World Economic and Financial Surveys

Global Financial Stability Report

Moving from Liquidity- to Growth-Driven Markets

April 2014

International Monetary Fund

Cataloging-in-Publication Data

Joint Bank-Fund Library

Global financial stability report – Washington, DC :
International Monetary Fund, 2002–
v. ; cm. – (World economic and financial surveys, 0258-7440)

Semiannual
Some issues also have thematic titles.
ISSN 1729-701X

1. Capital market — Development countries — Periodicals.
2. International finance — Periodicals. 3. Economic stabilization —
Periodicals. I. International Monetary Fund. II. Series: World economic and financial surveys.
HG4523.G563

ISBN 978-1-48435-746-0 (paper)
978-1-47557-766-2 (ePub)
978-1-48434-342-5 (Mobipocket)
978-1-47551-569-5 (PDF)

Recommended citation: International Monetary Fund, *Global Financial Stability Report—Moving from Liquidity- to Growth-Driven Markets* (Washington, April 2014).

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ASSUMPTIONS AND CONVENTIONS

The following conventions are used throughout the *Global Financial Stability Report* (GFSR):

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

– between years or months (for example, 2013–14 or January–June) to indicate the years or months covered, including the beginning and ending years or months;

/ between years or months (for example, 2013/14) to indicate a fiscal or financial year.

"Billion" means a thousand million.

"Trillion" means a thousand billion.

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

If no source is listed on tables and figures, data are based on IMF staff estimates or calculations.

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

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

Further Information and Data

This version of the GFSR is available in full through the IMF eLibrary (www.elibrary.imf. org) and the IMF website (www.imf.org).

The data and analysis appearing in the GFSR are compiled by the IMF staff at the time of publication. Every effort is made to ensure, but not guarantee, their timeliness, accuracy, and completeness. When errors are discovered, there is a concerted effort to correct them as appropriate and feasible. Corrections and revisions made after publication are incorporated into the electronic editions available from the IMF eLibrary (www.elibrary.imf.org) and on the IMF website (www.imf.org). All substantive changes are listed in detail in the online tables of contents.

PREFACE

The *Global Financial Stability Report* (GFSR) assesses key risks facing the global financial system. In normal times, the report seeks to play a role in preventing crises by highlighting policies that may mitigate systemic risks, thereby contributing to global financial stability and the sustained economic growth of the IMF's member countries. The global financial system is currently undergoing a number of challenging transitions on the path to greater stability. These transitions are far from complete, and stability conditions are far from normal. For advanced and emerging market economies alike, a successful shift from liquidity-driven to growth-driven markets requires a number of elements. The current report discusses these elements, including a normalization of U.S. monetary policy that avoids financial stability risks; financial rebalancing in emerging market economies amid tighter external financial conditions; further progress in the euro area's transition from fragmentation to robust integration; and the successful implementation of Abenomics in Japan to deliver sustained growth and stable inflation. The report also examines how changes in the investor base and financial deepening affect the stability of portfolio flows and asset prices in emerging market economies. The findings suggest that changes in the composition of investors are likely to make portfolio flows to emerging market economies more sensitive to global financial conditions; however, strengthening local financial systems reduces the sensitivity of domestic financial asset prices to global financial shocks. Last, the report looks at the issue of institutions deemed too important to fail and provides new estimates of the implicit funding subsidy received by systemically important banks. The report finds that this subsidy is still sizable and calls for a strengthening of financial reforms.

The analysis in this report has been coordinated by the Monetary and Capital Markets (MCM) Department under the general direction of José Viñals, Financial Counsellor and Director. The project has been directed by Jan Brockmeijer and Peter Dattels, both Deputy Directors, as well as by Gaston Gelos and Matthew Jones, both Division Chiefs. It has benefited from comments and suggestions from the senior staff in the MCM Department.

Individual contributors to the report are Isabella Araujo Ribeiro, Nicolás Arregui, Serkan Arslanalp, Sofiya Avramova, Luis Brandao-Marques, Eugenio Cerutti, Yingyuan Chen, Julian Chow, Fabio Cortes, Pragyan Deb, Reinout De Bock, Marc Dobler, Martin Edmonds, Johannes Ehrentraud, Jennifer Elliott, Michaela Erbenova, Luc Everaert, Xiangming Fang, Florian Gimbel, Brenda González-Hermosillo, Dale Gray, Pierpaolo Grippa, Sanjay Hazarika, Geoffrey Heenan, Hibiki Ichiue, Bradley Jones, David Jones, William Kerry, Oksana Khadarina, Yoon Sook Kim, Koralai Kirabaeva, Frederic Lambert, Paul Mills, Camelia Minoiu, Prachi Mishra, Kenji Moriyama, Papa N'Diaye, Oana Nedelescu, Lam Nguyen, Erlend Nier, S. Erik Oppers, Hiroko Oura, Evan Papageorgiou, Vladimir Pillonca, Jean Portier, Shaun Roache, Luigi Ruggerone, Narayan Suryakumar, Shamir Tanna, Kenichi Ueda, Constant Verkoren, Chris Walker, Christopher Wilson, Tao Wu, and Xiaoyong Wu. Magally Bernal, Carol Franco, Juan Rigat, and Adriana Rota were responsible for wordprocessing. Joe Procopio and Linda Griffin Kean from the Communications Department edited the manuscript and managed production of the publication with assistance from Lucy Scott Morales and Linda Long.

This particular edition of the GFSR draws in part on a series of discussions with banks, securities firms, asset management companies, hedge funds, standards setters, financial consultants, pension funds, central banks, national treasuries, and academic researchers.

This GFSR reflects information available as of March 24, 2014. The report benefited from comments and suggestions from staff in other IMF departments, as well as from Executive Directors following their discussion of the *Global Financial Stability Report* on March 21, 2014. However, the analysis and policy considerations are those of the contributing staff and should not be attributed to the IMF, its Executive Directors, or their national authorities.

EXECUTIVE SUMMARY

The global financial system is undergoing a number of challenging transitions on the path to greater stability. As the economic recovery in the United States gains footing, U.S. monetary policy has begun to normalize. Emerging market economies are transitioning to more sustainable growth in the financial sector, while addressing macroeconomic vulnerabilities amid a less favorable external financial environment. The euro area is strengthening bank capital positions as it moves from fragmentation to a more robust framework for integration.

These transitions are far from complete, and stability conditions are far from normal. Since October, bouts of financial turbulence have highlighted the substantial adjustment that lies ahead. In advanced economies, financial markets continue to be supported by extraordinary monetary accommodation and easy liquidity conditions. They will need to transition away from these supports if they are to create an environment of self-sustaining growth, marked by increased corporate investment and growing employment.

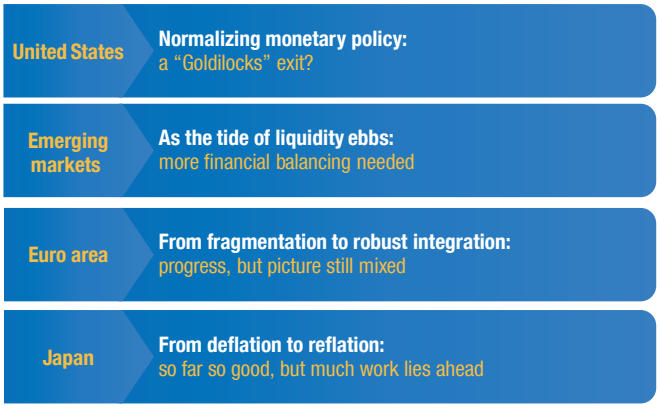
For advanced and emerging market economies alike, a successful shift from "liquidity-driven" to "growth-driven" markets requires a number of elements, including a normalization of U.S. monetary policy that avoids financial stability risks; financial rebalancing in emerging market economies amid tighter external financial conditions; further progress in the euro area's transition from fragmentation to robust integration; and the successful implementation of "Abenomics" to deliver sustained growth and stable inflation in Japan.

The gradual shift to self-sustaining growth is most advanced in the United States, where green shoots are evident from the economic recovery under way, as noted in the April 2014 *World Economic Outlook*. The U.S. transition presents several challenges to financial stability. The "search for yield" is becoming increasingly extended, with rising leverage in the corporate sector and weakening underwriting standards in some pockets of U.S. credit markets. Weaker market liquidity and the rapid growth of investment vehicles that are vulnerable to redemption risk could amplify financial or economic shocks. In this transitional period, the reduction in U.S. monetary accommodation could have important spillovers to advanced and emerging market economies alike as portfolios adjust and risks are repriced.

Amid this shifting global environment, emerging market economies face their own transition challenges, but with substantial differences across economies. Private and public balance sheets have become more leveraged since the beginning of the crisis and thus are more sensitive to changes in domestic and external conditions. Macroeconomic imbalances have increased in a number of economies in the past few years, while the increased participation of foreign investors in domestic bond markets exposes some economies to an additional source of market volatility and pressure on capital flows.

These developments have created a "systemic liquidity mismatch," that is, a disjunction between the potential scale of capital outflows and the capacity of local institutions and market makers (in particular, international banks) to intermediate them. This bottleneck could magnify the impact of any shocks emanating from other economies and broaden the impact on asset prices, particularly if asset managers seek to hedge exposures by taking positions in more liquid but unrelated markets. The mismatch could create circumstances where authorities may have to provide liquidity

Transition from Liquidity- to Growth-Driven Markets



to particular distressed markets to keep local bond and money markets working and contain spillovers across economies.

In the corporate sector of emerging market economies, this report suggests companies in many cases have sufficient buffers to withstand normal domestic or international shocks, although some vulnerabilities are evident. In a severe and adverse scenario where borrowing costs escalate and earnings deteriorate significantly, the debt at risk held by weaker, highly leveraged firms could increase by $740 billion, rising on average to 35 percent of total corporate debt in the sample of firms. In most emerging market economies, reported bank capital buffers and profitability generally remain high and should be sufficient to absorb moderate shocks to nonfinancial companies. Nonetheless, in several economies, weak provisioning and lower levels of bank capital could present difficulties in the event of further balance sheet deterioration in the corporate sector.

In China, the challenge for policymakers is to manage an orderly transition toward more market discipline in the financial system, including the removal of implicit guarantees. In this process, investors and lenders will have to bear some costs of previous financial excesses, and market prices will need to adjust to more accurately reflect risks. Pace is important. If the adjustment is too fast, it risks creating turmoil; if too slow, it will allow vulnerabilities to continue building. Other keys to the success of an orderly transition include upgrading the central bank's ability to address unpredictable shifts in liquidity demand, timely implementation of deposit insurance and interest rate liberalization, and strengthening the resolution framework for failed financial institutions.

In the euro area, policies implemented at both the national and European levels are supporting the transition to a more robust framework for integration, but important challenges remain. The restructuring of the debt-burdened euro area corporate sector has been stalled by the unfinished repair of bank balance sheets. Moreover, credit conditions remain difficult in stressed euro area economies. Although market sentiment regarding stressed euro area banks and sovereigns has improved markedly, it may be running ahead of the necessary balance-sheet repair. Thus, European policymakers must push ahead with a rigorous and transparent assessment of the current health of the banking system, followed by a determined cleansing of balance sheets and the removal of banks that are no longer viable. Additional measures to improve nonbank credit and equity channels are also required. The resulting tangible strengthening of balance sheets will help reinforce the improved optimism in financial markets.

In Japan, continued monetary accommodation is necessary but not sufficient for renewed economic dynamism to take root. The transition to higher sustained growth and lower debt-related risks requires the enactment of persuasive structural reforms. The first stages of Abenomics have been largely successful in altering deflationary expectations, but consolidating these gains in financial stability and expanding them will require continued efforts.

More broadly, maintaining the momentum and impetus for reform and good policies may prove challenging, amid a crowded electoral calendar in many countries. Geopolitical risks related to Ukraine could also pose a more serious threat to financial stability if they were to escalate. 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. Against this backdrop, there is a need for strengthened and cooperative policy actions to help reduce risks of renewed turmoil in the global economy, both by reducing external imbalances and their associated internal distortions and by improving market confidence. Furthermore, an enhanced dialog between supervisors in advanced and emerging market economies should help ensure that cross-border liquidity and credit are not disrupted.

Chapter 2 discusses the evolving landscape of portfolio investment in emerging market economies over the past 15 years. Their financial markets have deepened and become more globalized. Greater direct participation by global investors has stimulated the development of new asset class segments, including local currency sovereign debt markets. The mix of global investors has also changed, and bond funds have become more prominent—especially local currency funds, open-end funds with easy redemption options, and funds investing only opportunistically in emerging market economies. Chapter 2 draws on a variety of methods and relatively unexploited data to examine the implications of these changes for the stability of portfolio flows and asset prices in emerging market economies.

It finds that changes in the composition of global portfolio investors are likely to make overall portfolio flows more sensitive to global financial shocks. The share of more volatile bond flows has risen, and larger

foreign participation in local markets can transmit new instability. The growing activity of institutional investors is potentially more stable, but when facing an extreme shock, they can pull back even more strongly and persistently than other asset managers. While domestic macroeconomic conditions matter, herd behavior among global funds continues, and there are few signs that differentiation along local macroeconomic fundamentals during crises has increased over the past 15 years.

However, the progress made so far by emerging market economies in promoting a larger local investor base, deepening their banking sectors and capital markets, and improving their institutions has reduced their sensitivity to global financial shocks. A continuation of these efforts can help emerging market economies reap benefits from financial globalization while minimizing its potential costs.

Chapter 3 looks at how implicit funding subsidies for banks considered too important to fail (TITF) have changed over the past few years. Government protection for TITF banks creates a variety of problems: an uneven playing field, excessive risk taking, and large costs for the public sector. Because creditors of TITF institutions do not bear the full cost of failure, they are willing to provide funding without paying much attention to the banks' risk profiles, thereby encouraging leverage and risk taking. During the global financial crisis, governments intervened with large amounts of funds to support distressed banks and safeguard financial stability, leaving little uncertainty about their willingness to bail out failing TITF institutions. These developments have further reinforced incentives for banks to become large, and indeed, the concentration of the banking sector in many economies has increased. In response, policymakers have undertaken ambitious financial reforms to make the financial system safer, including addressing the TITF problem.

Chapter 3 assesses whether these policy efforts are sufficient to alleviate the TITF issue. In particular, it investigates the evolution of the funding cost advantages enjoyed by systemically important banks (SIBs). The expectation of government support in case of distress represents an implicit public subsidy to those banks. This subsidy rose in all economies during the crisis. Although it has declined in most economies since then, it remains elevated, especially in the euro area, likely reflecting different speeds of balance-sheet repair as well as differences in the policy response to the problems in the banking sector. Nonetheless, the expected probability that SIBs will be bailed out in case of distress has remained high in all regions.

Although not all measures have been implemented yet, there is still scope for a further strengthening of reforms. These reforms include enhancing capital requirements for SIBs or imposing a financial stability contribution based on the size of the liabilities of banks. Progress is also needed in facilitating the supervision and resolution of cross-border financial institutions. In these areas, international coordination is critical to avoid new distortions and negative cross-country spillovers, which may have become even more important because of country-specific policy reforms.

CHAPTER 1

MAKING THE TRANSITION FROM LIQUIDITY- TO GROWTH-DRIVEN MARKETS

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, policymakers 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.

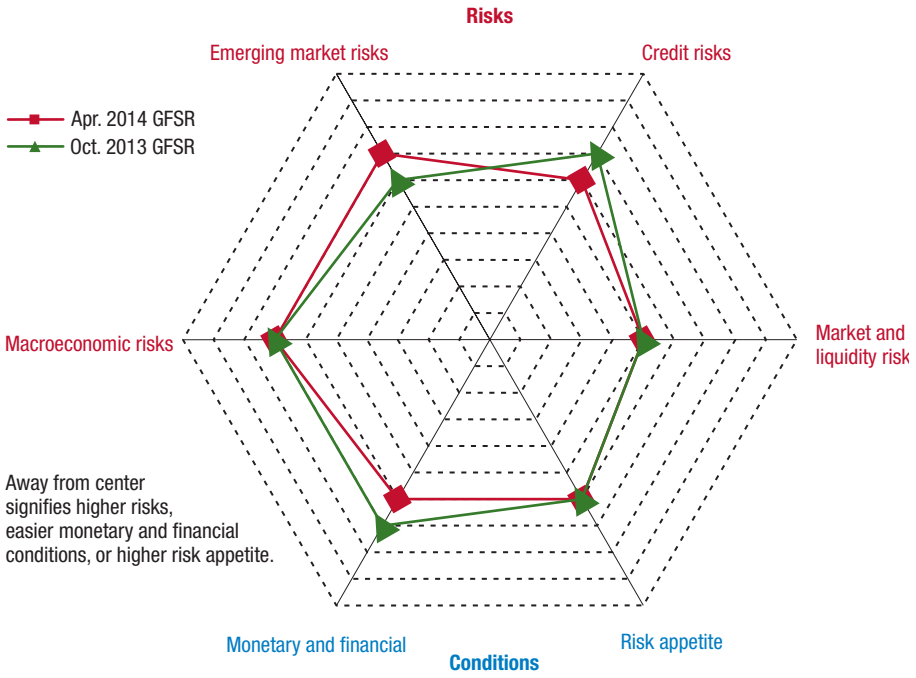
After reviewing changes in overall global financial stability since the October 2013 *Global Financial Stability Report* (GFSR), this chapter examines the ongoing transition challenges confronting the global financial system. The next section considers stability risks in light of the gradual normalization 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.

Prepared by Peter Dattels and Matthew Jones (team leaders), Serkan Arslanalp, Yingyuan Chen, Julian Chow, Fabio Cortes, Reinout De Bock, Marc Dobler, Martin Edmonds, Jennifer Elliott, Michaela Erbenova, Xiangming Fang, Sanjay Hazarika, Geoffrey Heenan, Bradley Jones, David Jones, William Kerry, Koralai Kirabaeva, Paul Mills, Lam Nguyen, Erlend Nier, Evan Papageorgiou, Vladimir Pillonca, Jean Portier, Shaun Roache, Luigi Ruggerone, Narayan Suryakumar, Shamir Tanna, Constant Verkoren, Chris Walker, Christopher Wilson, and Tao Wu.

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

Figure 1.1. Global Financial Stability Map



Source: IMF staff estimates.

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 nonfinancial 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.

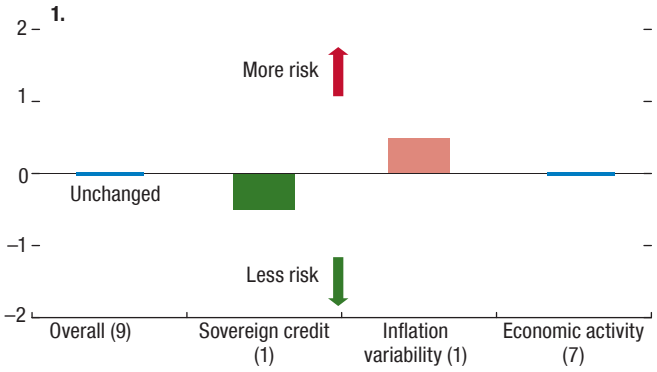
Normalizing U.S. Monetary Policy—A "Goldilocks" Exit?

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

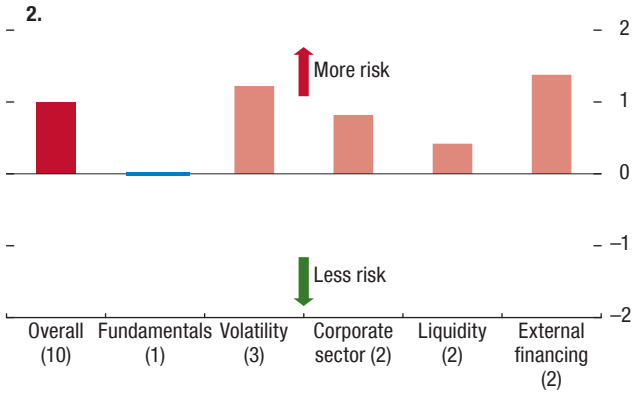
Figure 1.2. Global Financial Stability Map: Assessment of Risks and Conditions

(Notch changes since the October 2013 GFSR)

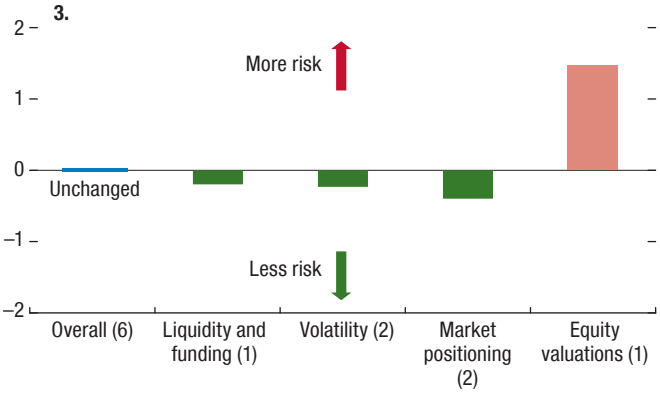
Macroeconomic risks remain balanced as growth improves in advanced economies and weakens in emerging markets.



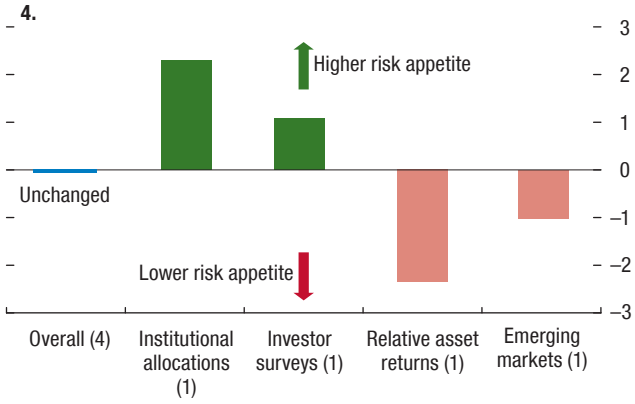
Emerging market risks have increased, reflecting tighter external conditions and market turbulence.



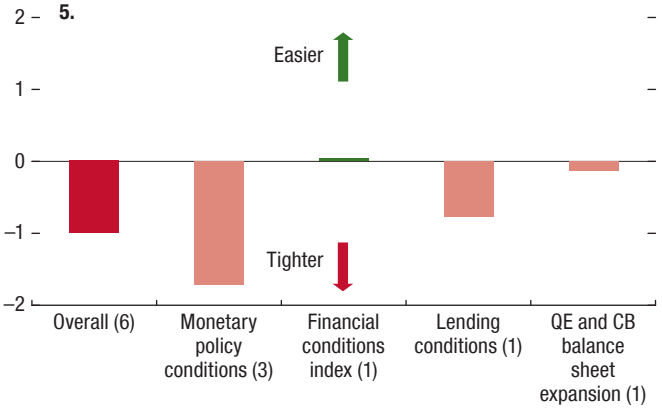
Market and liquidity risks remain unchanged overall.



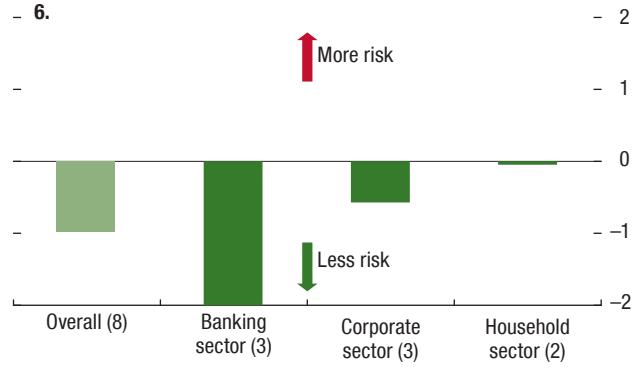
Risk appetite remains unchanged overall as flows rotate into advanced economy equities and away from emerging markets.



Monetary and financial conditions have tightened, as real rates have increased in response to the U.S. tapering.



Credit risks have declined, led by improvements in bank funding conditions.



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
Government													
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
Household liabilities													
Gross financial[1]	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
Nonfinancial corporates[2]													
Gross debt[3]	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
Financial institutions													
Gross debt[4]	51	196	242	83	153	101	165	95	24	699	105	45	109
Bank capital to assets (%)[5]	5.0	5.5	5.0	12.0	. . .	6.2	5.2	5.2	7.3	7.3	5.5	6.9	5.7
External liabilities													
Gross[6]	146	88	597	158	208	439	322	209	240	2,060	157	294	233
Net[6]	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.
[1]Household debt includes all liabilities and not just loans.
[2]Includes an adjustment for estimated intercompany loans, where necessary.
[3]Some large multinational enterprises have group treasury operations in financial centers (e.g., Ireland), increasing corporate debt.
[4]High gross debt in Ireland in part reflects its role as an international financial services center.
[5]Data from IMF Financial Soundness Indicators database. Treatment of derivatives varies across countries.
[6]Data from IMF International Financial Statistics database.

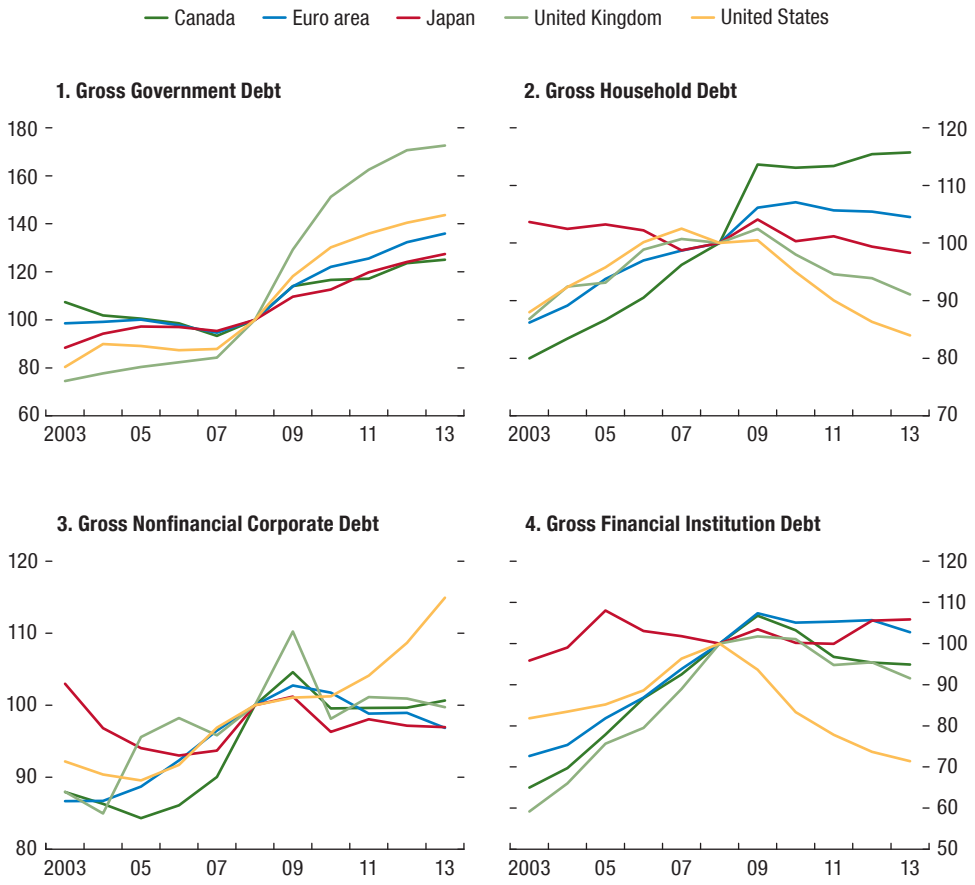
Table 1.1.2. Reduction in Gross Debt Levels in Selected Advanced Economies from the 2009–13 Peak
(Percent of GDP)

	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 Ecomomies 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).[1] 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

[1]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 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 rebalancing channel"). This box assesses progress in these channels, especially the portfolio rebalancing channel.

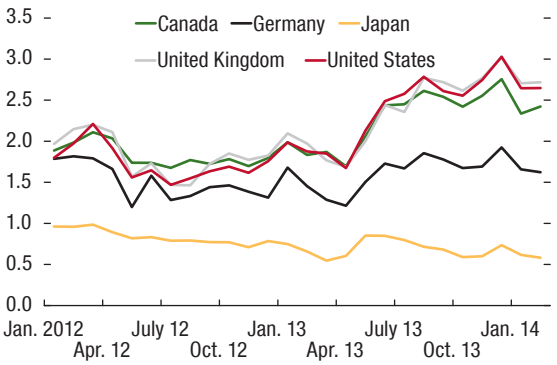
Prepared by Serkan Arslanalp.

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-

Figure 1.2.1. Japanese Financial System

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

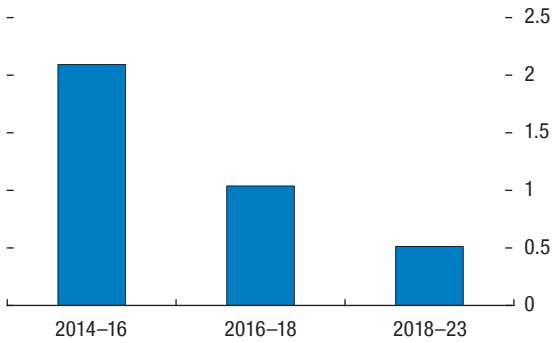
1. 10-Year Government Bond Nominal Yields (percent)



Source: Bloomberg L.P.

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

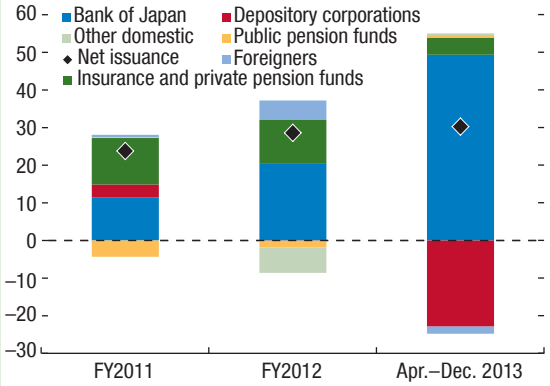
2. Inflation Expectations (percent; at end-2013)



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....

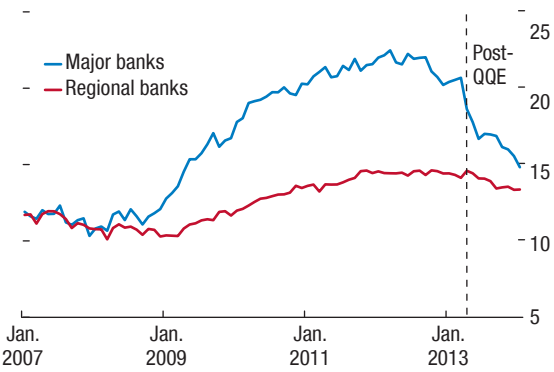
3. Net Japanese Government Bond Purchases (trillions of yen)



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.

4. Japanese Bank Holdings of Government Debt (percent of bank assets)



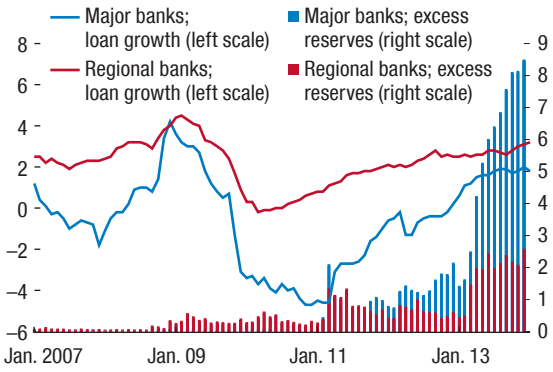
Sources: Bank of Japan; and IMF staff estimates.
Note: Government debt includes Japanese government bonds and treasury discount bills. QQE = quantitative and qualitative easing.

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.

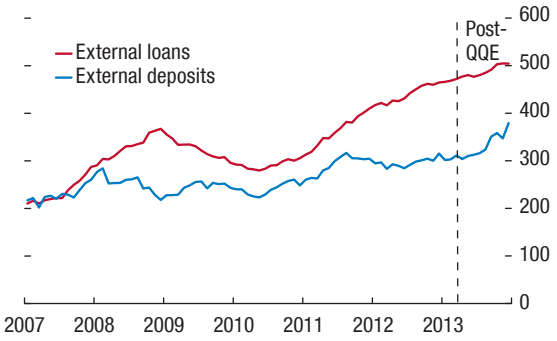
5. Japanese Banks: Excess Reserves and Domestic Lending (excess reserves as a percent of bank assets; year-over-year percent changes in loans)



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.

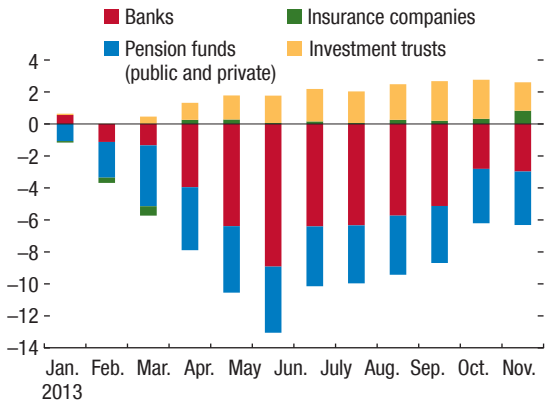
6. Japanese Banks: External Loans and Deposits (billions of U.S. dollars)



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

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

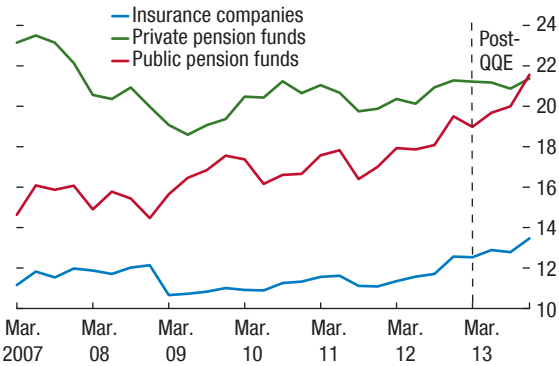
7. Cumulative Outward Portfolio Investment of Selected Investors (trillions of yen; since end-2012)



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 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).[1]

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.

[1]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

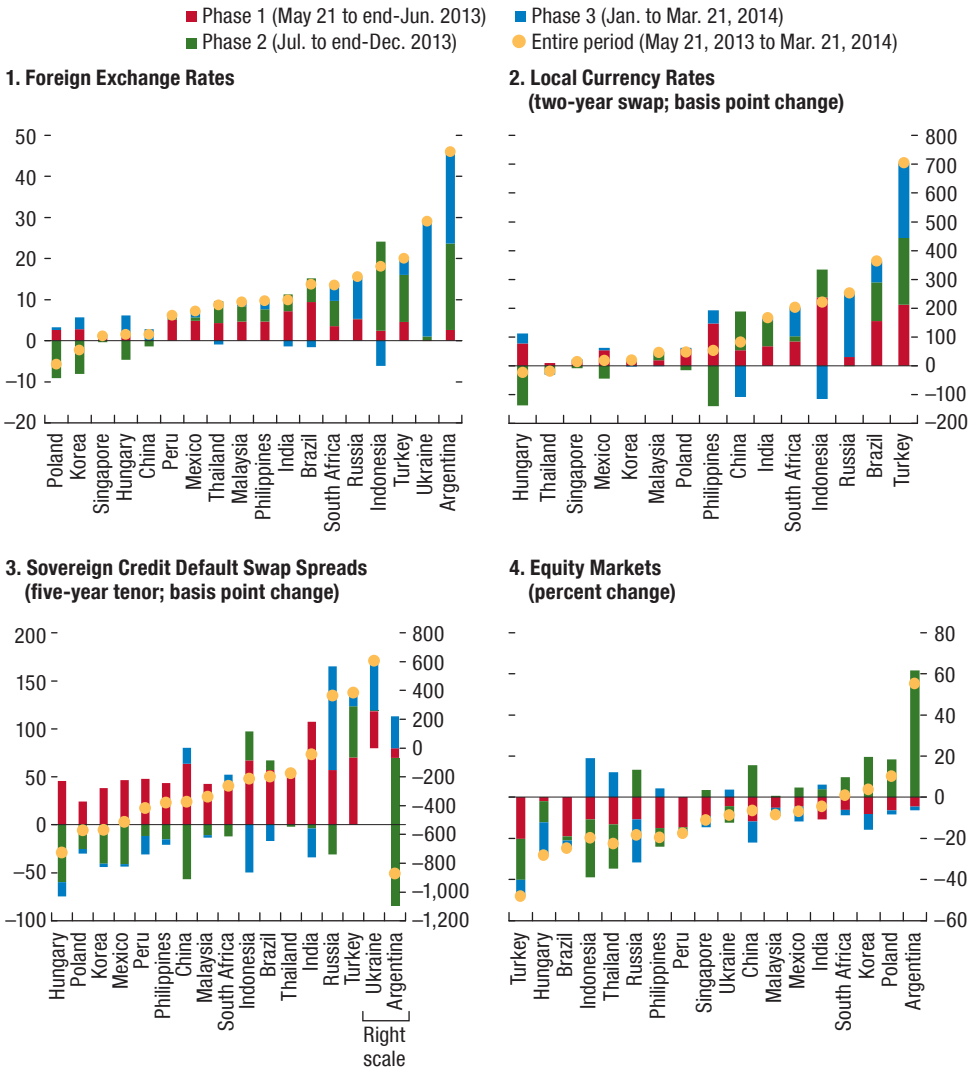
Emerging market economies have suffered bouts of market turbulence since May 2013 (Figure 1.3.1). This turbulence reflects a general repricing of external conditions and domestic vulnerabilities, as well as the new uncertainties for growth.

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.

Prepared by Peter Dattels and Matthew Jones.

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

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.

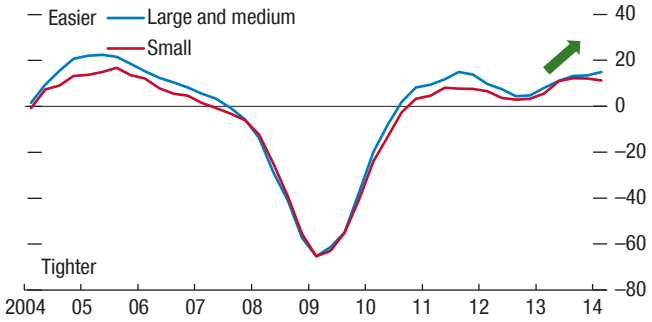
The search for yield has allowed U.S. companies, including those rated as speculative, to refinance and recapitalize at a rapid pace. High-yield issuance over the past three years is more than double the amount recorded in the three years before the last downturn. This trend is accelerating, with gross 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 protections 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?

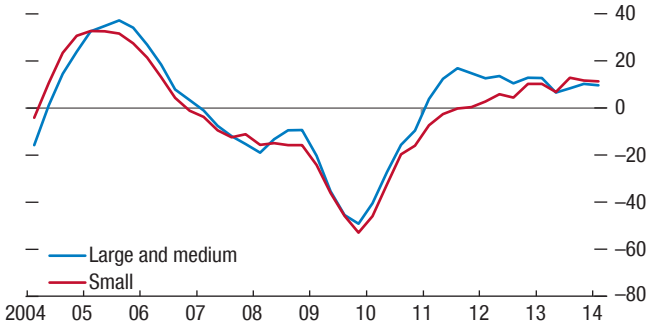
Corporate lending standards are loosening…

1. Corporate Lending Standards
(net percent of respondents reporting loosening standards; four-quarter moving average)



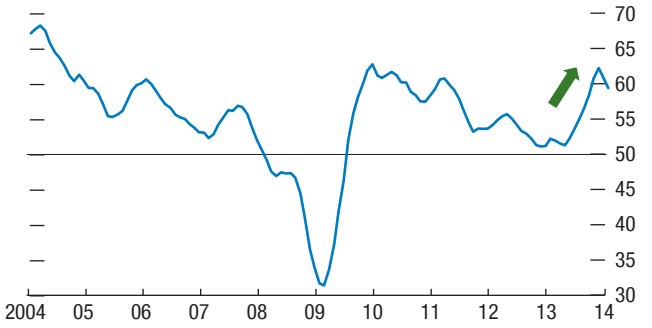
…while corporate loan demand is rising…

2. Corporate Loan Demand
(net percent of respondents reporting stronger demand; four-quarter moving average)



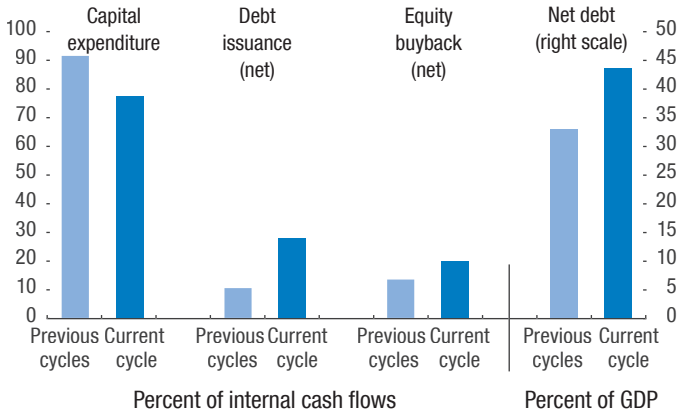
… and new orders are growing at a faster pace.

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.

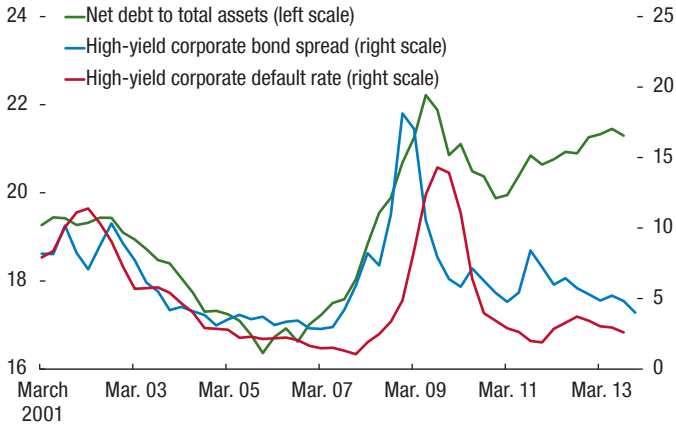
Figure 1.4. U.S. Nonfinancial Corporations: Credit Cycle Indicators



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.

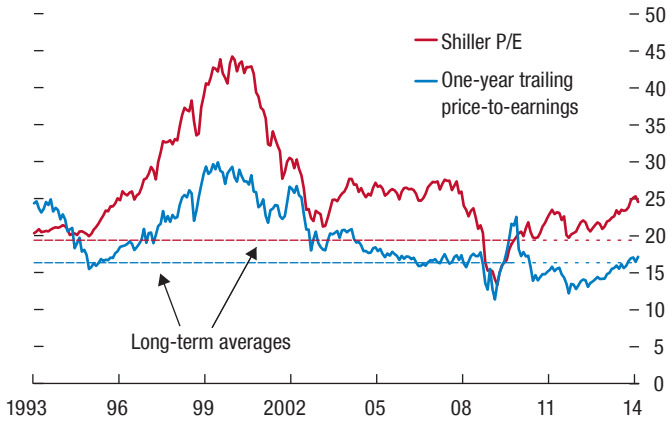
Figure 1.5. U.S. Nonfinancial Corporations: Key Financial Indicators

(Percent)



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

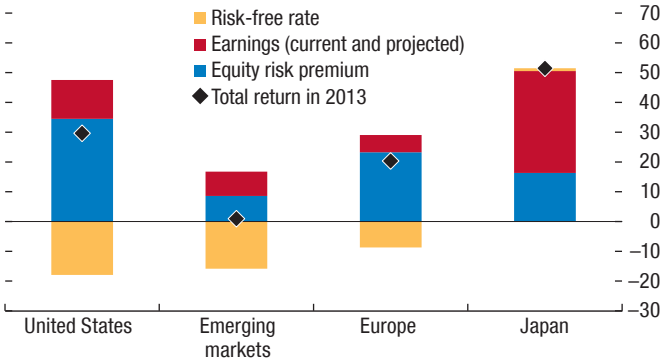
Figure 1.6. S&P 500 Price-to-Earnings Ratio



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

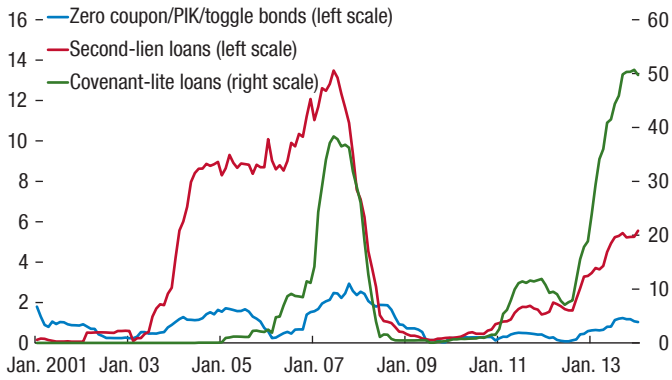
(Billions of U.S. dollars)

	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.

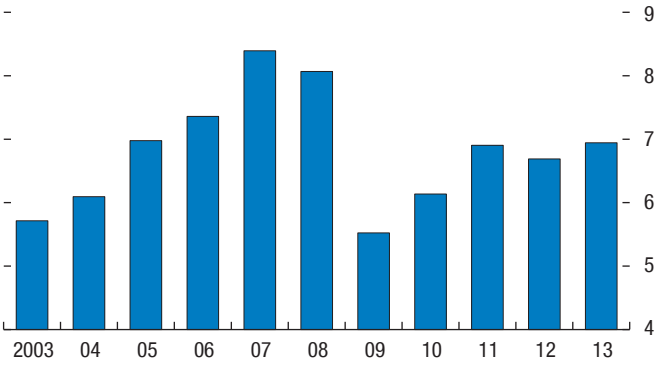
Figure 1.8. U.S. High-Yield Bond and Leveraged Loan Issuance with Lower Standards

(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.[2]

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 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.[3] 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

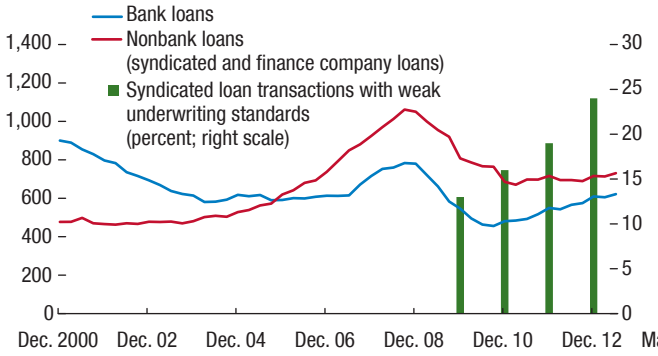
[2]According to the Federal Reserve's January Senior Loan Officer Opinion Survey, banks are reporting tighter debt-to-EBITDA restrictions on leveraged loans in response to the supervisory guidance issued in March 2013 (www.federalreserve.gov/boarddocs/snloansurvey).

[3]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...

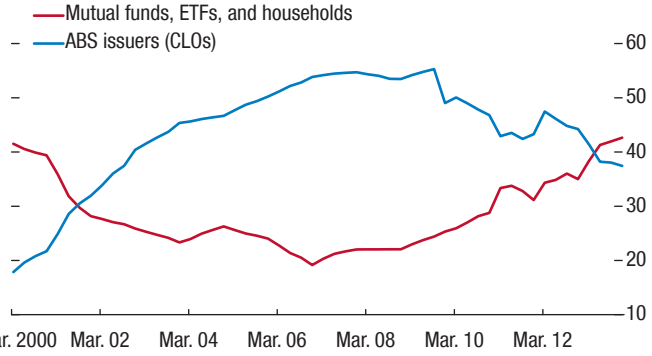
1. Loans to U.S. Nonfinancial Corporations (billions of U.S. dollars)



Sources: Federal Reserve; Shared National Credit Program; and IMF staff estimates.

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

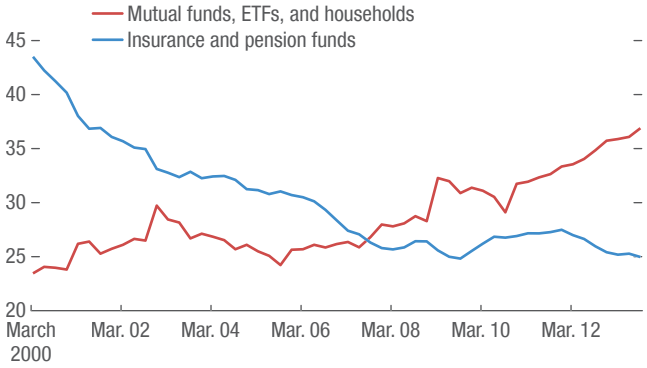
2. Holders of Syndicated Loans to U.S. Nonfinancial Corporations (percent of total outstanding)



Sources: Federal Reserve; and IMF staff estimates.
Note: ABS = asset-backed security; CLO = collateralized loan obligation; ETF = exchange-traded fund.

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

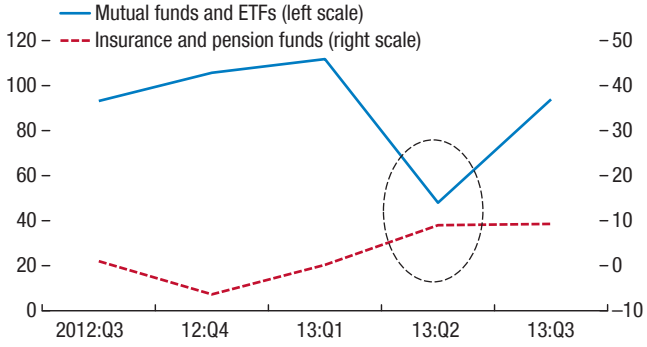
3. Holders of U.S. Corporate Bonds (percent of total outstanding)



Sources: Federal Reserve; and IMF staff estimates.
Note: ETF = exchange-traded fund.

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

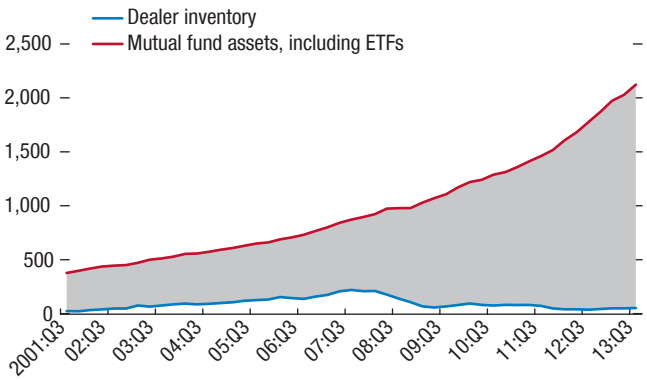
4. Net Purchases of U.S. Corporate Bonds (billions of U.S. dollars)



Sources: Federal Reserve; and IMF staff estimates.
Note: ETF = exchange-traded fund.

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

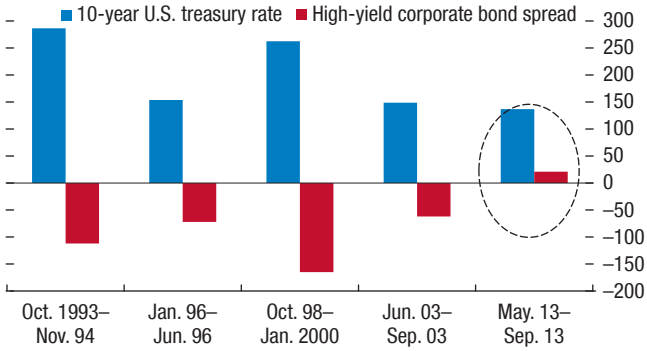
5. U.S. Credit Mutual Fund Assets and Dealer Inventory (billions of U.S. dollars)



Sources: Federal Reserve; and IMF staff estimates.
Note: ETF = exchange-traded fund.

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

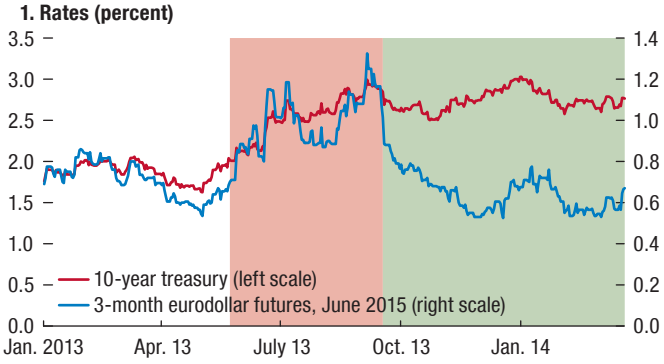
6. U.S. Treasury Sell-off Episodes (change in basis points)



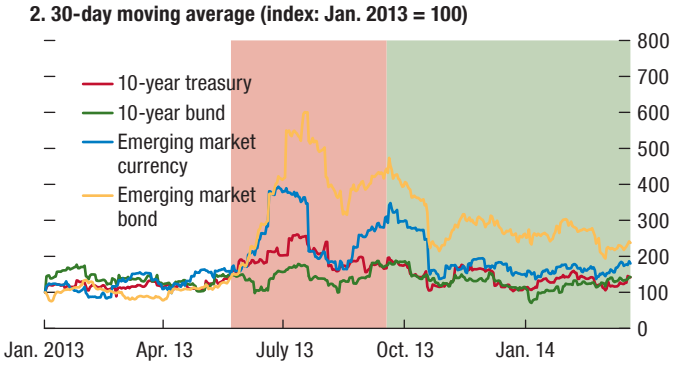
Sources: Bloomberg L.P.; Bank of America Merrill Lynch; and IMF staff estimates.
Note: Episodes when 10-year U.S. Treasury rate rose by more than 100 bps within a year.

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.

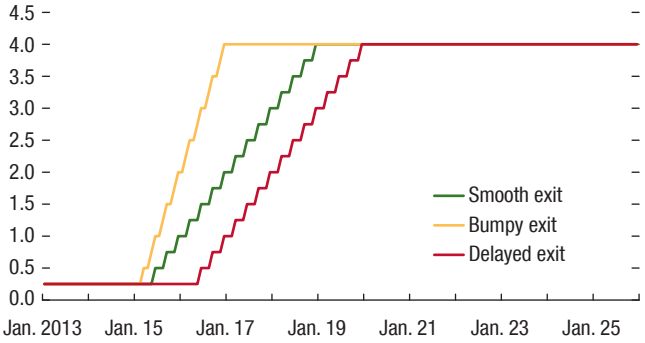
Under the smooth (baseline) exit scenario, the first hike in the target policy rate is assumed to take place in the second quarter of 2015, the timing of which is broadly in line with market expectations and the projections issued in conjunction with the March 2014 meeting of the Federal Reserve's Federal Open Market Committee.[4] 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.

[4]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). 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

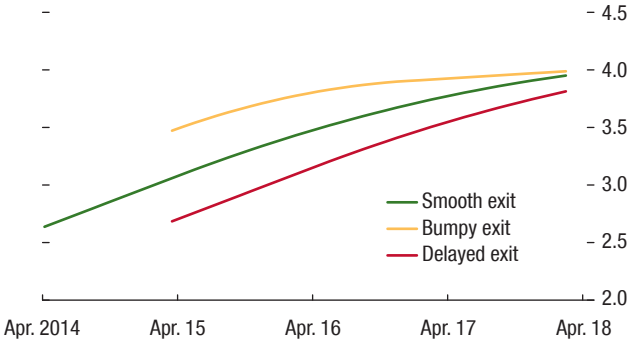
Our assumed path for U.S. policy rates…

1. U.S. Federal Reserve Polcy Rate
(percent)



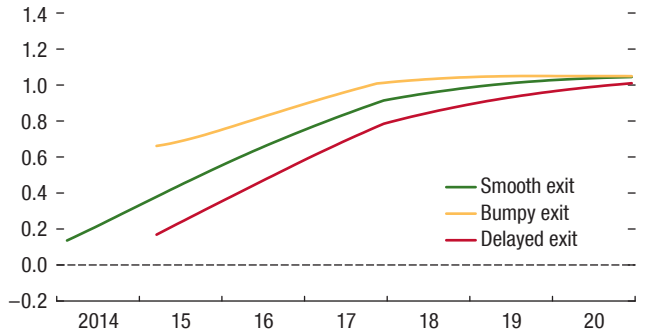
…determines the path of expected short rates…

2. Expected Short Rates
(percent; average over next 10 years)



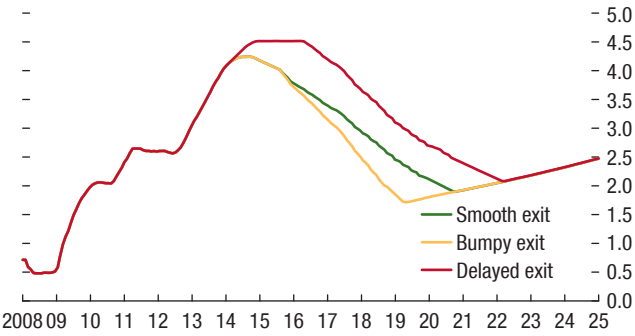
…and an econometric model of the term premium…

3. 10-Year U.S. Treasury Term Premium under Various Scenarios
(percent)



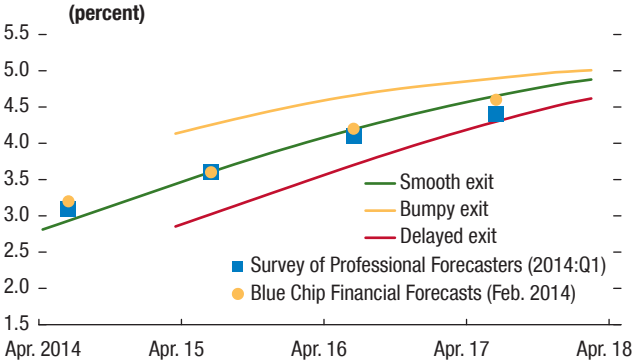
… based on the Fed's SOMA holdings…

4. U.S. Federal Reserve: System Open Marrket Account (SOMA) Holdings
(trillions of U.S. dollars; January of each year)



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

5. U.S. 10-Year Treasury Rate
(percent)



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).

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).[5] 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.[6] 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).[7]

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).[8] 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 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).[9] 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.[10] Macroprudential policies can help reduce excessive risk taking in the high-

[5]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).

[6]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.

[7]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.

[8]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.

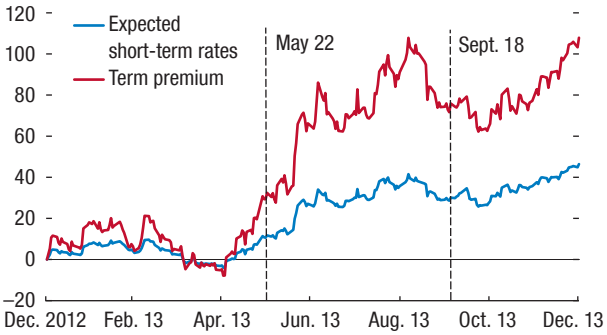
[9]These scenarios are consistent with the analysis in Chapter 3 of the April 2014 *World Economic Outlook*, which shows that real interest rates are likely to rise moderately from their very low current levels.

[10]These and related issued 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…

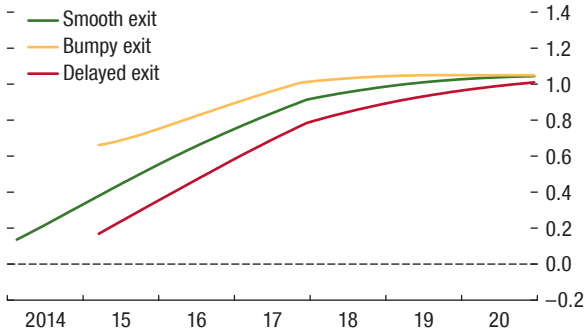
1. Decompositon of Changes in 10-Year Treasury Yield (basis point change since end-2012)



Source: IMF staff estimates based on Kim and Wright (2005).

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

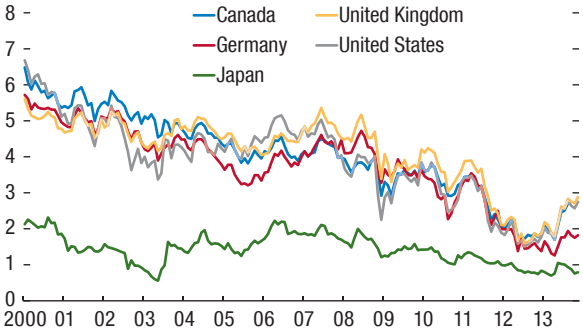
2. 10-Year U.S. Treasury Term Premium under Various Scenarios (percent)



Source: IMF staff estimates based on Wu (forthcoming).

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

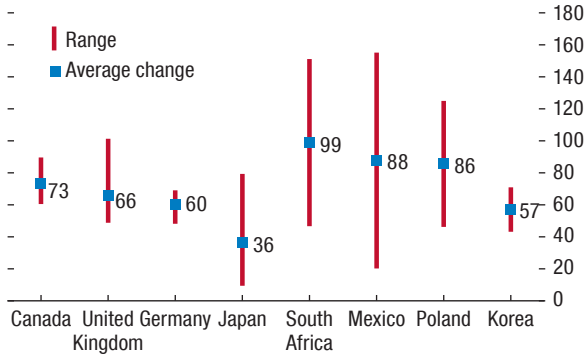
3. 10-Year Government Bond Nominal Yields (percent)



Sources: National central banks; and Thomson Reuters.

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

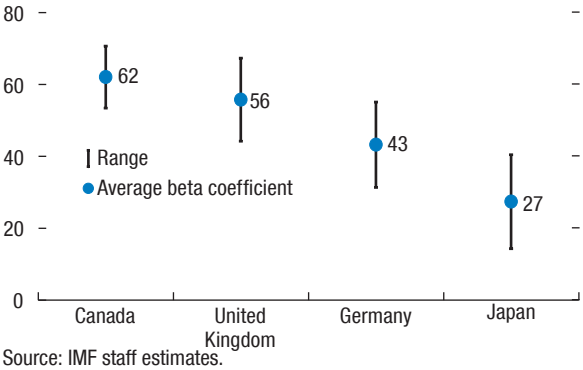
4. 10-Year Government Bond Yield Changes During Rapid Rises in U.S. Treasury Yields (percent of the rise in U.S. treasury yield)



Sources: Bloomberg L.P.; and IMF staff estimates.
Note: During these episodes 10-year U.S. Treasury rates rose by more than 100 basis points in less than a year (Oct. 93–Nov. 94; Jan. 96–Jun. 97; Oct. 98–Jan. 2000; Jun. 03–Sep. 03; and May 13–Sep. 13). For Korea, Mexico, Poland, and South Africa, only the last two episodes are considered for lack of comparable data.

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

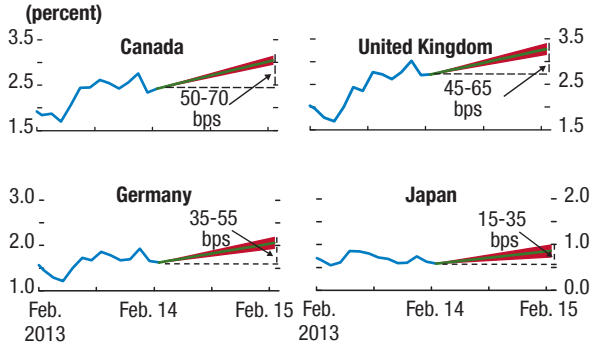
5. Beta to U.S. Term Premium Shock (percent)



Source: IMF staff estimates.
Note: Beta is the coefficient of the U.S. 10-year government bond term premium in the following regression:
$\Delta T_{i,t} = \alpha_i + \beta \times \Delta T_{us,t} + \in_{i,t}$ 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.

6. Potential Impact of a 100 Basis Point Rise in the U.S. Term Premium (percent)



Source: IMF staff estimates.
Note: bps = basis points. The projections are based on a one standard deviation range around the beta coefficient.

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
Average			*73*	*60*	*36*	*57*	*88*	*86*	*99*	*66*

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.[11] 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 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

[11]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.

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.[1] 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).

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.

This box was prepared by Erlend Nier.

[1]See Chapter 3 of the GFSR for more details on measures to address the too-important-to-fail issue.

Box 1.4 *(continued)*

Overall, therefore, although the U.S. macroprudential 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 systemically 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.

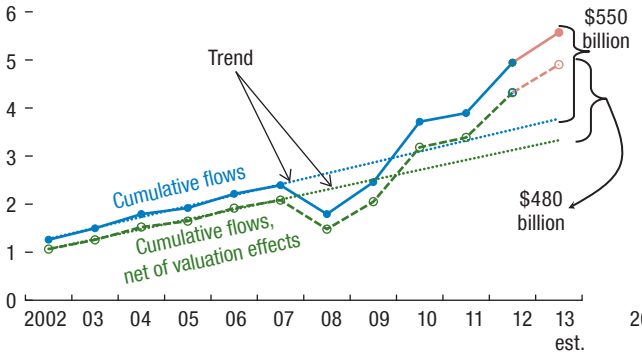
Many emerging market economies face larger debt stocks and higher leverage

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.

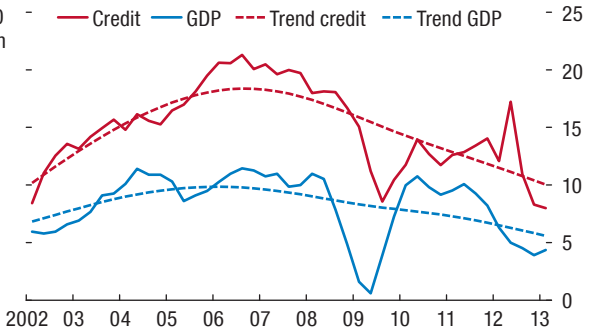
1. Bond Flows from Advanced to Emerging Market Economies (percent of advanced economies' GDP)



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…

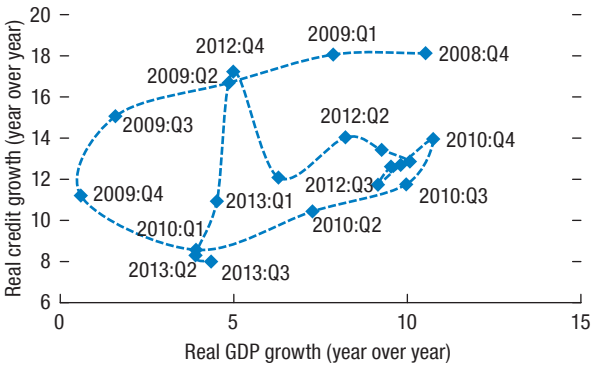
2. Credit and GDP Growth Trends in Emerging Market Economies (percent)



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.

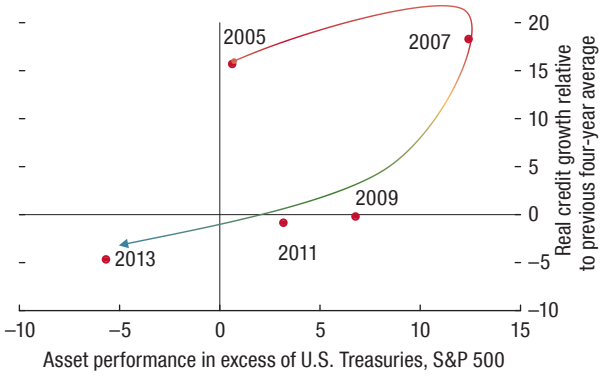
3. Real Credit and Real GDP Growth in Emerging Markets (percent)



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 releveraging 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).[12] 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).[13] 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.

[12]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.

[13]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
General Government Debt												
Gross	66	22	67	26	58	46	57	13	104	45	45	36
Net	34	. . .	. . .	. . .	. . .	40	29	. . .	. . .	39	. . .	27
Household Debt												
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
Nonfinancial Corporate Debt												
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
Banking Sector												
Credit to Nonfinancial Private Sector[1]	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.
[1]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).[14] 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.[15]

[14]These shocks are consistent with high-stress events experienced in emerging markets in the past 10 years.

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

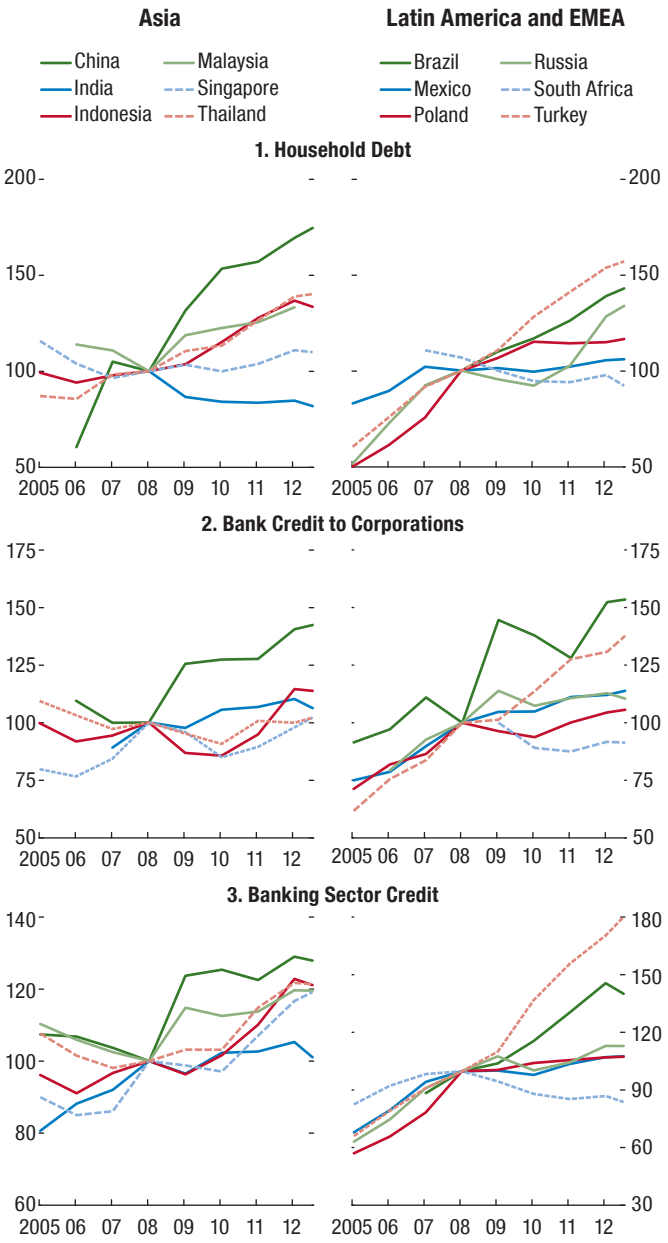
How exposed are firms in emerging market economies to exchange rate and foreign currency funding risks?

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.

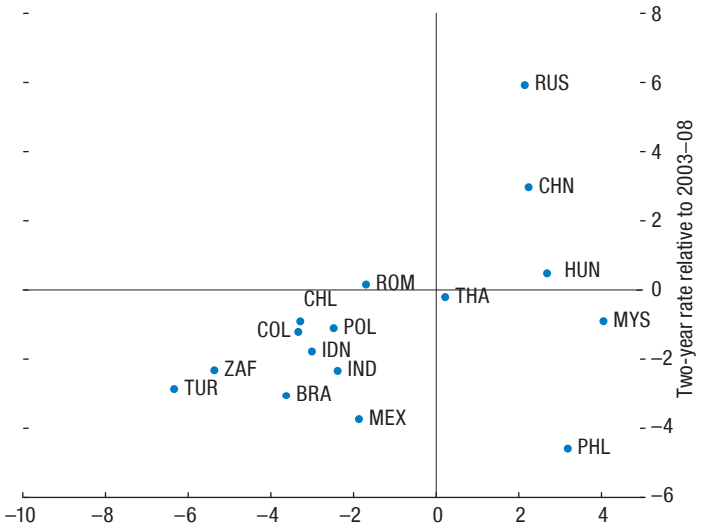
To gauge the sensitivity of earnings to exchange rate changes, a 30 percent depreciation in the exchange rate

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



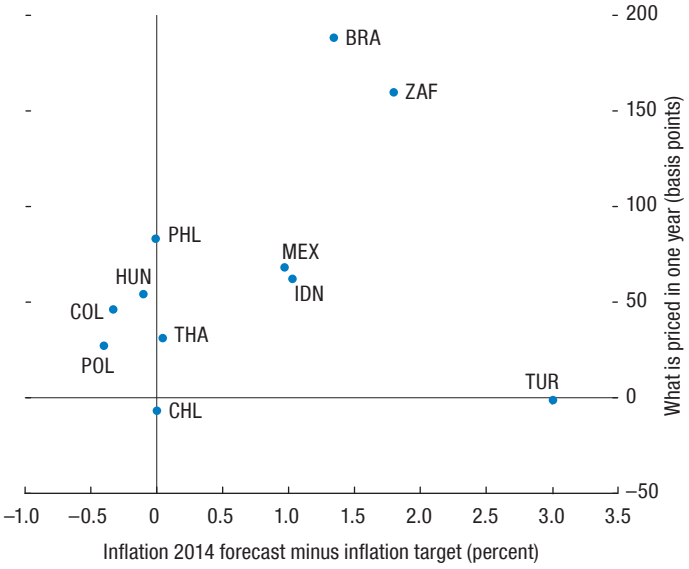
Sources: Bloomberg L.P.; national authorities; and IMF, World Economic Outlook database.
Note: Real rates are calculated as two-year nominal swap rates as of March 24, 2014 minus latest annual inflation data. The 2003–08 period refers to January 2003 (wherever real rates are available) through June 2008.
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.[16] 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.[17] 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"

[16]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.

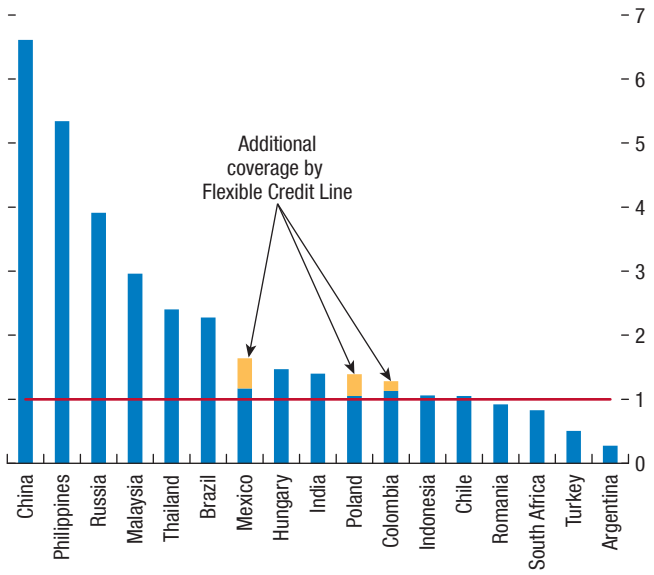
[17]The April 2014 Regional Economic Outlook: Asia and Pacific also concluded that the corporate sector may be more vulnerable to interest rate and profitability shocks than the aggregate data would suggest as firms that are highly leveraged tend to have lower profitability, lower interest coverage ratios,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

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.

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.[18] Leveraged firms in China, 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).[19] 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.

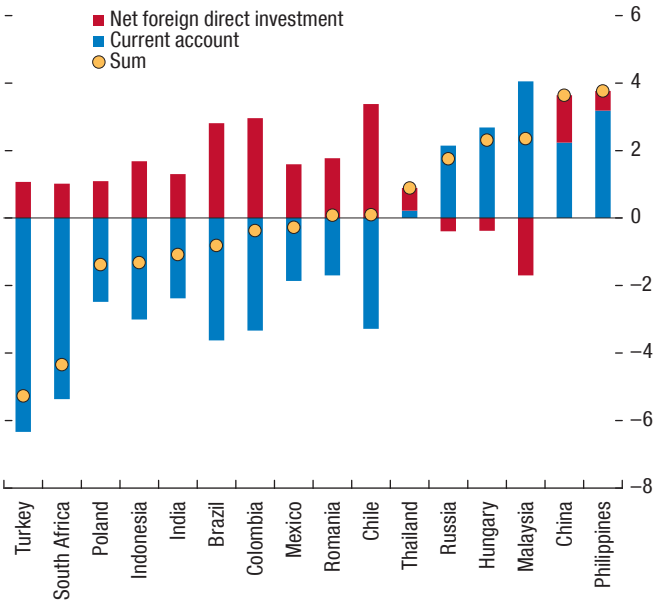
Banks remain resilient to a rise in corporate stress

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

[18]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 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.

[19]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[20] (Figure 1.21, panel 2).

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.[21] 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

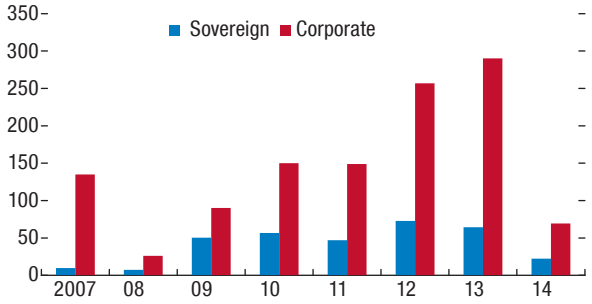
[20]Regulatory risk-weights vary across countries with some imposing stricter weights that could result in larger risk-weighted assets (RWA).

[21]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 …

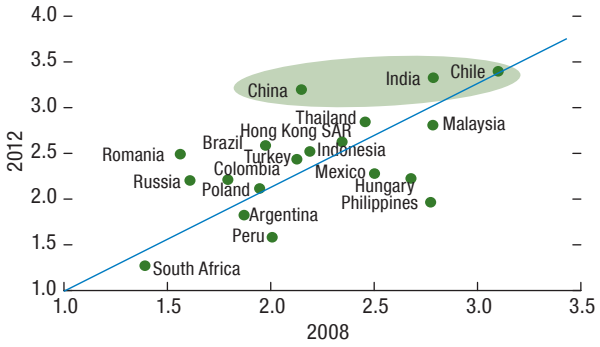
1. Net New Issuance of Emerging Market Bonds (billions of U.S. dollars)



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

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

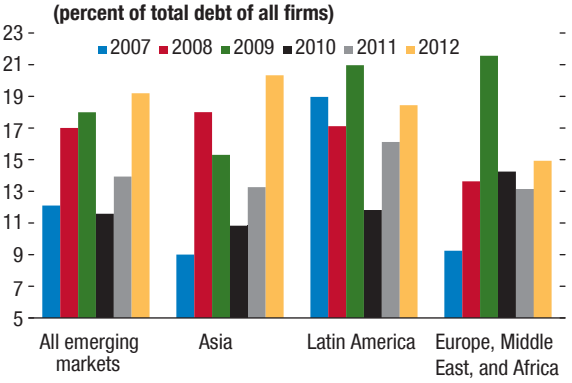
3. Net Debt-to-EBITDA Ratio, 2008 and 2012



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

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

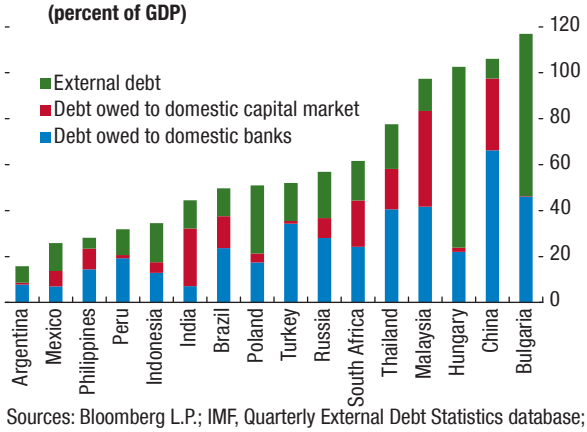
5. Debts of Weak Firms, 2007–12 (percent of total debt of all firms)



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.

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

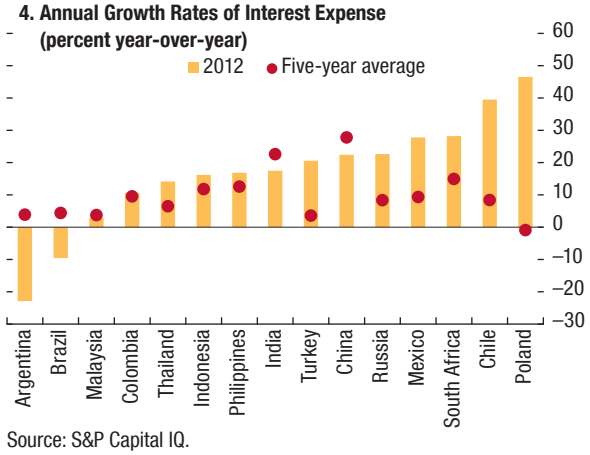
2. Corporate Sector Debt, 2013 (percent of GDP)



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.

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

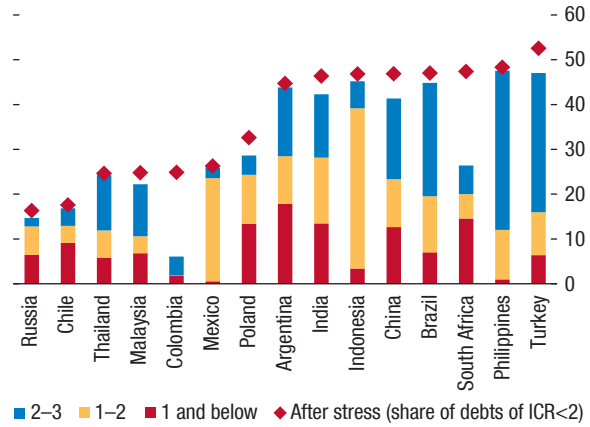
4. Annual Growth Rates of Interest Expense (percent year-over-year)



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

…while balance sheets have become more sensitive to shocks…

6. Distribution of Debt-at-Risk by Interest Coverage Ratio (percent of total debt)

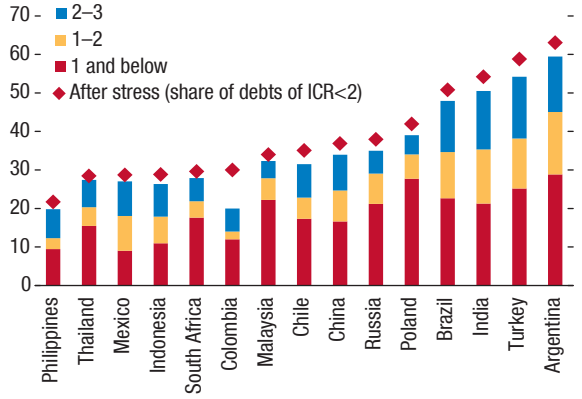


Sources: S&P Capital IQ; and IMF staff calculations.
Note: Debt-at-risk refers to the share of debts of weak firms (with interest coverage ratio below 2) after shocks. ICR = interest coverage ratio.

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

…and for a large share of firms.

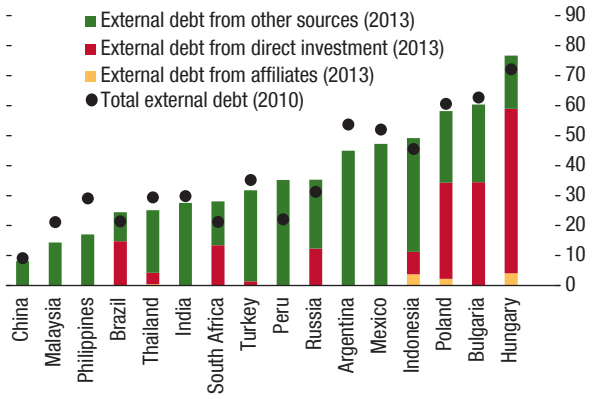
7. Distribution of Firms-at-Risk by Interest Coverage Ratio (percent of total firms)



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 = intererst coverage ratio.

Corporate external borrowing has increased…

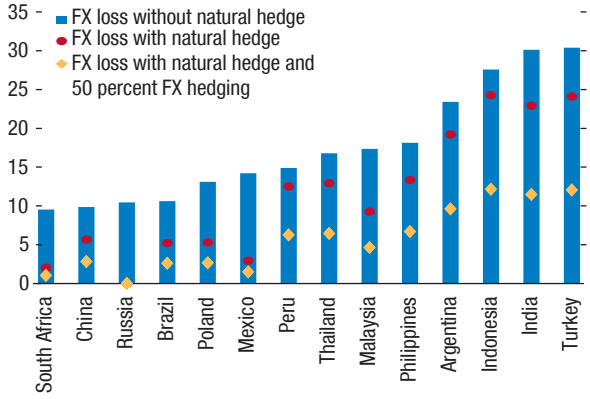
8. Share of Corporate Debt Owed to Nonresidents (percent of total corporate debt)



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.

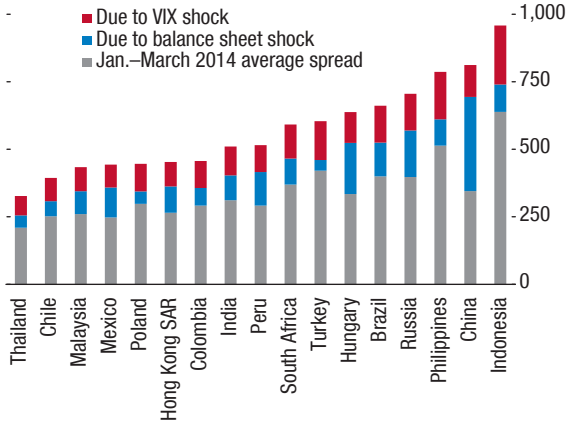
9. Net Foreign Exchange Loss on Debt Principal and Interest (percent of EBITDA)



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)

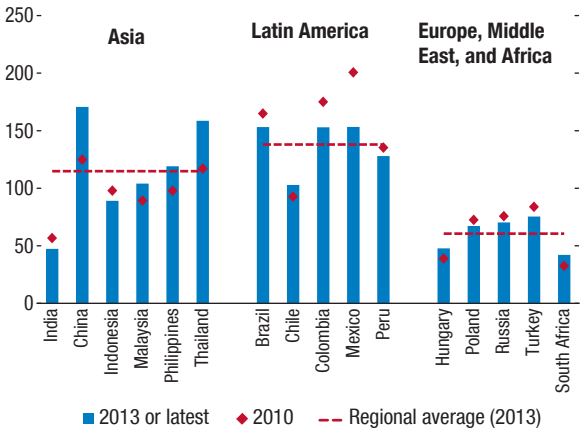


Sources: JPMorgan Chase & Co.; S&P Capital IQ; and IMF staff calculations.
Note: The sensitivity analysis assumes two-standard deviation deterioration in the balance sheet metrics (see main text), and a 10 percentage point increase in the VIX equity volatility index. VIX = Chicago Board Options Exchange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

Figure 1.21. Emerging Market Bank Resilience

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

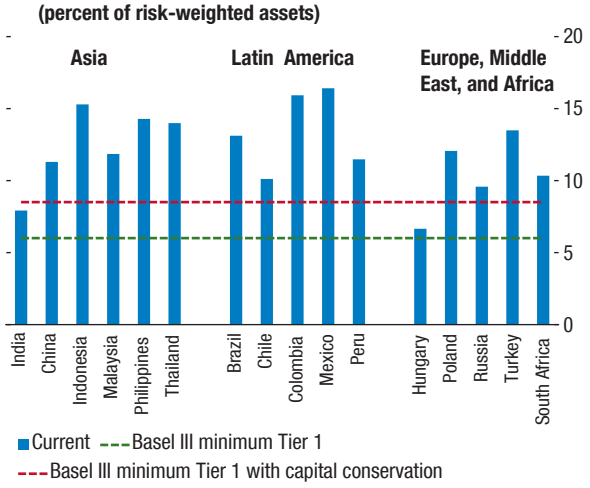
1. Banking Sector Provision Coverage Ratios, 2010 and 2013



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

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

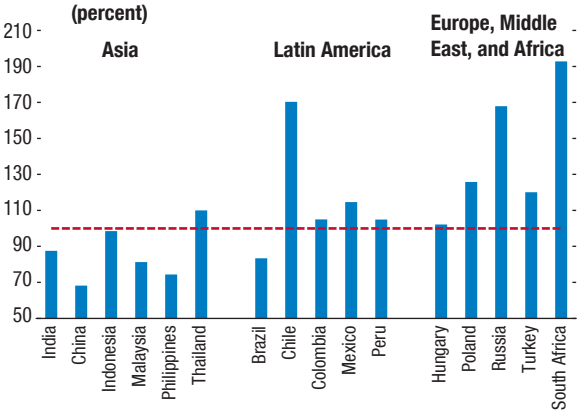
2. Loss-Absorbing Buffers (percent of risk-weighted assets)



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.

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

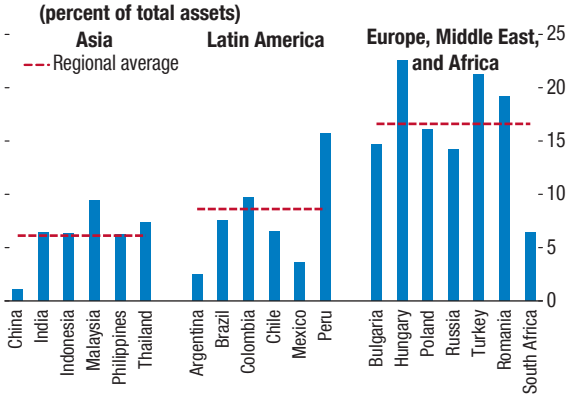
3. Banking System Loan-to-Deposit Ratios (percent)



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.

…and reliance on external funding could exacerbate this risk.

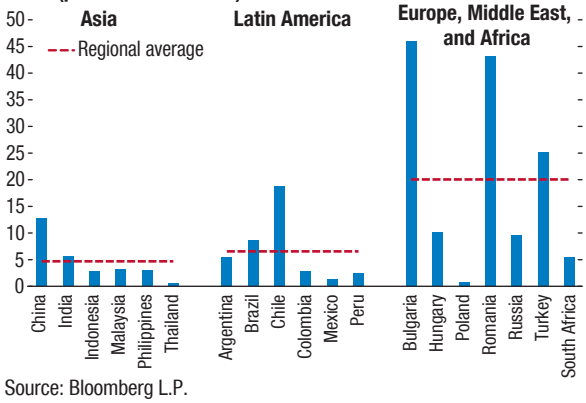
4. Banking Sector External Debt (percent of total assets)



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

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

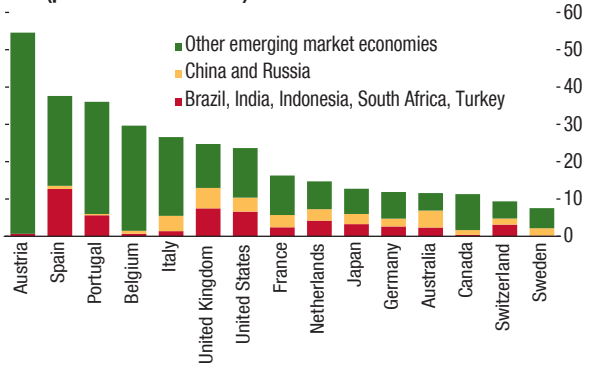
5. Foreign Currency Debt Maturing in 2014 (percent of total debt)



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

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

6. Banking System Exposure to Emerging Market Economies (percent of total claims)



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 though 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.

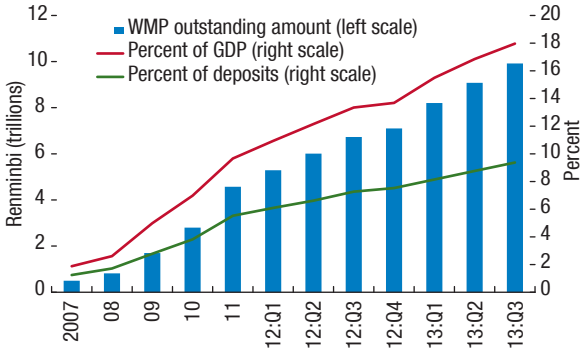
Pockets of stress have already begun to emerge, particularly in the trust sector, with spillovers to other parts of the financial system. Some trusts have begun to have difficulty making principal and interest payments. But until now, compensating payments from the issuing bank or trust company, evergreening 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...

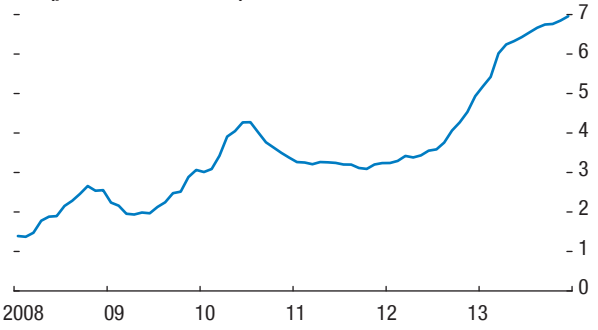
1. Wealth Management Products: Outstanding Stock, 2007 to 2013:Q3



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

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

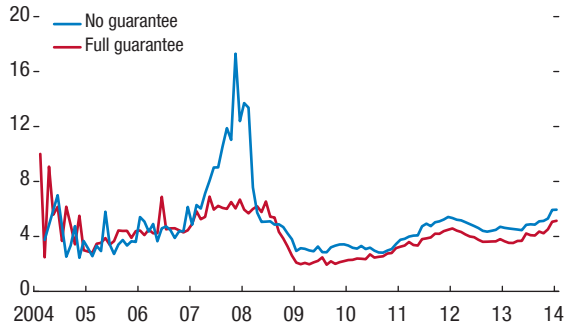
2. Loans Made by Trusts (percent of bank loans)



Sources: CEIC; and China Trust Association.

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

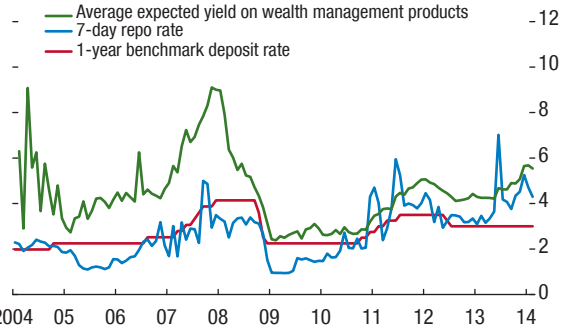
3. Average Expected Yield of New Wealth Management Products by Guarantee Status (percent)



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.

4. Average Expected Yield of New Wealth Management Products and Key Interest Rates (percent)

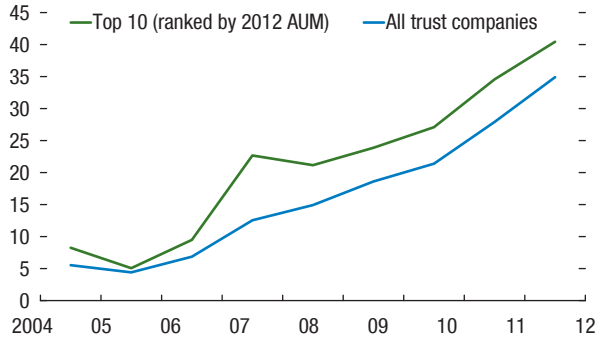


Sources: WIND; People's Bank of China; and IMF staff calculations.

Figure 1.23. China: Selected Financial Sector Developments

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

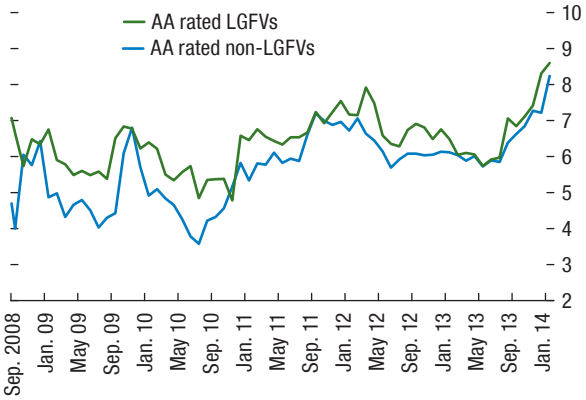
1. Trusts: Assets under Management to Equity Ratio



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.

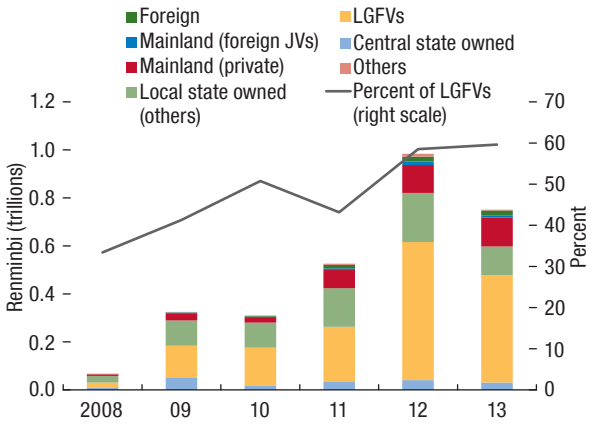
2. Corporate Bonds: Coupons Paid on New Issues (percent)



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.

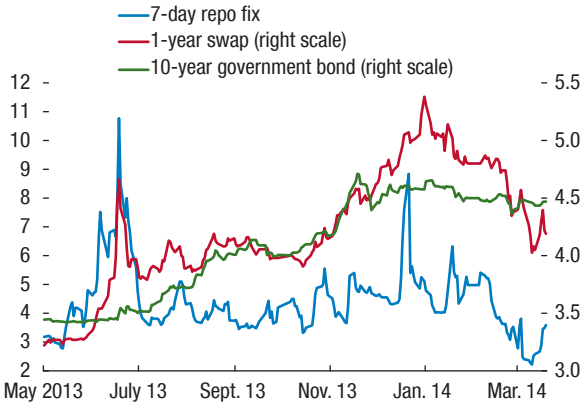
3. Issued Amount of AA Rated Nonfinancial Corporate Bonds



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 permissible 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.

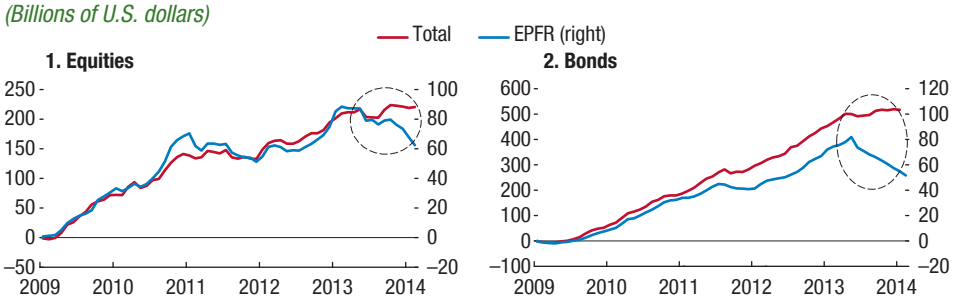
On the path to greater market discipline, increased disclosure and transparency would reduce uncertainty and help contain adverse spillovers. Efforts to improve data quality, including by addressing double-counting in some indicators, would be welcome. More could be done to enhance disclosure, such as 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

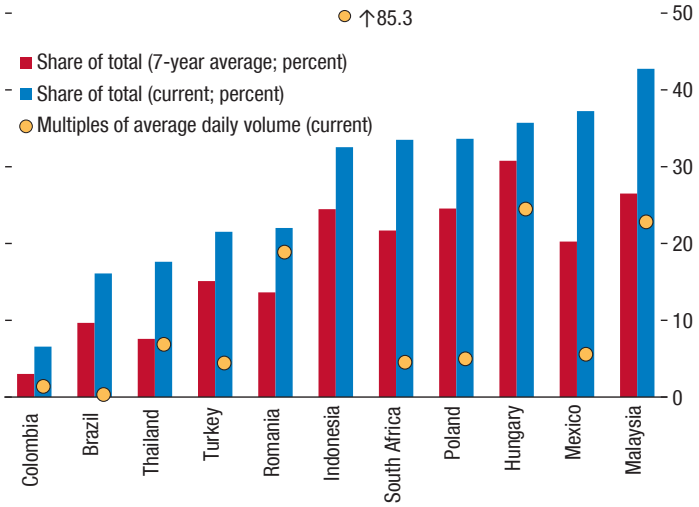
Figure 1.24. Total and Retail Portfolio Flows to Selected Emerging Market and Other Economies

(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[1]			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

[1]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 ammortization; 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.

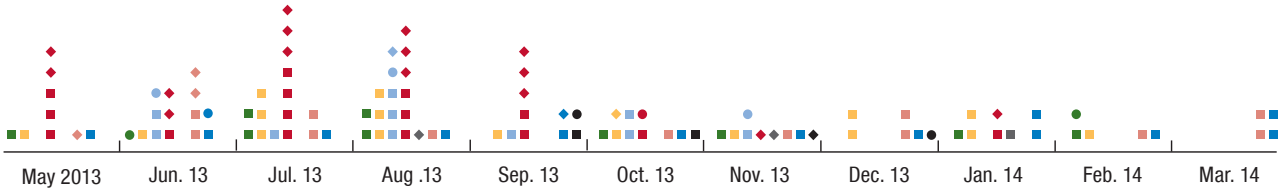
Policy implications

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
Brazil	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
China	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
India	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
Indonesia	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
Mexico	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
Russia	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
South Africa	Policy rate hike		
Turkey	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.[22] 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 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.

[22]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).

Improving Euro Area Bank Asset Quality to Support Credit

Market sentiment toward banks has improved—particularly those in stressed euro area countries.[23] 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.

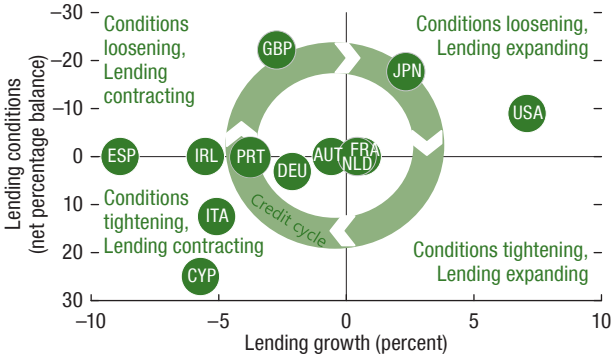
In the euro area, credit conditions continue to be fragmented. Although some banking systems are in a neutral phase of stable credit growth and lending standards, others remain in a phase of falling credit or tightening conditions on corporate loans. If the euro area is to make the transition from financial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

[23]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.

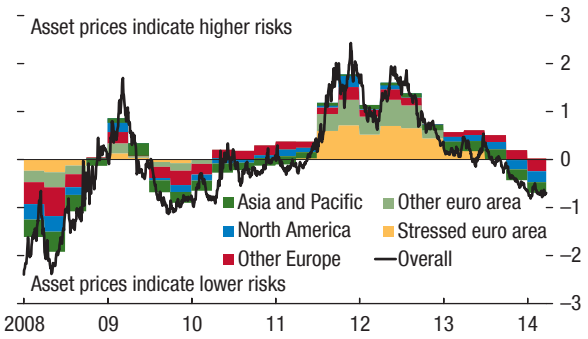
1. Bank Lending to Nonfinancial Companies: Growth and Conditions



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.

Market sentiment toward banks has continued to improve . . .

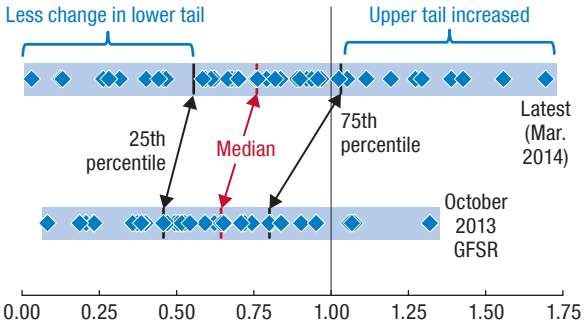
2. Market Indicator of Banking Risks (standard deviation from mean)



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.

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

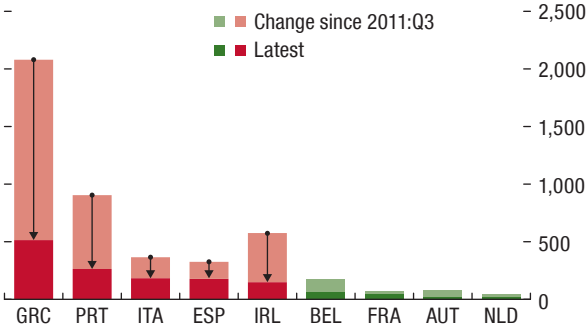
3. Euro Area Bank Price-to-Book Ratios



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

. . . 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 lockstep 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.[24] 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.[25] These actions have allowed banking systems in many euro

[24]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.

[25]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.[1]

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.

[1]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 Commission 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.

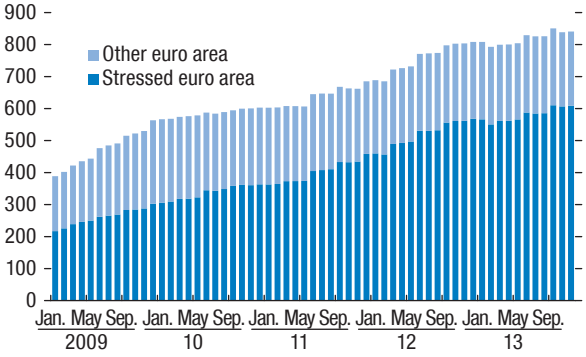
In parallel, efforts to complete the Single Rulebook are advancing with recent agreements on the Bank Recovery and Resolution Directive (BRRD) and the Deposit Guarantee Schemes (DGS) Directive. The BRRD, which is expected to enter into force on January 1, 2015, seeks to ensure that failing banks can 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 . . .

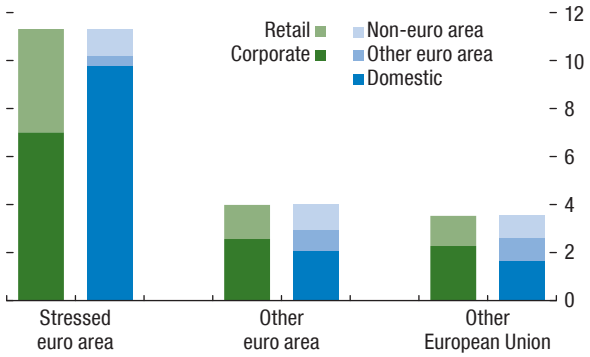
1. Nonperforming Loans (billions of euro)



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 . . .

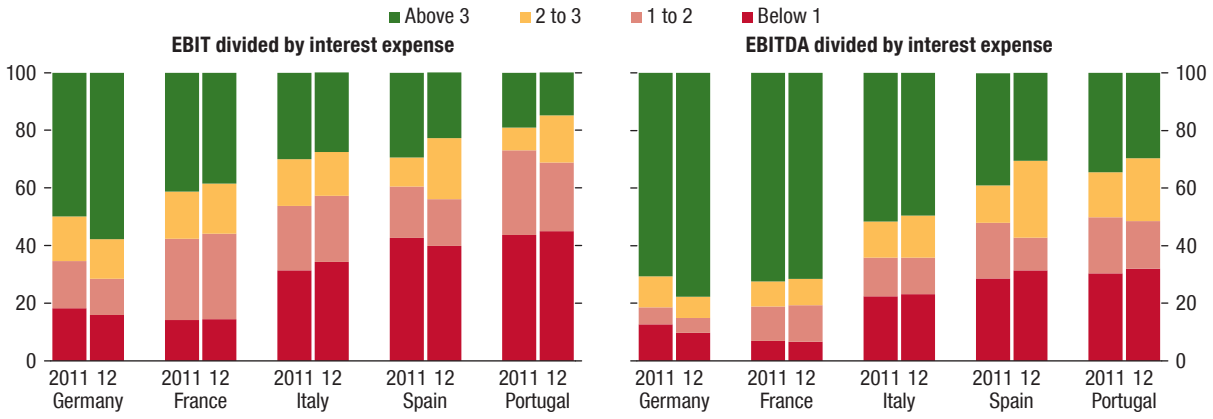
2. Bank Defaulted Exposures, 2013:Q2 (percent of total exposures)



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 economies, 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 interbank 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 (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]	Smooth Adjustment
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)

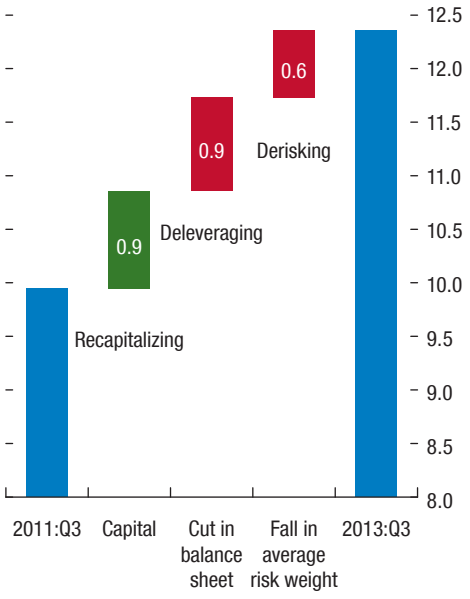
area economies to stabilize the ratio of buffers (capital and provisions) to nonperforming loans (Figure 1.29, panel 2), despite continued increases in nonperforming loans. But the stock of impaired assets—associated with the corporate debt overhang and economic slowdown—remains high relative to overall 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

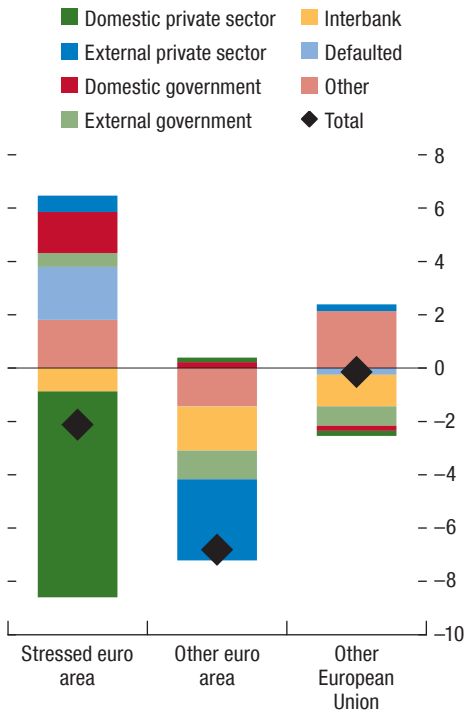
Box 1.7. *(continued)*

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.

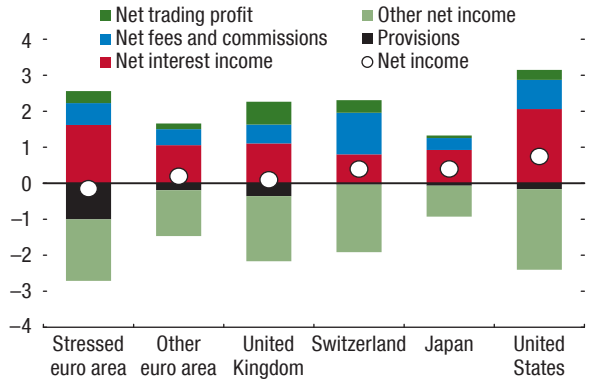
Restoring bank balance sheet strength and resolving the burden of nonperforming loans are key to restarting the flow of credit in stressed euro area economies. The connections between credit, nonperforming loans, and bank buffers are illustrated through simulations based on a vector autoregression (VAR)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

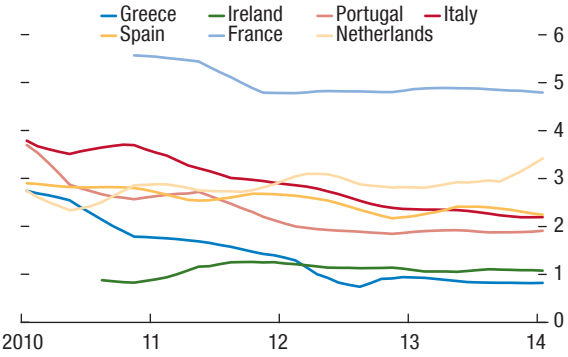
1. Bank Profitability, 2013
(percent of tangible assets)



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.

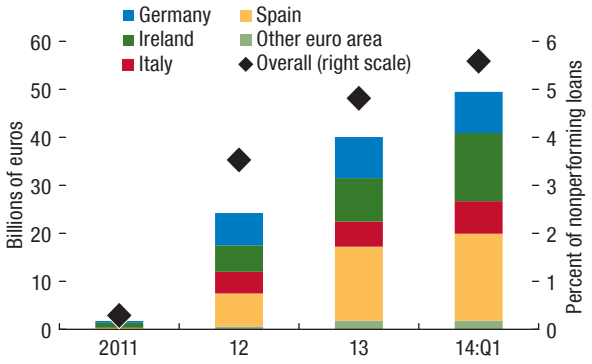
2. Bank Buffers to Nonperforming Loans
(ratio)



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.

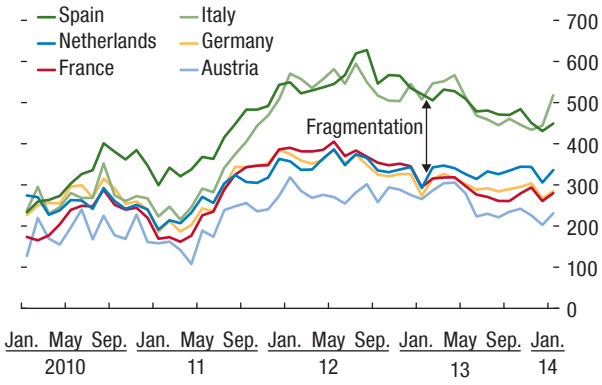
3. Cumulative Transactions in Nonperforming Loans



Sources: Fondo de Restructuración 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.

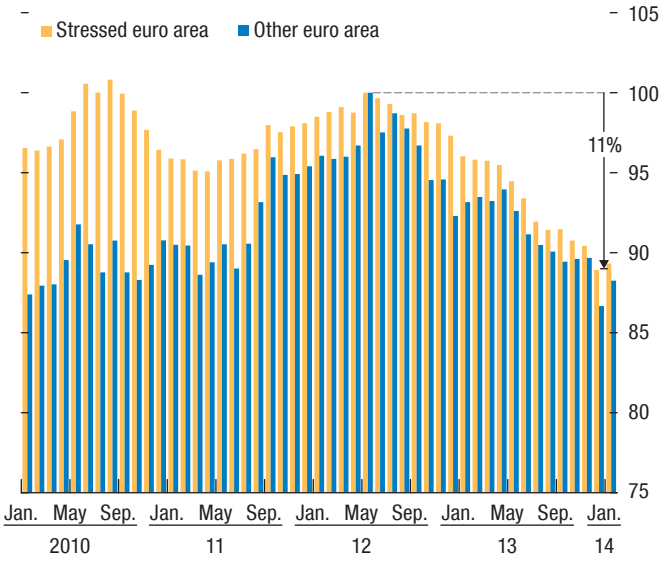
Bank credit supply remains tight and interest rates on bank loans relatively elevated.

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



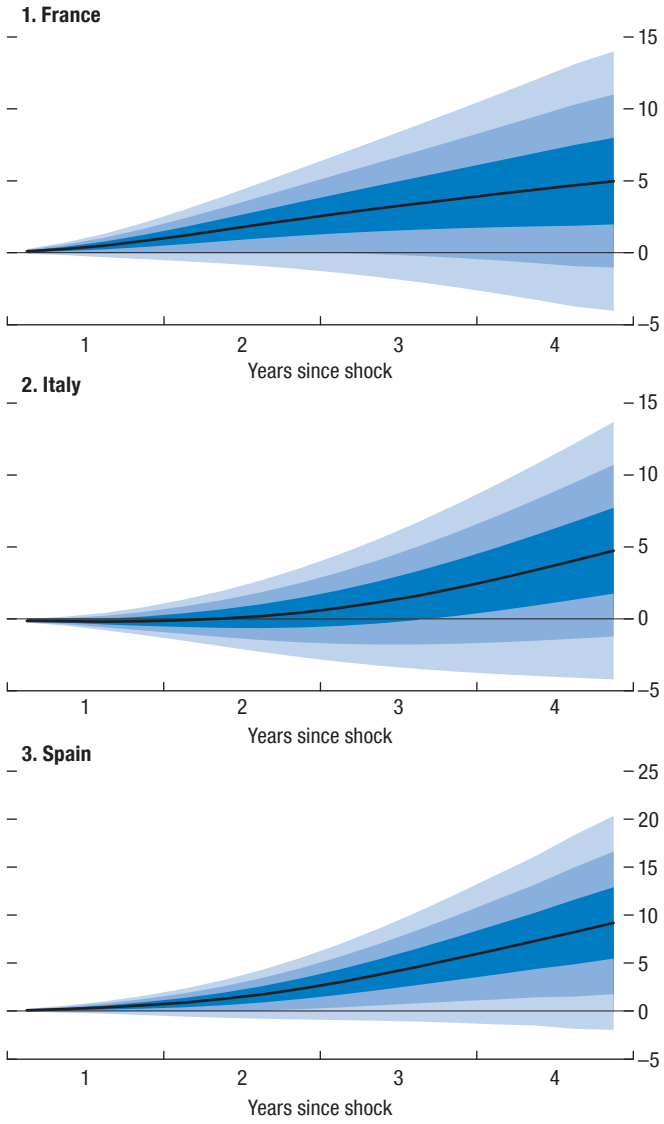
Sources: European Central Bank; and IMF staff estimates.
Note: Shows the spread of one- to five-year corporate loans of less than €1 million to five-year German government bonds. The comparison of interest rates across countries can be difficult due to different proportions of loans with the same maturity.

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



Sources: European Central Bank; and IMF staff estimates.

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)



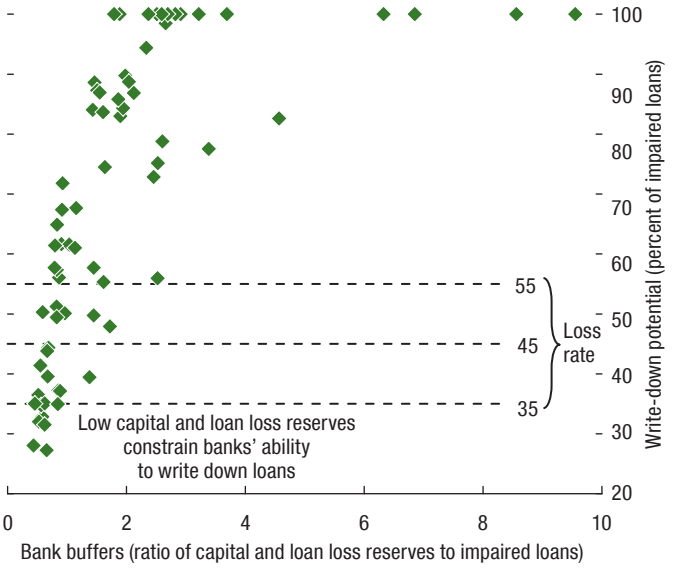
Source: IMF staff estimates.
Note: The impulse responses are generalized (Pesaran and Shin, 1998), so they do not depend on a specific ordering of the variables. The shaded areas show the cumulative error bands. One standard deviation shocks in basis points are: Spain 170, Italy 130, and France 30. See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

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

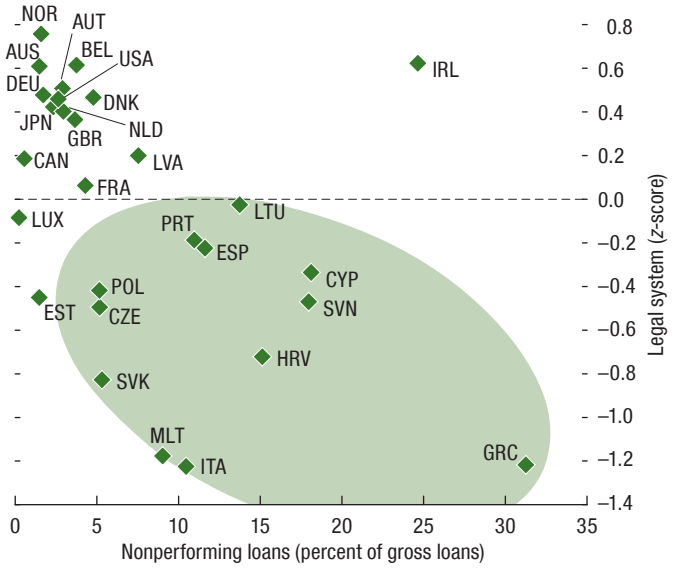
There is a need to resolve impaired loans on bank balance sheets, but corporate sector restructuring has been hampered by four factors. First, limitations in banks' financial capacity—capital and provisioning buffers—are hindering the disposal of nonperforming loan portfolios given the current gap between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

Figure 1.32. 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.

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.

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.[26] 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 corporate debt restructuring,[27] 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,

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

[27]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.[28] 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 the incurred loss-based impairment recognition model under the International Financial Reporting Standards (IFRS).[29] 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.[30] At the same time, policymakers should seek to remove any disincentives for bank provisioning.[31]
- **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.[32] 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-**

[28]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).

[29]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.

[30]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.

[31]See Banca d'Italia (2013) and IMF (2013b) on measures recently taken in Italy and Spain.

[32]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.[33] 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.[34] 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 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.[35] To foster such a market, authorities need to review

[33]For example, see IMF (2013c) for a description of legal reforms in Portugal.

[34]See IMF (2013d) for a discussion on fostering a market for distressed debt in Italy.

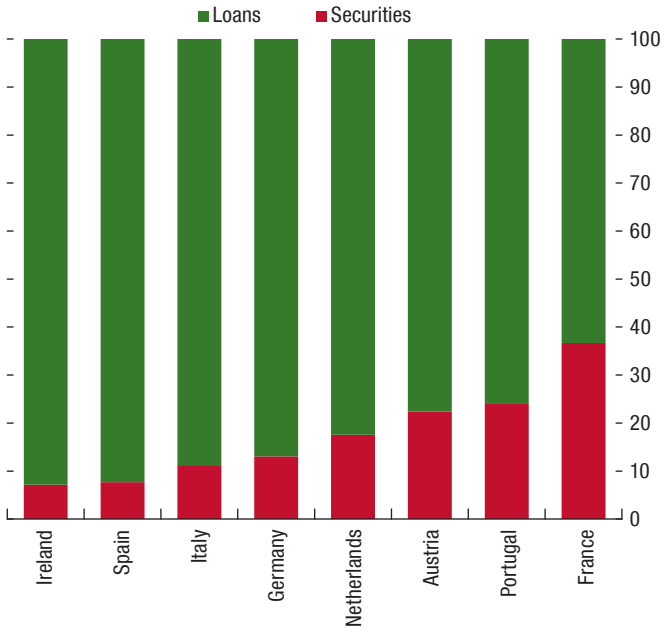
[35]In Spain, this refers to the Alternative Fixed-Income Market (MARF).

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[36]

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 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.

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.

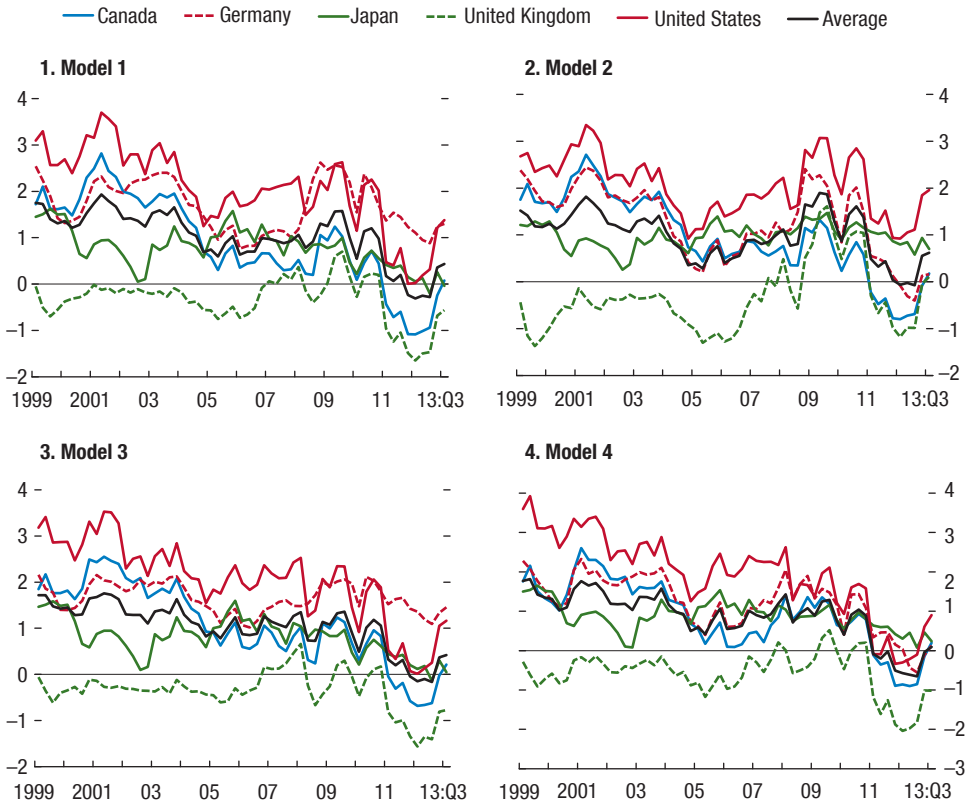
Results

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.[37]

[36]Prepared by Serkan Arslanalp and Yingyuan Chen.

[37]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 ΔT 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 ***	0.68 ***	0.63 ***	0.57 ***	0.62 ***
	(0.05)	(0.04)	(0.04)	(0.06)	(0.04)
Germany	0.32 ***	0.71 ***	0.23 ***	0.54 ***	0.43 ***
	(0.07)	(0.06)	(0.05)	(0.07)	(0.06)
Japan	0.28 ***	0.24 ***	0.23 ***	0.25 ***	0.27 ***
	(0.07)	(0.06)	(0.07)	(0.06)	(0.07)
United Kingdom	0.48 ***	0.68 ***	0.47 ***	0.59 ***	0.56 ***
	(0.06)	(0.09)	(0.05)	(0.06)	(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.

$$\Delta T_{i,t} = \alpha_i + \sum_{n=1}^{3} \boldsymbol{A}_i \times \Delta T_{i,t-n} + \sum_{n=1}^{3} \boldsymbol{A}_j \times \Delta T_{j,t-n} + \epsilon_{i,t},$$

where i = Canada, Germany, Japan, or U.K., j = all countries other than i , ΔT 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.[38] Also, to 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).

[38]For example, Diebold, Li, and Yue (2008) find that common global factors exist in the term structures of government bond yields 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[39]

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).[40] 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, 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).

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

	Number of Firms	Total Assets (U.S.$ million)
Asia		
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
Latin America		
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
Central and Eastern Europe, Middle East, Africa		
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.

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.[41] 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:

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

[39]Prepared by Julian Chow, Evan Papageorgiou, and Shamir Tanna.

[40]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.

[41]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:

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

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[1]	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.

[1]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:

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

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[42] on debt principal is computed by the following expression:

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

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

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

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.[43]

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:

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

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.

[42]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.

[43]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 Loss from Foreign Currency Debt Principal and Interest – FX 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 FX loss after accounting for natural hedges $\times$ *(1–Hedge 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:

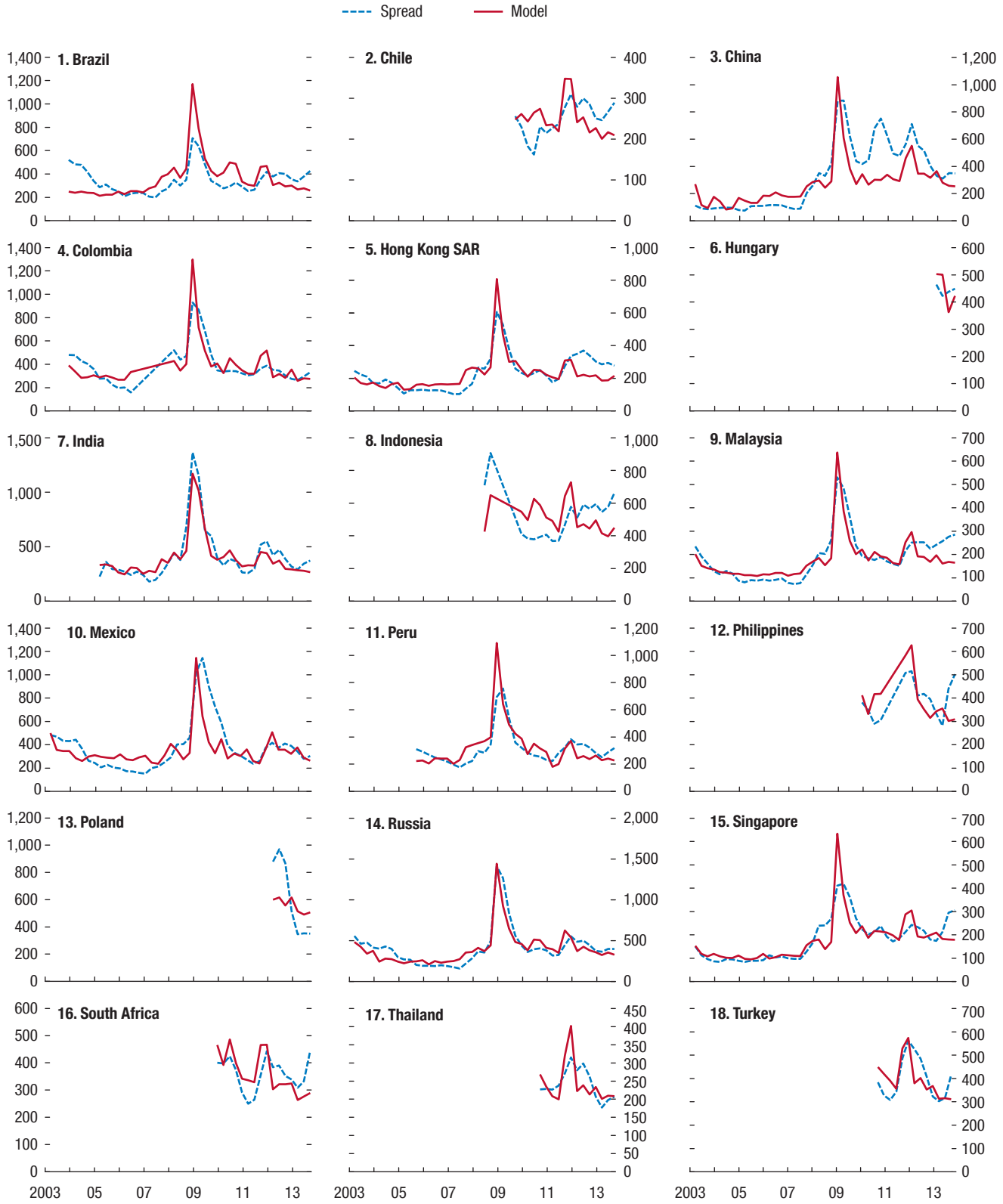
$$\begin{aligned}\log \text{CEMBI spread} = {} & \underset{(0.7)}{0.22}\log(1 - \text{WC2TA}) \\ & - \underset{(0.47)}{0.94}\log(1 - \text{RE2TA}) - \underset{(0.09)}{0.20}\log(\text{ND2TCE}) \\ & - \underset{(1.05)}{7.34}\log(\text{C2TA}) \\ & + \underset{(0.89)}{6.75}\log(1 - \text{EBIT2INTEXP}/100)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

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[44]

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) and 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 nonfinancial corporations by banks.
- *Bad or doubtful loans*, a measure of asset quality.[45]
- *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 *funding 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

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

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.[46] 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,[47] Johansen (Rank and Maximum Eigenvalue) tests show them to be cointegrated, and thus jointly stationary when estimated together as

[44]Prepared by Vladimir Pillonca.

[45]For the specific measures, use see Table 1.13.

[46]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).

[47]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.

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 interrelated. 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.

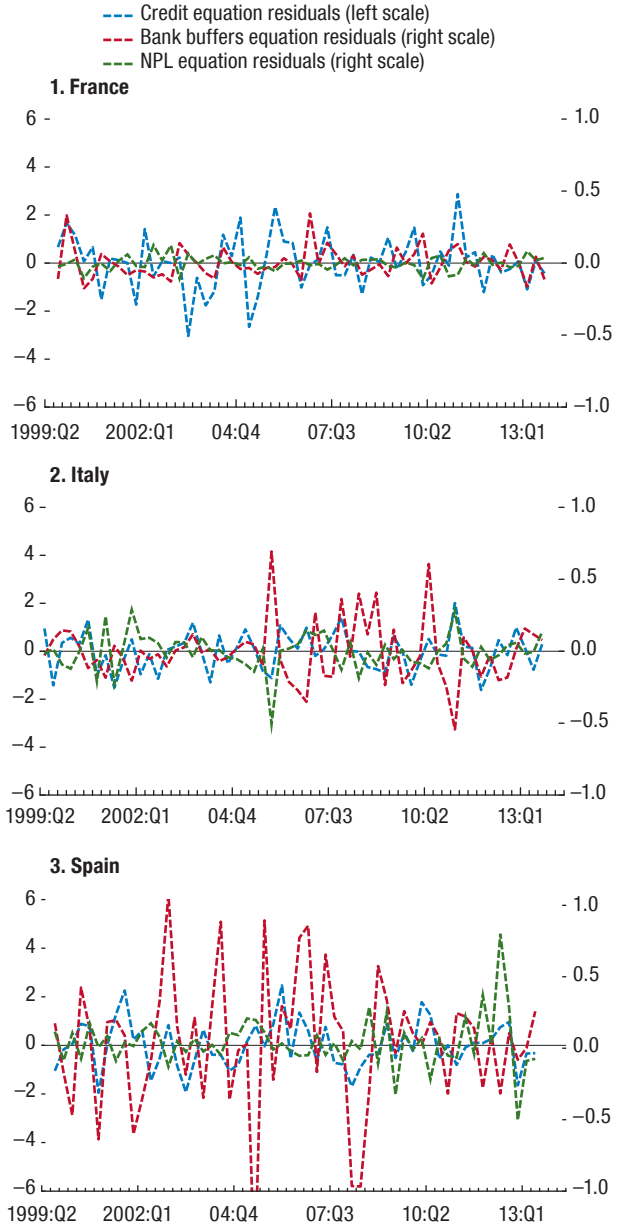
The graphs that trace the results of these hypothetical, simulated shocks are called impulse response functions (IRFs), as shown in Figure 1.38. A popular way to achieve the identification necessary to perform impulse response analysis is to use Choleski-type decompositions (to triangularize the covariance 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[48] (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.[49] Specifically, as noted by Pesaran and Shin (1998, p. 20), "the

Figure 1.37. Vector Autoregression Model Residuals

(Percentage points)

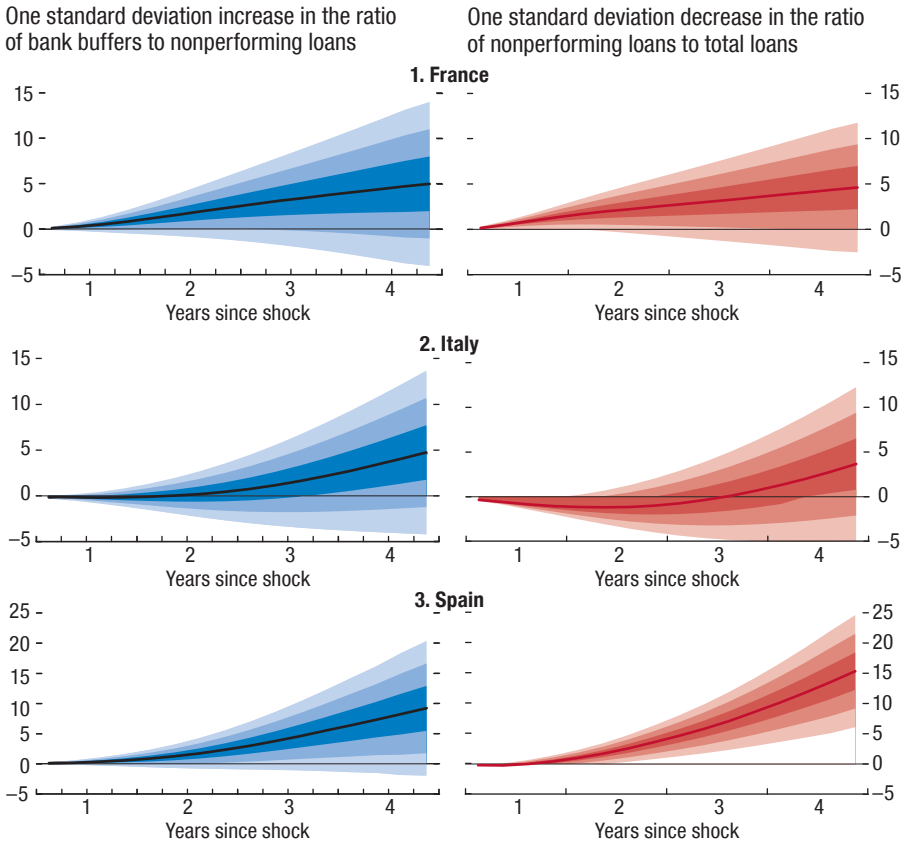


Source: IMF staff estimates.
Note: NPL = nonperforming loan. The residuals are for the credit equation, bank buffers, and nonperforming loan equations of each country's vector autoregression.

[48]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.

[49]Othogonalization 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 1.38. 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.

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CHAPTER 2

HOW DO CHANGES IN THE INVESTOR BASE AND FINANCIAL DEEPENING AFFECT EMERGING MARKET ECONOMIES?

Summary

The landscape of portfolio investment in emerging markets has evolved considerably over the past 15 years. Their financial markets have deepened and have become more globalized. New asset class segments have developed, including local currency sovereign debt, with increased direct participation of global investors. The mix of global investors has also changed. The role of bond funds—especially local currency bond funds, open-end funds with easy redemption options, and funds investing only opportunistically in emerging markets—has risen.

This chapter aims to identify the effects of these changes on the stability of portfolio flows and asset prices in emerging markets with a range of methods using relatively unexploited data. We examine the sensitivity of flows from various types of global investors to assess whether the new mix of investors has made portfolio flows more or less sensitive to global financial shocks. We also investigate the role of investor herding and domestic macro fundamentals during crises. Moreover, we analyze how the strength of local financial systems affects the sensitivity of local asset prices to global financial shocks.

We find that the structures of both the investor base and local financial systems matter. The new mix of global portfolio investors is likely to make overall portfolio flows more sensitive to global financial conditions. The share of more volatile bond flows has risen, and larger foreign participation in local markets can transmit new instability. Growing investment from institutional investors that are generally more stable during normal times is welcome, but these investors can pull back more strongly and persistently when facing an extreme shock. While domestic macroeconomic conditions matter, investor herding among global funds continues, and there are few signs of increasing differentiation along macroeconomic fundamentals during crises over the past 15 years. Nonetheless, the progress made by emerging markets toward strengthening their financial systems reduces their financial asset prices' sensitivity to global financial shocks.

Our results suggest options to enable emerging markets to reap the benefits of financial globalization while minimizing its potential costs. Governments can promote larger local investor bases, deeper banking sectors and capital markets, and better institutions. Initiatives to support local currency bond market development are beneficial, but the size of direct participation of foreign investors in local markets needs to be monitored and balanced with broad financial system development policies. Knowing the investor base and its characteristics is critical for assessing the risks of capital flow reversals and designing macroprudential policies.

Introduction

Financial markets in emerging market economies have deepened significantly over the past 15 years and witnessed substantial changes in their global and local investor bases. Improved fundamentals in emerging market economies and the persistently low yields in advanced economies have encouraged a broader range of investors to increase their investment in the financial assets of emerging market economies. This has helped foster the development of local financial markets and of new asset classes, such as local-currency-denominated sovereign debt. Global investors are directly entering local currency bond markets, while the local institutional investor base has also been expanding. At the same time, the relative role of cross-border bank lending has declined and, within portfolio flows, fixed-income flows have gained in importance compared with equity flows. The composition of international mutual funds investing in emerging markets has been changing, with a growing importance of globally operating funds that do not focus on emerging markets. All these investors differ in their mandates, constraints, and incentives and behave differently during volatile times (Figure 2.1).

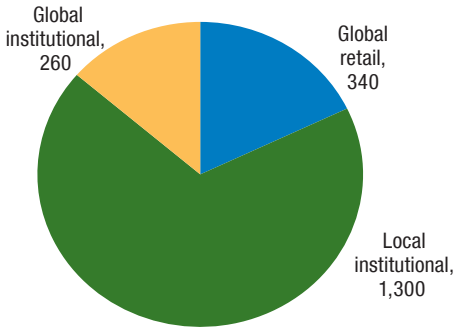
Despite potential benefits, these changes may have heightened the exposure of emerging markets to global financial conditions and to contagion and herding. Around mid-2013 and again in January 2014, for example, uncertainty over U.S. monetary policy roiled the markets for emerging market securities and generated substantial sell-offs, particularly among retail investors. This raises the question of whether the structural changes discussed above have contributed to enhance emerging markets' resilience to external financial shocks. For example, the increased foreign presence in local markets is likely to have been fundamental for the development of these markets, but may have made local asset prices more exposed to global factors. The ability of governments to issue their debt in local currency has reduced their currency mismatches, but the transfer of exchange rate risk to investors may have made portfolio flows more volatile. Similarly, the larger role of global investors in emerging market economies' bond markets may have made these flows more dependent on the ups and downs in global risk appetite.

The authors of this chapter are Hiroko Oura (team leader), Nicolás Arregui, Luis Brandao-Marques, Johannes Ehrentraud, Hibiki Ichiue, and Prachi Mishra with contributions and research assistance from Sofiya Avramova.

Figure 2.1. Investor Base for Bonds in Emerging Markets

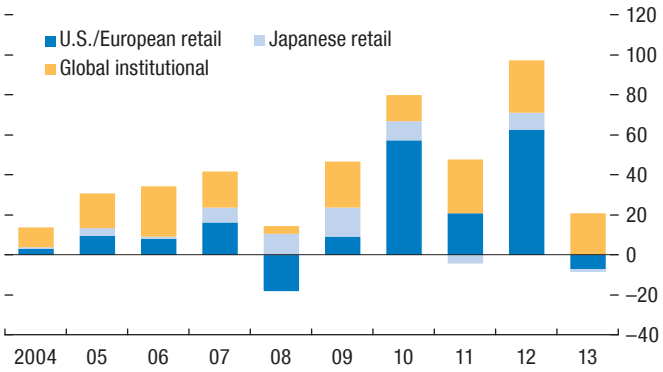
About 80 percent of bonds of emerging markets are owned by institutional investors…

1. Ownership of Emerging Market Bonds (Billions of U.S. dollars; as of 2013)



…but retail investor flows remain important and have been more volatile.

2. Bond Flows to Emerging Markets (Billions of U.S. dollars)



Source: J.P. Morgan.
Note: Global retail investors consist of European and U.S. mutual funds and Japanese investment trusts. Global institutional investors include investors with long-term strategic mandates such as pension funds, insurance companies, and official funds. Local institutional investors encompass emerging market insurance companies and pension funds. Some market participants consider the figures underestimate the assets and flows from global institutional investors.

Financial integration, especially if not managed well, can make asset prices and portfolio flows more sensitive to global "push" factors and pose challenges to financial stability in emerging markets.[1] These markets have strengthened buffers, including larger

[1]Capital flows are driven by so-called push factors reflecting common global conditions (such as monetary and fiscal policies in advanced economies, global liquidity, and global risk aversion) and country-specific "pull" factors (such as local macroeconomic fundamentals and institutional quality).

international reserves, flexible exchange rates, and reduced exchange rate mismatches at the sovereign level. However, sudden large capital outflows can still induce financial distress with their effects on exchange rates and the balance sheets of banks, firms, and households. Capital inflows driven by global financial conditions can help generate credit booms that sow the seeds of crises (Rey, 2013). Similarly, greater local asset price exposure to global conditions makes funding conditions for households, firms, and sovereigns more dependent on external financial conditions.

Against this backdrop, this chapter aims to identify the effects of changes in the global investor base and financial deepening in the recipient emerging markets on their exposure to global financial conditions. In particular, it assesses how these developments have affected the sensitivity of bond and equity flows as well as asset prices (foreign and local currency bonds, equities, and currencies) to global financial shocks. The chapter complements research that has focused on macroeconomic aspects of capital flows and macroprudential and capital flow management policies.[2]

Specifically, this chapter aims to answer the following questions:

- What do the changes in the global and local investor base of emerging markets over the past 15 years imply for the sensitivity of portfolio flows to global financial conditions? Have global investors become more discerning about local fundamentals? Has herding declined as the new asset classes have matured?
- What forms of financial deepening can reduce the sensitivity of emerging markets' asset prices to global financial shocks? Have developing local currency bond markets contributed to financial stability or have they increased exposure of local yields to global factors when combined with increased foreign participation?

Our findings indicate that the sensitivity of portfolio flows to global financial conditions is likely to increase and that herding among funds is on the rise. We investigate global flows involving institutional investors—defined as large pension and insurance funds, international reserve funds, and sovereign wealth funds—by using a unique custodian database from Bank of New York Mellon (BNY). Flows from predominantly retail-oriented mutual funds are examined with the Emerging Portfolio Fund Research (EPFR Global) database.[3]

- Fixed-income flows are substantially more sensitive to global push factors than are equity flows, and their importance in overall capital flows is growing.
- Mutual fund investor flows (Box 2.1) are generally more sensitive to global factors than those of institutional investors, and they are expanding exposures to emerging markets, making flows more sensitive to push factors (as witnessed during the recent bout of withdrawals from emerging market economies).
- These developments have been somewhat moderated by large institutional investors, which contribute to the stability of flows during normal times. However, they pulled back more strongly and persistently when faced with extreme shocks. They have also been increasing their allocations to emerging markets, but not to the extent that they become relatively larger players in these markets (Figure 2.1).
- Although country-level macroeconomic conditions in emerging markets matter for resilience, their role during crises does not seem to have grown over time since the late 1990s, and herding among global mutual funds has been increasing.

Nonetheless, the progress made by emerging markets toward financial deepening and better institutions mitigates some of the unpleasant side effects of financial globalization. Having a larger domestic investor base, deeper banking sectors and capital markets, more liquid markets, and better institutions all bring quantitatively large benefits. In particular, relying more on local currency debt makes bond prices more resilient to the ups and downs of international capital markets. Yet, while foreign participation has often played a key role in developing local markets, a large share of foreign holdings of domestic debt comes with a heightened bond price sensitivity to global financial shocks. This further underscores the importance of developing a local investor base.

[2]For instance, see IMF (2012, 2013a, 2013b, 2013c) and Ghosh and others (2009).

[3]Mutual funds are generally sold to retail investors, although a rising number of institutional investors purchase mutual fund shares. In most of the past research, the EPFR Global data were analyzed only at the aggregate level without differentiating across types of funds. Further details are given in Annex 2.1.

Box 2.1. A Primer on Mutual Funds

Mutual funds are collective investment vehicles that sell fund shares to retail and institutional investors and invest the proceeds in securities, though legal arrangements vary across countries. These collective investment vehicles are often referred to as investment funds, managed funds, or funds. This chapter uses the term mutual funds.

Types of mutual funds and their share in the industry

Funds can be classified according to various characteristics, including investment focus (such as equity or fixed income). Table 2.1.1 defines some key characteristics that are of interest in the context of financial stability, and Table 2.1.2 shows the share of each type of fund.

Behavior by fund type

Studies have found that funds show distinctive behaviors.

- *Open-end versus closed-end:* Open-end funds tend to engage more in herd behavior and withdraw from distressed economies more strongly and quickly than closed-end funds (Raddatz and Schmukler, 2012; Borensztein and Gelos, 2003a and 2003b); their behavior seems largely driven by that of individual investors (Chan-Lau and Ong, 2005). Hau and Lai (2012) show that fire sales by open-end funds played an important role in the transmission of the global financial crisis from financial stocks to nonfinancial stocks.
- *Active versus passive:* When funds deviate from the benchmarks, more actively managed funds tend to be countercyclical, while more passively managed funds tend to be more procyclical (Raddatz, Schmukler, and Williams, 2012). Active funds tend to retrench to the benchmark after underperforming (Broner, Gelos, and Reinhart, 2006).
- *Global versus dedicated:* Flows from dedicated single-country funds precede (Granger cause) flows from global funds, suggesting that dedicated funds hold an informational advantage (Borensztein and Gelos, 2003b).

The authors of this box are Hibiki Ichiue and Hiroko Oura.

Table 2.1.1. Key Fund Characteristics

Funds	Characteristics
Open-end	Investors can flexibly add to or redeem money from open-end funds. Inflows (redemptions) from investors create new shares (eliminate existing shares) at the fund's end-of-day net asset value. Fund managers then purchase (sell) underlying assets. If redemption pressures exceed the cash buffer held by a fund, it needs to sell assets, possibly at fire sale prices. "Mutual funds" in the United States, investment trusts (Toushin) in Japan, and UCITS in the European Union are typically open-end funds.
Closed-end	These funds issue a fixed number of shares, which can be traded on secondary markets. Purchase/sales pressures on fund shares are reflected in the funds' share price without causing the purchase/sale of underlying assets.
ETF	ETFs do not directly sell ETF shares to or redeem them from ultimate investors. They issue or redeem their shares only in large blocks through APs, who are typically large broker-dealers. APs usually buy or redeem "creation units" of an ETF with a basket of securities that mirrors the ETF's portfolio, not with cash. APs can split up a creation unit and trade the individual shares on the secondary market with ultimate investors. ETFs started as index funds, but in 2008 the United States began to authorize actively managed ETFs.
Crossover	As used here, crossover funds denote global funds that are not dedicated to emerging markets but invest opportunistically in them.
Dedicated	Funds that invest only in a limited range of assets such as those from specific regions, countries, or industries.
Passive	The asset allocation strategy is fixed at the launch of passive funds and does not vary thereafter. Many passive funds are index funds, replicating the portfolio represented in their benchmark index.
Active	Managers of active funds employ dynamic asset allocation strategies, aiming at outperforming their benchmark.

Sources: Gastineau (2010); Investment Company Institute (2013); Investment Trusts Association of Japan (2013); and www.sec.gov/answers/etf.htm.
Note: AP = authorized participant; ETF = exchange-traded fund; UCITS = Undertakings for Collective Investment in Transferable Securities.

Box 2.1 *(continued)*

Table 2.1.2. Shares of Types of Mutual Funds
(Percent of total assets under management)

	Structure				Strategy		Domicile		Geography		Currency	
		Non-ETF										
	ETF	Total	Open-end	Closed-end	Active	Passive	U.S.	Offshore	Global	EM Regional	Hard Currency	Local Currency
Bond Funds												
2003	0	100	89	11	100	0	54	46	0	19	66	3
2010	7	93	89	4	93	7	58	37	56	9	27	15
2013	9	91	89	2	91	9	58	38	47	7	23	28
Equity Funds												
1996	0	100	92	8	100	0	65	20	0	38	—	—
2003	0	100	97	3	98	2	64	26	37	16	—	—
2010	19	81	79	1	77	23	50	32	35	25	—	—
2013	27	73	73	1	56	44	64	20	51	14	—	—

Sources: EPFR Global; and IMF staff calculations.
Note: Global funds correspond to those that are categorized as "Global" or "Global ex-U.S." by EPFR Global. The offshore markets are defined according to IMF (2008). Numbers may not add up due to rounding. The numbers reflect the subsamples of EPFR Global data used in our analyses. EM = emerging market; ETF = exchange-traded fund.

Evolving Emerging Market Assets and Their Investor Bases

Rising Importance of Portfolio Flows in Total Capital Flows

Gross capital flows to emerging markets have quintupled since the early 2000s, and the most volatile component—portfolio flows—has become a more important part of the mix.[4] Since the global financial crisis, portfolio flows to these economies—especially bond flows—have risen sharply (Figure 2.2). The marked swings of these flows around the time of announcements about the tapering of U.S. unconventional monetary policy have raised financial stability concerns. In contrast, deleveraging at European banks has accelerated shrinkage of cross-border banking flows. While foreign direct investment is still the largest component of capital flows to emerging markets, it has been relatively stable through a number of crises.

Growing Importance in Global Portfolios and Deepening Financial Systems

The nature of portfolio investment in emerging markets has evolved as these markets have deepened and become more globally integrated. Over the past two decades, capital markets in emerging market economies often developed in tandem with financial integration and liberalization (Box 2.2). Foreign participation in emerging market equity markets took off in the 1990s.[5] In the 2000s, changes were concentrated in fixed-income markets: many emerging market sovereigns managed to shift from issuing hard currency external debt to local currency domestic debt. In doing so, they partially overcame "original sin," a key historical source of vulnerability of emerging markets (Burger, Warnock, and Warnock, 2011).[6,7] International investors now purchase local currency debt in domestic markets and play a dominant role in some of

[4]See IMF (2013d and 2013e) for details on macrolevel trends of capital flows.

[5]See Bekaert and Harvey (2000), Henry (2000), and World Bank (2013).

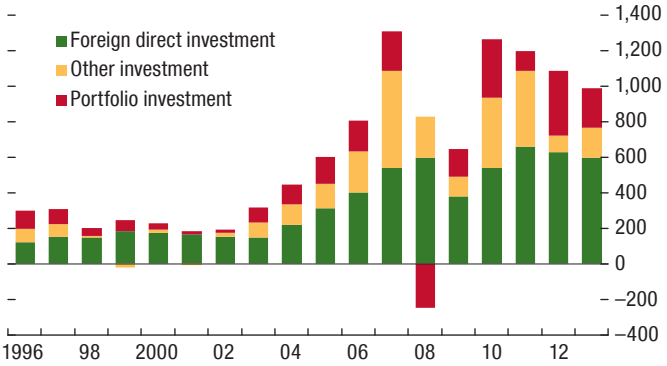
[6]Some of these trends mirror conscious policy efforts. See Felman and others (2011) and Goswami and Sharma (2011) on the Asian Bond Markets Initiative. The G20 has also emphasized the development of local currency bond markets, which led to a joint paper by the IMF, the World Bank, the European Bank for Reconstruction and Development, and the Organization for Economic Cooperation and Development, titled "Local Currency Bond Markets—A Diagnostic Framework," in July 2013.

[7]"Original sin" refers to the inability of emerging market borrowers to issue debt to foreigners in local currency (Eichengreen, Hausmann, and Panizza, 2005), which leads to currency mismatches unless accompanied by natural hedging and makes these economies more vulnerable to sudden stops of capital flows. Because of data constraints, the extent of original sin is difficult to assess for cross-border banking flows.

Figure 2.2. Trends in Capital Flows to Emerging Markets

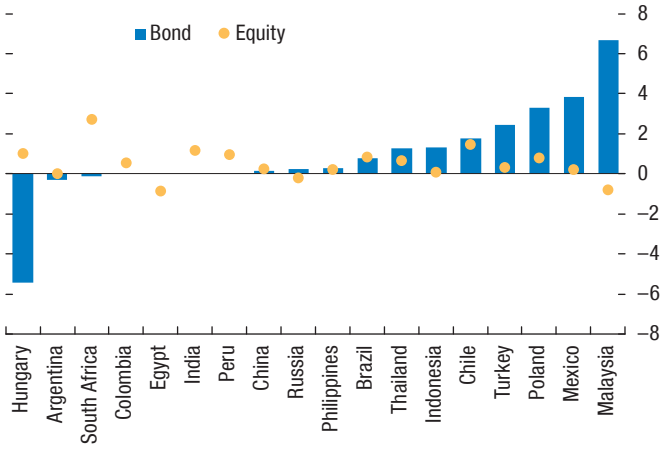
The share of portfolio flows in gross capital inflows has grown since the global financial crisis.

1. Gross Capital Inflows to Emerging Markets (Billions of U.S. dollars)



Bond flows have generally been stronger than equity flows.

2. Gross Portfolio Inflows by Country, 2009–13 (Annual average; percent of GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: Subgroups of capital flows follow balance of payments definition. Emerging markets include some advanced economies formerly classified as emerging markets. See Table 2.4 for sample economies.

them (Figure 2.3).[8] In international debt markets, the emerging market corporate sector has long been issuing more debt than emerging market sovereigns.[9] The share of emerging market bonds and equities in global investors' portfolios has risen sharply over the past decade, supported by their growing importance in the world economy, the decline in their relative credit risk compared with advanced economies, and low yields in advanced economies (Figure 2.4). The financial stability implications of these developments—especially the deepening of local currency bond markets with the help of larger foreign participation—are not obvious and require an empirical assessment (Box 2.2).[10]

The Role of Investor Characteristics in the Stability of Portfolio Flows

Understanding microlevel characteristics and behaviors of portfolio investors is important for assessing the stability of portfolio flows at the aggregate level. A large part of portfolio flows is intermediated by asset managers, including investment advisors for large institutional investors, mutual funds, and hedge funds. Banks and brokers that trade using their own accounts are also responsible for a portion of portfolio flows. Different investors are marked by differences in investment restrictions, degrees of regulatory oversight, investment horizon, and risk management (Box 2.3); they have varying degrees of expertise about emerging markets; and they face different risks of inflows and redemptions from their ultimate investors (see Box 2.1).[11] These differences affect the sensitivities of their emerging market investments to pull and push factors; therefore, changes in the composition of the investor base have potentially important consequences for aggregate flows.

- The volume of assets managed by mutual funds and institutional investors has grown both in emerging markets and advanced economies. No comprehensive data exist on the composition of all investors in emerging markets. As an approximation, Table 2.1 shows the size of assets managed by global and local institutional investors and mutual funds, and Figure 2.5 provides

[8]The share of foreign-currency-denominated debt securities in domestic markets is small (BIS, 2012).

[9]Chapter 1 of this *Global Financial Stability Report* (GFSR) discusses the vulnerabilities related to the emerging market corporate bond issuance boom.

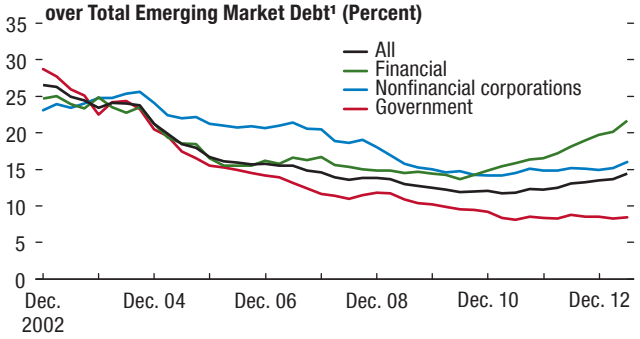
[10]See, for instance, CGFS (2007); Peiris (2010); Miyajima, Mohanty, and Chan (2012); Jaramillo and Zhang (2013); and Ebeke and Lu (2014).

[11]Institutional investors, which are defined in this chapter as pension and insurance funds, sovereign wealth funds, and central banks, are critically different from mutual funds in that they do not face immediate redemption pressures from their ultimate investors during volatile times. Jotikasthira, Lundblad, and Ramadorai (2012); Raddatz and Schmukler (2012); and Kaminsky, Lyons, and Schmukler (2004), for instance, emphasize that the volatility of open-end mutual fund investment in emerging markets is significantly driven by ultimate investors rather than by the decisions of fund asset managers.

Figure 2.3. Transformation of Investment Options in Emerging Markets

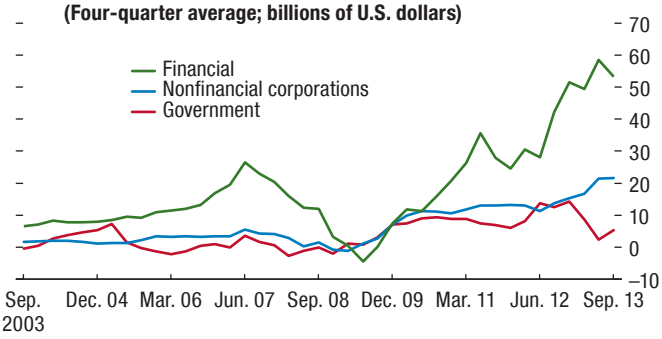
Emerging markets are shifting issuance from international to domestic debt, except for firms.

1. Share of Emerging Market Debt Issued in International Markets over Total Emerging Market Debt[1] (Percent)



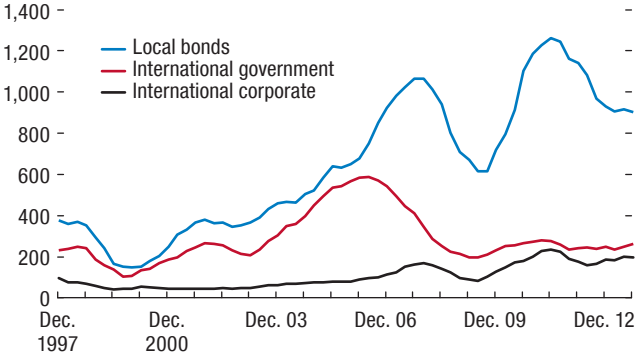
Firms now issue more international debt than governments.

2. Net Emerging Market Debt Issued in International Markets[1] (Four-quarter average; billions of U.S. dollars)



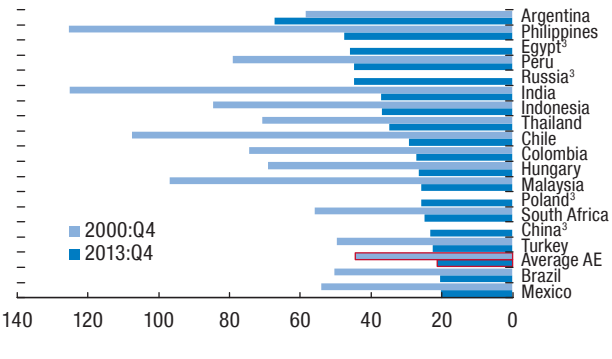
Trading volume has also shifted away from international government bonds and toward local bonds.

3. Trading Volume of Emerging Market Bonds (Four-quarter average; billions of U.S. dollars)



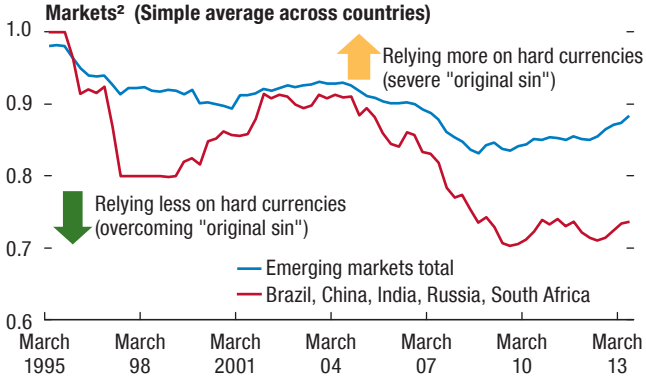
Fees and commissions for trading have declined, and some emerging markets offer cheaper trading costs than some advanced economies.

4. Equity Market One-Way Trading Costs (Quarterly average fees and commissions; basis points)



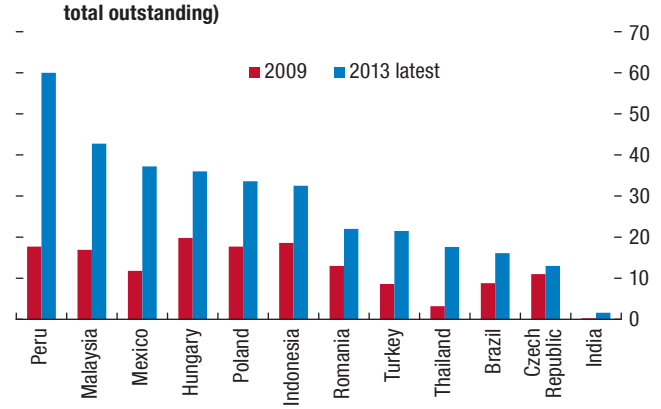
Emerging markets can now sell local currency debt to foreigners, partially overcoming "original sin"…

5. Reliance on Hard Currencies for Emerging Market Government and Nongovernment Bonds Issued in International Capital Markets[2] (Simple average across countries)



…and foreign investors have entered domestic government debt markets, increasing "external debt" in disguise.

6. Foreign Investor Participation in Local Government Bond Markets (Share of local government bond held by foreigners; percent of total outstanding)

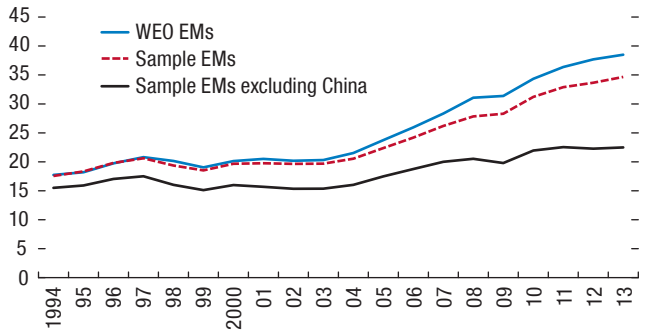


Sources: Asian Development Bank, AsianBondsOnline; Bank for International Settlements; Elkins-McSherry; Emerging Market Trading Association; J.P. Morgan; national authorities; and IMF staff calculations.
Note: AE = advanced economy.
[1]Debt issued by former and current emerging markets based on the nationality of issuers (including debt issued by foreign subsidiaries of issuers headquartered in emerging market economies). Sample includes Argentina, Brazil, China, Taiwan Province of China, Chile, Colombia, Croatia, Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Thailand, and Turkey.
[2]The figure shows the "original sin" measure following Eichengreen, Hausmann, and Panizza (2005) and is calculated as max (1-[debt issued in the currency of country i]/[all debt issued by country i], 0). Debt refers to international debt securities based on nationality issued by all sectors. Debt denominated in local currencies is assumed to be zero if data are not available.
[3]Data for 2000:Q4 are not available.

Figure 2.4. Emerging Markets: Shares in Economic Activity and Financial Markets

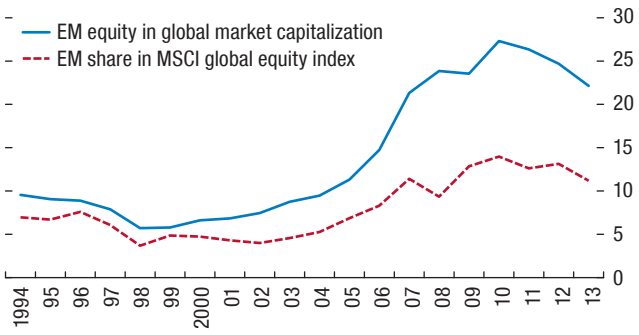
Emerging markets' share in world GDP has grown…

1. Share in Global GDP
(Percent of global GDP)



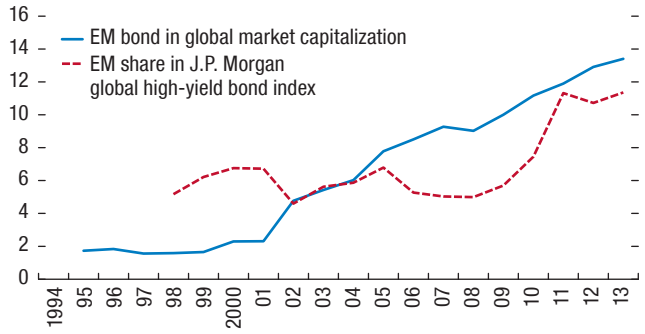
…and their share in global indices has risen, though less than their share in market capitalization would suggest.

2. Share in Global Equity Market Capitalization and Index
(Percent)



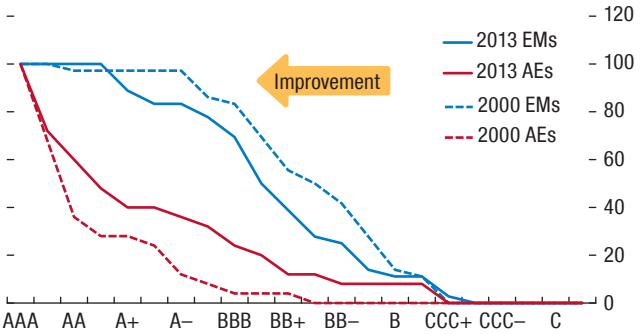
Emerging markets' share in bond market capitalization has grown, and their share in global high-yield index has caught up recently…

3. Share in Global Bond Market Capitalization and Index
(Percent)



…helped, in part, by a narrower rating gap with advanced economies.

4. Sovereign Ratings Distribution
(Cumulative distribution; percent)



Sources: IMF, World Economic Outlook database; J.P. Morgan; Morgan Stanley Capital International (MSCI); Standard and Poor's; and IMF staff calculations.
Note: AE = advanced economy; EM = emerging market; WEO EMs = emerging market economies classified as such in the World Economic Outlook database. See Table 2.4 for sample economies.

information on the allocation to emerging market assets for some subgroups of investors.

- Assets managed by mutual funds and institutional investors have grown both in nominal amounts and relative to GDP. In advanced economies, mutual funds have gained in relative importance over the past two decades, despite a decline since the global financial crisis.[12]
- Among U.S. investors, allocations to emerging market assets have increased for equities and bonds. Both institutional and retail investors have allocated more to emerging market assets (see Box 2.3). Among mutual funds, global funds with more globally diversified portfolios have strengthened their engagement in emerging markets over the past decade despite some retrenchment since 2011. Still, portfolio flows to emerging markets continue to be very small compared with those to advanced economies.
- Across regions and countries, portfolio flows from institutional investors and mutual funds have generally grown in tandem. However, institutional bond investors appear to differentiate more across regions.
- Hedge fund investment in emerging markets has stagnated since the global financial crisis.

[12]This trend in advanced economies is also pointed out in Chapter 2 of the September 2011 GFSR.

Box 2.2. Financial Deepening in Emerging Markets

Recent developments

Financial depth can be defined by the size of financial markets relative to economic activity and by the various functions those markets perform. Functions include intermediation, price discovery, and hedging. This wide range of functions can be measured by bank-based indicators (such as credit to GDP), market-based indicators (such as the market sizes for government and corporate bonds, foreign exchange, and derivatives), and indicators of financial access.

Financial markets in emerging market economies have generally deepened over the past decade but unevenly over time and across different dimensions (Figure 2.2.1). The period since the early 2000s has witnessed broad-based financial deepening in most segments of the financial systems. At the same time, growth in international government debt has been limited, partly because of emerging markets' efforts to reduce external vulnerabilities. Some market activities, such as measured by stock market capitalization, mutual fund assets, and interest derivatives, have shrunk since 2007.

Emerging markets' financial systems, however, remain thinner than those of advanced economies (AEs), with substantial variations among emerging markets (Figure 2.2.1, panels 2 and 3). In particular, emerging markets' insurance companies, mutual funds, international corporate debt, and interest rate derivatives markets are generally small compared with those of AEs. While this is not surprising—financial systems tend to deepen as countries develop—some segments of financial systems, such as the size of domestic money markets and spot foreign exchange markets, are larger in some emerging markets than in AEs.

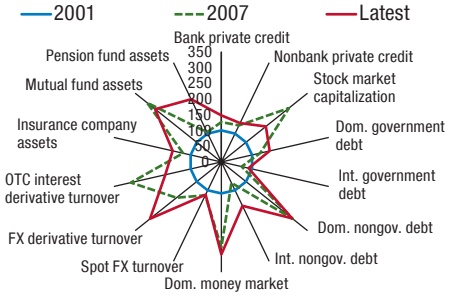
Financial deepening and economic and financial stability in emerging markets

Financial deepening does not guarantee financial stability. The benefits of financial deepening in reducing economic and financial volatility emanate mainly from the financial sector's role in allocating savings to productive use, smoothing consumption, and providing price discovery mechanisms and hedging opportunities. Empirical evidence suggests that in emerging markets, deepening financial markets—in particular stock and money markets—and making markets more liquid (as measured by reducing bid-ask spreads in

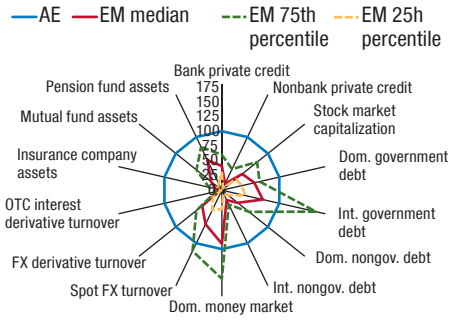
The authors of this box are Johannes Ehrentraud, Prachi Mishra, Kenji Moriyama, Papa N'Diaye, and Hiroko Oura.

Figure 2.2.1. Financial Deepening in Emerging Markets

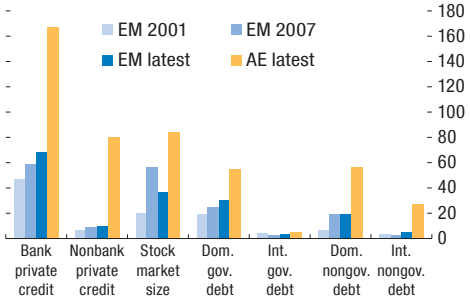
1. The Evolution of Financial Deepening in Emerging Markets (Percent of 2001 emerging market median)



2. Financial Deepening in Emerging Markets Relative to Advanced Economies (Percent of latest advanced economy median)



3. Financial System Size by Segments (Group median; percent of GDP)



Sources: Bank for International Settlements; European Fund and Asset Management Association; Organization for Economic Cooperation and Development; national mutual fund associations; World Bank, Global Financial Development database; and IMF staff calculations.
Note: AE = advanced economy; dom. = domestic; EM = emerging market; FX = foreign exchange; int. = international; OTC = over the counter. Latest data are for 2013, except for bank credit, money market instruments, and mutual fund assets (2012); and for insurance and pension fund assets (2011).

Box 2.2 *(continued)*

foreign exchange and bond markets) can enhance macroeconomic resilience. In contrast, additional benefits from deeper banking systems are likely to be more limited. Deepening debt markets on the other hand may increase economic volatility.[1]

Hence, the overall effect of financial deepening on an economy's exposure to global financial conditions explored in this chapter is ambiguous a priori. Moreover, the empirical analysis is complicated by the fact that financial deepening has often occurred alongside financial integration, and separating the effects of these two interrelated but distinct dimensions is difficult. The following summarizes recent literature on the relationship among financial deepening, asset prices, and capital flows.

- *Financial deepening and asset price sensitivity to global financial conditions:* Increased market transparency and liquidity, coupled with a broader local investor base, should allow local markets to absorb external shocks more easily. For example, a broader domestic investor base can prevent prices from overshooting or undershooting in response to sales or purchases by foreigners that are driven by external factors.[2] More liquid domestic markets can be expected to contribute to stability by reducing the price impact of capital flows.
- *Financial deepening and capital flow sensitivity to global financial conditions:* Improved local institutions, enhanced market transparency, a broader investor base, and increasingly sophisticated local investors are likely to promote price discovery and reduce herding, thereby making flows less susceptible to global conditions.[3] However, these markets could experience more volatile flows—though with lower price volatility—if global investors, facing distress, prefer to unwind their positions in deeper markets first, where the price impact is expected to be smaller.[4]

[1]The relationship between financial deepening and economic outcomes will be explored in "Financial Deepening in Emerging Markets" (IMF, forthcoming).

[2]Empirically, Alfaro, Kalemli-Ozcan, and Volosovych (2007); Chapter 3 of the April 2007 GFSR; and Broto, Díaz-Cassou, and Erce (2011) report that more developed financial sectors are empirically associated with less volatile portfolio flows. These studies, however, do not relate financial deepening to the sensitivity to global factors.

[3]Merton (1987) originally proposed the investor-base-broadening hypothesis. Wang (2007) extends the setting to discuss the role of foreign investors after financial liberalization. Umutlu, Akdenizb, and Altay-Salih (2010) find empirical support for this hypothesis.

[4]Broner and Ventura (2010) develop a model in which countries with deeper financial markets experience more volatile capital flows due to changes in investor sentiment.

Identifying the Financial Stability Effects of Changes in the Investor Base and in Local Financial Systems

Approach

This section examines how changes in the investor base and in local financial systems of emerging market economies have affected portfolio flows and asset prices in these economies.

- *The evolving role of global and local factors over time:* We document the evolution of correlations in emerging market asset returns with global asset returns. We then consider whether macro fundamentals have become more important over time in explaining cross-country differences of emerging market asset returns during crises (Box 2.4). This section also explores trends in investor herd behavior.
- *Investor characteristics and portfolio flows:* We measure the sensitivity of portfolio flows to global risk factors by estimating a panel model with global and domestic factors. The focus is on differences in sensitivities to global risk factors across types of investors. Since investors may behave differently when faced with extreme shocks, flows of mutual funds and institutional investors are also examined specifically around crises.
- *Local financial systems and emerging market asset prices:* We explore the impact of financial deepening on the sensitivity of emerging market asset returns to global risk factors using a technique similar to that for portfolio flows.[13] The panel model includes various global push and domestic pull factors. The analysis encompasses the role of local investors, who

[13]Annex 2.1 shows additional results on the relationship between local macroeconomic indicators and asset prices and flows.

Box 2.3. Investment Strategies of Institutional Investors

Over the past decade, institutional investors have been allocating more funds to emerging markets. Despite differences in mandates (Table 2.3.1), all types of institutional investors are attracted to emerging market assets by their relatively high returns. Economic growth trends, real currency appreciation, and deepening capital markets in emerging market economies have spurred the demand for emerging market assets.

- For pension funds, the decline in funded ratios led them to pursue higher returns by relaxing investment constraints. They have been diversifying asset classes, in particular to include local currency debt in emerging markets (J.P. Morgan Asset Management, 2009). Their current allocations to emerging market assets are still low, however. Allocation to emerging markets is expected to rise to 10 to 20 percent over the longer term (OECD, 2013).
- Insurance firms have increased their exposures to emerging markets since 2008 (despite a minor setback in 2012–13; Figure 2.3.1, panel 1), and interest continues to grow (*Financial Times,* 2013). In a recent survey of investment officers (Siegel and Morbi, 2013), more than 40 percent of insurance companies intended to increase their allocations to equity and to hard currency corporate debt in emerging Europe, the Middle East and Africa, and emerging Asia. Investment officers expect a 30 percent increase for emerging markets.
- Central bank reserve managers, who collectively handle $11 trillion in assets, tend to be conservative investors. Nonetheless, they do invest in emerging markets, and the most popular of those destinations have been Brazil, China, Korea, Mexico, Poland, South Africa, and Turkey. Reserve managers are also raising their allocation to emerging markets in line with their economic size and diversifying away from hard currencies (Figure 2.3.1, panel 2).
- Sovereign wealth funds have progressively expanded their exposure to emerging markets, especially to Brazil, China, India, Russia, and Turkey. Total deal flows, concentrated in equity acquisition, peaked in 2010 at $20 billion, then receded to $10 billion in 2013 (Figure 2.3.1, panel 3).

The author of this box is Sofiya Avramova.

Table 2.3.1. Investment Constraints of Institutional Investors

Investor Type	Risk Tolerance	Time Horizon	Need for Liquid Assets	Regulatory Constraints
Private Pension Plan (defined-benefit)	Determined by surplus, age of workers, balance sheet	Long	Depends on age of workers and percent of retirees to total workforce	High
Life Insurance	Fixed-income conservative Surplus aggressive	Medium to long	Fixed-income high Surplus low	High
Non–Life Insurance	Fixed-income conservative Surplus aggressive	Short	Fixed-income high Surplus low	Moderate
Central Bank Reserve Funds	Depends on international reserve amount and adequacy	Short	Medium to high	Moderate
Sovereign Wealth Funds				
Fiscal Stabilization Fund	Depends on fiscal budget, conservative	Short	Mostly government bonds with high liquidity	Light
Savings Fund	High risk-return profile	Long	Primarily equity and alternatives with low liquidity	Light
Public Pension Fund	Medium, high allocation to equity to hedge wage growth	Long	Depends on immediacy of contingent claims, medium to low	High
Sovereign Wealth Reserve Fund	Higher risk-return profile	Long	Low	Light

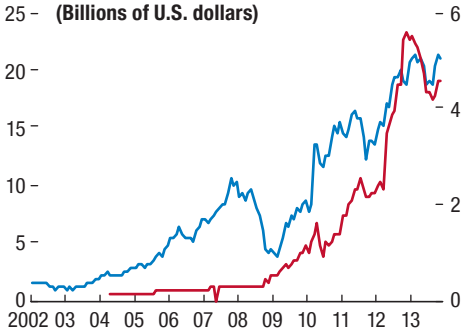
Sources: Al-Hassan and others (2013); Chartered Financial Analyst Institute Curriculum; Papaioannou and others (2013); and Morahan and Mulder (2013).
Note: The insurance surplus is assets above the reserves set aside for future insurance payout and is used to develop new business; it has a higher risk-return profile than the reserves that are usually invested in fixed-income assets.

Box 2.3 *(continued)*

Figure 2.3.1. Investments of Institutional Investors in Emerging Markets

Insurance companies are investing more in EMs, but they pulled back mildly around the tapering announcement in 2013.

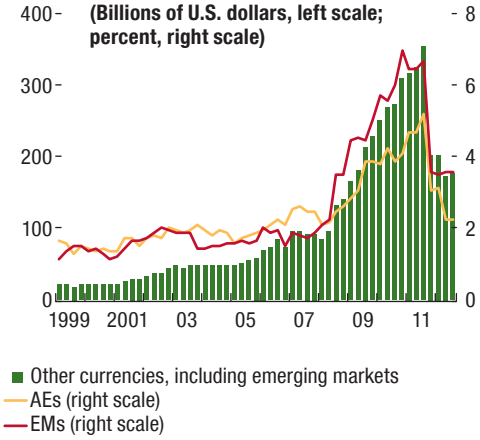
1. Insurance Companies' Investment in Emerging Markets (Billions of U.S. dollars)



Sources: EPFR Global; and IMF staff estimates.
Note: The sample includes about 4 percent of insurance firms in Organization for Economic Cooperation and Development economies.

Foreign reserve managers have been cautiously diversifying out of hard currencies.

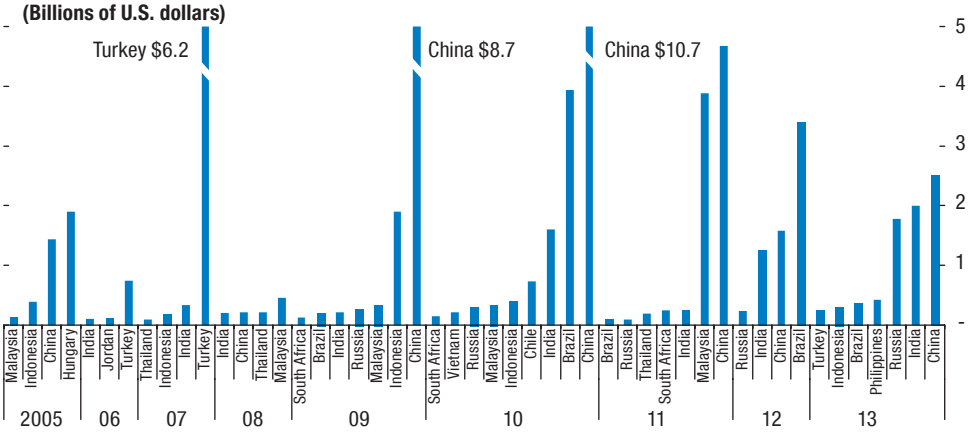
2. Foreign Reserves Asset Allocation by Currency (Billions of U.S. dollars, left scale; percent, right scale)



Source: IMF Currency Composition of Official Foreign Exchange Reserves database.
Note: Currencies other than those of the G7, Australia, and Switzerland. Data up to 2012 classify Canadian and Australian dollars as other currencies. Data with unknown currencies are excluded.

Brazil, China, India, Russia, and Turkey continue to attract sovereign wealth fund capital.

3. Sovereign Wealth Funds' Capital Flows by Country (Billions of U.S. dollars)



Source: SWF Institute.
Note: AE = advanced economy; EM = emerging market; SWF = sovereign wealth fund. Minimum investment is set at $100 million. The SWF Institute data cover about 53 percent of the capital flows to EMs in 2012. The data cover mainly investments in equity, real estate, and infrastructure.

Table 2.1. Size of Global and Local Institutional Investors and Mutual Funds
(Trillions of U.S. dollars, unless indicated otherwise)

	1995	2000	2005	2007	2009	2011	2012
Assets under management of mutual funds and institutional investors							
Selected advanced economies[1,2]							
Total assets	22	35	53	68	65	70	76
Total as percent of GDP	96	143	159	179	172	167	180
Mutual funds	6	13	19	26	25	26	29
Of which							
Share of open-end funds in total mutual fund assets (percent)[3]	94	97	96	97	97	97	97
Institutional investors	16	23	34	41	40	44	47
Share of institutional investors in total assets (percent)	72	64	64	61	61	63	61
Selected emerging market and other economies[2,4]							
Total assets	. . .	. . .	2.3	4.4	4.8	6.4	. . .
Total as percent of GDP[5]	. . .	. . .	32	36	37	36	. . .
Mutual funds	. . .	. . .	0.8	1.9	1.9	2.3	. . .
Institutional investors	. . .	. . .	1.5	2.5	2.9	4.1	. . .
Share of institutional investors in total assets (percent)[5]	. . .	. . .	65	59	60	62	. . .
International reserves, excluding gold							
Advanced economies[1]	0.7	0.8	1.3	1.5	1.8	2.3	2.5
Emerging market and other economies[4]	0.4	0.7	2.0	3.6	4.7	5.9	6.2

Sources: IMF, International Financial Statistics and World Economic Outlook databases; Organization for Economic Cooperation and Development; World Bank, Global Financial Development database; and IMF staff estimates.

[1]Including Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Japan, Luxembourg, Netherlands, Norway, Spain, United Kingdom, and United States.

[2]These data may reflect some double-counting of assets, such as those owned by pension funds and managed by mutual funds.

[3]The data include Australia, Finland, France, Greece, Spain, United Kingdom, and United States.

[4]Including Argentina, Brazil, Chile, China, Colombia, Croatia, Czech Republic, Egypt, Hungary, India, Indonesia, Korea, Latvia, Lithuania, Malaysia, Mexico, Morocco, Nigeria, Peru, Philippines, Poland, Russia, South Africa, Sri Lanka, Thailand, Turkey, Uruguay, and Vietnam. Mutual fund data for China start in 2007.

[5]Excluding China.

hold the largest share of emerging market bonds (Figure 2.1).

These analyses cover a wide range of emerging markets, including former emerging and frontier markets (Table 2.4 in Annex 2.1). Annex 2.1 describes the details of the data and empirical frameworks.

The Evolving Role of Global and Local Factors

As emerging markets have become increasingly integrated with global markets, global factors have increasingly driven emerging market asset returns (Figure 2.6).[14] Although the heightened correlation of local asset returns with global market returns (beta) during the global financial crisis may partly reflect the effects of higher asset volatility typical of weak markets, equity beta has remained at high levels (above one) since then. The beta for emerging market bonds (especially those denominated in the local currency) is much lower than that for equities but is rising rapidly.

Although country-level macroeconomic conditions in emerging markets (pull factors) matter for asset price resilience, their role during distress episodes does not seem to have risen since the late 1990s. Looking at distress episodes for emerging markets since the Asian crisis, it does not seem that the relative role of macroeconomic fundamentals in explaining contagion patterns has been rising over time (Box 2.4). This could be partly because macroeconomic vulnerability has been reduced in many emerging markets in the past 15 years, keeping them within a comfort zone for many global investors despite global turbulences.[15]

At the same time, herding among international equity investors is on the rise (Figure 2.7). If international investors buy or sell assets simply because they observe other investors doing so, this can amplify

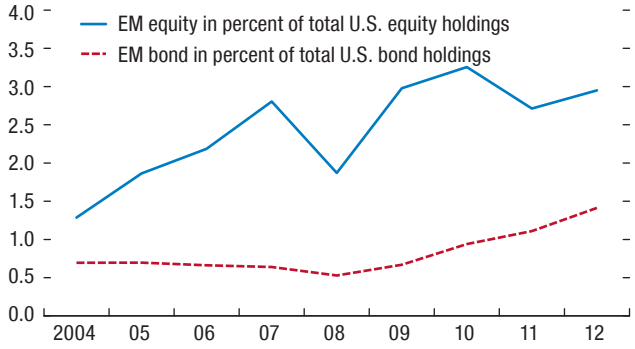
[14]See Forbes (2012), Bekaert and others (2011), and Bekaert and Harvey (2000) on equity market integration. See Burger, Warnock, and Warnock (2011) and Miyajima, Mohanty, and Chan (2012) on bond market integration.

[15]Dynamics within volatility periods also change: after an initial generalized sell-off in May and June 2013, financial assets of emerging markets with better macroeconomic fundamentals recovered more strongly than those with weaker fundamentals in the following months (Box 2.4).

Figure 2.5. Allocation to Emerging Market Assets

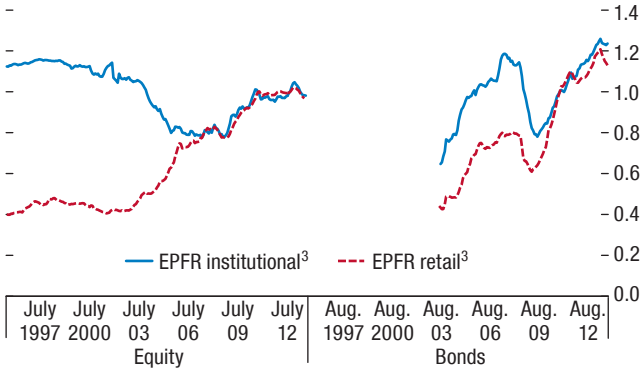
U.S. investors (including both mutual funds and institutional investors) have increased their allocations to emerging markets.

1. Share in U.S. Investors' Portfolios[1] (Percent)



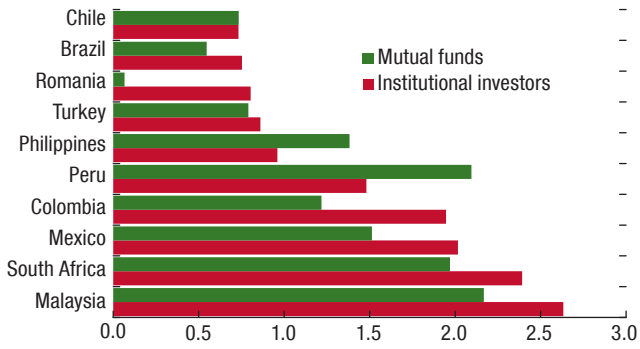
More recently, retail investors have also been increasing their engagement in emerging markets.

2. Emerging Market Assets in Global Investors' Portfolio Flows (Cumulative flows to EMs; relative to cumulative flows to other economies, December 2010 = 1)[2]



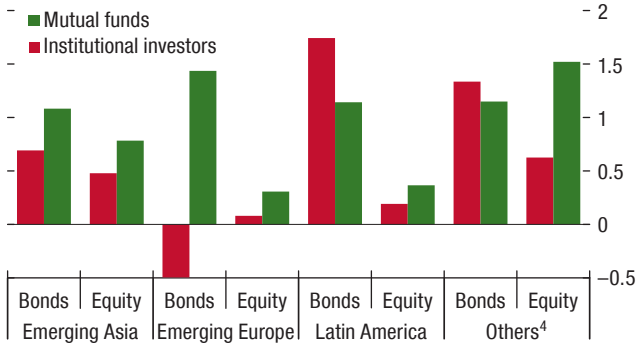
Mutual funds and institutional investors have largely invested in the same countries, although the relative size of both types of inflows has varied somewhat across countries.

3. Bond Flows by Types of Investors (Net inflows between October 2008 and September 2013; percent of GDP)



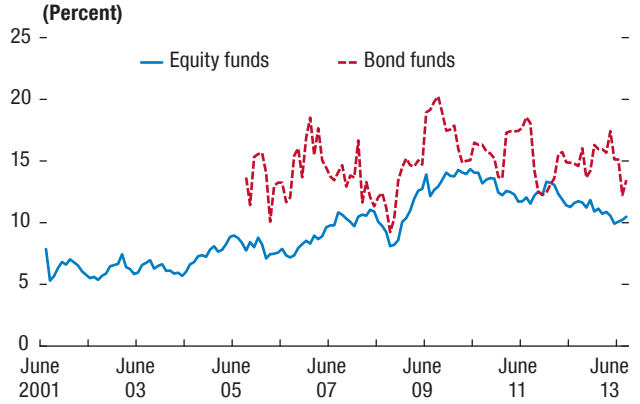
In emerging Europe, institutional investors pulled back since the global financial crisis, while mutual funds continued to invest.

4. Portfolio Inflows, by Region and Investor Type (Net inflows between October 2008 and September 2013; percent of GDP)



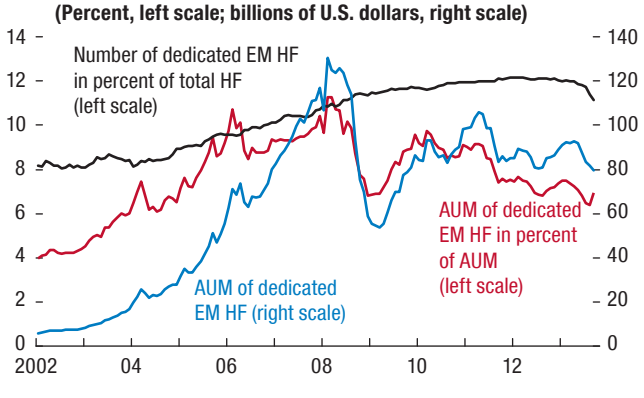
The role of emerging markets in global funds' portfolios has become more important, despite a recent setback…

5. Share in Global Mutual Funds' Assets (Percent)



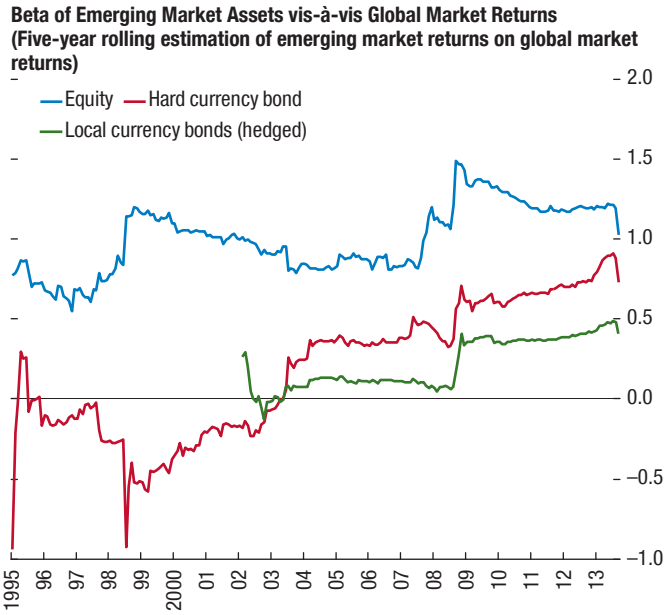
…while hedge fund investments in emerging markets have stagnated since 2008.

6. Dedicated Emerging Market Hedge Funds (Percent, left scale; billions of U.S. dollars, right scale)



Sources: Bank of New York Mellon; EPFR Global; Federal Reserve; Hedge Fund Research; U.S. Treasury International Capital System, and IMF staff estimates.
Note: AUM = assets under management; EM = emerging market; HF = hedge funds.
[1]U.S. portfolios include both domestic and foreign securities.
[2]Cumulative flows are calculated using monthly flows-to-assets under management in order to control for expanding coverage of the data. Data end in October 2013.
[3]See Annex 2.1 for EPFR Global definitions for institutional and retail investors.
[4]Others include Egypt, Israel, and South Africa.

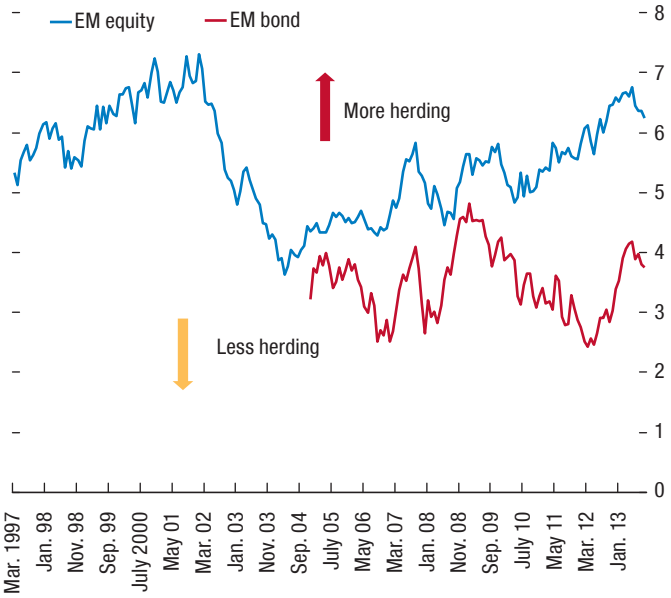
Figure 2.6. Integration of Emerging Market Assets into Global Markets



Source: IMF staff estimates.
Note: Betas are coefficients estimated by regressing returns of emerging market assets on global market returns, using a monthly panel model with country fixed effects and a five-year rolling window. If beta is negative, then the return of the asset rises when the overall market is declining, and that asset provides better diversification benefits for investors. If beta is above 1, then the asset is not only highly correlated with the market return but also rises or falls more than the market return. Global market returns are measured using the S&P 500 Index for equities and the City World Government Bond Index for both hard currency and local currency sovereign bonds. Both country and global market returns are measured in excess of the one-month Eurodollar deposit rate.

Figure 2.7. Herding among Equity and Bond Funds Investing in Emerging Markets

(Percent)



Sources: EPFR Global; and IMF staff estimates.
Note: EM = emerging market. The herding measure is that proposed by Lakonishok, Shleifer, and Vishny (1992). It assesses the strength of correlated trading among mutual funds investing in EMs, controlling for their overall trade trends (see Box 2.5). The measure is 0 when there is no sign of herding. It is calculated every month, looking at the fund-level activity in each country, and then averaged across EMs. The measure is computed when there are at least six funds in a month.

boom-bust cycles in financial markets (Box 2.5). In principle, as information about emerging markets becomes more widely available and coverage by country analysts increases, country fundamentals should become more important determinants of investment decisions, and herding among international investors should decline (Calvo and Mendoza, 2000). However, there is little evidence of such a shift over the past 15 years. For equity funds, herding behavior—measured by the extent to which a certain group of investors trades in the same direction more often than one would expect if they traded independently and randomly—weakened somewhat in the first half of the 2000s but has continuously climbed since then. The low-interest environment since the mid-2000s may have contributed to this rise, as investors searched for yield, neglecting country-specific risks and following other investors. Although there is no clear trend for bond funds, herding tends to pick up during turbulent times, and has been rising over the past two years, as well.[16]

Investor Characteristics and Portfolio Flows

Bond Fund Flows versus Equity Fund Flows

Bond flows are much more sensitive to global financial conditions than equity flows. Separate econometric analyses for bonds (covering both sovereign and corporate bonds) and equities (using country-level EPFR Global data for mutual fund flows and BNY data for institutional investors) reveal a stark contrast between bond and equity investors. Figure 2.8, panel 1, compares the sensitivity of bond and equity flows from mutual funds and institutional investors to a one standard deviation rise (about 8½ percentage points) in

[16]Note that a common move by global funds to emerging markets with better fundamentals during a period of volatility would also show up in our measure as a temporary spike in herding (see Box 2.5).

Box 2.4. Are Investors Differentiating among Emerging Markets during Stress Episodes?

Over the past 15 years, the impact of crises was not uniform across emerging markets, and the literature has sought to identify the macroeconomic conditions that determine the susceptibility of countries to shocks.[1] We assess whether variations in domestic macroeconomic fundamentals across emerging markets are increasingly influencing market participants in their investment decisions during crises.

Method

Our study compares the cross-country pattern of asset price movements during six crises affecting emerging markets. For each event, we estimate the relationship between market pressure and macroeconomic variables across emerging markets, then compare the explanatory power (measured by the *R* squared) of the macroeconomic variables across episodes to see whether markets have become more discriminating over time.

- *Crises:* The analysis covers the Thai, Russian, and Brazilian crises; the global financial crisis; the European crisis; and the 2013 sell-off episode owing to concerns over U.S. monetary policy.
- *Market pressure:* Market pressure is measured by changes in exchange rates, an index of exchange market pressure, and bond and equity prices between the beginning and the end of an episode.
- *Macroeconomic variables:* Given the small sample size for each stress episode, we use only a few key macroeconomic variables from the literature: the inflation rate, the current account balance, a measure of trade linkages with the country where the crisis originated, and a measure of financial openness. All macroeconomic variables are taken prior to the crisis episode to reduce endogeneity concerns.

The limited sampling and highly varied crises mean that the results should be interpreted as only indicative.

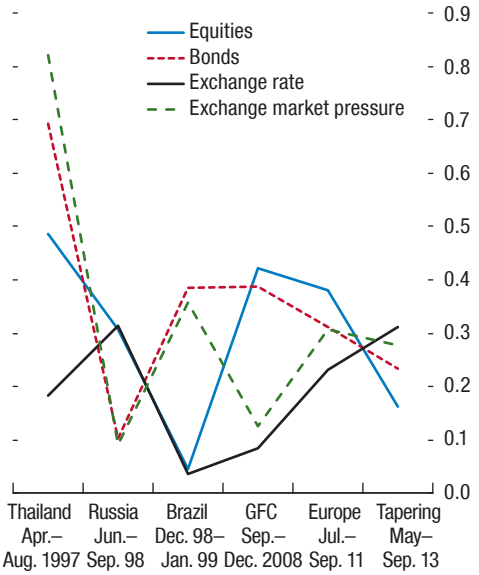
Results

The role of individual macroeconomic variables appears to be tied both to specific markets and to specific crises. Trade linkages and inflation have played a significant role across multiple types of crises and for several types of assets. Countries with a stronger trade connection with the shock-originating economy experience higher market pressure on asset prices. Markets also seem to exert more pressure on countries with higher inflation. The current account balance, which has been flagged as an important determinant of pressure on emerging market asset prices, does not appear to be a robust influence.[2]

The explanatory power of fundamentals across crises does not suggest that investors are becoming more discriminating among emerging markets according to differences in their macroeconomic fundamentals (Figure 2.4.1).[3] However, within the tapering-related sell-off episode in 2013, the *R* squared of macroeconomic fundamentals rose over time. Market participants agree that investors started to differentiate more across countries over the summer 2013 after the initial generalized sell-off in May and June.

Figure 2.4.1. Role of Macroeconomic Fundamentals over Time

Macroeconomic Fundamentals Explanatory Power across Stress Episodes
(*R* squared of separate cross-country regressions by episode)



Source: IMF staff calculations.
Note: GFC = global financial crisis. The dependent variables are changes in exchange rates, bond and equity prices, and an exchange market pressure index over the crisis periods. Explanatory variables are trade linkages, consumer price inflation, ratio of current account balance to GDP, and financial openness. Models are estimated by ordinary least squares with robust standard errors. See Table 2.4 for sample economies and Table 2.5 for variable definitions.

The author of this box is Nicolás Arregui.

[1]See Aizenman and Pasricha (2012); Feldkircher, Horvath, and Rusnak (2014); and Eichengreen and Gupta (2013).

[2]See Chapter 1 of the October 2013 GFSR and IMF (2014).

[3]The results are robust to the use of additional controls, including the real effective exchange rate appreciation, real GDP growth, the fiscal balance in percent of GDP, total foreign debt in percent of GDP, an indicator for the exchange rate regime, and the size of the economy.

Box 2.5. Measuring Herding

Herding in financial markets emerges when investors mimic other investors. Such behavior can destabilize financial markets, aggravate shocks, and lead to mispricing or asset price bubbles. While herding can be the result of cognitive biases or of "heuristic"-based decision making, it can also be rational. For instance, herding may emerge if less-informed asset managers follow their possibly better-informed peers instead of relying on their own assessments (Bikhchandani, Hirshleifer, and Welch, 1992). Herding may also be rational for asset managers if they are evaluated against each other (Scharfstein and Stein, 1990) or vis-à-vis similar benchmarks (Maug and Naik, 2011).

We use a herding measure that quantifies comovements in trading patterns for a subgroup of investors—here, international funds investing in emerging markets. This measure, originally introduced by Lakonishok, Shleifer, and Vishny (1992), assesses whether funds move in the same direction more often than one would expect if they traded independently and randomly. The herding measure (*HM*) is the average across countries of the following country-specific herding metric:

$$HM_{c,t} = |p_{c,t} - p_t| - AF_{c,t}, \qquad (2.5.1)$$

where $p_{c,t}$ is the proportion of all funds active in country c and month t that are net buyers ($1 - p_{c,t}$ is the proportion of net sellers), p_t is its expected value, and $AF_{c,t}$ is an adjustment factor to ensure that $HM_{c,t}$ is zero if there is no herding.[1] p_t is approximated by the share of funds that are net buyers across all emerging markets in our sample, and is allowed to be time-varying to control for common trends across countries, such as swings in aggregate inflows to emerging markets due to marketwide developments.[2]

Since $HM_{c,t}$ measures the correlation in trading patterns, it gives only indicative evidence of "true" herding.[3] A positive value of the measure in a given period may also reflect, for instance, the inclusion of a country in a benchmark index or regulatory changes affecting this subgroup of investors in specific countries. However, a generalized market reaction to fundamental news should not necessarily result in spurious positive herding values with this measure, since, for example, not everybody can react to bad news by selling: there must be a buyer for every seller. Consequently, for *HM* to misclassify a reaction to news about fundamentals as herding, news must either (1) fundamentally affect the group of mutual funds studied here in a different manner than other investors or (2) propagate slowly across different types of investor groups (which should not be an important issue at the monthly frequency; see Cipriani and Guarino, 2014).

The authors of this box are Johannes Ehrentraud and Hibiki Ichiue.

[1]The adjustment factor is equal to the expected value of the first term under the null hypothesis that there is no herding. It is needed since the distribution of the first term is not centered around zero.

[2]In this chapter, we show that mutual funds react more to global financial shocks than do other investors. To the extent that this results in uniform relative changes in emerging market allocation across countries, this effect is controlled for by p_t.

[3]See the discussions in Bikhchandani and Sharma (2001) and Cipriani and Guarino (2014).

the VIX (the Chicago Board Options Exchange Market Volatility Index).[17] In the case of mutual funds, bond flows are clearly more sensitive to the VIX than equity funds. For institutional investors, however, the difference between the sensitivity of bond and equity funds is not statistically significant.[18]

Institutional Investors versus Mutual Funds

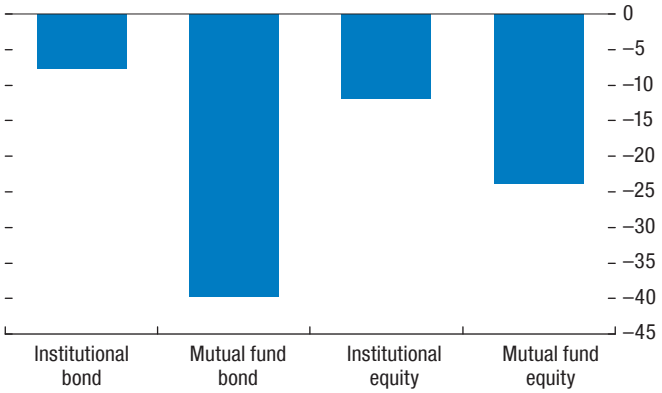
As expected, global mutual funds react more strongly to global financial shocks than do large global institutional investors (Figure 2.8). The results confirm that flows from retail-oriented mutual funds (EPFR Global data) are significantly more sensitive to the VIX than flows from the institutional investors (BNY data) for both bonds and equities. This may reflect the fact that

[17]The results are based on panel regressions for bond and equity flows from mutual funds and institutional investors on various global and domestic factors. See Annex 2.1 on details of the mutual fund flow data calculations.

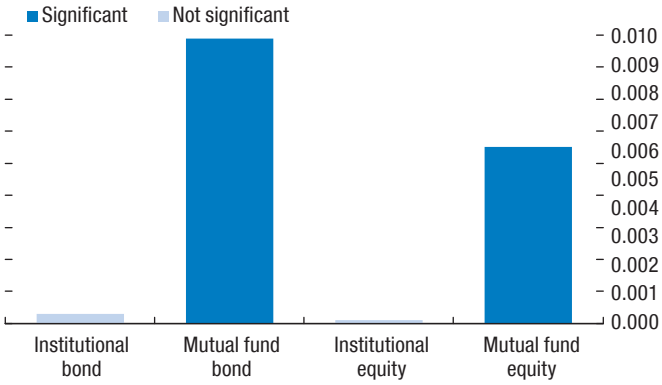
[18]The results are generally robust when other measures of global factors are used, including the volatility of the two-year Eurodollar interest rate future; the Merrill Lynch Option Volatility Estimate (MOVE) index; and the Treasury and Eurodollar (TED) spread. Our results and other research (see for example González-Hermosillo, 2008; Fratzscher, 2012; and Rey, 2013) suggest that different sets of global factors are relevant for emerging market portfolio flows and asset returns. Similarly, IMF (2013d and 2013e) and Chapter 1 of the April 2013 GFSR find that global factors such as the VIX and—to a lesser extent—government bond yields have played a significant role in explaining swings in portfolio flows to emerging markets. In general, however, the VIX—often interpreted as a measure of global risk aversion—is the factor that plays a significant and robust role.

Figure 2.8. Mutual Fund and Institutional Investor Flows

1. Sensitivity of Portfolio Flows to Emerging Markets to the VIX by Type of Investors and Assets
(Changes of flows when the VIX increases by one standard deviation; percent of standard deviation of flows)



2. Evidence for Momentum Trading
(Estimated coefficient on lagged country index returns)



Sources: Bank of New York Mellon; EPFR Global; and IMF staff estimates.
Note: ICRG = *International Country Risk Guide;* VIX = Chicago Board Options Exchange Market Volatility Index. Each type of monthly flow is regressed on the VIX, the lagged change in the ICRG country risk index, the real interest rate differential, and the lagged country index return. Estimation period is December 2000–October 2013. One standard deviation of the VIX is about 8½ percentage points. See Annex 2.1 for the details of method, Table 2.4 for sample economies, and Table 2.5 for the definition of variables.

institutional investors have limited redemption pressures and that they allocate assets following long-term investment strategies.[19]

Mutual funds are also more likely to engage in return chasing, creating more procyclical flows. The significant, positive coefficient in Figure 2.8, panel 2, for recipient economies' asset returns indicates that bond mutual funds and, to a lesser extent, equity mutual funds favor countries with high recent returns. Such momentum trading amplifies cyclical swings of portfolio flows and can be destabilizing. Institutional investors, on the other hand, do not engage in this type of behavior.

Institutional investors, however, are not always more stable: they pull back more strongly from bond markets than do mutual funds when faced with extreme shocks (Figure 2.9). Institutional investors' bond flows dropped more appreciably than those of mutual funds after the September 2008 Lehman Brothers shock, although their flows have been more resilient than mutual fund flows and have even grown during other episodes of distress. Moreover, institutional investors reduced their bond exposure more persistently than did mutual funds when a country was downgraded to below investment grade. One factor in this behavior is that institutional investors typically face tighter limits on the ratings of the securities they can hold than do mutual funds (Box 2.3). In contrast, institutional investors' equity allocations were broadly unaffected by sovereign downgrades or the Lehman Brothers shock. These investors typically do not change their investment strategies frequently, irrespectively of short-term market fluctuations. However, once a strategy to shift away from certain emerging markets is adopted, the effects can be persistent.

Hedge funds have shown a mix of behaviors during stress episodes. In principle, hedge funds can trade in a destabilizing manner. But they can also behave as contrarians and thus smooth market turbulences because they face fewer portfolio restrictions (see Ilyina, 2006). Hedge funds, especially those that are leveraged, pulled back substantially during the global financial crisis, although they maintained their exposures in 2013 (Figure 2.9). Moreover, market participants suggest that some hedge funds are becoming similar to mutual funds in terms of transparency and investment strategies because many of them now serve more conservative institutional investors, such as pension funds. Among dedicated emerging market hedge funds, about 40 percent are leveraged, down from about 50 percent in 2008.

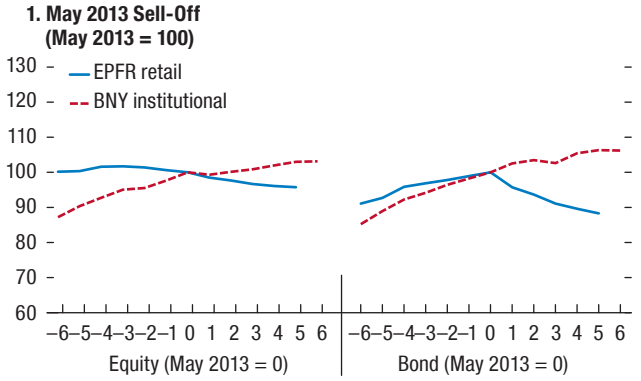
Flows from Different Types of Mutual Funds

Different types of mutual funds show distinctive sensitivities to global financial shocks. The key results from

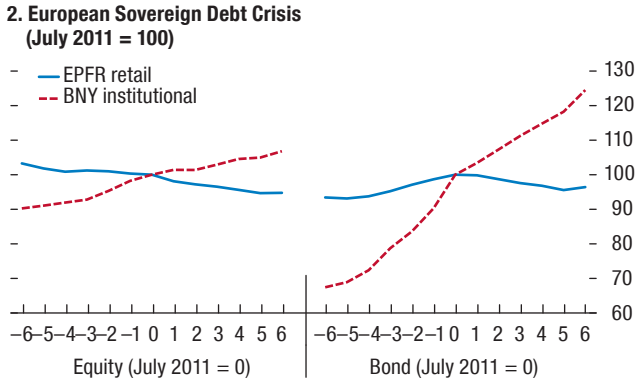
[19]For instance, *Financial Times* (2014a) reports intense redemptions by retail investors in January 2014.

Figure 2.9. Cumulative Monthly Portfolio Flows to Emerging Markets from Different Types of Investors during Distress Episodes

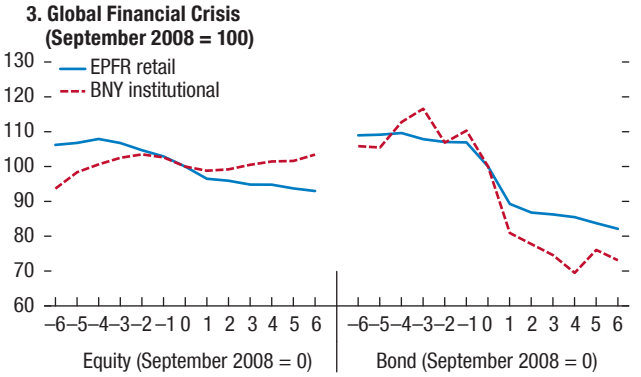
Institutional investors continued to add money to emerging markets while retail investors pulled back in 2013…



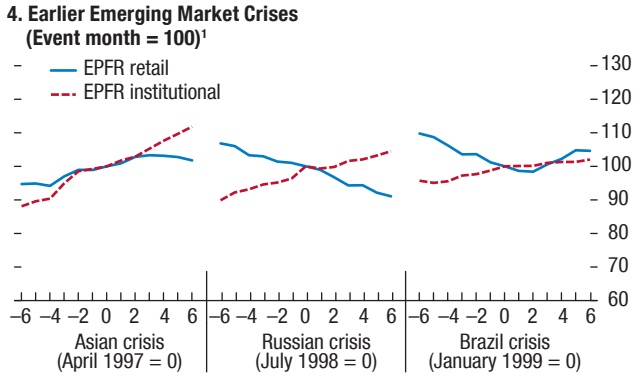
… and during the European sovereign debt crisis…



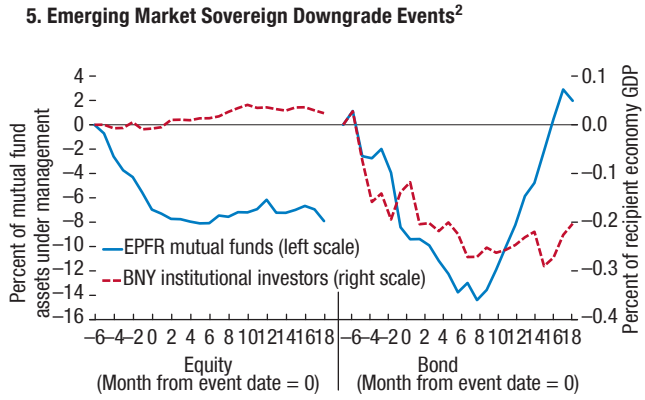
…but institutional investors withdrew more than retail investors from bonds after the Lehman Brothers shock.



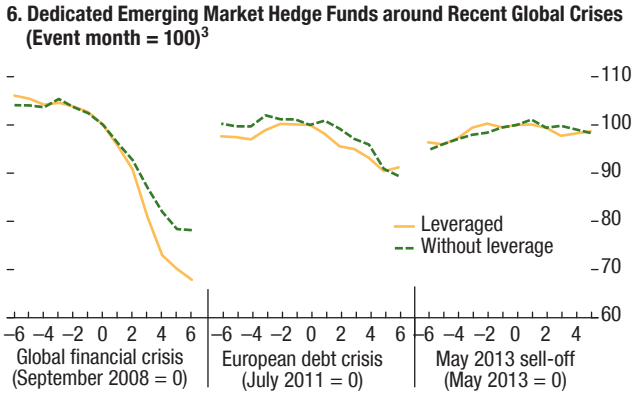
Institutional investor flows were more resilient and often continued to rise during past emerging market crises.



However, institutional investors withdrew more persistently than retail-oriented mutual funds from sovereign bonds downgraded below investment grade.

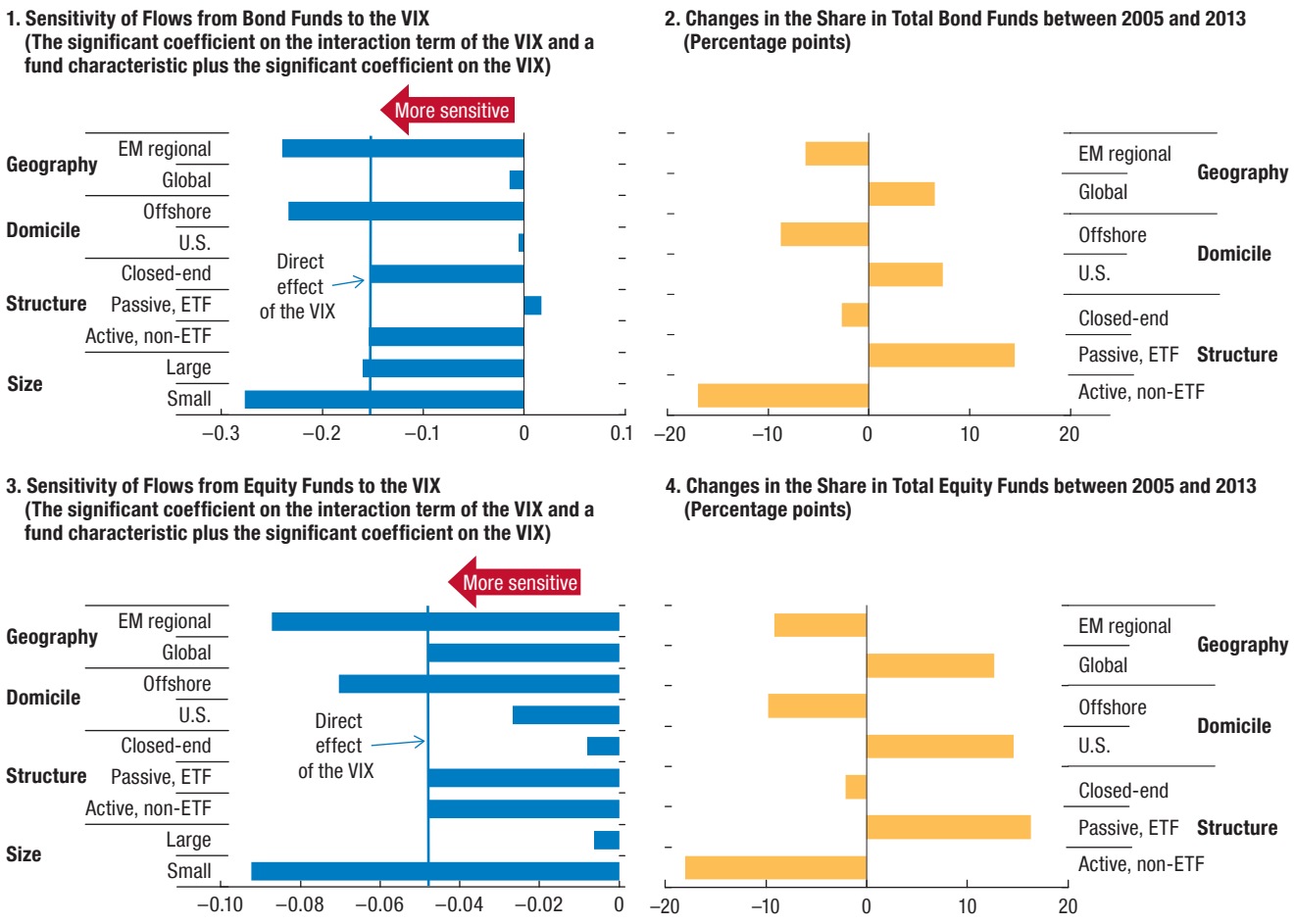


Hedge funds, especially leveraged ones, pulled back from emerging markets in 2008 and to a lesser extent in 2011, but their exposures remained unchanged in 2013.



Sources: Bank of New York Mellon (BNY); EPFR Global; Eurekahedge; and IMF staff calculations.
[1]See Annex 2.1 for the definition of EPFR retail and EPFR institutional investors.
[2]The data are average flows for five episodes in which sovereigns were downgraded to below investment grade between 2000 and 2013 when institutional investor data are available: Croatia, 2012; Egypt, 2002; Hungary, 2011; Latvia, 2009; and Romania, 2008.
[3]Flows are estimated by adjusting changes in assets under management with returns at the fund level. In distress periods, funds tend to increase their cash holdings, so the outflows from emerging markets may then be even greater.

Figure 2.10. Flow Sensitivity to Global Financial Conditions by Fund Characteristics



Source: IMF staff estimates.
Note: EM= emerging market; ETF = exchange-traded funds; VIX = Chicago Board Options Exchange Market Volatility Index. Panels 1 and 3 summarize the results of panel regressions with country-fund fixed effects. A value of –1 means that a 1 percentage-point increase in the VIX reduces flows by 1 percent of assets under management per month. The dependent variables are monthly equity and bond flows of individual funds into individual countries as a proportion of the funds' assets allocated to the country. The independent variables consist of the VIX, its interaction with one dummy variable representing a fund characteristic, and control variables. All independent variables are demeaned. Estimation periods are December 2003–September 2013 for bond funds and March 1996–October 2013 for equity funds. See Annex 2.1 for details, Table 2.4 for sample economies, and Table 2.5 for definitions of variables. Box 2.1 provides the definition of fund characteristics. Active non-ETF funds are mostly actively managed open-end funds. Panels 1 and 3 show the sum of the two coefficients only when they are significant at the 5 percent level. Panels 2 and 4 do not show the share of small and large funds because size indicators are relative to the total sample.

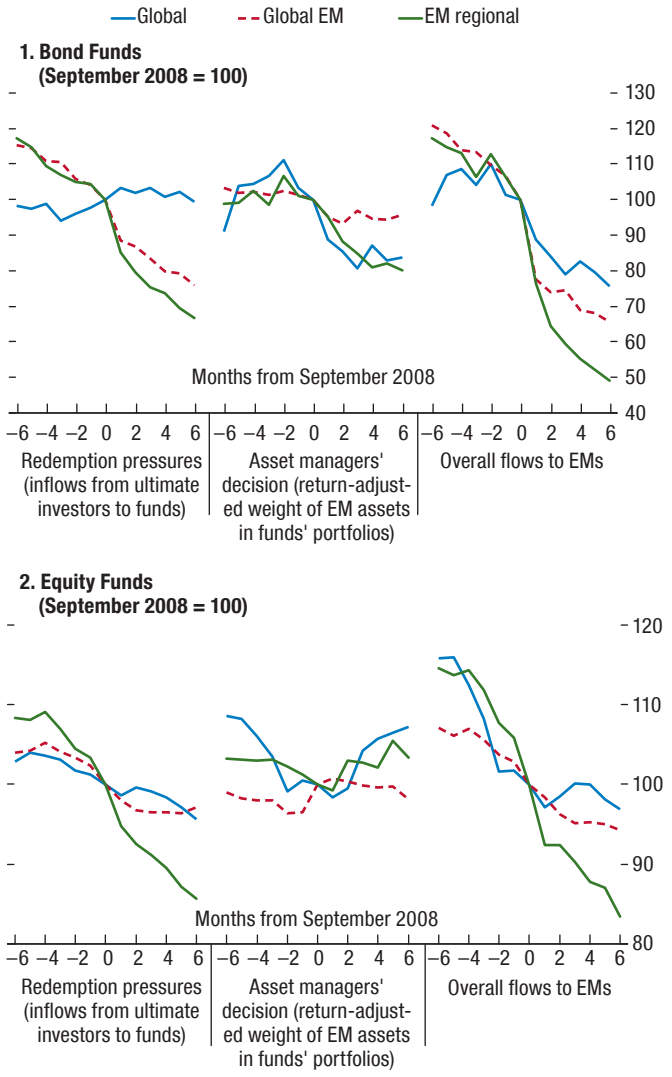
a comparison of their flows' sensitivity to the VIX (Figure 2.10, panels 1 and 3) are as follows:[20]

- For fixed-income funds, active funds that are not exchange-traded funds (ETFs) (mostly actively managed open-end funds, which are the majority of mutual funds; see Box 2.1), are more sensitive to global financial conditions than are passive ETFs.
- Closed-end funds, especially for equity, seem to be less reactive to global financial conditions. This suggests that redemption pressures by funds' ultimate investors play an important role in mutual fund investment strategies. News reports around the January–February 2014 volatility episode are in line with this interpretation (*Financial Times,* 2014b).
- Global funds are more stable sources of capital flows.[21] The evidence suggests that this may be because they

[20]The differences across various types of mutual funds highlighted here are statistically significant. The results are generally robust when subsamples (before and after the global financial crisis) are used; when multiple fund characteristics are examined at the same time; and when alternative global factors (such as the TED spread and the volatility of the U.S. federal funds futures rate) are used.

[21]This is contrary to the perception that crossover funds (those not dedicated to emerging market assets but that opportunistically invest in them) are more return sensitive and volatile. The average share of

Figure 2.11. Drivers of Global and Dedicated Funds' Flows into Emerging Markets around the Global Financial Crisis



Sources: EPFR Global; and IMF staff calculations.
Note: EM = emerging market.

also face smaller redemption pressures from their ultimate investors during periods of distress (Figure 2.11).

- Investor behavior differs by regions. Flows of funds domiciled in the United Kingdom and the United States are less sensitive to the VIX than those of other European funds and offshore funds. These variations may reflect the fact that movements in the VIX are more directly related to economic conditions in the United Kingdom and the United States, where investors may have an incentive to diversify away from their countries when faced with bad news at home. Moreover, Figure 2.1, panel 2, also suggests distinctive cyclical behavior of Japanese funds.[22]
- Small funds are more cyclical with respect to global financial conditions both for bond and equity flows.[23]

Although various factors are working in opposite directions, the overall composition of mutual funds is likely to become more reactive to global financial conditions. Most important, the share of bond funds, which are more sensitive to global financial shocks, is rising. Moreover, the proportion of open-end funds that are subject to redemptions is growing as well.[24] However, in fixed income and equity markets, more flows are now coming from more stable global funds. The declining share of offshore-domiciled funds has also contributed to more stability.

Local Financial Systems and Asset Prices

Has the deepening of the financial sector in emerging markets lowered the sensitivity of emerging market asset prices to external financial conditions? As discussed in Box 2.2, the theoretical relationship between financial deepening and exposure to global financial conditions is not clear-cut, and therefore determining it requires empirical investigation. To that end, we examined yields and returns of foreign and local currency bonds, equities, and currencies. The study covered various dimensions of financial deepening, including foreign participation in local currency markets and institutional quality.

Financial deepening does help mitigate the impact of global financial shocks on domestic asset prices. A panel regression model is estimated relating country-level excess stock market returns, local currency sovereign bond yields, foreign currency sovereign bond spreads, and currency excess returns to various global and domestic factors.[25] As in the case of the analysis of

emerging market assets is small for global funds (though rising—Figure 2.5, panel 4), but the size of these funds tends to be much larger. Therefore, small changes in their allocation can potentially cause large absolute swings in their emerging market investments.

[22]The coverage of Japanese investment trusts in the EPFR Global database is more limited compared with that of mutual funds in Europe and the United States.

[23]This is in line with theoretical predictions in Corsetti and others (2004).

[24]The compositional changes are based on the EPFR Global database and may not be fully representative of the mutual fund universe.

[25]See Jaramillo and Weber (2013) for a recent analysis of global factors in domestic bond markets in emerging market economies.

Table 2.2. Role of Financial Deepening in Dampening the Impact of Global Financial Shocks on Asset Prices
(Estimated coefficients on the interaction terms of the VIX and respective financial development measure)

	Equity Excess Returns		Foreign Currency Sovereign Bond Spreads		Local Currency Sovereign Bond Yields		Currency Excess Returns	
	Expected Sign	Estimate	Expected Sign	Estimate	Expected Sign	Estimate	Expected Sign	Estimate
Financial Depth								
Bank Assets	+	0.001**	–	–0.001***	–	–0.002***	+	0.001**
Nonbank Financial Institution Assets	+	0.001***	–	–0.000	–	–0.001***	+	0.019*
Domestic Bonds	+	0.000	–	–0.001	–	–0.002***	+	–0.001**
Stock Market Capitalization	+	0.001**	–	–0.001***	–	–0.001***	+	0.001***
Investor Base								
Mutual Fund Assets	+	0.003**	–	0.000	–	–0.003**	+	0.000
Insurance Company Assets	+	0.005***	–	–0.004***	–	–0.005***	+	0.002
Pension Fund Assets	+	0.004***	–	–0.001***	–	–0.001***	+	0.003**
Market Liquidity								
Stock Market Total Value Traded	+	0.001***	–	–0.001***	–	–0.002***	+	0.001**
Bond Bid-Ask Spreads	–	–0.463	+	0.614***	+	0.467***	–	–0.559
Debt Structure								
Original Sin Index	nil	–0.050	+	0.268***	+	0.159***	–	–0.118
Foreign Holdings of Sovereign Debt	–	–0.233***	+	0.098*	+	0.209***	–	–0.232**
Foreign Share in LC Sovereign Debt	–	–0.447*	+	–0.100	+	0.202***	–	–0.644
Institutional Quality								
Rule of Law	+	0.044**	–	–0.083***	–	–0.088***	+	0.011
Accounting Standards	+	0.077***	–	–0.036***	–	–0.125***	+	0.066**
Transparency of Government Policy	+	0.122***	–	–0.054	–	–0.150***	+	0.077

Source: IMF staff estimates.

Note: LC = local currency; TED = Treasuries and Eurodollar; VIX = Chicago Board Options Exchange Volatility Index. Equity returns are on a dollar basis, and local currency sovereign bond yields are without hedging. Each model is estimated using country fixed effects; global factors as controls (including the TED spread, credit spread, term spread, and global market returns); country-specific factors (including dividend yield differentials, interest differentials, currency returns, exchange rate regimes, sovereign credit rating, and the forecasts of GDP growth, inflation, and the current account balance, depending on asset types); a global risk factor (a measure of foreign exchange risk for currency excess returns and the VIX for all others); and the global risk factor's interaction with one measure of financial deepening, debt structure, or institutional quality at a time. Estimation periods are May 1995–August 2013 for equities; May 1995–August 2013 for foreign currency sovereign bonds; January 2001–August 2013 for local currency bonds; and May 1995–August 2013 for currencies. Results are robust to other measures of financial deepening (including bank private credit, nonbank private credit, stock market turnover, and bond value traded) and institutions (quality of government regulation, control of corruption, government effectiveness, and political stability, among others). See Annex 2.1 for details, Table 2.4 for sample economies, and Table 2.5 for definitions of variables. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

portfolio flows, the focus is on differences in the reaction to global financial conditions, here depending on the degree of financial sector deepening. In our study, most of the dimensions of financial deepening are associated with a lower sensitivity to global shocks for equity markets as well as for markets of bonds denominated in foreign or local currencies; the results for the exchange rate market are somewhat weaker (Table 2.2).[26]

Having a larger local investor base has a stabilizing effect. A larger financial sector (banks and nonbanks such as mutual funds, pension funds, and insurance companies) significantly helps limit the effects of global financial shocks. Moreover, these effects are quantitatively large (Figure 2.12). Some of the effects of a larger local investor base are sufficient to offset the unfavorable direct impact from the increase in the VIX. These results are consistent with the literature stressing the countercyclical nature of capital flows of domestic investors (see Broner and others, 2013; and IMF, 2013c).[27]

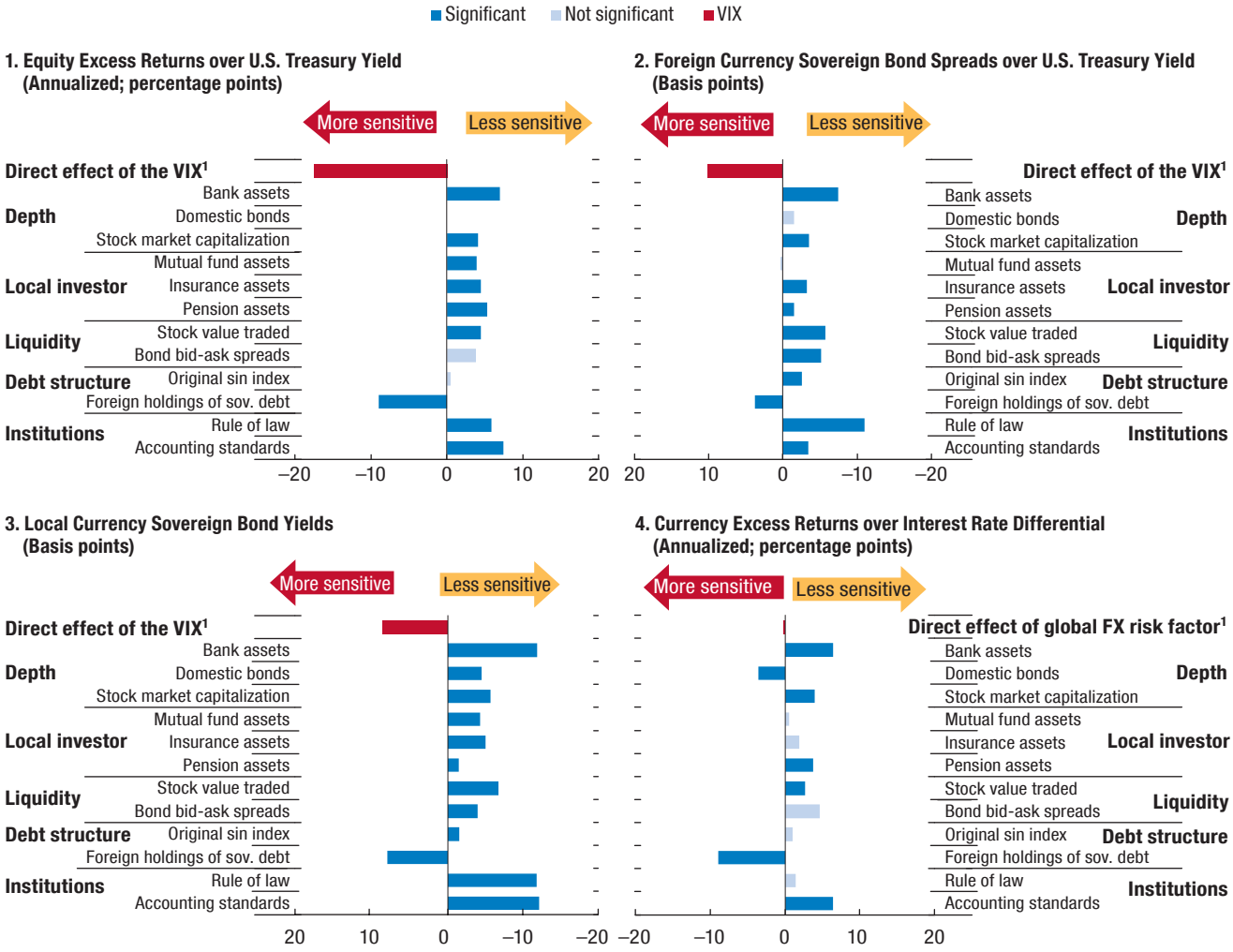
Similarly, capital market development generally lowers the sensitivity of asset returns to global financial conditions. A higher stock market capitalization contributes to the stability of bond, equity, and currency markets. Large and liquid stock markets also mitigate the sensitivity of equity returns to global financial conditions. Similarly, bond markets with higher liquidity (that is, with lower bond bid-ask spreads) are less reactive to VIX shocks.

Therefore, the recent decline in liquidity in some emerging markets appears to have contributed to making local bond yields more sensitive to the VIX in these markets (Figure 2.13). Market participants attribute this to reduced market making by global banks operating in emerging markets. This could be partly due to tighter

[26]These results are generally robust when the estimation sample is separated into the periods before and after the global financial crisis.

[27]A robustness check showed little evidence of nonlinear effects (when returns are large or small and when they are negative or positive).

Figure 2.12. The Effects of Financial Deepening on the Sensitivities of Asset Returns to Global Risk Factor
(Estimated coefficients on the interaction terms of the VIX and one financial deepening variable × best 75th – worst 25th percentile of the financial deepening variable × 10 percentage point change in the VIX)



Source: IMF staff estimates.
Note: VIX = Chicago Board Options Exchange Market Volatility Index. FX = foreign exchange. With the estimation results presented in Table 2.2, the panels illustrate how much a country can mitigate the negative effect of a 10 percentage point increase in the VIX (or FX risk factor for currency excess returns) by having more developed (deeper) domestic financial systems or better institutions. For example, the effect of a 10 percentage point shock to the VIX on stock prices for economies with the largest 75th percentile ratio of stock market capitalization to GDP is 4 percentage points smaller than those with the lowest 25th percentile ratio of market capitalization to GDP (panel 1, stock market capitalization bar). Percentile data are taken from the whole country-month sample from 2005 to 2013 (some variables, such as insurance and pension fund assets, start for most of the countries only around 2003–05). For bond bid-ask spreads and original sin index, the "best" 75 percent means those with lowest 25th percentile values. See Table 2.4 for sample economies and Table 2.5 for definitions of variables.
[1]The direct effect of the VIX or FX risk factor for currency excess returns (red bar) is the average effect of a 10 percentage point increase of the VIX or FX risk factor, without controlling for the level of financial deepening or institutional quality.

regulation set by supervisors in their home countries and also to changes in bank business models following the global financial crisis.[28] Market participants believe that local banks have helped fill this liquidity gap somewhat, but not fully. Expanding local institutional investors can create demand in primary markets but do not necessarily help improve secondary market liquidity, as they tend to buy and hold.

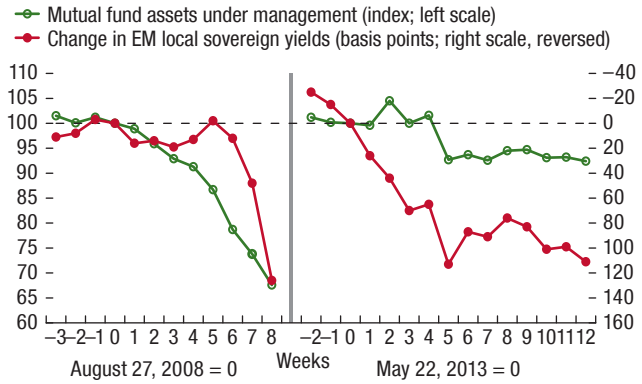
Overcoming "original sin" has reduced the sensitivity to global factors of both foreign and domestic currency bond prices. In principle, reducing the share of foreign currency debt in total external debt lessens issuers' credit risk, thereby reducing the price sensitivity to VIX shocks.

[28]See Chapter 1 of the October 2013 GFSR for details.

Figure 2.13. Sensitivity of Local Yields to Portfolio Flows and Decline in Global Market Making

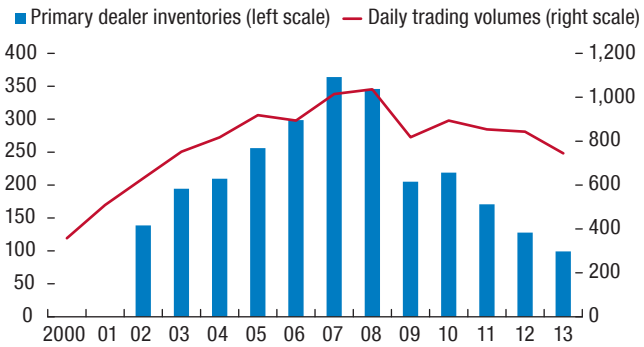
Local market yields seem to have become more sensitive to global financial shocks…

1. May 2013 Sell-Off of Emerging Market Bonds versus the Lehman Brothers Episode



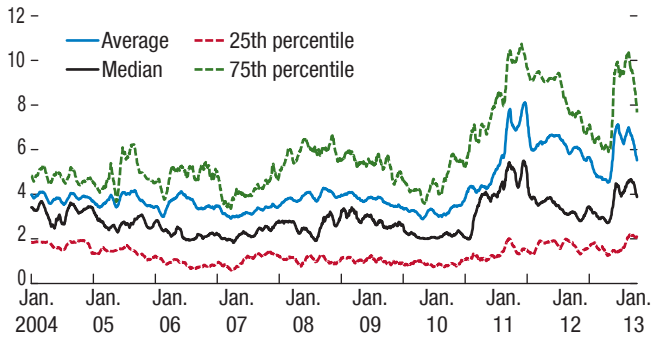
…in the context of reduced market making by global banks and brokers…

2. Nongovernment Bond Inventories and Trading Volumes[1] (Billions of U.S. dollars)

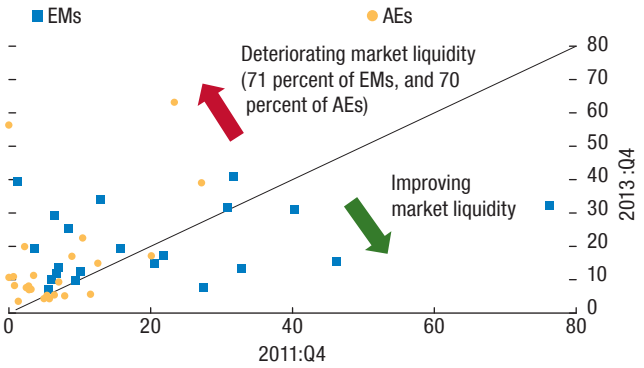


… and liquidity in local government bond market has declined recently in some economies.

3. Bid-Ask Spreads for Government Bonds in Selected Economies[2] (Spreads for local 10-year government bond yields; basis points)



4. Bond Market Illiquidity (Quarterly average bid-ask spreads; basis points)



Sources: Bloomberg, L.P.; Elkins-McSherry; EPFR Global; Federal Reserve; J.P. Morgan; Securities Industry and Financial Markets Association; and IMF staff calculations.
Note: AE = advanced economy; EM = emerging market.
[1]Average daily volumes include municipal securities, treasuries, asset- and mortgage-backed securities, corporate debt, and federal agency securities.
[2]Sample includes Bulgaria, Chile, China, Colombia, Czech Republic, Hungary, India, Indonesia, Israel, Korea, Lithuania, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Romania, Russia, South Africa, Taiwan Province of China, Thailand, Turkey, and Ukraine.

At the same time, a larger foreign engagement in domestic markets increases the price sensitivity to global financial shocks. When more government debt (domestic and external) is held by foreigners, excess equity returns, local currency bond yields, and currency excess returns become more sensitive to global financial conditions. This effect is particularly strong for local currency bond yields.

Improving local institutions and governance related to financial system infrastructure strongly reduces the exposure of equity and bonds to fluctuations in global financial markets. Indeed, improved governance—measured as the prevalence of the rule of law, the strength of auditing and reporting standards, and the transparency of government policymaking—often has a larger impact than indicators of financial deepening.[29]

[29]This is in line with the literature emphasizing the role of transparency in dampening volatility, including Brandão-Marques, Gelos, and Melgar (2013).

Table 2.3. Summary of Methods and Results

Approach	Asset Prices	Portfolio Flows
Rolling beta	Fig. 2.6. EM assets are increasingly integrated with global markets, with rising beta vis-à-vis global markets.	n.a.
Herding among global mutual funds (fund-level analysis)	n.a.	Fig. 2.7. Particularly for equity funds, herding is on the rise over time.
Differences across broad investor groups: sensitivity to global financial shocks and momentum trading	n.a.	Fig. 2.8. Bond investors (increasing in importance) are more sensitive to global financial shocks than equity investors. Mutual funds react more to changes in global conditions than institutional investors, and follow procyclical momentum strategies.
Institutional investors and mutual funds during distress periods	n.a.	Fig. 2.9. Institutional investors withdrew more from EM bonds during the global financial crisis and sovereign downgrades to below investment grade.
Differences across types of mutual funds in their sensitivity to global financial shocks (fund-level analysis)	n.a.	Fig. 2.10. Actively managed open-end bond funds and smaller funds are more sensitive to global financial shocks. Crossover investors (increasing in importance) are less sensitive to global financial shocks. Funds from different domiciles behave differently (see also Fig. 2.1).
Local financial systems and sensitivity to global financial shocks	Table 2.2, Fig. 2.12. Deeper local investor bases and capital markets, higher liquidity, and better institutions reduce the sensitivity to global financial shocks. Reducing "original sin" is beneficial but higher foreign ownership of local bonds increases the sensitivity to global financial shocks.	n.a.
Role of local macroeconomic factors during distress episodes over time	Box 2.4. Over time, the role of macroeconomic factors in explaining cross-country patterns of contagion during distress episodes has not increased.	n.a.
Local macroeconomic factors and sensitivity to global financial shocks	Annex 2.1. Better macroeconomic conditions can reduce local currency bond sensitivity to global factors. International reserves and low external public debt are important.	Annex 2.1. Higher external public debt increases the sensitivity of equity flows to global factors.

Source: IMF staff.
Note: EM = emerging market.

Summary

This section examined the relationship between the investor base, local financial systems, portfolio flows, and local asset prices using a variety of approaches. Table 2.3 summarizes the methods used in this section and the key messages from each line of analysis.

Policy Implications and Conclusions

The results presented in this chapter can help guide emerging markets in maximizing the net benefits of further integration with global capital markets. Our analysis has identified the types of investors that tend to amplify the impact of global financial conditions and the aspects of financial deepening that help absorb the effects of global financial shocks. The changing mix of global portfolio investors is likely to make overall portfolio flows more sensitive to global financial shocks. The share of less stable bond flows is rising. Growing investment from more stable institutional investors than mutual funds is welcome, but they can pull back more strongly and persistently when facing a large shock. Moreover, herding behavior among international mutual funds continues, and investors do not seem to be differentiating among emerging markets based on macro fundamentals during crises moreso than in the past. Nonetheless, the progress made by emerging markets toward financial deepening and improving institutions reduces their financial asset price sensitivity to global financial shocks. Yet, large foreign participation in local markets can introduce instability. These findings have several policy implications.

Governments can promote specific forms of financial deepening to enhance resilience to global financial shocks. In particular, developing a local investor base (both of banks and nonbanks) and improving institutional quality help dampen external financial shocks.

Similarly, the evidence on the beneficial role of local currency bond markets generally lends support to government-led initiatives to develop these markets, but caution is warranted. Initiatives such as the Asian Bond Markets Initiative and the G20 action plan provide guidance on how to develop these markets. Although foreign investors can play a critical role in financial deepening in emerging markets, a very high level of foreign participation has drawbacks. Therefore, this type of participation needs to be monitored closely and accompanied by a deepening of the local investor

base, by adequate macroeconomic policies, and by better institutions.

Knowing the investor base and its characteristics is critical when assessing the risks of capital flow reversals and designing macroprudential policies.

- Large institutional investors provide relatively stable flows but can react more strongly than others to downgrades of sovereign debt to below investment grade. Hence, maintaining a solid sovereign rating and remaining included in global indices is essential.
- The inclination of retail investors (mutual funds) to follow momentum trading and to react to international shocks requires close monitoring of their positions. Even in markets dominated by institutional investors, volatile retail investors can affect asset prices significantly.
- Our regression results show that investor behavior can vary according to the region in which they are domiciled, perhaps due to differences in the specific factors that are relevant for them. Therefore, attracting a geographically diverse investor base can help smooth flows. This can be achieved, for example, by targeting asset managers in different parts of the world.
- Close monitoring of cross-border activities of open-end mutual funds is warranted.

The continued instability of portfolio flows to emerging markets highlights the importance of insurance mechanisms. Since emerging markets remain exposed to the ups and downs of international capital markets, counting on insurance through access to bilateral and multilateral credit lines or adequate international reserves remains important for many of them.

The global regulatory reform agenda is helping to improve financial stability, but it needs to pay attention to potential unintended consequences for market-making activities. Market liquidity in bond markets has declined in emerging market economies in the past couple of years, in tandem with a drop in inventories maintained by global banks. While the exact causality is hard to establish, market participants argue that various regulations restricting bank trading activities may have contributed to this decline in market making. Lower market liquidity increases the volatility of emerging market bond prices and makes them more exposed to changes in global financial conditions.

The information gap surrounding institutional investors needs to be filled. Although institutional investors, such as sovereign wealth funds and international reserve managers, are large players in emerging markets, there is insufficient information available about their asset allocation and investment patterns. As a result, the analysis of capital flows tends to focus on areas where data are available, such as mutual fund investments.

Annex 2.1. Data, Main Empirical Framework, and Additional Analyses

This annex describes the data sources, contains technical background, and provides key results from the empirical analysis in this chapter.

Data

Portfolio Allocation and Investment Flows for Mutual Funds

Mutual fund data are from Emerging Portfolio Fund Research (EPFR Global), which covers portfolio allocations and flows by country and type of asset for about 11,000 equity funds and about 4,500 fixed-income funds, all of which had $22 trillion in total assets as of the end of 2013. According to EPFR Global, its data track more than 95 percent of emerging-market-focused bond and equity funds. The investment in emerging markets covered by EPFR Global to total U.S. investment (using the U.S. Treasury International Capital System) is 58 percent for equities and 38 percent for debt securities as of 2012.

Mutual funds are sold mainly to retail investors, but institutional investors have been purchasing an increasing number of mutual fund shares. "EPFR institutional" investors are identified as funds targeting institutional investors or those with investments of $100,000 or more. The share of EPFR institutional investors has risen over time to about 50 percent in 2013 in our sample.

EPFR Global estimates aggregate portfolio flows from funds at the country level by multiplying aggregate flows from investors to funds and the average country allocation by fund type. We estimated portfolio flows from each fund to each country using the change in assets under management (AUM) adjusted for valuation effects, approximated by country index returns as in Gelos and Wei (2005) and Raddatz and Schmukler (2012).

Portfolio Investment Flows for Institutional Investors

Portfolio flows data for institutional investors are collected by Bank of New York Mellon (BNY) in its role as a custodian for many large global institutional inves-

tors domiciled in many jurisdictions throughout the world. These include pension funds, insurance companies, and some official reserve funds from various countries, among others. The data consist of net daily flows, aggregated by country, for equities, sovereign bonds, and corporate bonds.

Portfolio Investment Flows for Hedge Funds

Hedge funds data are taken from two sources. The Hedge Fund Research (HFR) database comprises more than 4,500 funds and funds of funds with AUM of $1.3 trillion, of which about 500 (with AUM of $80 billion) report that their investment focus is in emerging markets. The data cover about half of the industry by assets (data from BarclayHedge).[30] The second source is the Eurekahedge Emerging Markets Hedge Fund database, which covers emerging-market-dedicated hedge funds only and comprises about 1,000 hedge funds with AUM of $160 billion.

We estimate portfolio flow data of hedge funds based on the AUM of funds, adjusted for the funds' returns to account for valuation effects. This proxy may not be accurate for funds with strongly varying cash holdings. But their cash positions usually do not fluctuate much, except during severe stress periods.

Empirical Framework

All models in the chapter are estimated using monthly data. Table 2.4 provides the country samples, and Table 2.5 summarizes the definitions and data sources of variables used in the various estimations.

Bond versus Equity Flows and Institutional versus Mutual Fund Flows

Figure 2.8 highlights the differences between equity and bond investors and between institutional investors and mutual funds based on an estimation of the following panel model for each type of flows, using EPFR Global and BNY data:

$$Flow_{i,t} = \alpha_i + \beta Global_t + \gamma Rindex_{i,t-1} + \sum_{p=1}^{P} \delta_p Control_{p,i,t} + \varepsilon_{i,t}, \quad (2.1)$$

where $Flow_{i,t}$ is monthly net bond or equity inflows to country i. The model includes country-level fixed effects α_i. The explanatory variables include one global factor, $Global_t$ (from the Chicago Board Options Exchange Market Volatility Index, VIX; the Merrill Lynch Option Volatility Estimate, MOVE index; the volatility of two-year interest rate futures; and the Treasuries and Eurodollar, TED, spread). $Rindex_{i,t-1}$ is the lagged relevant country index return (orthogonalized using the VIX) and is added to examine momentum behavior. $Control_{p,i,t}$ are country-specific controls (there are P number of such controls), which include the first difference of the composite risk score of the *International Country Risk Guide* (ICRG) and the lagged real interest rate differential against the United States. $\varepsilon_{i,t}$ is the residual. The coefficient vectors to be estimated are β, γ, and δ.

Mutual Fund Characteristics and Their Flows' Sensitivity to Global Financial Shocks

The portfolio flows' sensitivities to global financial shocks by type of funds (Figure 2.10) are examined by expanding the baseline model (2.1) to use fund-level data and to include one interaction term between a fund characteristic dummy and a global factor, as follows:

$$Flow_{i,j,t} = \alpha_{i,j} + \beta_1 Global_t + \beta_2 Chara_{j,t} \times Global_t + \beta_3 Chara_{j,t} + \gamma Rindex_{i,t-1} + \sum_{p=1}^{P} \delta_p Control_{p,i,t} + \varepsilon_{i,j,t}, \quad (2.2)$$

where $Flow_{i,j,t}$ is the monthly net inflows to country i by fund j, divided by each fund's assets allocated to the country at month t. The model includes country-fund fixed effects $\alpha_{i,j}$. $Chara_{j,t}$ are dummy variables indicating fund characteristics.[31] The variables are de-meaned so that β_1 shows the average effect of the global factor across funds. The results presented in Figure 2.10 are robust to various specification changes.[32]

Financial Development and Asset Returns' Sensitivity to Global Factors

The effect of financial development on the sensitivity of asset prices to global financial conditions is estimated

[30]Data are available at www.barclayhedge.com/research/indices/ghs/mum/HF_Money_Under_Management.html.

[31]The fund characteristic dummy is generally time invariant and perfectly colinear with fund-level fixed effects. An exception is fund size: large and small funds are defined as those above the 80th and below the 20th percentiles of AUM, respectively.

[32]As a robustness check, we estimate the model with interaction terms between multiple characteristic variables, and the VIX. Most results are robust, but the sign of the coefficient of closed-end funds changes.

Table 2.4. Sample Economies

		Herding Measure		Flow Regression						Asset Price Regression				Stress Episode Regression[1]					
				EPFR Global Data															
				Fund-Level		Country-Level		BNY Data											
	Background	Bond	Equity	Bond	Equity	Bond	Equity	Bond	Equity	Equity Excess Return	FC Gov. Bond Spreads	LC Gov. Bond Yields	Currency Excess Returns	Thailand	Russia	Brazil	GFC	Europe	Tapering
Argentina	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Bangladesh	x		x																
Brazil	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x
Bulgaria	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x
Chile	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
China	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Colombia	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Croatia	x	x	x	x	x	x	x			x	x		x	x	x	x	x	x	x
Czech Republic	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x
Egypt	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Hungary	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
India	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Indonesia	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Israel	x		x		x	x	x	x	x	x			x	x	x	x	x	x	x
Jordan	x	x	x							x			x	x	x	x	x	x	x
Korea	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Latvia	x	x	x	x	x	x	x			x	x		x	x	x	x	x	x	x
Lebanon														x	x	x	x	x	x
Lithuania	x	x	x	x	x	x	x			x	x		x	x	x	x	x	x	x
Malaysia	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Mexico	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Morocco	x	x	x							x			x	x	x	x	x	x	x
Nigeria	x	x	x							x	x		x	x	x	x	x	x	x
Pakistan	x	x	x	x	x	x	x			x	x		x	x	x	x	x	x	x
Peru	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Philippines	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Poland	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Romania	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x
Russia	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x
Serbia	x	x	x	x	x	x	x			x	x		x						
South Africa	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Sri Lanka	x	x	x	x	x	x	x			x	x		x	x	x	x	x	x	x
Taiwan Province of China	x		x																
Thailand	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x
Turkey	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x
Ukraine	x	x	x							x	x		x	x	x	x	x	x	x
Uruguay	x	x																	
Vietnam	x	x	x	x	x	x	x			x	x		x	x	x	x	x	x	x

Note: BNY = Bank of New York Mellon; FC = foreign currency; GFC = global financial crisis; gov. = government; LC = local currency.

[1]The table shows for each stress episode the largest sample used in the regressions for exchange rates, exchange market pressure index, and equity and bond prices. Specific regressions may have fewer observations due to data availability. Bond price regressions during the Thai, Russian, and Brazilian crises also include Greece.

Table 2.5. Definition of Variables Used in Estimations

Variable	Description	Source
Dependent variables		
Equity excess returns	MSCI equity monthly returns (in U.S. domestic) in excess of the U.S. short-term rate (one-month Eurodollar deposit rate)	Thomson Reuters Datastream
FX sovereign bond spreads	EMBI Global stripped spreads	Thomson Reuters Datastream
LC sovereign bond yields	J.P. Morgan Global Bond Broad Index redemption yields	Thomson Reuters Datastream
Currency excess returns	Monthly exchange rate excess returns on the carry	Thomson Reuters Datastream
Exchange market pressure index	Sum of exchange rate depreciation and reserve outflows (scaled by base money)	Thomson Reuters Datastream, Haver Analytics, IFS, CA
Institutional investor flows	Monthly net portfolio inflows by country and by asset (bond and equity), normalized by recipient economy GDP	BNY, WEO
Mutual funds flows	Monthly net portfolio inflows by country, by fund, and by asset (bond and equity), normalized by fund's AUM. We use both country-level and fund-level data.	EPFR Global
Global factors		
S&P 500 excess returns	S&P 500 monthly returns in excess of the U.S. short-term interest rate	Thomson Reuters Datastream
HY spread	Difference between Moody's yield on seasoned corporate bonds—all industries with BAA rating and the one-month Eurodollar deposit rate	FRB
Term spread	Market yield on U.S. Treasury securities at 10-year constant maturity minus the three-month Treasury bill secondary market rate	FRB
TED spread	Three-month Eurodollar deposit rate minus the three-month Treasury bill rate	FRB
Credit spread	Difference between Moody's yield on seasoned corporate bonds—all industries with AAA rating—and yield of those with BAA rating	FRB
VIX	Chicago Board Options Exchange Market Volatility Index	Thomson Reuters Datastream
FX risk	Monthly average of daily implicit volatilities of continuous call options on euro-dollar, pound sterling–dollar, yen-dollar, and Swiss franc–dollar exchange rates	Thomson Reuters Datastream
Local financial deepening, debt structure, and institutional quality		
Bank assets	Total DMB assets in percent of GDP	World Bank
NBFI assets	Total NBFI assets in percent of GDP	World Bank
Domestic debt	Total outstanding domestic public debt in percent of GDP	World Bank
Stock market capitalization	Total value of all listed shares in a stock market in percent of GDP	World Bank
Stock value traded	Total value of all traded shares in a stock exchange in percent of GDP	World Bank
Bond bid-ask spreads	Monthly average of bid-ask spread in local bond markets	Bloomberg, L.P.
Mutual fund assets	Mutual funds' assets in percent of GDP	World Bank
Insurance assets	Insurance companies' assets in percent of GDP	World Bank
Pension assets	Pension funds' assets in percent of GDP	World Bank
Original sin index	Max. (1–international debt issued in currency of country i divided by international debt issued by country i, 0), following Eichengreen, Hausmann, and Panizza (2005)	BIS
Foreign sovereign holdings	Total public debt (domestic and external) owned by nonresidents	Arslanalp and Tsuda (2014)
Foreign share in LC debt	Domestic local currency public debt owned by nonresidents	J.P. Morgan, ADB, CA
FX external public debt	Total external public debt denominated in dollars, euros, yen, pounds sterling, Swiss francs, or SDRs in percent of GDP	World Bank
Reserves	Official international reserves in percent of the money base	IFS, Haver Analytics
Rule of law	Perception of confidence and adherence to rules of society and laws, according to World Governance Indicators	World Bank
Accounting standards	Strength of auditing and reporting standards, 1–7 (best)	World Economic Forum
Transparency of government	Transparency of government policymaking, 1–7 (best)	World Economic Forum
Local factors		
Dividend yield differential	Difference between the dollar dividend yield implicit to each country's MSCI index and that of the world MSCI index	Thomson Reuters Datastream
Currency returns	Monthly exchange rate logarithmic return	Thomson Reuters Datastream
Interest rate differential	Local short-term interest rate (one month or closest available maturity) in excess of the U.S. short-term interest rate (one-month Eurodollar deposit rate)	Thomson Reuters Datastream
ICRG country risk rating	Index of 22 variables covering political, financial, and economic risks	ICRG
Real interest rate differential	Interest rate differential minus expected inflation differential (from *Consensus Forecasts*)	Thomson Reuters Datastream and *Consensus Forecasts*
GDP growth forecast	Consensus one-year-ahead mean forecast for GDP growth	*Consensus Forecasts*
Inflation forecast	Consensus one-year-ahead mean forecast for consumer price index inflation	*Consensus Forecasts*
Current account forecast	Consensus one-year-ahead mean forecast for the current account as a fraction of forecasted GDP	*Consensus Forecasts*, EIU, IFS, Haver Analytics
Sovereign credit rating	Standard & Poor's foreign currency long-term sovereign debt rating (AAA = 24, SD = 1)	Bloomberg, L.P.
Exchange rate regime	Dummy that takes value 1 for floating exchange rates and zero otherwise	AREAER
Inflation	Average over last four quarters of year-over-year inflation rate consumer prices	IFS, CA
Current account to GDP	Current-account-to-GDP ratio	WEO
Trade linkage with crisis source	Exports to crisis country/total exports. Crisis country is the United States for the global financial crisis and tapering announcement; and to euro area for the European crisis.	Direction of Trade Statistics Database
Financial openness	Foreign assets plus foreign liabilities to GDP ratio	Lane and Milesi-Ferreti (2007, updated)
Returns of LC bonds	Monthly returns of GBI-EM index (in U.S. dollars) in excess of the U.S. short-term rate (one-month Eurodollar deposit rate)	Thomson Reuters Datastream
Returns for other bonds	Monthly returns of EMBI Global index (in U.S. dollars) in excess of the U.S. short-term rate (one-month Eurodollar deposit rate)	Thomson Reuters Datastream
Returns of equities	Monthly returns of MSCI index (in U.S. dollars) in excess of the U.S. short-term rate (one-month Eurodollar deposit rate)	Thomson Reuters Datastream

Note: ADB = Asian Development Bank; AREAER = *Annual Report on Exchange Arrangements and Exchange Restrictions;* AUM = assets under management; BIS = Bank for International Settlements; BNY = Bank of New York Mellon; CA = country authorities; DMB = deposit monetary banks; EIU = Economist Intelligence Unit; EM = emerging markets; FI = financial institution; FRB = Board of Governors of the Federal Reserve System; FX = foreign exchange; HY = high yield; ICRG = *International Country Risk Guide;* IFS = *International Financial Statistics;* LC = local currency; NB = nonbank; SDRs = special drawing rights; WEO = *World Economic Outlook.*

with the following panel regressions. The dependent variable $r_{i,t}$ is either the standard country MSCI equity monthly log return in excess of the one-month U.S. Eurodollar rate, the EMBI Global Bond Index stripped spread, the J.P. Morgan Global Bond Broad Index redemption yield, or the foreign exchange monthly log return in excess of the interest rate differential.

$$r_{i,t} = \alpha_i + \beta_1 Global_t + \beta_2 FinDev_{i,t-1} \times Global_t + \beta_3 FinDev_{i,t-1} + \sum_{k=1}^{K} \delta_{1k} Global\ Control_{k,t} + \sum_{p=1}^{P} \delta_{2p} Local\ Control_{p,i,t} + \varepsilon_{it}. \quad (2.3)$$

- Coefficients for a global risk factor ($Global_t$) and their interaction with a lagged financial deepening variable ($FinDev_{i,t-1}$) show whether financial deepening improves the resilience to global financial shocks. The global risk factor is the VIX for the equity and bond regressions and a foreign-exchange-specific risk factor for the currency return regressions.[33]
- Furthermore, the specification controls for K number of other global financial factors ($Global\ Control_{k,t}$), such as a global market portfolio return (the S&P 500 total return for equities and the high-yield spread for bonds), the TED spread, the credit spread, and the term spread (also interacted with a dummy that signals proximity of U.S. monetary policy rates to the zero lower bound).
- The model also controls for P number of local market and macroeconomic conditions ($Local\ Control_{p,i,t}$) using the one-year-ahead *Consensus Forecasts* for GDP growth, consumer price index inflation, and the balance of the current account; the differential dividend yield (equity only) and short-term interest rates; simple exchange rate returns; the sovereign bond credit rating (bonds only); and a dummy variable for the exchange rate regime (currency excess returns only).[34]
- The main results presented in Table 2.3 and Figure 2.13 do not change when the global risk factor is interacted with each financial development variable as well as with real GDP per capita, local market liquidity, crisis dummies, or various measures of capital account openness (both de facto and de jure).

[33]According to Ranaldo and Söderlind (2010), a foreign exchange risk measure is more informative for currency returns than broader risk measures such as the VIX.

Additional Analyses

Local Macroeconomic Factors and the Sensitivity of Flows and Returns to Global Factors

Compared with global factors, local macroeconomic factors generally play more ambiguous roles for flows and asset prices (Table 2.6). The forecasts of GDP growth, inflation, and the current account are often not statistically significant.[35] Some results are worth mentioning:

[34]The choice of global and local controls follows the literature on the predictability of equity returns (Campbell and Hamao, 1992) and bond spreads (see González-Rozada and Levy Yeyati, 2008). All local conditions and financial development variables are lagged by one month and one year, respectively, to dispel endogeneity concerns.

[35]The literature is mixed regarding the relative roles of push and pull factors (see, for instance, Ghosh and others, 2012, for a survey).

Table 2.6. Local Macroeconomic Factors and Global Financial Shocks—The Effect on Asset Prices and Portfolio Flows
(Estimated coefficients on the interaction terms of the VIX and local macroeconomic variables)

	Equity Excess Returns		FC Bond Spreads		LC Bond Yields		Currency Excess Returns		Bond Country Flows		Equity Country Flows	
	Exp. Sign	Estimate	Exp. Sign	Estimate	Exp. Sign	Estimate	Exp. Sign	Estimate	Exp. Sign	Estimate	Exp. Sign	Estimate
FC External Public Debt	nil	0.001	+	0.007***	+	0.010***	–	0.002	–	–0.012	–	–0.011***
Current Account Surplus	+	0.007**	–	–0.001	–	0.002*	+	0.000	+	0.014***	+	0.000
Reserves/Monetary Base	+	0.016*	–	–0.015***	–	–0.032***	+	–0.003	+	0.004	+	0.002
GDP Growth	+	–0.011	–	–0.020	–	–0.018***	+	–0.023*	+	–0.001	+	0.001
Inflation	–	0.002	+	0.015***	+	0.020***	–	0.001	–	–0.016**	–	–0.020**

Source: IMF staff estimates.

Note: Exp. = expected; FC = foreign currency; FX = foreign exchange; LC = local currency; VIX = Chicago Board Options Exchange Market Volatility Index. The table presents the estimated coefficients on the interaction of the VIX (FX risk for currency excess returns) with the respective macro variables (all forecast). Each dependent variable is regressed on a set of global and local factors. Asset return models additionally include an interaction of the global risk variable with a linear time trend. Estimation periods are May 1995–August 2013 for equities; May 1995–August 2013 for foreign currency sovereign bonds; January 2001–August 2013 for local currency bonds; May 1995–August 2013 for currencies; November 2003–September 2013 for bond flows; and February 1996–October 2013 for equity flows. Each equation is estimated using country fixed effects and Kraay-Driscoll standard errors. *, **, and *** mean significance at the 10, 5, and 1 percent level, respectively. See Table 2.4 for sample economies and Table 2.5 for the definition of variables.

- Comparing the sensitivity to global conditions, local macroeconomic conditions matter more in bond markets, especially local currency bond yields, than in equity or currency markets. Among the macroeconomic factors, inflation seems to be the only factor that matters consistently for all types of flows and asset returns.
- Larger international reserves reduce the impact of global financial shocks on equity as well as on bond returns. However, they have no significant effect on foreign currency excess returns (even after controlling for the exchange rate regime). Although a direct comparison is difficult, the effect of reserves seems smaller than that of most financial deepening variables.

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Compared with studies that find clearer roles for pull factors, our empirical models are less likely to find such effects, because we cover a more recent period, when emerging markets were more integrated with global markets; and because we control for unobservable slow-moving country-specific factors with country fixed effects.

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CHAPTER 3

HOW BIG IS THE IMPLICIT SUBSIDY FOR BANKS CONSIDERED TOO IMPORTANT TO FAIL?

Summary

Government protection for too-important-to-fail (TITF) banks creates a variety of problems: an uneven playing field, excessive risk-taking, and large costs for the public sector. Because creditors of systemically important banks (SIBs) do not bear the full cost of failure, they are willing to provide funding without paying sufficient attention to the banks' risk profiles, thereby encouraging leverage and risk-taking. SIBs thus enjoy a competitive advantage over banks of lesser systemic importance and may engage in riskier activities, increasing systemic risk. Required fiscal outlays to bail out SIBs in the event of distress are often substantial.

The TITF problem has likely intensified in the wake of the financial crisis. When the crisis started in 2007, and especially in the wake of the financial turmoil that followed the collapse of Lehman Brothers in September 2008, governments intervened with large amounts of funds to support distressed banks and safeguard financial stability, leaving little uncertainty about their willingness to bail out failing SIBs. These developments reinforced incentives for banks to grow larger and, together with occasional government support for bank mergers, the banking sector in many countries has, indeed, become more concentrated.

In response, policymakers have launched ambitious financial reforms. They imposed higher capital buffers and strengthened the supervision of global systemically important banks (G-SIBs) to reduce the probability and cost of failure and contagion. They are working on improving domestic and cross-border resolution frameworks for large and complex financial institutions. In some countries, policymakers decided on structural measures to limit certain bank activities.

This chapter assesses how likely these policy efforts are to alleviate the TITF issue by investigating the evolution of funding cost advantages enjoyed by SIBs. The expectation of government support in case of distress represents an implicit public subsidy to those banks.

Subsidies rose across the board during the crisis but have since declined in most countries, as banks repair their balance sheets and financial reforms are put forward. Estimated subsidies remain more elevated in the euro area than in the United States, likely reflecting the different speed of balance sheet repair, as well as differences in the policy response to the problems in the banking sector. All in all, however, the expected probability that SIBs will be bailed out remains high in all regions.

Not all policy measures have been completed or implemented, and there is still scope for further strengthening of reforms. These reforms include enhancing capital requirements for SIBs or imposing a financial stability contribution based on the size of a bank's liabilities. Progress is also needed in facilitating the supervision and resolution of cross-border financial institutions. In these areas, international coordination is critical to avoid new distortions and negative cross-country spillovers, which may have increased due to country-specific policy reforms.

Introduction

> [The too-big-to-fail issue] is not solved and gone; it's still here . . . it's a real problem and needs to be addressed if at all possible. . . . Too-big-to-fail was a major part of the source of the crisis. And we will not have successfully responded to the crisis if we don't address that problem successfully.
>
> *–Ben S. Bernanke, Chairman, Federal Reserve Board, March 20, 2013*[1]

> The expectation that systemically important institutions can privatise gains and socialize losses encourages excessive private sector risk-taking and can be ruinous for public finances. . . . Firms and markets are beginning to adjust to authorities' determination to end too-big-to-fail. However, the problem is not yet solved.
>
> *–Mark Carney, Chairman, Financial Stability Board, October 12, 2013*[2]

One of the most troubling legacies of the global financial crisis is the widely held notion that some banks are simply "too important to fail" (TITF). These banks are known as systemically important banks (SIBs) because of their size, complexity, and systemic interconnectedness.[3] The TITF concept is based on the belief that the failure of SIBs would have such a negative impact on the financial system and the economy as a whole that the government would do whatever it takes to prevent such a failure. And given the often very large social costs of an SIB failure, in many cases such rescues are ex-post desirable, but they tend to entail large transfers from taxpayers (Laeven and Valencia, 2014).

The implicit government protection of these banks distorts prices and resource allocation. Because creditors of SIBs do not bear the full cost of failure, they are willing to provide funding at a lower cost than warranted by the institutions' risk profiles. They also have little incentive to monitor and punish excessive risk-taking. SIBs then may take advantage of the lower funding costs to increase their leverage and engage in riskier activities. Banks may also seek to grow faster and larger than justified by economies of scale and scope to reap the benefits of the implicit funding subsidy granted to TITF institutions (Figure 3.1).

A SIB failure is likely to have large negative externalities, and the expectation of government protection exacerbates such externalities. Claimants to SIBs do not internalize the external effects of a failure on the financial system and the economy as a whole. This implies that risk-taking by SIBs, especially under government protection, can be socially excessive, thus creating a "risk externality" (Kocherlakota, 2010). The size of this externality depends on the size of the implicit funding subsidy given to SIBs, which this chapter quantifies.[4]

Policymakers have long recognized the dangers that SIBs pose to the financial system and to public sector balance sheets. Prior to the global financial crisis, however, policymakers sought to address this problem by relying on "constructive ambiguity" about the willingness of governments to intervene in a crisis. Still, by paying a premium for bonds issued by large banks, investors signaled their belief in some form of government protection in case of distress.

The crisis that erupted in the wake of the Lehman Brothers collapse in September 2008 compelled governments to intervene to maintain confidence in the banking sector and to prevent a collapse of the financial system. Governments provided support to distressed banks in various ways. For example, public transfers were used to recapitalize banks, while asset value guarantees protected balance sheets and supported mergers or takeovers. In some countries, system-wide programs were established for recapitalization, asset purchases, asset guarantees, and debt guarantees (Landier and Ueda, 2009; Stolz and Wedow, 2010).[5] These actions left little uncertainty about the willingness of governments to support failing SIBs.

This chapter was written by Frederic Lambert and Kenichi Ueda (team leaders), Pragyan Deb, Dale Gray, and Pierpaolo Grippa. Research support was provided by Isabella Araujo Ribeiro, Sofiya Avramova, and Oksana Khadarina.

[1]Transcript of press conference held after the March 20, 2013, meeting of the Federal Reserve's Open Market Committee, pp. 9–10, www.federalreserve.gov/monetarypolicy/fomcpresconf20130320.htm.

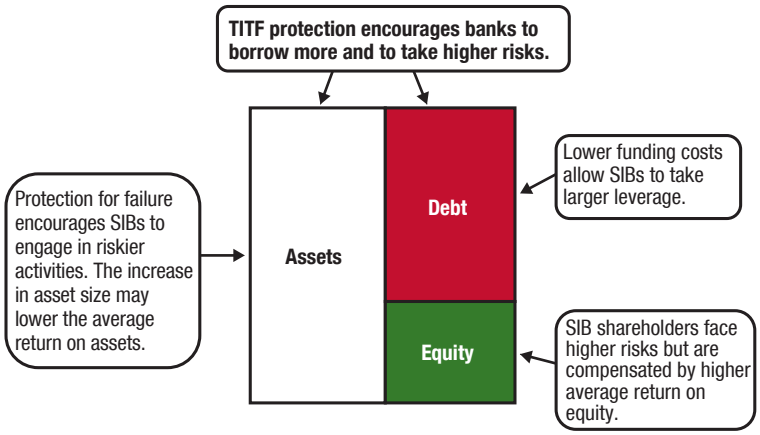
[2]Statement to the International Monetary and Financial Committee, p. 2, www.imf.org/External/AM/2013/imfc/statement/eng/FSB.pdf.

[3]See FSB (2010). This chapter uses the term "too important to fail" instead of "too big to fail" to emphasize that the size of a bank, typically measured by the value of its assets, does not capture other important reasons why its failure might create havoc. Those reasons include its connections with other financial institutions ("interconnectedness"), the difficulty of its resolution ("complexity"), and a lack of substitutes for the services it provides.

[4]The size, interconnectedness, complexity, and nonsubstitutability of SIBs are by themselves sources of externalities in the absence of any government protection, as the risks imposed by SIBs to the economy are not well reflected in the equity or bond prices of those institutions.

[5]In this chapter, central bank actions not targeted to specific banks are not considered to be bailouts.

Figure 3.1. Effects of Too-Important-to-Fail Protection on a Simplified Bank Balance Sheet



Source: IMF staff.
Note: SIB = systematically important bank; TITF = too important to fail.

Thus, countries emerged from the financial crisis with an even bigger problem: many banks were even larger than before and so were the implicit government guarantees. In addition, it became clear that these guarantees were not limited to large institutions. In some countries, smaller institutions with a high degree of interconnectedness, complexity, or political importance were also considered too important to fail, and sometimes they were "too many to fail." In a few cases, including Ireland, governments provided near blanket guarantees to all banks' liabilities, thereby indicating that no failure whatsoever was considered acceptable.

Some market participants dismiss the notion of a funding cost advantage as an exaggeration. It may exist in theory for banks deemed too important to fail, but is very small in practice, they contend, and the advantage has declined anyway as a result of recent regulatory reforms. Any existing differences in funding costs may reflect only genuine differences in risks and returns between large and small banks, this argument asserts.

Other studies that control for the characteristics and risks of banks have shown that funding subsidies have been sizable, especially during 2008–09.[6] However, most of these studies focused on the period up to 2009 or 2010, which preceded recent regulatory initiatives. Given the progress of financial reforms since 2010 (for example, Basel III reforms, the Dodd-Frank Act in the United States, and recent agreements on bank resolution in Europe), implicit TITF subsidies may have declined (Schäfer, Schnabel, and Weder di Mauro, 2013).

Identifying the evolution of TITF subsidies following recent policy reforms is the main objective of this chapter. The chapter focuses on the effects of government support measures and financial reforms to address the TITF issue, including higher capital requirements for SIBs, enhanced supervision, the development of recovery and resolution frameworks, and restrictions on bank size and activities. The chapter examines SIBs active at the global level (G-SIBs) as identified annually by the Financial Stability Board (FSB, 2013b), plus the three largest banks by asset size in each country studied (if these are not G-SIBs), subject to data availability. While the TITF problem is not limited to banks, this chapter does not examine systemically important nonbank financial firms, such as insurance corporations or central counterparty clearing houses (CCPs), because of limited data availability.

The results in this chapter show a divergence in the evolution of TITF subsidies across countries. In all

[6]See Ueda and Weder di Mauro (2013); Gray and Jobst (2013); Tsesmelidakis and Merton (2012); and Jacewitz and Pogach (2012).

advanced economies outside of Europe, subsidies have dropped from their crisis peaks but remain higher than before the crisis. According to one estimate, implicit subsidies rose again in 2012 in Europe, possibly reflecting the market turmoil around the sovereign debt crisis. The subsidies, however, had declined by late 2013. In the United States, subsidies fell much earlier, at the time of the discussion and passage of the Dodd-Frank Act, and have not increased substantially since then. Still, in the United States, the expected value of government guarantees for a distressed SIB appears higher than its precrisis level.

The estimated subsidies are large. In terms of the funding cost advantage in 2013, these subsidies are at least 15 or so basis points in the United States, 25–60 basis points in Japan, 20–60 basis points in the United Kingdom, and 60–90 basis points in the euro area. In dollar terms, if applied to banks' total liabilities (net of equity), the implicit subsidies given just to G-SIBs in 2011–12 represent around $15–$70 billion in the United States, $25–$110 billion in Japan, $20–$110 billion in the United Kingdom, and up to $90–$300 billion in the euro area.

Additional efforts are therefore necessary to deal with the TITF issue and move toward a situation in which the funding cost advantage associated with TITF no longer exists. Besides full implementation of Basel III, international coordination on both regulation and resolution regimes should be enhanced. Moreover, additional capital buffers, loss provisioning, or bank levies may be required to lower the probability that the TITF institutions become distressed and to reduce the burden on taxpayers.

Is the Too-Important-to-Fail Problem Growing?

In many countries, the value of assets in the banking sector relative to GDP has grown dramatically since 2000, while the number of banks has dropped (Figure 3.2). These trends are found in the euro area, Japan, the United Kingdom, and the United States as well as in several emerging market economies, including India and Russia. The growth in the value of assets has been particularly dramatic for the banks that are now at the top of the Financial Stability Board list of G-SIBs (Figure 3.3). As a consequence, concentration in the banking sector has increased in many countries, though less strikingly. The assets of the largest three banks represent at least 40 percent of total banking assets in the main advanced and emerging market economies (Figure 3.4). In Canada, France, and Spain, the share exceeds 60 percent.

The high degree of concentration carries with it a high degree of potential systemic risk. The distress or failure of one of the top three banks in a country, for example, could destabilize that country's entire financial system, in part because its activities may not easily be replaced by other institutions, because it is likely to be highly interconnected with other banks, and because of the potential effect of the failure on confidence in the whole financial system.

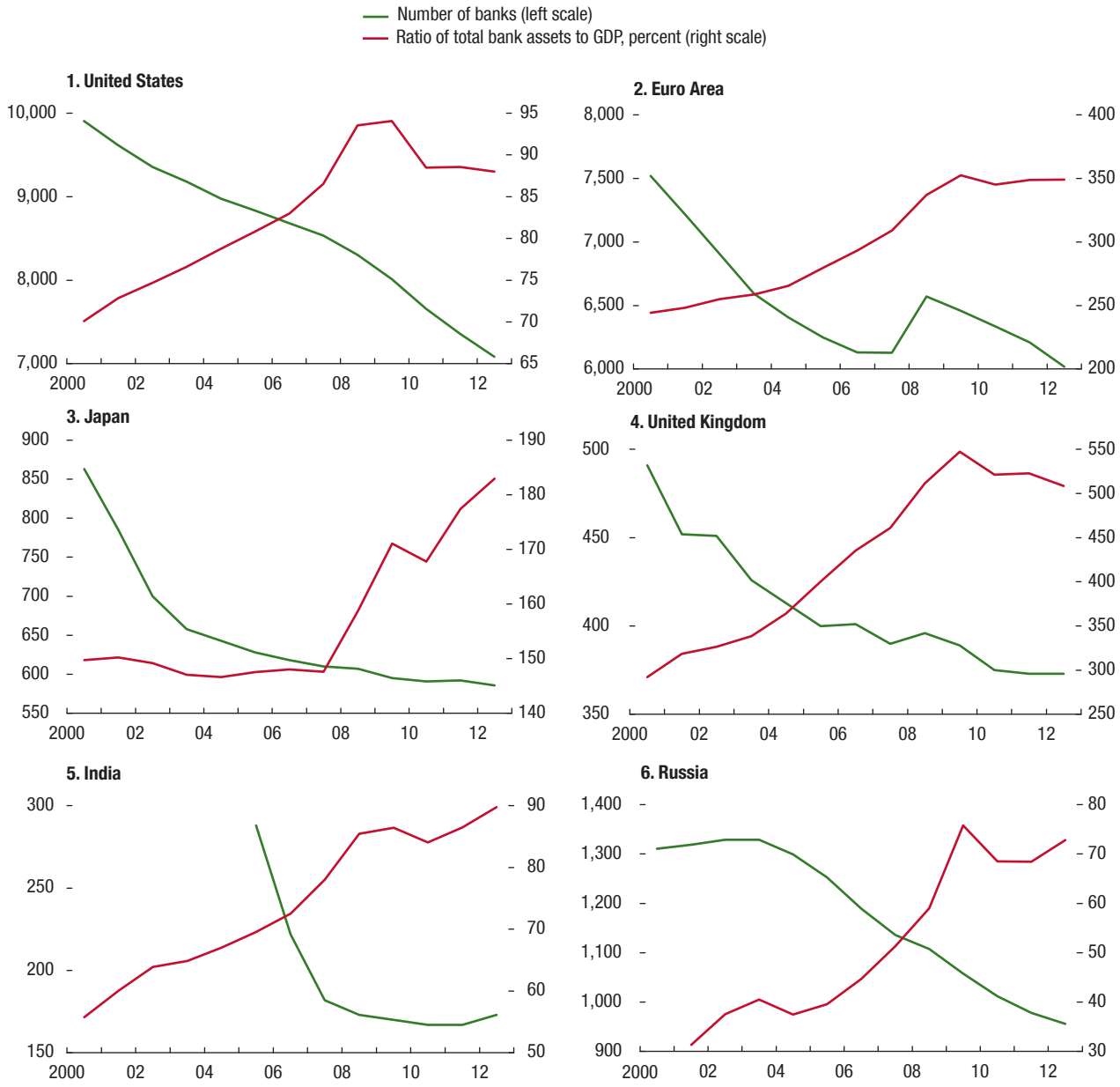
Governments and central banks often encouraged consolidation in the banking industry in an attempt to fight the financial crisis. In 2008, the U.S. government and Federal Reserve directly or indirectly supported three significant acquisitions: the purchases by JPMorgan Chase of investment bank and brokerage firm Bear Stearns and of Washington Mutual Bank, then the largest U.S. savings and loan association, and the purchase by Wells Fargo of Wachovia, then the fourth-largest U.S. bank holding company. In Japan, government measures in the aftermath of the banking crisis of the late 1990s coincided with a reduction by nearly one-fourth in the number of banks between 2000 and 2003 and the creation of three large banking groups. In some other countries (for example, members of the Gulf Cooperation Council), large banks have historically been created in part through public ownership.

Banks have become more interconnected with other financial institutions through an increasingly complex set of relationships, although the trend may have recently reversed. Box 3.1 depicts a complex and densely connected global banking network. Cross-border exposures are a source of difficulties in resolving institutions that engage in such international activities. These linkages have, however, declined since 2007, which may reflect banks' strategies to lower cross-border exposures amid the crisis and subsequent regulatory reforms.

Estimating Subsidy Values

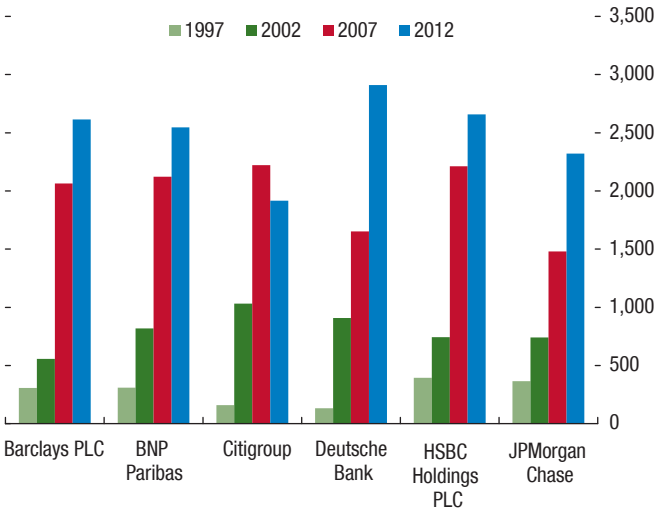
The growth in the size, concentration, and interconnectedness of banks over the past decade potentially exacerbated the problems related to TITF financial institutions. However, as described in the next section, recent regulatory reforms may have eased the problem. This section assesses how the magnitude of the TITF problem has changed since the crisis and following the introduction of financial reforms. The focus is on SIBs, which are defined

Figure 3.2. Changes in the Number of Banks and the Size of the Banking Sector



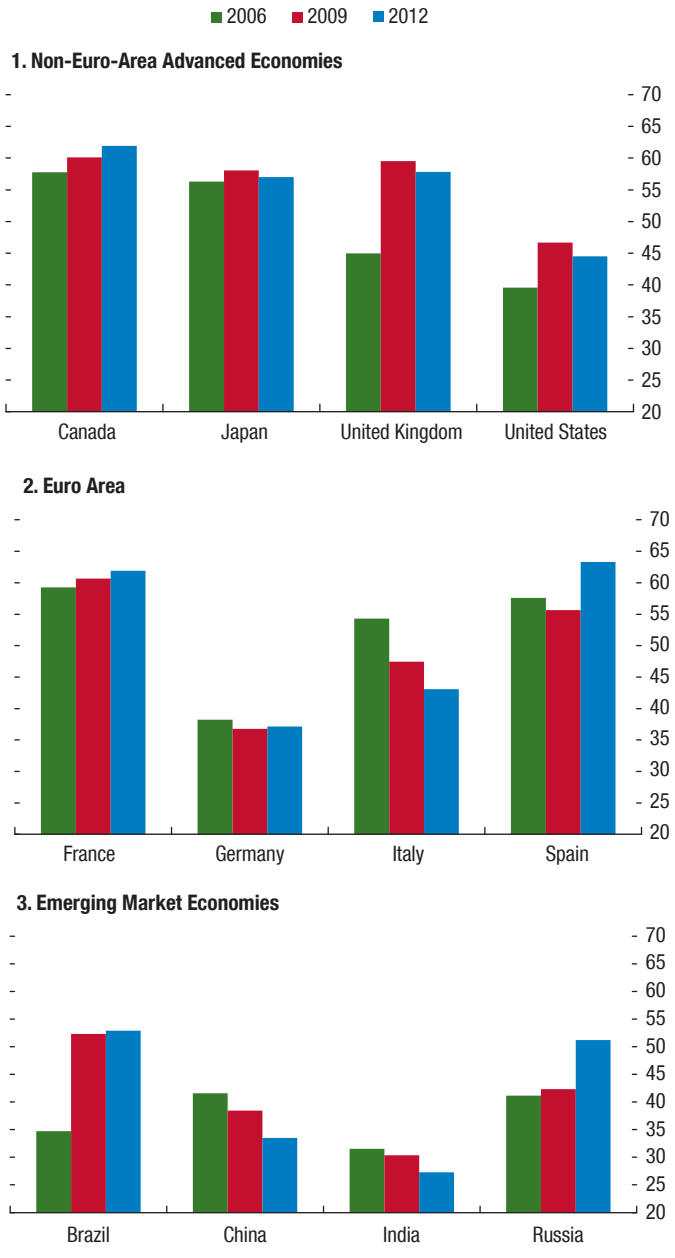
Sources: Bank of England; Bank of Japan; Bank of Russia; CEIC database; Deposit Insurance Corporation of Japan (DICJ); European Central Bank; Reserve Bank of India; U.S. Federal Deposit Insurance Corporation (FDIC); and IMF staff estimates.
Note: Number of banks refers to the following: for the United States, number of FDIC-insured commercial banks and savings institutions; for the euro area, the United Kingdom, and Russia, number of credit institutions; for Japan, number of DICJ-insured banks; and for India, number of commercial banks. The jump in the number of credit institutions in the euro area in 2008 corresponds to a change in the population of included banks in one member country.

Figure 3.3. Total Assets of Large Banks[1]
(Billions of U.S. dollars)



Sources: IMF, International Financial Statistics database; Moody's CreditEdge; and IMF staff estimates.
[1]Top global systemically important banks as of November 2013 (FSB, 2013b).

Figure 3.4. Concentration in the Banking Sector
(Assets of the three largest banks as a share of total banking assets; percent)



Sources: Bankscope; Bank of Japan; Bank of Russia; Canadian Office of the Superintendent of Financial Institutions; Central Bank of Brazil; China Banking Regulatory Commission; CEIC database; European Central Bank; Reserve Bank of India; U.S. Federal Deposit Insurance Corporation; and IMF staff estimates.
Note: For euro area countries, "total banking assets" refers to total assets of the monetary financial institutions, excluding the Eurosystem.

here as the G-SIBs identified by the FSB (2013b) plus the three largest banks by asset size in each country if these are not G-SIBs, subject to data availability (see Table 3.4 in Annex 3.1 for a list of SIBs in the sample).[7]

The section compares three separate approaches to assessing the implicit funding subsidy to SIBs: (1) a bond spread differential; (2) a contingent claims analysis (CCA) approach; and (3) a ratings-based approach. The first approach is often used by banks but is less reliable and can even be misleading, especially if the sample of banks is not carefully selected. While the other two approaches are not perfect, they deliver a more precise measure of the implicit subsidy to SIBs. The combination of these latter two approaches provides a consistent and robust picture of the changes in the implicit subsidy since 2005.

Bond Spread Differential

The first method simply compares bond yields of SIBs with those of other banks (hereafter, non-SIBs). This straightforward measure of the funding-cost advantage of SIBs can be computed as the difference between the spread over the London interbank offered rate (LIBOR)

[7]A proper identification of domestic systemically important banks (D-SIBs) would require detailed data not only on size but also on interconnectedness, complexity, and substitutability, which are not publicly available.

Box 3.1. Cross-Border Banking Linkages

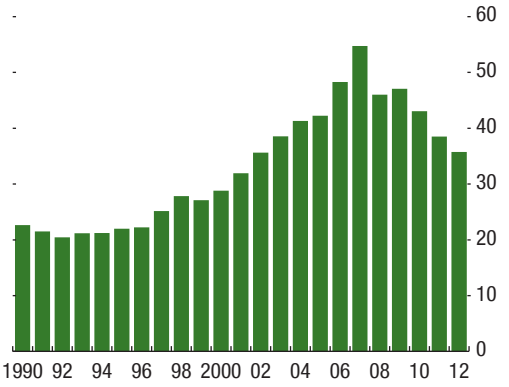
This box reviews the evolution of cross-border banking linkages in recent decades, highlighting the complexity of the global network of financial connections and the role of different countries in the network. It also discusses the benefits of global interconnectedness and the potential for cross-border spillovers.

Following a long-term upward trend and a steep downward adjustment during the global financial crisis, cross-border banking linkages remain significant. Cross-border banking claims, measured by Bank for International Settlements (BIS) locational banking statistics, have increased sharply since the mid-1990s, reaching more than half of global GDP in 2007 (Figure 3.1.1).[1] This phenomenon was spurred by widespread deregulation of banking activities, capital account liberalization, and financial innovation. The trend toward greater financial integration was reversed in the wake of the global financial crisis, however. The crisis triggered a process of bank deleveraging and restructuring and led to a gradual reduction in cross-border banking claims to about one-third of global GDP by 2012.

The authors of this box are Eugenio Cerutti and Camelia Minoiu.

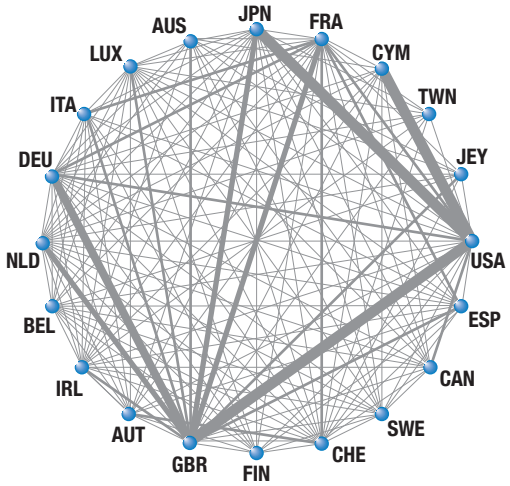
[1]The analysis is based on BIS locational banking statistics by residence, which capture the activities of all international active offices in the reporting country regardless of the nationality of the parent bank. Banks record their positions on an unconsolidated basis, including those vis-à-vis their own offices in other countries.

Figure 3.1.1. Cross-Border Banking Linkages
(Percent of GDP)



Sources: Bank for International Settlements; IMF, World Economic Outlook database; and IMF staff estimates.

Figure 3.1.2. Global Banking Network: Core Countries



Sources: IMF staff estimates using Bank for International Settlements (BIS) locational banking statistics; and Cerutti and others (2014).
Note: The figure depicts the network of cross-border banking claims in 2012 for core countries (these are the 20 BIS-reporting countries with the highest stock of bilateral claims). Link width is proportional to the size of claims. AUS = Australia; AUT = Austria; BEL = Belgium; CAN = Canada; CHE = Switzerland; CYM = Cayman Islands; DEU = Germany; ESP = Spain; FIN = Finland; FRA = France; GBR = United Kingdom; IRL = Ireland; ITA = Italy; JEY = Jersey; JPN = Japan; LUX = Luxembourg; NLD = Netherlands; SWE = Sweden; TWN = Taiwan Province of China; USA = United States.

The global banking network generating these claims is very complex, with "core" banking systems playing a central role. A small number of banking systems (which we label "core") hold the vast majority of cross-border banking claims (about 95 percent in 2012).[2] The banking activity underlying these claims is often accounted for by a few systematically important financial institutions that manage their global operations out of these jurisdictions. Seventeen of the 20 core countries we consider have recently been classified as jurisdictions with systemically important financial systems (IMF, 2013). As shown in Figure 3.1.2, the core banking systems are highly interconnected. While there is much heterogeneity in the size of claims—captured by the width of cross-country links—some of the most sizable banking activity occurs between the United States and the Cayman Islands, Japan, and United Kingdom.

[2]The core countries represent a subset of 20 BIS-reporting countries with the largest cross-border banking claims in 2012.

Box 3.1 *(continued)*

Cross-border banking linkages to non-core countries are relatively small, but they are large relative to the size of these economies (Cerutti and Ohnsorge, 2013).

A densely connected global banking network facilitates risk sharing but also opens the door to contagion and cross-border spillovers. Risk sharing is an important feature of densely interconnected financial networks, in that the losses of a distressed bank (or banking system) are borne by a large number of creditors. This means that the impact of negative shocks can more easily be absorbed in a denser network (Allen and Gale, 2000). But there are also costs associated with high financial interconnectedness. For example, Hale, Minoiu, and Kapan (2013) document the importance of interbank linkages as conduits for the spread of financial crises internationally. Recent studies stress that network characteristics play a critical role in how contagion and spillovers unfold when negative shocks hit the system. So long as they are not very large, negative shocks to well-connected networks are not very destabilizing. However, beyond a certain point, a dense web of connections can serve as a mechanism for shock propagation and cross-border spillovers (Acemoglu, Ozdaglar, and Tahbaz-Salehi, 2013).

in the same currency for SIB bonds and the spread for non-SIB bonds.[8] To control for country-specific factors (such as the level of interest rates), we calculate the average spread differentials at the country level. Country aggregates represent the simple average of the country estimates (Figure 3.5). This approach does not account for possible differences in fundamental characteristics between institutions that may drive the spread differential, such as their relative risk characteristics.

The results from this method suggest that, on average over 2003–13, the funding cost advantage of SIBs was about 25 basis points in advanced economies and about 125 basis points in emerging market economies. The funding cost advantage rose markedly during the crisis, peaking at around 250 basis points at the beginning of 2009. This peak was primarily driven by emerging market economies, where large portfolio outflows in late 2008 and early 2009 led to a surge in corporate bond spreads, whereas the spreads for SIBs (often state-owned banks) were relatively less affected. Among the advanced economies, the funding cost advantage since the crisis has been declining in the United States, and to a lesser extent in Japan, while it has significantly risen in Europe. Notably, it is negative in the United States during most of the past 10 years, which often leads to a claim that the TITF subsidy is negligible or even negative (Goldman Sachs, 2013).

However, this simple spread comparison is misleading in three broad ways. First, it ignores the possibility of genuine economies of scale and scope: if being large implies higher returns with less risk, large banks should naturally enjoy lower funding costs (Box 3.2). Second, it ignores moral hazard, which may increase bond spreads of SIBs.[9] And third, it may reflect differences in the characteristics of bonds issued by SIBs and non-SIBs.[10] In particular, as Figure 3.6 shows, SIBs tend to issue longer maturity bonds, and this difference in maturity increased during the crisis. Also, SIBs generally have higher leverage compared to non-SIBs. Controlling for the leverage difference by restricting the sample of non-SIBs in the United States to banks with a leverage ratio similar to that of SIBs reveals that SIBs did enjoy a funding advantage (Figure 3.7).[11]

[8]Comparing spreads over LIBOR at a similar time horizon allows for controlling for maturity differences between bonds, assuming that the term premium structure is the same for LIBOR and bank bond rates. An alternative is to look at credit default swap (CDS) spreads, which are theoretically the same as bond spreads over the risk-free rate. However, active and liquid CDS markets exist only for the largest banks in advanced economies.

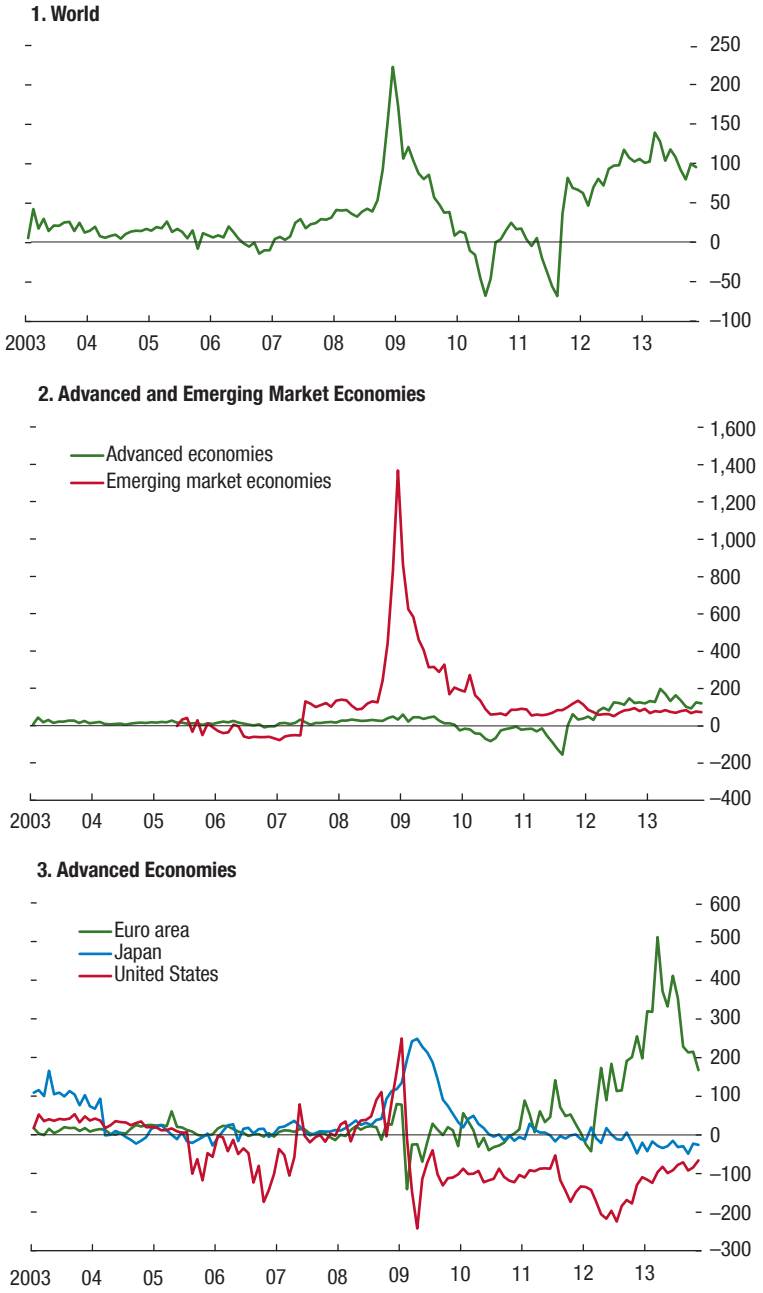
[9]Counting on the government's intervention in case of distress, SIBs may take on more risk than optimal even compared to other banks with similar balance sheets. Hence, while the expectation of government support lowers the expected loss given default of bond holders, the probability of default itself may increase and offset part of the reduction in the overall risk. As a result, the total effect on observed bond spreads or spreads on credit default swaps would understate the benefits of the government protection.

[10]Bond characteristics can be different: SIBs usually issue various types of bonds with different maturities, coupon rates, options to retirement, and degrees of market liquidity. SIB bonds are more frequently issued and enjoy greater liquidity (Kroszner, 2013). Although comparing bond spreads rather than bond yields should limit any bias resulting from bond maturity differences, differences in liquidity are not accounted for.

[11]The control group includes non-SIBs with a leverage ratio within one standard deviation of SIBs. Because in general only large banks issue bonds, non-SIBs in this sample are still quite large. Acharya, Anginer, and Warburton (2013) provide an estimate of the implicit subsidy based on bond spread differentials after controlling for bank and bond characteristics along with macroeconomic factors. They estimate that, in the U.S. bond market, SIBs enjoy funding cost advantages of 28 basis points, on average, over 1990–2010, peaking at more than 120 basis points in 2009.

Figure 3.5. Bond Spread Differential between Systemically Important Banks and Other Banks

(Basis points)



Sources: Moody's CreditEdge; and IMF staff estimates.
Note: The lines represent the funding cost advantage of systemically important banks (SIBs) relative to other banks. SIBs = systemically important banks, defined as G-SIBs plus the three largest banks by asset size in each country.

Box 3.2. Benefits and Risks of Large Banks

This box summarizes the main benefits and problems associated with large banks, some of which may be magnified by the too-important-to-fail (TITF) issue.

Larger financial institutions may bring some benefits as they may generate genuine economies of scale and scope. For instance, large banks can benefit from diversifying their investments across many sectors and geographical regions. Setting up an information technology system that handles mass transactions is a typical fixed cost that generates increasing returns to scale. An extensive ATM and branch network strengthens a bank's competitiveness vis-à-vis rival banks. Underwriting a large bond issue requires a global network of client investors.

Recent studies provide some evidence of economies of scale and scope in banking, with caveats. Wheelock and Wilson (2012) find increasing returns to scale for most U.S. banks over 1984–2006. This suggests that economies of scale might at least partially account for the growth in the average size of banks over that period. Yet, some of these economies of scale may be driven by TITF subsidies (Davies and Tracey, 2014). Following a different approach, Hughes and Mester (2013) still find sizable economies of scale, aside from the TITF subsidy. According to their estimates, the increase in cost following a 10 percent increase in output incurred by a bank with total assets above $100 billion is about 20 percent lower than for the average bank in the United States. However, their assumption that all banks have production and cost functions of the same form might be too strong. The business models of large global banks and other banks are, indeed, quite different (Calomiris and Nissim, 2012).

Limits on bank activities have been shown to reduce competitive pressures and potentially to increase banks' monopolistic rents. This, for example, has been the case for the limits on branch banking imposed in the United States until the 1990s, with a resulting adverse effect on economic growth (Strahan, 2003). Similarly, empirical studies have provided some evidence that emerging market economies can increase production efficiency by removing restrictions on banking activities, entry, or pricing (Abiad, Oomes, and Ueda, 2008).

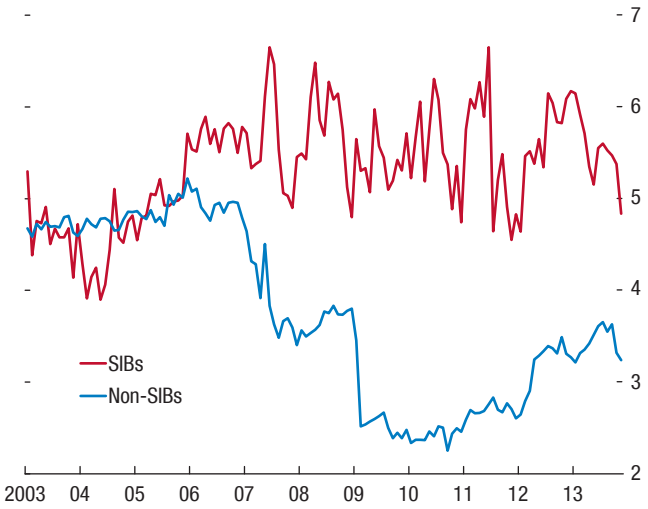
However, a review of the literature on the effects of bank mergers and acquisitions on operating performance or shareholder value finds mixed results (Piloff and Santomero, 1998). Hughes and others (2003) find that internal growth generally leads to better performance than external acquisitions. Besides, banks with less entrenched management tend to benefit more from acquisitions than banks with more entrenched managers.

In terms of risks, although an increase in bank size may allow for greater diversification, the existing evidence of the risks of large banks compared to smaller ones is mixed. While Demsetz and Strahan (1997) find that both leverage ratios and the share of risky assets in banks' portfolios increase with size, Soussa (2000) argues that large U.K. banks do not take on more risk than small ones. By contrast, Dell'Ariccia, Laeven, and Suarez (2013) examine U.S. bank-loan-level data and find that bigger banks take on more risks. Other studies have found that more interconnected institutions had a higher likelihood of distress during the global financial crisis than others (Ötker-Robe and others, 2011).

To the extent that managers and employees also benefit from the TITF protection, labor markets may also be distorted. Because of the structure of compensation packages in the financial industry, particularly the use of stock options, managers and employees of large banks typically benefit as shareholders from lower funding costs and higher profitability. Because of the expectation of government support, existing compensation schemes may thus excessively reward short-term profitability and risk-taking. By offering artificially higher wages, large banks may also attract disproportionately more highly skilled people (Philippon and Reshef, 2012).

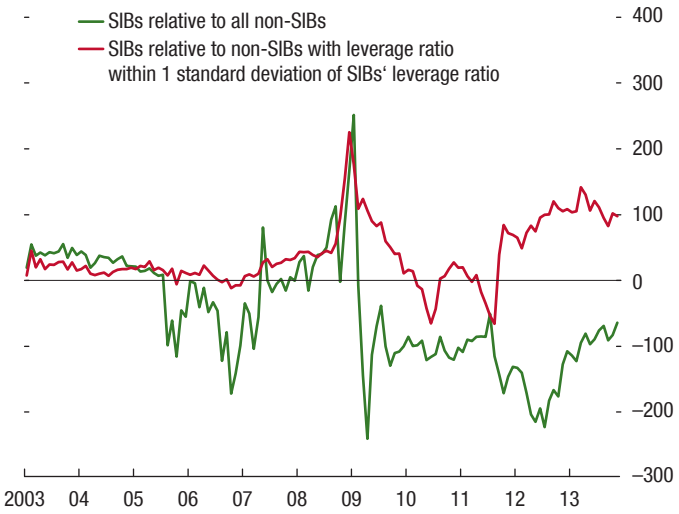
The authors of this box are Frederic Lambert and Kenichi Ueda.

Figure 3.6. U.S. Banks' Average Bond Duration
(Years)



Sources: Moody's CreditEdge; and IMF staff estimates.
Note: SIBs = systemically important banks, defined as G-SIBs plus the three largest banks by asset size.

Figure 3.7. Bond Spread Differential for U.S. Banks with Similar Leverage
(Basis points)



Sources: Moody's CreditEdge; and IMF staff estimates.
Note: The lines represent the funding cost advantage of SIBs relative to non-SIBs. SIBs = systemically important banks, defined as G-SIBs plus the three largest banks by asset size.

Contingent Claims Analysis Approach

The CCA approach to estimating TITF subsidies uses data on the price paid, known as the spread, for credit default swaps (CDS) on bank bonds. It compares observed CDS spreads with fair-value CDS spreads calculated from equity price information (see Annex 3.1). Observed CDS spreads take into account both the probability of bank distress and the likelihood and size of government support in case of distress.[12] Assuming that equity holders are wiped out in the event of default, equity prices contain information only on the probability of distress. The equity price information permits the calculation of a hypothetical "equity-market-implied" (fair-value) CDS spread, which disregards the possibility of government support.[13] A larger expected loss implies a larger fair-value CDS spread. The difference between the observed and fair-value spreads provides a measure of the value of the government guarantee.[14]

By construction, this estimate of the TITF subsidy is not contaminated by other factors, such as the general size advantage of SIBs. This is because these factors should be incorporated in both the observed CDS spreads and the fair-value CDS spreads. However, a limitation of this approach is its reliance on observed CDS spreads and assumptions for estimating fair-value CDS spreads. Liquid and reliable CDS spreads are available only from 2005 onward and only for the largest banks, which limits the sample size.[15] CDS prices often incorporate an illiquidity premium

[12]Investors often use CDS spreads as an indicator of the probability of distress of firms. This is because in normal times the loss given distress is assumed to be fixed, so that any change in CDS spreads is attributed to a change in the probability of distress. However, CDS spreads theoretically depend on both the probability of distress and the loss given distress.

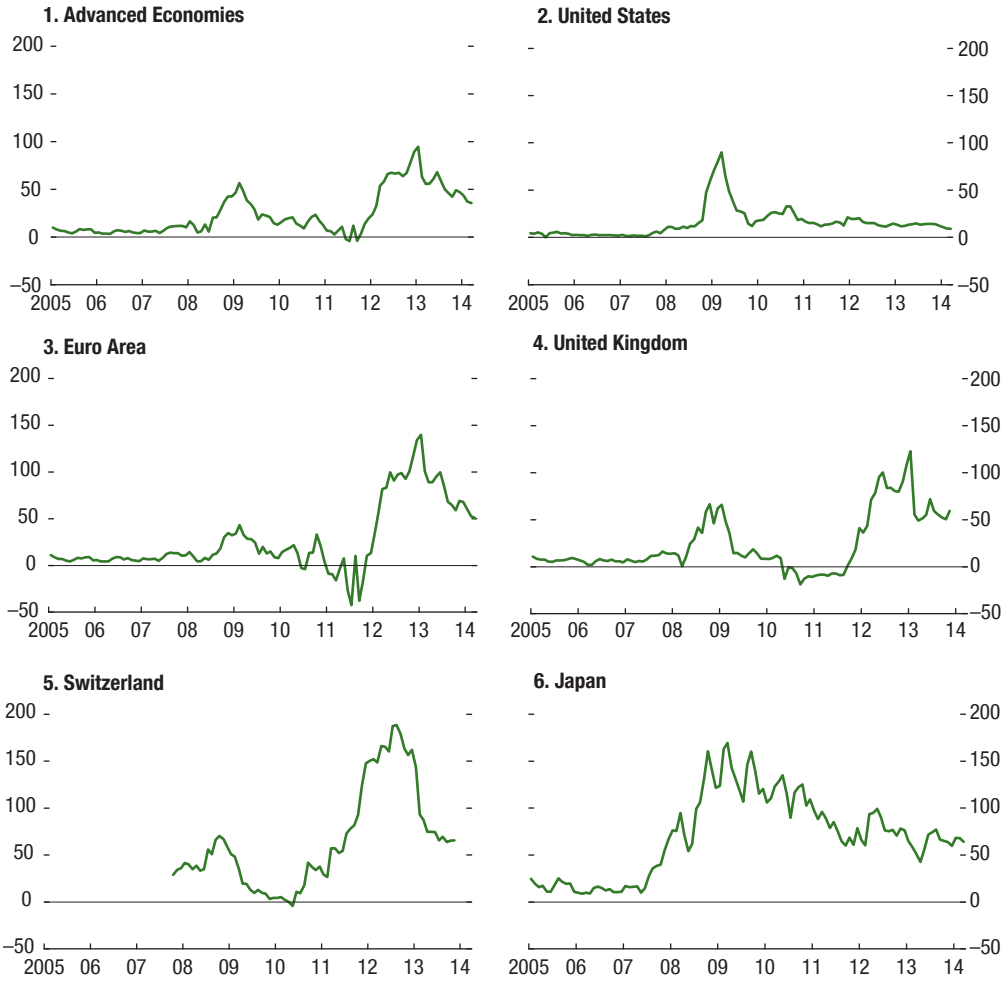
[13]The lower funding costs resulting from the expectation of government support likely imply higher profits in good times, which may raise equity prices (Kelly, Lustig, and van Nieuwerburgh, 2011). The CCA approach may thus underestimate the true subsidy value.

[14]See Gray and Malone (2012); Gray and Jobst (2013); Li, Qu, and Zhang (2011); and Schweikhard and Tsesmelidakis (2012).

[15]In times of crisis, the assumptions required to implement the CCA approach may be violated. Also, the CDS spread may not be efficiently priced. While the extent of such violations is difficult to measure empirically, the approach pursued here attempts to take the effect of sovereign stress into account at least partially by restricting the sample to banks with fair-value CDS spreads that are higher than the sovereign CDS spreads. The implicit assumption is that the sovereign CDS spreads de facto serve as a floor for the individual bank CDS spreads, and when the sovereign spread exceeds the estimated fair-value CDS spread, the banks' CDS spreads may not be indicative of TITF support. See Box 3.4 for more details on the bank-sovereign linkages.

Figure 3.8. Mean Implicit Subsidy for Systemically Important Banks Estimated with the Contingent Claims Analysis Approach

(Basis points)



Sources: Markit; Moody's CreditEdge; and IMF staff estimates.
Note: Systemically important banks are defined as G-SIBs plus the three largest banks by asset size in each country.

and a counterparty credit risk premium that may affect the results (Bao and Pan, 2013). Besides, during acute stress episodes, assumptions about the distress threshold and loss given distress may be violated. Finally, the method may provide only a lower bound for the subsidy estimates if equity holders may also be partially bailed out.[16]

[16]The probability of distress is computed assuming no bailout of equity holders. However, equity holders were bailed out to some extent during the crisis, such as through the Troubled Asset Relief Program (TARP) in the United States and the recapitalization of Lloyds Banking Group and Royal Bank of Scotland by the U.K. government.

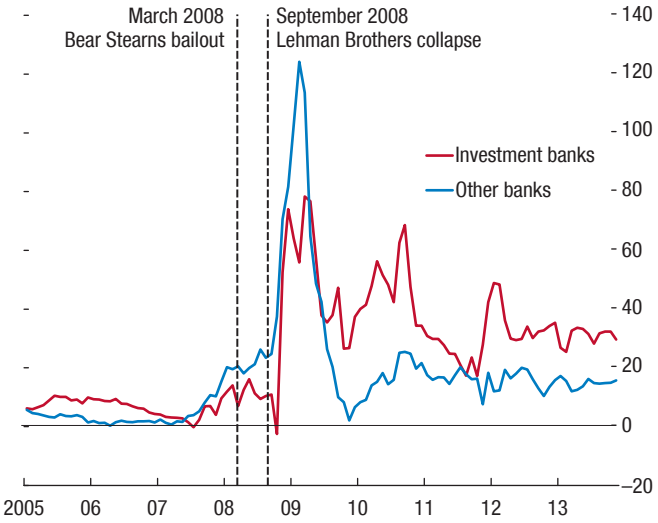
The CCA approach estimates suggest that in the advanced economies, implicit subsidies for SIBs averaged around 30 basis points over the past nine years. The subsidies increased during the financial crisis, climbing to around 60 basis points in 2009, before declining somewhat (Figure 3.8). The spike in estimated subsidies in 2009 can be explained by heightened expectations of public bailouts following the disruptions provoked by the collapse of Lehman Brothers in mid-September 2008, although the severe market turmoil at that time might also have impeded efficient pricing of CDS. The subsidies have grown again over the past few years with the rise of European sovereign stress.

After the global financial crisis subsided, subsidies declined in the United States and Japan but rose in Europe during the sovereign debt crisis. In the United States, implicit subsidies dropped sharply from their 2009 peak to around 15 basis points. In Japan, the implicit subsidies also declined from their crisis peaks but remain relatively high at around 60 basis points.

By contrast, in Europe, the subsidies climbed markedly after an initial drop following the 2007–08 phase of the crisis. They have averaged around 90 basis points since 2012. The results for the European countries likely reflect the severe market turmoil around the sovereign debt crisis in the euro area in 2011–12, rather than a failure of the regulatory initiatives to solve the TITF problem. In particular, in Switzerland and the United Kingdom, the implicit subsidy was at its lowest level during the design period of financial reforms (November 2009–October 2010 in Switzerland, and January 2010–September 2011 in the United Kingdom). In the euro area, regulatory initiatives are still ongoing (as discussed in the next section).

The implicit subsidies received by investment banks and other banks exhibit broadly similar patterns, with a few interesting differences. Figure 3.9 compares the subsidy estimates by type of bank in the United States. The implicit subsidy value received by investment banks rose after the bailout of Bear Stearns in March 2008, before dropping to zero in the month following the Lehman Brothers collapse. The increased subsidy value observed after 2009 may reflect the transformation of investment banks into traditional bank holding companies regulated by the Federal Reserve, while the heightened volatility after 2012 could result from the higher exposure of investment banks to euro area countries and their riskier profiles compared to other banks.

Figure 3.9. Implicit Subsidy by Type of Bank in the United States
(Basis points)



Sources: Markit; Moody's CreditEdge; and IMF staff estimates.
Note: Estimated with the contingent claim analysis approach. Investment banks comprise Morgan Stanley and Goldman Sachs.

Ratings-Based Approach

The ratings-based approach exploits the fact that credit rating agencies typically provide a breakdown of the overall credit rating for each bank. The breakdown shows the fundamental standalone rating and an assessment of the government's (or parent company's) willingness to provide support.[17] The estimation is carried out in two steps. First, the different ratings are used to estimate the overall rating uplift related to government support ratings while taking into account banks' fundamental factors and the government's capacity to support banks.[18] Second, the rating uplift is translated into a funding cost spread based on the historical relationship between credit ratings and bond spreads.[19] A potential drawback is that, since the agencies' assessment method is based on a statistical analysis of past bailout episodes (Moody's Investor Service, 2013), the ratings are often slow to reflect changes in financial policies.[20] This may explain the stability of the agencies' assessments of government support for the most recent period. Moreover, divergent views among credit rating agencies have recently emerged. For example,

[17]Fitch Ratings discloses both its assessment of support and whether it comes from the government or the parent company.

[18]See Annex 3.2 and Ueda and Weder di Mauro (2013).

[19]Long panel datasets are used to estimate the historical relationship so as to smooth out the short-run fluctuations in risk sentiment and to alleviate the bias due to moral hazard (Box 3.3). The method thus yields an estimate of the long-run average value of TITF subsidies. This means that it does not take into account possible changes over time in the relationship between credit ratings and bond spreads.

[20]Credit rating agencies have faced heavy criticism in the aftermath of the crisis for producing inaccurate and even "catastrophically misleading" assessments (Casey, 2009). However, what matters for purposes here is that markets use ratings in pricing debt instruments and that these ratings affect bond spreads on average over many years. Resti and Sironi (2005) provide evidence of a strongly significant relationship between corporate bond spreads and credit ratings.

Moody's markedly lowered the support component in its overall ratings of SIBs in November 2013.

The results based on this method suggest that although implicit subsidies have declined from their peaks during the financial crisis, they remain high (Figure 3.10).[21] In line with the previous results, the ratings-based method finds that subsidies for U.S. SIBs have fallen to somewhat above their precrisis levels—to around 15 basis points. Moreover, subsidy estimates remain much higher than before the crisis for euro area banks. However, the ratings-based subsidies for U.K., Japanese, and Swiss banks are close to their precrisis levels, whereas the estimates in the CCA approach were much higher. This difference is likely due to the slow ratings adjustment mentioned earlier and the fact that long-run and support ratings are not much affected by short-run market turmoil; such turmoil may impede the efficient pricing of CDS and equity, the key elements used in the CCA approach.

The subsidy estimates are driven by both the probability that the SIBs become distressed and expectations regarding the size of a government bailout in the case of distress (Box 3.3). In most countries, the subsidy estimates have declined from their 2009 peaks as various policy reforms have been implemented and banks have become healthier. Yet, subsidy estimates remain much higher in the euro area than in the United States, likely reflecting the different speed of banks' balance sheet repairs, as well as perceived differences in policy frameworks for dealing with the TITF issue. In particular, while the expectation of a bailout in case of distress may be difficult to change, the probability of distress can be significantly lowered with better regulation and supervision, more capital and better fundamentals, and stronger fiscal positions of sovereigns. The ratings-based approach can disentangle the two effects.

The value of government support for a SIB already in distress has declined since 2010 but remains, on average, not far below its precrisis level, with a subsidy of around 60 basis points. The ratings-based approach is used to estimate SIBs' implied subsidy values conditional on the bank being distressed, that is, with a rating just below investment grade (Figure 3.11).[22] It shows almost unchanged expectations about the likelihood of government rescuing a distressed SIB. This further suggests that recent reforms in recovery and resolution plans, aimed at reducing potential bailout costs for a (hypothetical) SIB already in distress, may not yet be viewed as effective, or that the announcements to eschew bailouts are not considered to be credible. This seems to be especially the case for the United States, where the bailout expectations appear still higher than before the crisis. This is in contrast to the euro area, where they have slightly fallen. The difference, however, mainly stems from an increase in the bailout expectations for U.S. investment banks.

Summary

The results of the CCA and ratings-based approaches provide a broadly consistent picture. The TITF subsidies have declined from their crisis peaks but remain substantial, especially in Europe. Table 3.1 summarizes the advantages and shortcomings of the two estimation approaches, along with their results.

The dollar values of the implicit subsidies are sizable. The subsidy values in billions of dollars can be calculated for G-SIBs in a few countries using the funding cost advantage from the CCA and ratings-based methods (Figure 3.12).[23] Because of the methodological differences between the two approaches, the range of estimates is quite large and argues for caution when discussing these numbers. The subsidy values obtained from the CCA approach over 2011–12 are found to be around $50 billion for the United States and Switzerland, around $110 billion for Japan and the United Kingdom, and above $300 billion for the euro area. Using the ratings-based approach, in the United States, the subsidies represent around $15 billion for G-SIBs when using the historical relationship between rating

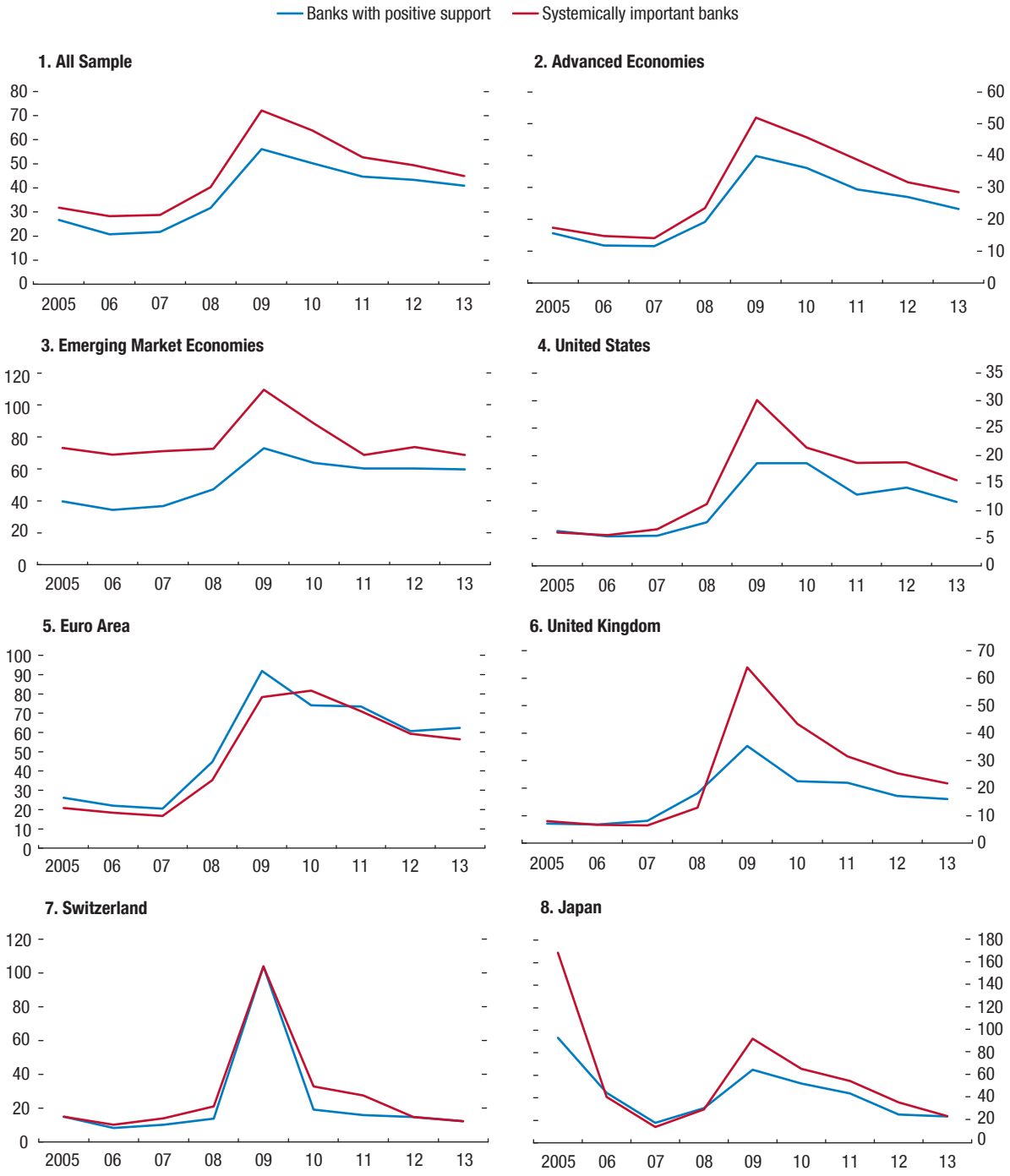
[21]Figures 3.10 and 3.11 are derived from the most conservative estimate for the subsidy value among several possible econometric specifications. See Annex 3.2 for a detailed explanation of the estimation methodology. The majority of banks are not expected by rating agencies to receive support from the government. For those banks, the ratings-based approach implies an implicit subsidy of zero.

[22]The phrase "just below investment grade" corresponds to the "C/D" assessment in the individual ratings by Fitch (roughly equivalent to "BB" on the overall rating scale), which was, for example, the rating given to Bank of America and Citigroup at the end of 2009 after a few upgrades from the trough after the collapse of Lehman Brothers.

[23]The CCA approach allows for a direct computation of the subsidy value in dollars (see Annex 3.1). The calculation is made at the level of each bank and then summed up for all G-SIBs. For the ratings-based approach, the subsidy values in dollars are computed by multiplying the funding cost advantage in basis points by the sum of total liabilities (net of equity) of G-SIBs in each country, depending on the availability of balance sheet information.

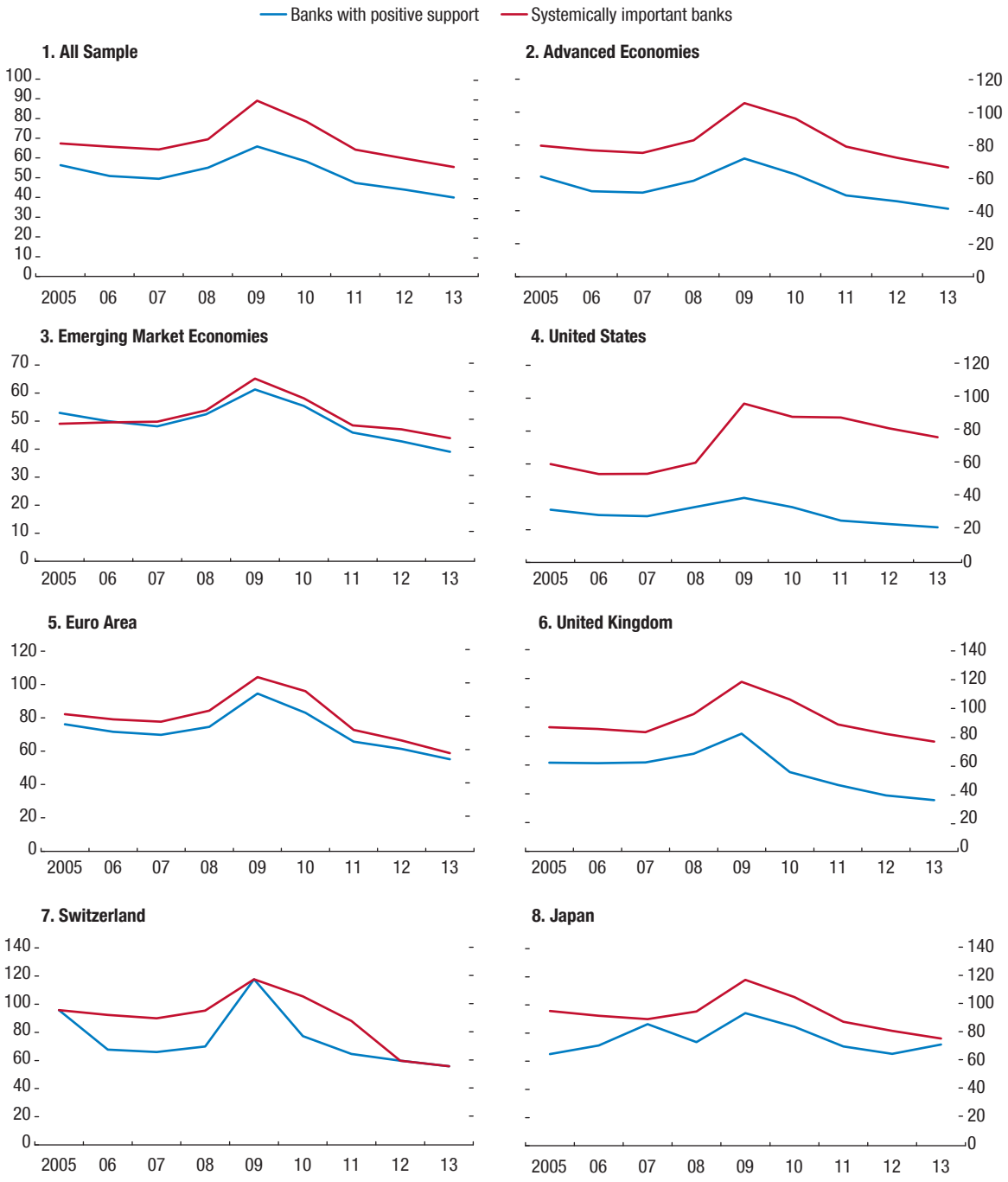
Figure 3.10. Average Subsidies Derived from Credit Ratings

(Basis points)



Sources: Bankscope; Fitch Research; and IMF staff estimates.
Note: The estimate of the rating uplift is based on all of the sample using rating information only. Systemically important banks are defined as G-SIBs plus the three largest banks by asset size in each country.

Figure 3.11. Subsidies Derived from Credit Ratings for a Bank Just Below Investment Grade
(Basis points)



Sources: Bankscope; Fitch Research; and IMF staff estimates.
Note: The estimate of the rating uplift is based on all of the sample using rating information only. Systemically important banks are defined as G-SIBs plus the three largest banks by asset size in each country. The data represent the value of government protection in case of distress.

Box 3.3. Estimating Implicit Too-Important-to-Fail Subsidies

This box compares the contingent claims analysis (CCA) and the ratings-based approaches for estimating too-important-to-fail (TITF) subsidies. In particular, it shows how the analyses differ in their treatment of the moral hazard issue, which is at the heart of the TITF problem.

Distressed systemically important banks are expected to be bailed out by the government with some probability. This probability is denoted by p in Figure 3.13 in the main text. It increases with the government's willingness to support distressed banks, which is denoted by x. Moreover, the loss incurred by the debt holders in the event of support S can be much smaller than the full loss L in the absence of support, depending on the terms of the bailout. The expected loss given distress $E(LGD)$ is theoretically equal to the lower loss given distress multiplied by the probability of a bailout, plus the loss in the absence of a bailout multiplied by the probability of no bailout, that is:

$$E(LGD) = p(x)\ S + (1–p(x))\ L. \quad (3.3.1)$$

This expected loss given distress decreases with the government's willingness to support distressed banks.

The expected loss for debt holders depends not only on the expected loss given distress but also on the probability that a bank becomes distressed. It is the expected loss given distress $E(LGD)$ multiplied by the probability of distress q, that is, $q \times E(LGD)$. This corresponds to the credit spread, which is theoretically equal to the observed CDS spread:

$$\text{Credit spread} = q \times (p(x)\ S + (1 - p(x))\ L). \quad (3.3.2)$$

In the CCA approach, the fair-value credit spread, assuming no government support (S=L), is calculated from the equity price movements under specific assumptions about the default threshold and the full loss L.

The authors of this box are Frederic Lambert and Kenichi Ueda.

Both the CCA and the ratings-based approaches implicitly or explicitly control for the current fundamental characteristics of banks, such as profitability and indebtedness. These characteristics are denoted by F. The credit spread can then be written as $q(x|F) \times E(LGD)$, with the distress probability q depending on the government's willingness to support x given the bank's fundamentals F. Note that the bank's fundamentals are themselves a function of x in addition to economies of scale and scope y, and other factors z: $F(x, y, z)$. The willingness of the government to support distressed banks may influence fundamentals because, for example, protected banks can enjoy some monopolistic rents. This effect, however, is unlikely to be well captured in any estimation approaches, which therefore likely underestimate the true value of the subsidies.

The issue of moral hazard further complicates the estimation of the TITF subsidy. Because of expected government support, systematically important banks may be inclined to take on more risk. While a government's greater willingness x to bail out lowers the expected loss given distress $E(LGD)$, it may at the same time increase the probability of distress q, even with the same fundamentals. Therefore, the observed bond spread is not an accurate measure of the benefit of the protection. The CCA approach can eliminate the moral hazard bias by using credit default swap and equity price data for the same bank, except in the case when moral hazard makes the tail of the distribution of returns fatter (as was the case for some structured products whose losses became especially large during the crisis). This issue is minimized in the ratings-based approach. The effect of government support on overall risk (captured by the overall rating) is estimated while controlling for fundamentals that absorb the effect of moral hazard. Any remaining effect of moral hazard is further controlled for by delinking each bank's rating from its bond spread and instead using long-run panel estimates of the rating-spread relation.

Table 3.1. Summary of the Estimates of Implicit Subsidies

Estimation Method	Advantages	Shortcomings	Average Subsidy Value for SIBs (in 2013)
Contingent claims analysis approach			
Difference between the fair-value CDS spread computed from equity prices and the observed CDS spread	Controls for bank characteristics Controls for economies of scale and scope	CDS data available only for a limited number of banks CDS data may not be reliable during market turmoil Assumes equity holders are not bailed out	Euro area: Around 90 basis points Japan: Around 60 basis points United Kingdom: Around 60 basis points United States: Around 15 basis points
Ratings-based approach			
Estimation of rating uplift from government support, which is translated into a credit spread based on the historical relationship between credit ratings and bond spreads	Controls for bank characteristics Controls for economies of scale and scope Effect of moral hazard is limited	Relies on credit ratings Ratings are slow to adjust[1]	Euro area: Around 60 basis points (60 basis points for a distressed SIB) Japan: Around 25 basis points (75 basis points for a distressed SIB) United Kingdom: Around 20 basis points (75 basis points for a distressed SIB) United States: Around 15 basis points (75 basis points for a distressed SIB)

Source: IMF staff.
Note: CDS = credit default swap; SIBs = systemically important banks, defined as G-SIBs plus the three largest banks by asset size in each country. Basis points estimates are for a one-year period.
[1]See Chapter 3 of the October 2010 *Global Financial Stability Report,* "The Uses and Abuses of Sovereign Credit Ratings."

uplifts and funding costs. However, using more recent estimates of this relationship (Acharya, Anginer, and Warburton, 2013), the value of protection increases to $70 billion. Subsidy values lie between $25 and $45 billion in Japan, $20 and $60 billion in the United Kingdom, and $5 and $20 billion in Switzerland.[24] For the euro area banks, the estimated subsidy values are higher, around $90 to $100 billion. These estimates are broadly consistent with other results found in the literature (for example, Noss and Sowerbutts (2012) for the United Kingdom, and Tsesmelidakis and Merton (2012) for the United States). Notably, in all the jurisdictions considered, with the exception of Switzerland, the protection values in 2011–12 are equal to or higher than the expected protection values before the crisis.

[24]The changes in value over time mostly follow the changes in the estimates of the funding cost advantage but also reflect the increases and decreases in the size of the balance sheets of G-SIBs. These dollar values likely underestimate the true TITF subsidy values for at least two reasons. First, the estimates do not account for the large off-balance-sheet assets and liabilities of G-SIBs. Second, TITF institutions go beyond G-SIBs or the three largest banks in many countries. Conversely, including deposits in the liabilities may overestimate the subsidy value as deposits are covered by deposit insurance, and they account for about half of the liabilities of G-SIBs. Yet it has been shown that large banks also benefit from a funding cost advantage on deposits, especially uninsured ones (Jacewitz and Pogach, 2012).

The Effects of Specific Reforms

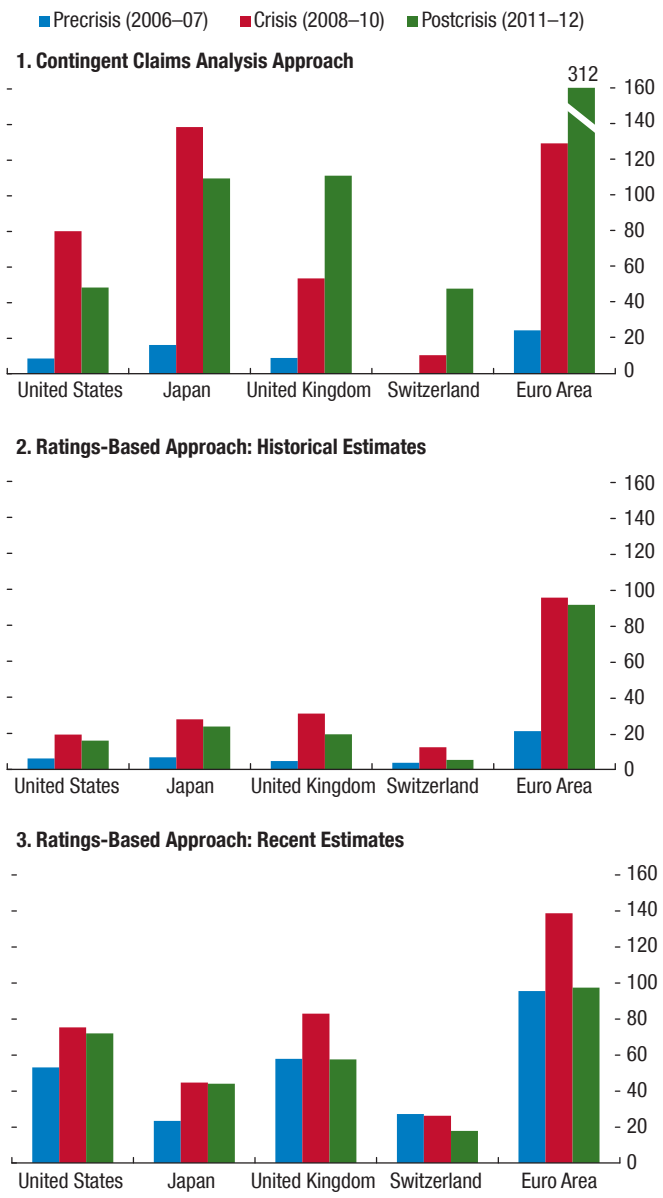
The effectiveness of specific policy measures can be evaluated by investigating the market reaction around the dates of key policy announcements.[25] We use CDS spreads and equity returns to gauge the market reaction to various policy initiatives in the euro area, Switzerland, the United Kingdom, and the United States. In this exercise, the sample is limited to G-SIBs, as these are more likely to be affected by regulatory initiatives than the top three domestic banks in each jurisdiction. However, this limits the size of the cross-sectional sample, particularly in the case of Switzerland, which has only two G-SIBs.

As expected, early proposals and initial announcements of reform initiatives usually have a larger market impact than the final approval and implementation of the initiatives (Table 3.2). This outcome is to be expected because markets already incorporate the likely impact of the reforms before they are actually implemented.

The announcement of the Volcker Rule seems to have affected G-SIBs in all jurisdictions considered.

[25]This section largely follows Schäfer, Schnabel, and Weder di Mauro (2013) but considers a few additional, more recent, events. See also the event study in IMF (2010), which covers the key crisis events. In particular, the purchase of Bear Stearns by JPMorgan Chase protected creditors but (almost) wiped out shareholders. That day, financial sector equity prices abnormally fell but CDS spreads did not. Bank CDS spreads went up on the day of the Lehman Brothers' collapse.

Figure 3.12. Implicit Subsidy Values for Global Systemically Important Banks
(Billions of U.S. dollars)



Sources: Bankscope; Fitch Research; Markit; and IMF staff estimates.
Note: The estimate of the implicit subsidy value for Switzerland in the contingent claims analysis approach for the precrisis period is not available. Historical estimates for the ratings-based approaches use the relationship between ratings and bond spreads estimates by Soussa (2000) for each rating over the period 1920–99. Recent estimates rely on average ratings-bond spreads' relationship estimates for all banks by Acharya and others (2013) over 1990–2010.

G-SIBs in all the jurisdictions under consideration are active in the U.S. market. Their CDS spreads significantly increased, indicating that the perception of government support declined. At the same time, equity returns fell, implying that the announcement was seen as negative for SIBs' profitability. The European Union bail-in requirements decreased CDS spreads in the euro area and, to a lesser extent, in the United Kingdom.[26]

Country-specific results show that the main reform initiatives had an effect on markets. In the United States, the presentation of the reform bill by President Obama led to a significant increase in CDS spreads, as it reduced the expectation of government support to G-SIBs. Conversely, the new leverage ratio requirements significantly reduced CDS spreads, as they are expected to lower G-SIBs' probability of distress. In the United Kingdom, the release of the Vickers proposal had a significant positive effect on CDS spreads. In the euro area, the European Commission's proposal for a Deposit Guarantee and Recovery and Resolution Directive had a significant positive impact on G-SIBs' equity returns, but the Single Resolution Mechanism did not. However, the Eurogroup's approval of the European Financial Stability Facility's assistance (subsequently taken over by the European Stability Mechanism) for recapitalizing Spanish banks reduced the equity value of G-SIBs in the euro area, likely because the envisaged scheme (indirect recapitalization through the Spanish government and not directly by a European institution) was not viewed as breaking the bank-sovereign link. Finally, in Switzerland, the most significant event was the release of the report and recommendations of the "too-big-to-fail commission."

Policy Discussion

As noted at the outset of this chapter in the quotes from Federal Reserve Chairman Ben Bernanke and Financial Stability Board Chairman Mark Carney, the too-important-to-fail issue "is not solved and gone." Although progress is under way—especially in the United States—the subsidy estimates suggest that the TITF issue is still very much alive. TITF subsidies remain substantial in Europe, even if they have declined from their peaks. Moreover, the TITF subsidy appears to be widespread: other large banks that are not classified as SIBs are not much different from SIBs

[26]The interpretation of this result is complicated. A bail-in requirement by itself may imply an increase in CDS spreads, as it implies higher losses for creditors affected by the bail-in than under full government bailouts. However, creditors have also more incentives to scrutinize issuers and to monitor their activities, and this would reduce moral hazard. This, in turn, should lower the CDS spread.

Box 3.4. Banks and Sovereign Linkages

This box discusses the linkages between the banking sector and the sovereign and the effects banking crises may have on governments' fiscal positions.

Large distressed financial institutions can destabilize the government's fiscal position and increase sovereign risk. The potential for large financial institutions to seriously affect a government's financial position should be a factor in the design of policies to deal with the too-important-to-fail (TITF) issue.

Several channels of two-way risk transmission exist between financial institutions and sovereigns. Transmission of financial sector risk to sovereigns can arise from financial support to distressed systematically important financial institutions (SIFIs) through (1) debt guarantees, (2) direct capital injections, and/or (3) asset purchases or asset guarantees. Channels of transmission of sovereign risk to the financial sector include (1) higher sovereign risk that can lower the market value of banks' sovereign debt holdings; (2) higher sovereign borrowing costs that can increase banks' funding costs; and (3) in cases of high sovereign risk, the deterioration of perceived sovereign creditworthiness that can reduce the government's ability to provide a credible backstop to large SIFIs.[1]

The perception that sovereigns may need to bail out large financial institutions via debt guarantees or capital injections can lead to increases in sovereign spreads. The activation of debt guarantees directly raises fiscal costs, which in extreme situations can lead to a sovereign debt crisis, as occurred recently in Ireland (Gray, Merton, and Bodie, 2008). Indeed, in serious situations the financial institution may be "too big to save." Destabilization spirals can occur when the value of banks' holdings of government debt declines, worsening banks' financial positions; this, in turn, increases government contingent liabilities to banks, thus worsening the government's creditworthiness with further negative feedbacks to financial institutions (Gray and Malone, 2012; Gray and others, 2013).

These multiple channels of two-way risk transmission from financial institutions to sovereigns have important implications for measures to target the TITF problem. The potential for large financial institutions to seriously affect a government's financial position should be a factor in the design of policies to deal with the TITF issue (see Box 3.5). It also points to the need to analyze, including in stress-testing exercises, the possibility of distressed financial institutions adversely affecting sovereign risk and the government's fiscal situation, and the risk of triggering a "destabilizing spiral." The transmission channels further reinforce the need to adopt a comprehensive approach to the design of TITF policies, macroprudential policies, and current methods to compute capital requirements. For example, the current prudential practice of zero risk-weights for all government debt masks the potential build-up of bank-sovereign risk.

The author of this box is Dale Gray.

[1]See the April 2010 *Global Financial Stability Report* (GFSR); and Caruana and Avdjiev (2012).

in terms of the subsidies they receive. The presence of an implicit subsidy for the other banks suggests that they may also be considered TITF.

Policy Options

Policymakers have essentially four options in addressing the TITF issue: (1) restrict bank size and activities to prevent institutions from becoming too important to fail, (2) reduce the probability that a SIB becomes distressed, (3) lower the probability of a bailout if a bank becomes distressed, and (4) minimize public transfers in the case of bank restructuring.[27] Each of these policies corresponds to a node in the event tree depicted in Figure 3.13: first, a bank may or may not be classified as systemically important; second, if systemically important, it may or may not become distressed; third, if distressed, it may or may not obtain public support; and fourth, in the case of public support, losses incurred by claimants may be reduced in various proportions. Table 3.3 provides a summary of the various policy measures that are discussed in more detail below.

Policies to restrict the size and scope of banks can reduce interconnectedness and complexity and limit the number of SIBs. As discussed in Viñals and others (2013), such policies can be useful in managing risks that are difficult to measure and address through other tools. Activities that are too complex for their risk to be accurately measured and too complex to be effectively resolved may require outright separation.

[27]See similar discussions in Ötker-Robe and others (2011).

Table 3.2. Event Study

Events	Date	Abnormal Returns		
		CDS Spreads (Basis points)	Equity Returns (Percent)	
		Constant Mean	Constant Mean	Market Model
United States				
Blueprint of the reform bill presented by President Obama	June 17, 2009	36.36**	–0.0286***	–0.0241***
Announcement of the Volcker Rule	Jan. 21, 2010	12.53***	–0.0366***	–0.0307**
U.S. banks set to lose lobby fight on swaps	June 11, 2010	25.24***	0.0078	–0.0011
Dodd-Frank Act signed by President Obama	July 21, 2010	–2.28	–0.0182	–0.0033
New leverage ratio requirement adopted	July 9, 2013	–10.38***	0.0062	–0.0022
United Kingdom				
Announcement of the Volcker Rule in the United States	Jan. 21, 2010	10.98***	–0.0478**	–0.0379**
Appointment of the Vickers Commission	June 16, 2010	–8.26**	0.0082	0.0014
Barclays warns to leave the U.K. in case of a bank break-up	Aug. 5, 2010	–7.08**	–0.0140	–0.0042
Publication of the Vickers Report	Sep. 12, 2011	30.30***	–0.0686***	–0.0271*
E.U. statutory bail-in requirement	Aug. 1, 2013	–7.14*	0.0338*	0.0246
Euro Area				
Announcement of the Volcker Rule in the United States	Jan. 21, 2010	12.10***	–0.0258***	–0.0230***
Commission Proposal for Bank Recovery and Resolution Directive	June 6, 2012	–4.73*	–0.0205***	–0.0123***
Commission Proposal for Deposit Guarantee Scheme	July 12, 2012	11.25**	0.0425***	0.0234***
Eurogroup's approval for Spanish bank recapitalization	July 20, 2012	2.65	–0.0440***	–0.0438***
Commission Proposal for Single Resolution Mechanism	July 10, 2013	–0.42	–0.0038	–0.0034
E.U. statutory bail-in requirement	Aug. 1, 2013	–15.29***	0.0309**	0.0318**
Switzerland				
Appointment of the "too-big-to-fail commission"	Nov. 4, 2009	1.17	0.0392	0.0184
Announcement of the Volcker Rule in the United States	Jan. 21, 2010	11.10*	–0.0119**	–0.0087**
Press conference on preliminary too-big-to-fail report	Apr. 22, 2010	23.69	–0.0301	–0.0152
Press conference presenting final report on too-big-to-fail	Oct. 4, 2010	–6.85*	0.0305*	0.0190*
E.U. statutory bail-in requirement	Aug. 1, 2013	–2.63	0.0286*	0.0224

Source: IMF staff estimates.

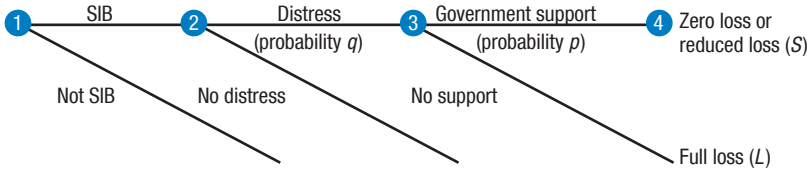
Note: ***, **, * = statistically significant at the 1, 5, and 10 percent levels. The event date is defined as the day of the policy event or the closest date in case the announcement was made on a date for which market data are not available. CDS spreads and abnormal returns in the constant mean model are estimated based on a two-week window prior to the event. The market model is estimated on a six-month sample period before the event. Since G-SIBs generally make up a large share of overall stock indices, a nonfinancial index or an industrial index is used (when the nonfinancial index is not available). Note that the estimates from the market model should be considered as a lower bound of the effects of the policy announcements as policy initiatives likely have some impact on nonfinancial corporates through the credit channel. CDS = credit default swap; E.U. = European Union; G-SIB = global systemically important bank.

However, measures to limit the size and scope of banks also entail costs. First, the empirical evidence supports (albeit weakly) the existence of economies of scale and scope in the banking industry (see Box 3.2). Market liquidity, efficiency, and risk management capacity are likely to decline when banks' activities are curtailed. Second, restrictions on the activities of banks may create monopolistic rents with an adverse effect on economic growth. Furthermore, the implementation of restrictions on bank size and scope poses substantial policy challenges. In particular, risks may migrate to less regulated activities. Finally, the fact that many smaller banks were bailed out during the recent crisis suggests that size restrictions are not a panacea.

Strengthening the resilience of SIBs remains a key strategy to enhance financial stability, and it has been central to international policy initiatives to tackle the TITF problem. The Basel III reform package increased the quantity and quality of capital as well as the liquidity of banks, thereby making them more solid. In addition, the systemically important financial institutions (SIFIs) framework introduced additional capital requirements for SIBs, with a surcharge for G-SIBs that ranges from 1 percent to 3.5 percent of risk-weighted assets, depending on their degree of systemic importance. Several countries, including Singapore and Switzerland, have adopted tougher capital requirements, and the United States has announced a more stringent leverage ratio for large banks. The initiatives on the regulatory side are complemented by efforts to enhance the effectiveness and intensity of supervision of SIBs (Box 3.5).

Completely excluding the possibility of government support for SIBs may be neither credible nor always socially desirable. Despite all efforts to limit the number of SIBs and to prevent them from becoming

Figure 3.13. Event Tree of Government Policies to Deal with Systemically Important Banks



Source: IMF staff.
Note: SIB = systemically important bank.

Table 3.3. Summary of Policy Measures

Policy Measure (at key nodes in Figure 3.13)	Expected Effects	Risks/Issues
Structural measures: size or activity restrictions (node 1)	– Prevents banks from becoming too important to fail. – Facilitates an orderly resolution, hence reduces the probability of bailout and thereby the implicit subsidy.	– May reduce genuine economies of scale and scope and imply efficiency losses. – Difficult to assess the "right" size. – Risk of regulatory arbitrage. – Risks can migrate to less regulated activities.
Increase loss-absorption capacity (node 2)	– Reduces the probability of distress. – Reduces incentives to become systemically important. – Reduces the implicit subsidy.	– Risk of regulatory arbitrage. – Risks can migrate to less regulated activities (shadow banking). – Difficult to calibrate the required capital buffers.
Enhance supervision of systemically important banks (node 2)	– Reduces the probability of distress.	– Limited effect on the implicit subsidy. – Does not solve the too-important-to-fail issue.
Enhance transparency and disclosure requirements (node 3)	– Reduces unnecessary bailouts, as everyone can better assess the soundness of a bank and the systemic implications of its failure.	– Limited effect on the implicit subsidy.
Increase bail-in powers (node 4)	– Facilitates resolution. – Reduces the cost of bailout if one is needed. – Offsets part or all of the implicit subsidy.	– Needs to be accompanied by progress on transparency and information-sharing. – Risk of uncoordinated national initiatives.
Bank contribution to resolution funds (node 4)	– Offsets part or all of the implicit subsidy. – If well designed (for example, a progressive levy), reduces banks' incentives to become systemically important. – Having such funds available increases the willingness of authorities to engage in resolution, in turn, reducing the likelihood of bailout.	– Regulatory arbitrage in the absence of international coordination. – Needs a levy high enough to fully offset the subsidy.

Source: IMF staff.

distressed, governments cannot prepare for all scenarios. In some cases, allowing a SIB to fail in disorderly fashion could impose large costs on its customers, other banks, and the economy in general. Moreover, in some circumstances, a public recapitalization of SIBs may be an effective way to alleviate the problem of debt overhang, as weak banks may not lend to profitable projects.[28] For such reasons, governments will have trouble convincing creditors of SIBs, ex ante, that they will not be bailed out in case of failure.[29]

Policies focusing on improving disclosure and transparency requirements of banks can help to reduce the probability of government support. Better information mitigates uncertainties about the quality of banks' assets during crises. The recent crisis showed that when they lack precise information about which banks are

[28]See Myers (1977) and Chapter 2 of the October 2013 GFSR.

[29]This is known in the academic literature as the "time-inconsistency" problem, which refers to the fact that promises, even in the form of legislation, can be reversed in the future when they become inconvenient (Stern and Feldman, 2004; and Chari and Kehoe, 2013).

Box 3.5. Recent Policy Initiatives Addressing the Too-Important-to-Fail Issue

This box summarizes the recent policy initiatives taken by governments to address the too-important-to-fail issue.

Global initiatives to address the too-important-to-fail issue have been coordinated by the Financial Stability Board (FSB, 2010). The overarching policy framework for global systematically important financial institutions (G-SIFIs) is organized along four pillars: (1) identification, (2) higher loss absorbency capacity, (3) more intense supervision, and (4) improved resolvability. While some of these policies are well advanced—for example, the identification of global systemically important banks (G-SIBs) and related capital surcharges—others are progressing at a slower pace. In particular, the slow implementation of resolution frameworks in line with the FSB's *Key Attributes of Effective Resolution Regimes* reflects legal and operational complexities and challenges. Similar frameworks are being designed for domestic systematically important banks (D-SIBs).

To lower the probability that a G-SIB or a D-SIB will become distressed, capital buffers have been raised. More specifically, minimum regulatory capital requirements are to be supplemented by capital surcharges. The identification methodology devised by the Basel Committee on Banking Supervision (BCBS) produces yearly updates of the G-SIBs, to which capital surcharges from 1 to 3.5 percent are applied on top of the Basel III requirements (that is, a 7 percent level of common equity and a 10.5 percent level minimum capital requirement, including in both cases a capital conservation buffer). Some major countries have introduced even stricter regimes than Basel III. For example, in June 2013, the United States announced a version of the leverage ratio requirement that is stricter than the Basel III level of 3 percent: 5 percent for large bank holding companies and 6 percent for their Federal Deposit Insurance Corporation–insured subsidiaries. Switzerland asks for SIBs to maintain a total capital adequacy ratio of up to 19 percent, of which 10 percent needs to be common equity, while the rest has to be covered by contingent convertible capital instruments. Australia, Canada, and Singapore, among the countries that have already adopted a comprehensive D-SIB framework so far, also require major banks to maintain common equity ratios 1 percent higher (2 percent higher for Singapore) than those required by Basel III.

The initiatives on the regulatory side are complemented by efforts to reinforce the intensity and effectiveness of supervision. In the past few months, the FSB has provided guidance on the interaction between supervisors and financial institutions. A thorough investigation of the roots of persisting weaknesses in supervisory practices (specifically in terms of supervisory independence and resources) has been launched in collaboration with the IMF, drawing from the recent experience of the IMF and the World Bank with the Financial Sector Assessment Program. The revised Joint Forum Principles for the Supervision of Financial Conglomerates (2012) also aim at reinforcing the supervisory approaches to mixed financial groups in a way that captures the full spectrum of groupwide activities and risks, including all risks from entities within the group (whether regulated or unregulated) that may have a significant impact on the financial position of the group.[1]

Reforms have also been directed toward reducing the need for a bailout in case of distress. Several policies have been pursued to lower counterparty risks, for example, through the centralization of large shares of over-the-counter (OTC) derivative transactions at central counterparties (CCPs) and through margin requirements and increased capital charges on noncentralized OTC transactions. In addition, transparency and disclosure requirements are further enhanced to mitigate any uncertainties on asset quality and counterparty risks (for example, by the U.S. Office of Financial Research). At the international level, the new proposed framework for measuring and controlling large exposures affects SIBs indirectly, by establishing "hard" (that is, Pillar 1) limits constraining the large exposures of all banks, and directly, by proposing a tighter limit for inter-G-SIB exposures.

Resolution and recovery plans have been established to reduce the cost of bailouts, potentially leading to a lower probability of such events. Significant improvements of the resolution powers and tools have been implemented in Australia, Canada, France, Germany, Japan, the Netherlands, Spain, Switzerland, the United Kingdom, and the United States. Bail-in powers have been introduced in France, Portugal, Slovenia,

The authors of this box are Pierpaolo Grippa, Oana Nedelescu, and Kenichi Ueda.

[1]The Joint Forum was established in 1996 under the aegis of the BCBS, the International Organization of Securities Commissions (IOSCO), and the International Association of Insurance Supervisors (IAIS) to deal with issues common to the banking, securities, and insurance sectors, including the regulation of financial conglomerates.

Box 3.5 *(continued)*

Switzerland, and the United Kingdom, while other countries such as Canada are currently designing the relevant frameworks. For U.S. banks, under the single-point-of-entry approach envisaged in the Dodd-Frank Act, a government-supported bridge bank would swiftly replace the distressed bank holding companies, while keeping intact operational subsidiaries (such as a deposit-taking bank or a brokerage firm) (Tarullo, 2013; Dudley, 2013). The agreed European Union's Bank Recovery and Resolution Directive would also provide for a bail-in tool, while new state aid rules require that junior creditors be bailed in before exceptional government stabilization tools are used. To prefund the bailout costs and to lower banks' incentives to become too large, several European countries have adopted bank levies on liabilities.

Progress continues on making the global resolution framework for G-SIBs operational, albeit at a slower pace. Crisis management groups are operational for all G-SIBs and outlined in the resolution strategies. However, the introduction of institution-specific cooperation arrangements is proving more difficult, as many countries need to remove legal constraints to information-sharing with foreign authorities, and as there are significant operational complexities. These stem from wide cross-country variations in legal and organizational requirements, operating models, and funding structures. A key challenge is to ensure that the adequacy of the loss-absorbing capacity (which may take the form of equity, subordinated debt, senior unsecured debt, and other unsecured uninsured liabilities) is conducive to orderly resolution (FSB, 2013a).

Structural measures to limit bank activities have so far been pursued individually by a few major countries. In the United States, the Volcker Rule in the Dodd-Frank Act prevents deposit-taking institutions and their group firms from engaging in proprietary trading, with a few exceptions such as for market-making purposes. The recent E.U. Commission proposal, which is a modified version of the recommendations by the E.U. expert group (the Liikanen group), also seeks to prevent deposit-taking institutions and any entity within the same financial group from engaging in proprietary trading except for market-making activities. The central recommendation by the Vickers Commission in the United Kingdom allows deposit-taking institutions to conduct only simple operations and requires most of the investment banking activities to be handled separately, although possibly within the same group.

in need of support, governments sometimes need to provide support to all SIBs, even fundamentally sound ones (Landier and Ueda, 2009). Also, without information on counterparty exposures, governments tend to assume the worst-case scenario and end up rescuing some institutions whose failure would not have triggered a systemic crisis. To be useful, disclosures and information releases need to be granular, consistent, and comparable across SIBs.

Effective recovery and resolution plans are crucial to reduce the cost of bailouts and could also bring down the probability of support. Having SIBs prepare individual, tailor-made recovery and resolution plans, such as those being implemented in the United States and in Europe, reduces uncertainties about what creditors, depositors, and other economic agents can expect in the case of failure. These plans ensure that financial and operational structures of SIBs are periodically reassessed to allow for a potential resolution with the least impact on functions that are critical for financial stability (see Box 3.5). The aim of these plans (following, for example, the single-point-of-entry approach in the United States and the bail-in requirement in the European Union) is to shift the burden of resolving banks largely to the private sector.[30]

Bank levies can be collected to explicitly or implicitly fund bank resolution and also, if linked to liabilities, to lower banks' incentives to become too large. Given the difficulty of completely ruling out bailouts in practice, some level of government protection, and thus some positive subsidy, may be unavoidable. Bank levies can allow governments to recoup part of it. Levies may also help reduce the incentives for banks to seek TITF status and lower the negative externality associated with it, especially if they are progressive—

[30]However, the bail-in efforts need to establish an appropriate balance between the rights of private stakeholders and the public policy interest of preserving financial stability. At the same time, the increased issuances of covered bonds, which create claims that are senior even to those of insured depositors, threaten the effectiveness of the bail-in approach (see Chapter 3 of the October 2013 GFSR; and Zhou and others, 2012).

for example, if they increase with asset size or liabilities. In line with the IMF's recommendations (IMF, 2010), bank levies were adopted by several European countries, including Germany, Sweden, and the United Kingdom since 2008 (Gottlieb, Impavido, and Ivanova, 2012), and those appeared to help reduce bank leverage (Devereux, Johannesen, and Vella, 2013).

The Way Forward

The implicit funding subsidies estimated in this chapter show a high level of expected government support but also reflect the sounder balance sheets of SIBs since the onset of the crisis. Given the increase in the concentration of banks in many countries, it would not have been surprising if the implied TITF subsidy had gone up. Instead, the subsidy went down from its peak and is now back to its precrisis level, except perhaps for the euro area. However, the estimates from the ratings-based approach suggest that the level of government protection for a distressed SIB is still high everywhere, a finding consistent with the time-inconsistency problem associated with eschewing bailouts. The subsidy estimate for the average SIB has gone down, especially in the United States. This at least partially reflects tighter regulations and more effective supervision.

The implication is that policies should focus mainly on further reducing the probability of distress at TITF institutions and possibly on prefunding or recouping taxpayers' costs from such banks. The estimates suggest that preventive measures have worked well in lowering the subsidy value; therefore, strengthening capital buffers or, more generally, increasing the loss absorbency of banks, including through provisioning, could go far toward reducing the probability of distress. Dynamic provisioning and countercyclical capital buffers could also enhance the resilience of SIBs.

The subsidy estimates could be used to calibrate the capital surcharge that would effectively offset the funding cost advantage of SIBs and reduce the probability of distress. An example of such a calibration is provided in Box 3.6. The exercise relies on estimated relationships among banks' funding costs, market capitalization, and the regulatory capital level; these are likely to vary over time, particularly during episodes of financial turmoil, and make the calibration particularly challenging. An alternative approach relates capital surcharges to a bank's contribution to systemic risk (Chan-Lau, 2010). However, this presupposes that the contribution to systemic risk is relatively stable.

Loss allocation to banks through resolution funds can help reduce the perceived unfair funding cost advantage of SIBs. In a simple calibration for an ex-ante funded resolution fund, an assumption that a crisis occurs only once every 30 years implies a contribution by SIBs of around 15–30 basis points of their liabilities (net of equity and deposits), in the absence of other reforms in other areas.[31] Compared to this estimate, the size of the levies currently in place appears small.

International coordination is essential to prevent regulatory arbitrage and make cross-border resolution effective. International coordination efforts have already allowed for the identification of G-SIBs and for an agreement on related capital surcharges. However, in other areas, such as the implementation of resolution frameworks or structural reforms, countries have adopted policies without much coordination. These solo initiatives, even though individually justifiable, could add unnecessary complexity to the regulation and consolidated supervision of large cross-border institutions and encourage new forms of regulatory arbitrage. In the case of resolving cross-border banks, local initiatives may well end up being mutually destructive. For example, attempts to ring-fence the assets of failed internationally active banks are considered a factor behind the increasing financial fragmentation in Europe (see the October 2013 GFSR). Also, the legal systems in some countries are not fully compatible with the single-point-of-entry approach of the Dodd-Frank Act. Further progress on information sharing for resolution purposes and the harmonization and improvement of resolution regimes are necessary to solve the TITF problem.[32]

[31]The calculation assumes a subsidy of 60–100 basis points for three of the 30 years and a subsidy of 10–20 basis points for the other 27 years. More sophisticated approaches could also be devised, for example, by conditioning the levy on banks' capital ratios.

[32]For a more comprehensive discussion of the challenges in improving resolution regimes, see Claessens, Herring, and Schoenmaker (2010).

Box 3.6. Higher Loss Absorbency for Systemically Important Banks in Australia

This box presents the results of the calibration exercise of capital requirements for the largest domestic systemically important banks (D-SIBs) conducted during the 2012 Financial Sector Assessment Program for Australia.

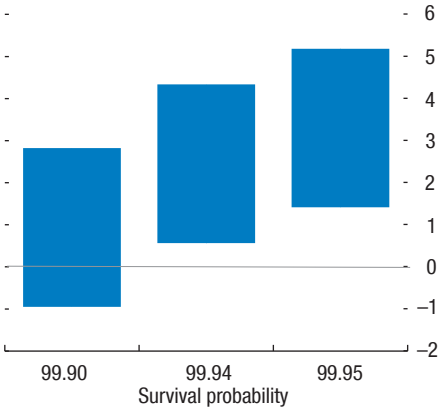
The contingent claims analysis (CCA) approach discussed in this chapter was used by IMF staff in the 2012 Financial Sector Assessment Program for Australia (IMF, 2012) to estimate the additional capital required for the four largest D-SIBs. A higher minimum capital requirement for SIBs, in addition to heightened supervision and a credible resolution framework, mitigates systemic risk by providing higher loss absorbency that reduces the likelihood of a SIB becoming insolvent. How much additional capital is necessary depends on the acceptable probability of default of the SIBs, and this may be estimated by using the CCA approach described in Annex 3.1. The Australian assessment used the expected default frequency obtained from Moody's CreditEdge as an estimate of default probabilities.

To determine a desired probability of survival, the key is to find a robust relationship between the estimated default probability and the market-capitalization-to-assets ratio. A power function was found to be a relatively robust fit for the top four Australian banks based on daily data from June 2011 to June 2012.

The market value of assets and regulatory risk-weighted assets should coincide if the supervisor's view of risk weights is close to the market's view. Furthermore, abstracting from the discount offered at the time of additional equity issuance, one assumes that additional capital can be raised at the current market value of equity. With these two assumptions, the marginal change in the market-capitalization-to-assets ratio and in the Tier 1 regulatory-capital ratio can be deemed equal for the additional equity raised. For Australia, the reported Tier 1 capital ratio and the market-capitalization-to-assets ratio were very similar at 10.1 percent and 9.4 percent, respectively, in 2011; the ratio between the two was used to adjust the Tier 1 capital equivalent of the market capital requirements.

This exercise suggests, as an illustration, that maintaining a one-year-ahead probability of 99.9 percent of not defaulting on any payment would require the four major banks to hold additional Tier 1 capital ranging from –0.9 to 2.8 percent of risk-weighted assets (RWA) at the end of 2011. If the goal were to achieve a 99.95 percent probability of no default, additional Tier 1 capital ranging from 1.4 to 5.2 percent of RWA would be necessary. This would require all large banks to fund themselves with more capital—some by a small amount, others by a more substantial amount. The actual amount of loss absorbency required would be determined by the regulator's risk tolerance.

Figure 3.6.1. Additional Tier 1 Capital Requirements for Systemic Banks
(Percent of risk-weighted assets)



Sources: Moody's CreditEdge; and IMF staff estimates.

The authors of this box are Luc Everaert and Xiaoyong Wu.

Annex 3.1. The Contingent Claims Analysis Approach

In the risk-adjusted balance sheets used for contingent claims analysis (CCA), the total market value of a bank's assets, A, is equal to the sum of its equity market value, E, and its risky debt value, D. Equity and debt derive their value from the unobserved asset value. The value of risky debt is equal to the default-free debt minus the expected loss due to default. The asset value is stochastic and may fall below the value of outstanding liabilities that constitutes a default barrier B, at horizon T. As pointed out by Merton (1974), the value of equity can be seen as the value of an implicit call option on the assets, with an exercise price equal to the default barrier B. The expected loss due to default can be calculated as the value of an implicit put option on the assets, A, with an exercise price equal to B. The value of the implicit put option will be called the expected loss value (ELV).

The calibration of the model uses the value of equity, the volatility of equity, and the distress barrier as inputs into two equations in order to calculate the implied asset value A and the implied asset volatility s_A.[33] Equity and equity volatility reflect forecasts of market participants and provide forward-looking information. The implied asset value and volatility can then be used with the other parameters to calculate risk indicators such as the spreads, the ELV, default probabilities, and other risk indicators. The fair-value credit default swap (FVCDS) is calculated using a loss given default (LGD) that is the average LGD for the

The author of this annex is Dale Gray.

[33]See Merton (1974); Gray, Merton, and Bodie (2008); and Gray and Malone (2008 and 2012).

Table 3.4. Sample of Systemically Important Banks (as of 2012)

Bank Names		
ABN AMRO Holding N.V.	Credit Suisse Group*	National Australia Bank Limited
Allied Irish Banks PLC	Criteria Caixacorp, S.A.	National Bank of Abu Dhabi
Australia and New Zealand Banking Group	Danske Bank A/S	National Bank of Greece, S.A.
Banca Monte dei Paschi di Siena S.p.A.	DBS Group Holdings Ltd.	Natixis*
Banco Bilbao Vizcaya Argentaria S.A.*	Depfa Bank PLC	Nordea Bank AB*
Banco BPI, S.A.	Deutsche Bank AG*	OKO Bank PLC
Banco Bradesco S.A.	Dexia**	Oversea-Chinese Banking Corporation
Banco Comercial Portugues, S.A.	DNB ASA	Public Bank Berhad (The)
Banco de Chile	Emirates NBD PJSC	Raiffeisen International Bank
Banco de Oro Universal Bank	Erste Bank Der Osterreichischen Sparkassen AG	Riyad Bank
Banco do Brasil S.A.	Espirito Santo Financial Group S.A.	Royal Bank of Canada
Banco Espirito S.A.nto S.A.	First Gulf Bank PJSC	Royal Bank of Scotland Group PLC*
Banco Latinoamericano De Exportaciones, S.A.	Glitnir Banki hf	Samba Financial Group
Bancolombia S.A.	Goldman Sachs Group Inc.*	Santander Central Hispano S.A.*
Bangkok Bank Public Company Limited	Hang Seng Bank Limited	Sberbank Rosseii
Bank Austria	HSBC Holdings PLC*	Siam Commercial Bank Public Co Ltd
Bank Hapoalim B.M.	ICICI Bank Limited	Skandinaviska Enskilda Banken
Bank of America Corp.*	ING Groep N.V.*	Société Générale S.A.*
Bank of Baroda	Intesa Sanpaolo S.p.A.	Standard Chartered PLC*
Bank of China Limited*	JPMorgan Chase*	State Bank of India
Bank of East Asia Limited (The)	JSC VTB Bank	State Street Corp.*
Bank of Ireland	Jyske Bank A/S	Sumitomo Mitsui Financial Group Inc.*
Bank of New York *	Kaupthing Bank HF	Svenska Handelsbanken AB
Bank of Nova Scotia	KBC Group NV	Sydbank A.S.
Barclays PLC*	Krung Thai Bank Public Company Ltd.	Toronto Dominion Bank
Bayerische Hypo- und Vereinsbank AG	Landsbanki Islands HF	Turkiye Garanti Bankasi A.S.
BNP Paribas*	Lloyds TSB Group PLC**	Turkiye Is Bankasi A.S.
BRE Bank S.A.	Malayan Banking Berhad	UBS AG*
Cathay Financial Holding Company Ltd.	Mega Financial Holding Company	Unicredito Italiano S.p.A.*
China Construction Bank Corp	Metropolitan Bank and Trust Company	United Overseas Bank Limited
Citigroup Inc.*	Mitsubishi UFJ Financial Group*	Wells Fargo & Co.*
Commercial Bank of Qatar	Mizuho Financial Group*	Westpac Banking Corporation
Commerzbank AG**	Morgan Stanley*	
Crédit Agricole S.A.*	Moscow Municipal Bank	

Source: IMF staff.

Note: Systemically important banks are defined as the G-SIBs identified by the Financial Stability Board plus the three largest banks by asset size in each country if these are not G-SIBs, subject to data availability.

* G-SIBs as identified by the Financial Stability Board in 2013. When the group is not listed, the largest quoted entity is used.

** Banks previously identified by the Financial Stability Board as G-SIBs.

banking sector as a whole. This chapter uses FVCDS computed by Moody's CreditEdge.

During the recent crisis the estimated FVCDS was frequently observed to be higher than the observed CDS of banks, presumably due to the depressing effect of implicit and explicit guarantees under the plausible assumption that equity holders do not benefit from such guarantees, but debt holders do. The relationship between the credit spread and the ELV is:

$$spread = -\frac{1}{T}\ln\left(1 - \frac{ELV}{Be^{-rT}}\right), \tag{3.1}$$

where r denotes the risk-free rate. The difference between the ELV derived from the CCA (using equity information) and the ELVCDS backed out from observed CDS spreads is the market-implied government guarantee (see Gray and others, 2013, Appendix 1, for details).

Annex 3.2. The Ratings-Based Approach

The overall credit rating of banks is explained by their fundamentals, reflected in the standalone rating, and by the expectation of support either by the government or by the parent firm, if any. Fitch Ratings discloses both components. The overall rating, the Long-Term Credit Rating (LT), ranges from AAA (best rating) to D. LT Ratings are assigned numerical values from 1 to 16 in the regression below, with 16 denoting the highest rating. For the standalone rating, until 2011, Fitch used the Individual Ratings (INDV), whose scale runs from A to E with gradations such as A/B or B/C. These are converted into numerical values from 1 to 11, with 11 denoting the highest rating. Since 2011, Fitch has produced a Viability Rating whose scale is the same as for the overall rating (Fitch Ratings, 2011). As for the support expectation, Fitch provides a Support Rating (SUPP) with values running from 1 to 5, with 1 indicating the highest support probability. For consistency with other numerical values, the order is inverted in the regression. Lastly, Fitch also discloses a Support Rating Floor, which is given whenever the support is expected to come from the government. The absence of Support Rating Floor implies that the support comes from the parent company.

Because ratings are categorical variables, an ordered probit estimation is used to estimate the effect of government support on the probability for a given bank of getting a certain rating (the so-called rating uplift). Fundamental variables (FUNDA)—the common equity ratio and the return on assets—are used in the benchmark regression to control for a bank's standalone strength without relying on the assessment of the credit rating agency. Balance sheet data for listed firms and major nonlisted firms are obtained from Bankscope. Because the data are available only for listed and major nonlisted firms, most subsidiaries are excluded from the sample. The sovereign rating (SOVR) of the country where the bank is located is included as a control for the macroeconomic environment and the ability of the government to provide support in case of distress beyond Fitch's own evaluation of the support rating.

The probability for bank i in country k to receive the overall rating x is expressed as:

$$prob(LT_{ik} = x) = F(\alpha SUPP_{ik} + \beta FUNDA_{ik} + \gamma SOVR_{ik} \le cut_x) - F(\alpha SUPP_{ik} + \beta FUNDA_{ik} + \gamma SOVR_{ik} \le cut_{x-1}), \quad (3.2)$$

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for LT rating x between 2 (B) and 15 (AA+), with F denoting the normal cumulative density. The coefficient of interest is α on the Support Rating. This procedure provides the coefficient estimate as well as each *cut*, which determines the threshold below which a bank obtains a specific rating. For the lowest rating 1 (B–) in the sample, it is

$$prob(LT_{ik} = 1) = F(\alpha SUPP_{ik} + \beta FUNDA_{ik} + \gamma SOVR_{ik} \le cut_1), \quad (3.3)$$

and for the highest rating 16 (AAA), it is

$$prob(LT_{ik} = 16) = 1 - F(\alpha SUPP_{ik} + \beta FUNDA_{ik} + \gamma SOVR_{ik} \le cut_{15}). \quad (3.4)$$

Table 3.5 shows the results from the benchmark regression with the average cut, which is simply the highest cut estimate minus the lowest cut estimate divided by the total number of cuts. It also provides the unit impact of the support rating on the overall rating. Impact estimates slightly increased in 2008–09 but have declined since. The table shows results for an estimation using all countries in the sample. As a robustness check, the same estimation is carried out using different country subsamples: banks in G20 countries, banks in advanced countries, banks in developing countries, U.S. banks, and banks in the European Union. The results are similar, except for banks in developing countries (Table 3.6).

Table 3.6 also reports the estimates for the unit impact of government support on the overall rating based on the regression using the standalone rating by Fitch, instead of balance sheet information, as a proxy for banks' fundamental strength. The estimated impacts are slightly lower, in particular in the last three years. These results are used to draw the panels in Figures 3.10 and 3.11 in the main text, as they produce the most conservative estimates for the subsidy values and because balance sheet data, contrary to rating information, are not yet available for 2013.

The average support for each sample of banks is multiplied by the unit impact of the support to yield the average rating uplift. The rating uplift is then translated into a funding cost advantage based on Soussa's (2000) estimate of the average annualized interest rate differentials for different credit ratings over 1920–99. According to Soussa's table, when a bank issues a five-year bond, a three-notch rating increase translates into a funding cost advantage of 5–128 basis points, depending on the riskiness of the institution:

5–8 basis points for an A rated bank, 23 basis points for a BBB rated bank, 61 basis points for a BB rated bank, and 128 basis points for a B rated bank. The structural subsidy values for banks just below investment grade correspond to the case for a BB rated bank before support. The subsidy values for the average bank in each year are computed by averaging the funding cost advantage across banks in the sample in each year.[34]

[34]Although the database is different, the sample of SIBs almost coincides with the one used in the CCA approach (Table 3.4).

Table 3.5. Benchmark Credit-Rating Estimation Results to Explain the Overall Ratings

	2005	2006	2007	2008	2009	2010	2011	2012
Support rating	0.6200***	0.5967***	0.6413***	0.6637***	0.6646***	0.6435***	0.6192***	0.6190***
Sovereign rating	0.3672***	0.3317***	0.3329***	0.3552***	0.2983***	0.2600***	0.2510***	0.2616***
Common equity ratio	–2.5824	–1.8227**	–1.1043	–1.5912*	0.7913	–0.7454	–0.1346	–0.8212
Return on asset	0.2049**	–0.0447	–0.0210	0.1223**	0.1403***	0.0663**	0.1739***	0.0947***
Average cut[1]	0.582	0.584	0.584	0.618	0.560	0.545	0.530	0.585
Observations[2]	172	286	307	285	281	331	378	384
R squared	0.281	0.25	0.261	0.285	0.267	0.246	0.233	0.244
Unit rating uplift from "support" on "overall rating"[3]	1.06	1.02	1.10	1.07	1.19	1.18	1.17	1.06

Sources: Bankscope; Fitch Ratings; and IMF staff estimates.

Note: ***, **, * = statistically significant at the 1, 5, and 10 percent levels. Ordered probit estimation is conducted. The dependent variable is the overall long-term rating. Balance sheet information is from Bankscope database, which covers most listed banks and other major banks.

[1]The estimation produces a constant term for each rating level, called cut1 to cut15. The average cut is calculated by the difference between the top cut and the bottom cut, divided by the total number of cuts. The average cut implies how many "points" are necessary to make the cut for the next rating level.

[2]The sample includes all banks with support expectation from the government. For major financial groups, the sample includes either the core banking entity or the holding company, depending on available data.

[3]The rating uplift is obtained as the coefficient for support the rating divided by the average cut.

Table 3.6. Unit Rating Uplift: Robustness for Different Samples

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Balance sheet info-based controls[1]									
All countries	1.06	1.02	1.10	1.07	1.19	1.18	1.17	1.06	n.a.
All countries, full sample[2]	0.92	0.95	1.04	1.06	1.30	1.25	1.22	1.06	n.a.
G20 members	1.01	1.07	1.16	1.03	1.22	1.24	1.19	1.06	n.a.
Advanced economies	0.97	0.99	1.02	0.97	1.14	1.08	1.00	1.03	n.a.
Emerging market economies	1.84	1.68	1.72	1.71	1.77	1.59	1.55	1.48	n.a.
United States	0.98	0.92	1.09	0.74	1.54	1.72	1.59	1.06	n.a.
European Union	1.23	1.27	1.23	1.21	1.44	1.02	1.07	1.08	n.a.
Memorandum: Rating info only, all countries	0.94	0.91	0.88	0.94	1.16	1.04	0.87	0.80	0.75

Sources: Bankscope; Fitch Ratings; and IMF staff estimates.

[1]For each regression, the sample corresponds to the one specified in the first column. Except for the memorandum item, only banks with balance sheet information are used. For major financial groups, the sample includes either the core banking entity or the holding company, depending on available data.

[2]Except for this full sample case, samples include only banks with support expectation from the government. The full sample results might be biased by the inclusion of parent-subsidiary pairs.

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GLOSSARY

Active fund A fund that employs dynamic asset allocation strategies, aiming to outperform a benchmark.

Asset manager An individual in a financial institution, such as a mutual fund, who manages asset portfolios on behalf of investors.

Asset price bubble A sharp rise in the price of an asset above its economically fundamental value over a specific period for reasons other than random shocks.

Assets under management (AUM) Financial assets managed by a fund manager on behalf of end investors. These assets may be direct loans or securities and may be leveraged (for example, by hedge funds).

Bail-in A statutory government power to restructure the liabilities of a distressed financial institution by writing down and/or converting to equity its unsecured debt.

Bailout A transfer of funds (or commitment to transfer funds) from public sources to a distressed firm. Examples include recapitalization, asset purchases, subsidized loans, and the provision of guarantees. A bailout primarily benefits creditors but may also benefit shareholders, managers, and employees. The business of the supported entity may be reorganized or merged with that of other entities.

Bank levy A tax on banks based on their balance sheets (for example, assets, liabilities, or liabilities net of deposits). In a broader sense, it may include other forms of taxation—for example, taxes based on transactions or value added.

Basis point (bp) One one-hundredth of a percentage point—that is, 1 bp = 0.01 percentage point.

Beta In finance, the beta is often used to show the sensitivity of one security return to a factor or to another security return. One common use is for the beta to measure a security's systematic or nondiversifiable risk. The beta is the expected percent change in an asset's excess return in response to a 1 percentage point increase in the excess return of the market portfolio (or some well-diversified portfolio). Securities with a beta greater than 1 on average move more than the market as a whole; those with a beta lower than 1 move less.

Bid-offer (or bid-ask) spread The difference between the price at which an instrument is simultaneously quoted for immediate purchase (bid) and sale (offer or ask).

Bond spread The difference between a bond yield and a benchmark interest rate. In Chapter 3, bond spread refers to the difference between banks' bond yields and the London interbank offered rate (LIBOR) in the same currency. The LIBOR rate is matched to the duration of the bond. If the bond is denominated in a currency for which the LIBOR rate is not available, the U.S. dollar LIBOR rate is used.

Call (put) options A financial contract that gives the buyer the right, but not the obligation, to buy (sell) a financial instrument at a set price on or before a given date.

Capital buffer The capital banks must hold in excess of their minimum capital requirements. In particular, Basel III introduced a capital conservation buffer (designed to ensure that banks build up capital buffers outside periods of stress, which can be drawn down as losses are incurred); a countercyclical capital buffer (aimed at building up financial resources during periods of excess aggregate credit growth); and capital surcharges for global systemically important banks (G-SIBs). Domestic SIBs are also often expected to hold additional resources to meet capital surcharges as established by national regulations. More broadly, capital buffers are the capital that banks hold to absorb losses should they occur.

Capital flow management policies Policy measures designed to limit capital flows, which may or may not discriminate on the basis of residency. Measures that discriminate based on residency are known as capital controls and include taxes and regulations. Measures that do not discriminate based on residency may be applied according to other characteristics (such as currency denomination) or to specific sectors (typically the nonfinancial sector).

Capital inflows (gross) Total net nonresident investment in the reporting economy: (1) net direct investment (investment minus disinvestment); (2) net flow

of portfolio investment liabilities; and (3) net flow of other investment liabilities.

Capital requirements The amount of capital a bank or other financial institution is required to hold as a buffer against possible losses. The requirements are usually imposed by law or by a regulatory agency.

CDS spread The amount the buyer of a CDS (credit default swap; see below) must pay the seller annually over the length of the contract, expressed as a percentage of the notional amount.

Central bank reserve fund A government-owned fund that invests foreign exchange reserves globally. These funds usually aim to maintain liquidity in foreign currencies and therefore tend to invest in highly rated government bonds issued by reserve currency issuers.

Closed-end fund A collective investment vehicle that has a fixed number of shares. Unlike open-end funds, new shares in a closed-end fund are not issued nor are shares redeemed by managers to meet demand from ultimate investors. Instead, the shares are traded on secondary markets.

Coefficient In a regression, the coefficient shows the size of the relationship between a regressor and the dependent variable. If the regression takes the form $Y = A + BX$, then B is the coefficient for regressor X.

Collective investment vehicle An institution that sells its shares to retail and institutional investors and invests the proceeds in securities. These vehicles are often referred to as investment funds, management funds, mutual funds, or funds.

Contagion The transmission of economic and financial disturbances across countries.

Contingent claims analysis (CCA) A methodology that combines balance sheet data and market prices of traded securities to assess the implicit value and volatility of assets, credit risk (default probabilities and credit spreads), and contingent liabilities of a firm or bank. The method has been extended to study entire economic sectors and sovereign states.

Contingent liability A liability that may or may not materialize, depending on the outcome of a future event.

Correlation The degree of comovement between two variables, taking values between +1 and –1: +1 means they move together perfectly, and –1 means they always move by the same amount but in opposite directions.

Credit default swap (CDS) A financial contract under which the seller agrees to compensate the buyer in the event of a loan default or other credit event. CDS settlements can be "physical"—the protection seller buys a defaulted reference asset at its face value from the protection buyer—or "cash"—the protection seller pays the protection buyer the difference between the reference asset face value and the price of the defaulted asset. A single-name CDS contract references a single firm or government agency, whereas CDS index contracts reference standardized indices based on baskets of liquid single-name CDS contracts.

Credit rating A measure of the ability of a borrower to meet its financial commitments in a timely way. Credit ratings are typically expressed as discrete letter grades. For example, Fitch Ratings and Standard & Poor's use a scale in which AAA represents the highest creditworthiness and D the lowest.

Credit risk The risk that a party to a financial contract will incur a financial loss because a counterparty is unable or unwilling to meet its obligations.

Credit spread The difference in yield between a benchmark debt security and another debt security that is comparable to the benchmark instrument in all respects except that it is of lower credit quality and, hence, typically returns a higher yield.

Credit-to-GDP ratio A ratio that measures domestic credit to the private sector as a proportion of GDP. Domestic credit to the private sector refers to financial resources provided to the private sector, for example through loans, purchases of nonequity securities, trade credits, and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises.

Crossover fund A collective investment vehicle that is not dedicated to certain assets but invests opportunistically across broader asset classes.

Dedicated fund A collective investment vehicle that invests in a limited range of assets, such as those from specific regions, countries, or industries.

Defined benefit pension plan A type of pension plan that promises a specified benefit after retirement, typically determined by a formula that takes into account an employee's earnings history, age, and tenure.

Deleveraging The reduction of the leverage ratio, or the percent of debt in the balance sheet, of a financial institution.

Derivative A financial contract whose value derives from underlying securities prices, interest rates, foreign exchange rates, commodity prices, or market or other indices.

Examples of derivatives include stock options, currency and interest rate swaps, and credit default swaps.

Diversification A risk management technique that mixes a wide variety of investments within a portfolio. The rationale is that a portfolio containing different kinds of investments poses lower risk than the individual investments within the portfolio because the positive performance of some investments will offset to some extent the negative performance of others.

Dynamic provisioning A macroprudential tool that requires banks to build a cushion of generic provisions during upswings that can be used to cover rising specific provisions linked to loan delinquencies during downturns.

Earnings before interest and taxes (EBIT) A measure of a company's operating cash flow obtained by looking at earnings before the deduction of interest expenses and taxes (see also EBITDA, below).

Earnings before interest, taxes, depreciation, and amortization (EBITDA) A measure of a company's operating cash flow obtained by looking at earnings before the deduction of interest expenses, taxes, depreciation, and amortization. This measure is used to compare companies' profitability without the accounting and financing effects of various asset and capital structures. This measure may be of particular interest to creditors because it represents the income a company has available for interest payments.

Economy of scale and scope Cost advantage in a firm arising from size or the expansion of activities.

EMBI Global or EMBIG The J.P. Morgan Emerging Market Bond Index Global tracks the performance of dollar-denominated sovereign bonds issued by a broad set of emerging market economies. There are other versions of the index assembled according to different inclusion criteria with respect to, for example, liquidity requirements.

Endogeneity Issues that arise in a statistical model when an independent variable (regressor) is correlated with the error term, which makes it difficult to identify causal relationships. Endogeneity can be caused, for example, by omitted variables or simultaneity.

EURIBOR The euro interbank offered rate, a daily reference rate based on the averaged interest rates at which euro area banks offer to lend unsecured funds to other banks in the euro wholesale money market (or interbank market).

Eurodollars Time deposits denominated in U.S. dollars at banks outside the United States and thus not under the jurisdiction of the Federal Reserve.

Event study A statistical method to assess the impact of an event, such as a corporate or policy announcement, by observing the change in the variable of interest, such as the firm's stock price or some other price (yield spread, exchange rate), around the time of the announcement.

Excess returns Total returns of a risky asset above those of a risk-free asset. For exchange rates it is the percent difference between the forward exchange rate and the spot rate at maturity.

Exchange-traded fund (ETF) A collective investment vehicle traded on an exchange. ETFs may be attractive to investors because of their low costs and tax efficiency. ETFs started as passively managed funds following some market indices, but in 2008 the United States began to authorize actively managed ETFs.

Externality A cost or benefit of an action affecting a party that did not choose to bear that cost or enjoy that benefit.

Fair-value CDS spread The CDS spread (see above) estimated for an institution using equity and balance sheet information in a contingent claims analysis (CCA) model. This spread estimate is not significantly affected by implicit or explicit government debt guarantees.

Fat-tail risk The risk of a rare event leading to very large losses whose frequency is greater than predicted by a normal distribution of events.

Financial deepening Growing size of financial markets relative to economic activity, defined by the various functions those markets perform, including intermediation, price discovery, and hedging.

Fire sale A panic condition in which many holders of an asset or class of assets attempt a market sale, thereby driving the price down to extremely low levels. The acceptance of a low price for assets by a seller facing bankruptcy or other impending distress may also characterize a fire sale.

Fiscal stabilization fund A type of sovereign wealth fund (SWF). Stabilization funds aim to insulate the budget and economy from commodity price volatility and external shocks. Their investment horizons and liquidity objectives resemble those of central bank reserve funds.

Fixed income portfolio (for insurance companies) A portfolio invested predominantly in bonds and typically with a conservative risk-return profile that is used by insurance companies to meet claims by policyholders.

Fixed-effects panel data estimation An econometric panel data technique that accounts for possible time-

invariant unobserved characteristics in the underlying data.

Funded ratio (for pension funds) The ratio of pension plans' assets to liabilities. A funding ratio above 1 means that pension funds hold sufficient assets to cover their payment obligations.

Global systemically important bank (G-SIB) A large banking institution with global operations that has potential impact on the financial system. The Financial Stability Board, together with the Basel Committee on Banking Supervision, maintains a list of G-SIBs that is updated every year. (In 2013, 29 global banks were tentatively identified.) Beginning in 2016 (with phasing in until 2018), G-SIBs will be subject to additional loss absorbency, or capital surcharges, between 1 percent and 2.5 percent of the ratio of common equity Tier 1 capital to risk-weighted assets.

Governance The collection of laws, rules, incentives, and processes by which an organization is managed, controlled, and monitored by its stakeholders.

Group of Seven (G7) Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.

Group of Twenty (G20) The Group of Twenty Finance Ministers and Central Bank Governors was established in 1999 as a forum for officials from systemically important advanced and emerging market and developing economies to discuss key issues related to the global economy. It consists of leaders from the European Union and the following 19 countries: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Korea, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, and the United States.

Hard currency Hard currency is any globally traded currency that is expected to serve as a reliable and stable store of value, often including the U.S. dollar, euro, Swiss franc, British pound sterling, Japanese yen, and, to a lesser extent, Canadian dollar and Australian dollar.

Hedge fund An investment pool, typically organized as a private partnership, that faces few restrictions on its portfolio and transactions. Hence, compared with more regulated financial institutions, hedge funds use a wider variety of investment techniques—including short positions, derivatives transactions, and leverage—in their effort to boost returns and manage risk.

Hedging The practice of offsetting existing risk exposures by taking opposite positions in instruments or contracts with identical or similar risk—for example, in related derivatives contracts.

Herding A behavior characterized by individuals making decisions only because they observe other investors making them.

Institution/institutional quality The overall quality of contract enforcement, property rights, shareholder protection, rule of law, and the efficiency of government and regulations.

Institutional investor A professional financial institution that pools money and makes investments. In Chapter 2, institutional investors are defined narrowly as those with a long-term investment horizon, such as pension funds, insurance companies, and official sector institutions. Banks and mutual funds are excluded from this narrow definition.

Interconnectedness Linkages among entities within the financial system that drive financial contagion and risk concentration.

Interest rate derivative A derivative contract that is linked to one or more reference interest rates.

Intermediation The process of transferring funds from a source to a user. A financial institution, such as a bank, intermediates when it obtains money from depositors or other lenders and onlends to borrowers.

Investment and speculative grade A credit rating of BBB– or better (Baa3 on the Moody's scale) is considered investment grade. Otherwise it is considered speculative, or high-yield, grade.

Investor base Composition of the investors who are investing in a company, country, or asset class.

J.P. Morgan Global Bond Broad Index redemption yield The return on a portfolio of bonds with same composition as J.P. Morgan's country-specific index of local currency emerging bonds, assuming the bonds are held until maturity.

Japanese investment trust (Toshin) A type of collective investment vehicle common in Japan.

Lehman Brothers A global investment bank, headquartered in the United States, whose failure on September 15, 2008, marked the largest bankruptcy of an investment bank in U.S. history. The bankruptcy was the catalyst for exceptional turmoil in global financial markets and prompted an unprecedented, coordinated public sector response to prevent a catastrophic financial crisis.

Leverage The proportion of debt to equity (also assets to equity or capital to assets in banking). Leverage can

be built up by borrowing (on-balance-sheet leverage, commonly measured by debt-to-equity ratios) or by off-balance-sheet transactions.

Loan loss provision A noncash expense set aside to account for credit losses a bank has incurred or is likely to incur on some of its loans. This provision adds periodically (typically, every quarter) to the loan loss allowance or reserve, a contra asset account on the bank's balance sheet that is netted against gross loans.

Loss absorbency The capacity of capital instruments to absorb losses incurred by a bank either as a going concern (that is, if the bank is still viable and can continue to operate) or a gone concern (that is, if the bank is no longer viable and must be resolved). Theoretically, increased going-concern loss absorbency is apt to reduce a bank's probability of default, whereas gone-concern loss absorbency can reduce its loss, given default.

Loss given distress / loss given default The portion of the value of an asset that is not expected to be recovered in the event of default, expressed as a percent of the asset's value.

Macroprudential policies Policies aimed at maintaining the safety and soundness of the financial system as a whole. Examples include countercyclical capital buffers and limits to credit growth.

Market liquidity The degree to which an asset or security can be bought or sold in the market without affecting its price. Liquidity is characterized by a high level of trading. Assets that are easily bought and sold are known as liquid assets.

Market making Trading activity by a bank or a broker-dealer firm that accepts the risk of holding a certain number of shares of a particular security to facilitate trading in that security. Each market maker competes for customer order flow by quoting buying and selling prices for a guaranteed number of shares. Once an order is received, the market maker immediately sells from its own inventory or seeks an offsetting order.

Momentum trading A type of trading in which investors buy securities that have recently performed well and sell securities that have recently performed poorly. It is also known as positive-feedback trading.

Money market A market in which short-term debt is traded.

Monopolistic rent Extra profits made by a firm because it has a monopoly in a given market. Such profits can arise naturally because of increasing returns to scale or artificially as a result of restrictive regulations.

Moral hazard The tendency of an individual or institution to act less carefully because the consequences of a bad outcome will be largely shifted to another party. Often such behavior is present because the other party cannot observe the actions. For example, financial institutions have an incentive to take excessive risks if they believe the government will step in with support during a crisis and because governments cannot observe the risky behavior ex ante to prevent it.

MOVE Index The Merrill Lynch Option Volatility Estimate Index, which measures the implied volatility of one-month options contracts on U.S. Treasury bonds of various maturities. It reflects a market estimate of future Treasury bond yield volatility.

MSCIA A company that calculates key market indices for many regions of the world. Formerly known as Morgan Stanley Capital International.

Mutual fund A collective investment vehicle made up of a pool of funds collected from many investors for the purpose of investing in financial assets such as stocks and bonds.

Natural hedging A firm or individual with foreign currency liabilities has natural hedging against exchange rate risks when its income is denominated in the same foreign currency as its liabilities.

Nonbank institution A financial institution that does not have a full banking license or is not supervised by a national or international banking regulatory agency. These institutions facilitate banking-related financial services, such as investment, risk pooling, contractual savings, and market brokering, and may include money market mutual funds, investment banks, finance companies, insurance firms, pension funds, hedge funds, currency exchanges, and microfinance organizations.

Nonperforming loan (NPL) A loan whose contractual payments are delinquent, usually defined as overdue for more than a particular number of days (for example, 30, 60, or 90). The NPL ratio is the amount of nonperforming loans as a percent of gross loans.

Offshore market A financial market in a country or jurisdiction in which financial services are provided to nonresidents on a scale that is not commensurate with the size and the financing of the domestic economy.

Open-end fund A type of collective investment vehicle that allows investors the flexibility to add to or redeem money from the fund.

Ordinary least squares (OLS) A method of estimating the unknown parameters in a linear regression model. The

method minimizes the sum of squared (to capture absolute value) vertical distances between the observed responses in the data set and the responses predicted by the linear approximation—also known as linear least squares.

Original sin Original sin refers to the inability of borrowers, especially those in emerging market and developing economies, to issue debt to foreigners in local currency, which leads to currency mismatches unless accompanied by natural hedging.

Over-the-counter (OTC) In the case of financial securities, trading directly between two parties rather than on a financial exchange.

Over-the-counter (OTC) derivative A financial contract whose value derives from an underlying reference value, such as the price of a stock or bond, an interest rate, a foreign exchange rate, a commodity price, or an index, and that is negotiated and traded bilaterally rather than through a centralized exchange.

Panel regression An econometric technique to estimate relationships among variables in a panel data set. A panel data set is two-dimensional: one dimension is time (year, quarter, month, and so on), and the other is the cross-sectional dimension (people, firms, countries, and so on). Various estimation techniques can be used depending on the nature of these two dimensions.

Passive fund A fund that establishes a fixed investment strategy at its launch which is not modified thereafter. Many passive funds are index funds, replicating the portfolio represented in their benchmark index.

Portfolio flows Capital flows into or out of foreign portfolio investments (equity, debt, or other investments).

Price discovery The process by which the price of an asset in the marketplace is determined through the interaction of buyers and sellers.

Primary dealer A financial institution that is authorized to deal directly with the central bank in the buying and selling of government securities.

Probit model A statistical binary response model in which the response probability follows a normal distribution and is evaluated as a function of the explanatory variables.

Procyclicality The tendency of changes in asset prices and capital flows to move in line with macroeconomic business and financial cycles.

Proprietary trading A firm taking a position in the market using its own capital.

Public pension fund A type of sovereign wealth fund (SWF) that manages the reserves accumulated for future public pension liabilities.

Pull factor A factor that influences capital flows and arises in an investment destination.

Push factor A factor that influences capital flows and arises in an investor's domicile.

Quantitative and qualitative monetary easing (QQME) Bank of Japan policies that involve a significant increase in its holdings of government bonds and other assets by extending the maturity of Japanese government bond purchases. The goal is a year-over-year consumer price index stability target of 2 percent as soon as possible.

Rating uplift An increase in a firm's credit rating—as a result of government support—above the rating based on its fundamentals.

Real effective exchange rate (REER) An exchange rate index calculated as a weighted average of bilateral exchange rates with a country's trading partners and adjusted for inflation differentials.

Redemption The act of returning money to an investor in a fund.

Regression A statistical technique for modeling and analyzing the relationship between economic variables.

Regulatory arbitrage Reducing regulatory requirements (for instance, capital and liquidity requirements) by taking advantage of regulatory differences across countries, types of financial institutions, or products and by exploiting differences between economic risk and risk as measured by regulatory guidelines.

Resolution Procedures and measures taken to solve the situation of an unviable institution in a way that protects its critical functions, government funds, and systemic stability.

Retail investor Typically, small individual investors who buy and sell financial assets for their personal account and not for another investor, company, or organization.

Return chasing Investor purchases (chasing) of assets or funds that have recently outperformed their peers.

Ring-fencing Measures imposed by prudential supervisors that aim to protect the domestic assets of a bank so that they can be seized and liquidated under local law in case of failure of the whole, or other entities of the, banking group.

Risk aversion The degree to which an investor who, when faced with two investments with the same expected

return but different risk characteristics, prefers the one with the lower risk. That is, a measure of an investor's aversion to uncertain outcomes or payoffs.

Risk-weighted assets (RWA) The total assets of a bank weighted by credit, market, and operational risk according to formulas determined by the national regulator or supervisor. Most regulators and supervisors adopt the Basel Committee on Banking Supervision (BCBS) capital standards in setting formulas for asset risk weights.

Robustness A characteristic of regression results whose estimated coefficients change little among several differently specified regressions.

***R* squared** A statistical measure that captures how much of the variability in a dependent variable is explained by the variability in the explanatory variables, in the context of a regression model. It ranges between zero and 1, with values closer to 1 implying a better fit of the model.

Saving fund A type of sovereign wealth fund (SWF) that aims to spread wealth across generations by turning nonrenewable assets into diversified financial assets. Their investment mandate emphasizes a high risk-return profile.

Single point of entry A resolution strategy involving resolution powers, including bail-in and/or transfer tools, at the level of the top holding or parent company by a single resolution authority (that is, the jurisdiction responsible for the global consolidated supervision of a group). Provided sufficient loss-absorbing capacity is available at the top parent level, operations of subsidiaries can be preserved as a going concern.

Sovereign wealth fund (SWF) A government-owned fund that invests globally in real and financial assets or in alternative investments such as private equity or hedge funds. Most SWFs are funded by revenues from commodity exports or from foreign exchange reserves held by the central bank.

Standard deviation A measure of the degree of potential movement of a variable. The variance of a variable is constructed by (1) calculating each observation's deviation from the mean, (2) taking squares for each deviation, and (3) calculating the average of (2). The standard deviation is constructed by (4) taking the square root of the variance. In a regression analysis, standard deviation for each coefficient estimate is computed.

Statistically significant Not merely the result of chance. For example, if the same policy spurs economic growth by 1 percent at least 95 times in 100 trials, the policy's effect can be said to be statistically significant from zero at the 5 percent confidence level.

Stock market capitalization Market value of all stocks listed in an exchange, a group of exchanges, or a country.

Sudden stop A sudden slowdown in the flow of private capital into emerging market and developing economies. Sudden stops are usually followed by sharp decreases in output, private spending, and credit to the private sector and appreciation in the real (adjusted for relative purchasing power) exchange value of the currency.

Surplus (for insurance companies) Assets above the reserves set aside for future insurance payout (insurance liabilities).

Systemic risk The risk that failure of a particular financial institution would cause large losses to other financial institutions, thus threatening the stability of the financial system.

Systemically important banks (SIBs) Banks whose distress or disorderly failure would cause significant disruption to the financial system and economic activity (see G-SIBs).

TED spread The difference between the three-month London interbank offered rate (LIBOR) and the three-month U.S. Treasury bill interest rate.

Term premium The premium investors expect to receive when they buy longer-dated compared with shorter-dated securities.

Time inconsistency A problem that arises when a decision maker prefers a course of action tomorrow over a different one today.

Total assets (insurance companies) The sum of cash, total investments, premium balance receivables, investments in unconsolidated subsidiaries, net property, plant and equipment, and other assets.

Total assets (other financial companies) The sum of cash and equivalents, receivables, securities inventory, custody securities, total investments, net loans, net property, plant and equipment, investments in unconsolidated subsidiaries, and other assets.

Transparency The availability of information that allows investors to properly assess risks and returns associated with investing in a country.

Turnover ratio A measure of market liquidity that shows the degree of trading in the secondary market relative to the amount of bonds outstanding. The higher the ratio, the more active the secondary market.

U.S. federal funds rate The overnight interest rate at which U.S. depository institutions lend their reserves at a Federal Reserve Bank (federal funds) to each other.

Unconventional monetary policy A central bank policy, such as forward guidance on interest rates, long-term provision of liquidity to banks, and large-scale asset purchases, that is not part of the conventional central bank toolkit.

Vector autoregression (VAR) Multivariate models often used in macroeconomics and finance to explore the dynamic relationships among variables. To each endogenous variable corresponds an (autoregressive) equation, and each VAR is made up of two or more equations, one for each (endogenous) variable. Because each equation contains its own lags, as well as the lags of the other variables in the system, the model is said to be autoregressive.

VIX Chicago Board Options Exchange Volatility Index, which measures market expectations of financial volatility over the next 30 days. The VIX is constructed from S&P 500 option prices.

ANNEX

IMF EXECUTIVE BOARD DISCUSSION SUMMARY

The following remarks were made by the Acting Chair at the conclusion of the Executive Board's discussion of the World Economic Outlook, Global Financial Stability Report, *and* Fiscal Monitor *on March 21, 2014.*

Executive Directors welcomed the strengthening of global activity in the second half 2013. They observed that much of the impetus has come from advanced economies, but inflation in these economies continues to undershoot projections, reflecting still-large output gaps. While remaining fairly robust, growth activity in emerging market and developing economies slowed in 2013, in an environment of increased capital flow volatility and worsening external financing conditions. Directors underscored that, despite improved growth prospects, the global recovery is still fragile and significant downside risks, including geopolitical, remain.

Directors agreed that global growth will continue to improve this year and next, on the back of slower fiscal tightening and still highly accommodative monetary conditions in advanced economies. In emerging market and developing economies, growth will pick up gradually, with stronger external demand being partly offset by the dampening impact of tighter financial conditions.

Directors acknowledged that successfully transitioning from liquidity-driven to growth-driven markets will require overcoming key challenges, including strengthening policy coordination. In advanced economies, a sustained rise in corporate investment and continued efforts to strengthen bank balance sheets will be necessary, especially in the euro area. Risks to emerging market economies have increased with rising public and corporate sector leverage and greater foreign borrowing. Directors noted that the recent increase in financial volatility likely reflected renewed market concern about fundamentals, against the backdrop of early steps toward monetary policy normalization in some advanced economies. In view of possible capital flow reversals from emerging markets, Directors considered the risks related to sizable external funding needs and disorderly currency depreciations and welcomed the recent tightening of macroeconomic policies, which appears to have shored up confidence. Regarding the financial sector, Directors noted that, despite the progress made in reducing global financial vulnerabilities, the too-important-to-fail issue still remains largely unresolved.

Most Directors recommended closer monitoring of the risks to activity associated with low inflation in advanced economies, especially in the euro area. Longer-term inflation expectations could drift down, leading to higher real interest rates, an increase in private and public debt burdens, and a further slowdown in demand and output. Directors noted, however, that continued low nominal interest rates in advanced economies could also pose financial stability risks and have already led to pockets of increased leverage, sometimes accompanied by a weakening of underwriting standards.

Against this backdrop, Directors called for more policy efforts to fully restore confidence, lower downside risks, and ensure robust and sustainable global growth. In an environment of continued fiscal consolidation, still-large output gaps, and very low inflation, monetary policy should remain accommodative. Many Directors argued that in the euro area, further monetary easing, including unconventional measures, would help to sustain activity and limit the risk of very low inflation or deflation. A number of Directors thought that current monetary conditions in the euro area are already accommodative and further easing would not be justified. Some Directors also called for a more comprehensive analysis of exchange rates and global imbalances in the *World Economic Outlook*.

Directors recommended designing and implementing clear and credible medium-term fiscal consolidation plans to help mitigate fiscal risks and address the debt overhang in advanced economies, including the United States and Japan. They welcomed the expected shift from tax to expenditure consolidation measures, particularly in those advanced economies where rais-

ing tax burdens could hamper growth. Moreover, they agreed that a new impulse to structural reforms is needed to lift investment and growth prospects in advanced economies.

Directors welcomed the progress made in strengthening the banking sector in the euro area, but noted that more needs to be done to address financial fragmentation, repair bank and corporate sector balance sheets following a credible comprehensive assessment, and recapitalize weak banks in order to enhance confidence and revive credit. While acknowledging the EU Council's recent agreement on a Single Resolution Mechanism (SRM), Directors underscored the importance of completing the banking union, including through functional independence of the SRM with the capacity to undertake timely bank resolution and common backstops to sever the link between sovereigns and banks.

Directors noted that the appropriate policy measures will differ across emerging market economies, but observed that there are some common priorities. Exchange rates should be allowed to respond to changing fundamentals and facilitate external adjustment. Where international reserves are adequate, foreign exchange interventions can be used to smooth volatility and avoid financial disruption. In economies where inflationary pressures are still high, further monetary policy tightening may be necessary. If warranted, macroprudential measures can help contain the growth of corporate leverage, particularly in foreign currency. Strengthening the transparency and consistency of policy frameworks would contribute to building policy credibility.

Directors underscored the need for emerging market and low-income economies to rebuild fiscal buffers and rein in fiscal deficits (including by containing public sector contingent liabilities), particularly in the context of elevated public debt and financing vulnerabilities. Fiscal consolidation plans should be country specific and properly calibrated between tax and expenditure measures to support equitable, sustained growth. Priority social spending should be safeguarded, and the efficiency of public spending improved, through better targeting of social expenditures, rationalizing the public sector wage bill, and enhancing public investment project appraisal, selection, and audit processes.

Directors agreed that emerging market economies could enhance their resilience to global financial shocks through a deepening of their domestic financial markets and the development of a local investor base. They supported tightening prudential and regulatory oversight, including over nonbank institutions in China, removing implicit guarantees, and enhancing the role of market forces in the nonbank sector in order to mitigate financial stability risks and any negative cross-border spillovers.

Directors concurred that many emerging market and developing economies should implement other key structural reforms, designed to boost employment and prospects for diversified and sustained growth, while also promoting global rebalancing. Reforms should, among other things, encompass the removal of barriers to entry in product and services markets, improve the business climate and address key supply-side bottlenecks, and in China, support sustainable and balanced growth, including the shift from investment toward consumption.

GLOBAL FINANCIAL STABILITY REPORT
STATISTICAL APPENDIX, APRIL 2014

This presentation complements the main text of the *Global Financial Stability Report* (GFSR) with data on financial developments in regions and countries as well as in selected sectors.

Unless noted otherwise, the data reflect information available up to January 24, 2014. The data come for the most part from sources outside the IMF. Although the IMF endeavors to use the highest quality data available, it cannot be responsible for the accuracy of information obtained from independent sources.

Please note that effective with the April 2011 issue, the IMF's Statistics Department has assumed responsibility for compiling the Financial Soundness Indicators tables, and those tables are no longer part of this appendix. However, those tables will continue to be linked to the GFSR Statistical Appendix on the IMF's public website.

The following symbols are used in this appendix:

. . . to indicate that data are not available;

— to indicate that the figure is zero or less than half the final digit shown or that the item does not exist;

– between years and months (for example, 2008–09 or January–June) to indicate the years or months covered, including the beginning and ending years or months;

/ between years (for example, 2008/09) to indicate a fiscal or financial year.

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

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

"n.a." means not applicable.

Minor discrepancies between constituent figures and totals are due to rounding.

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

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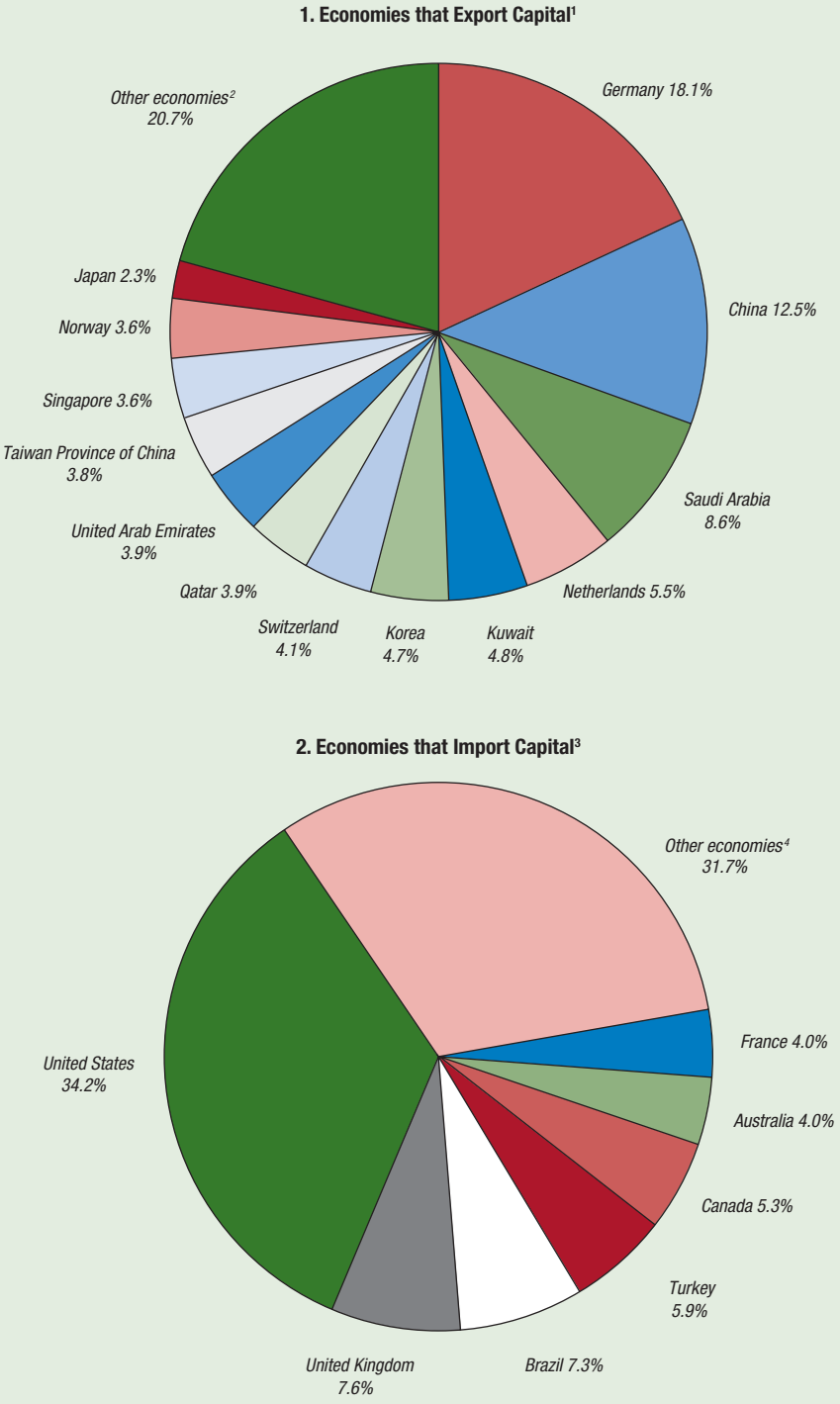
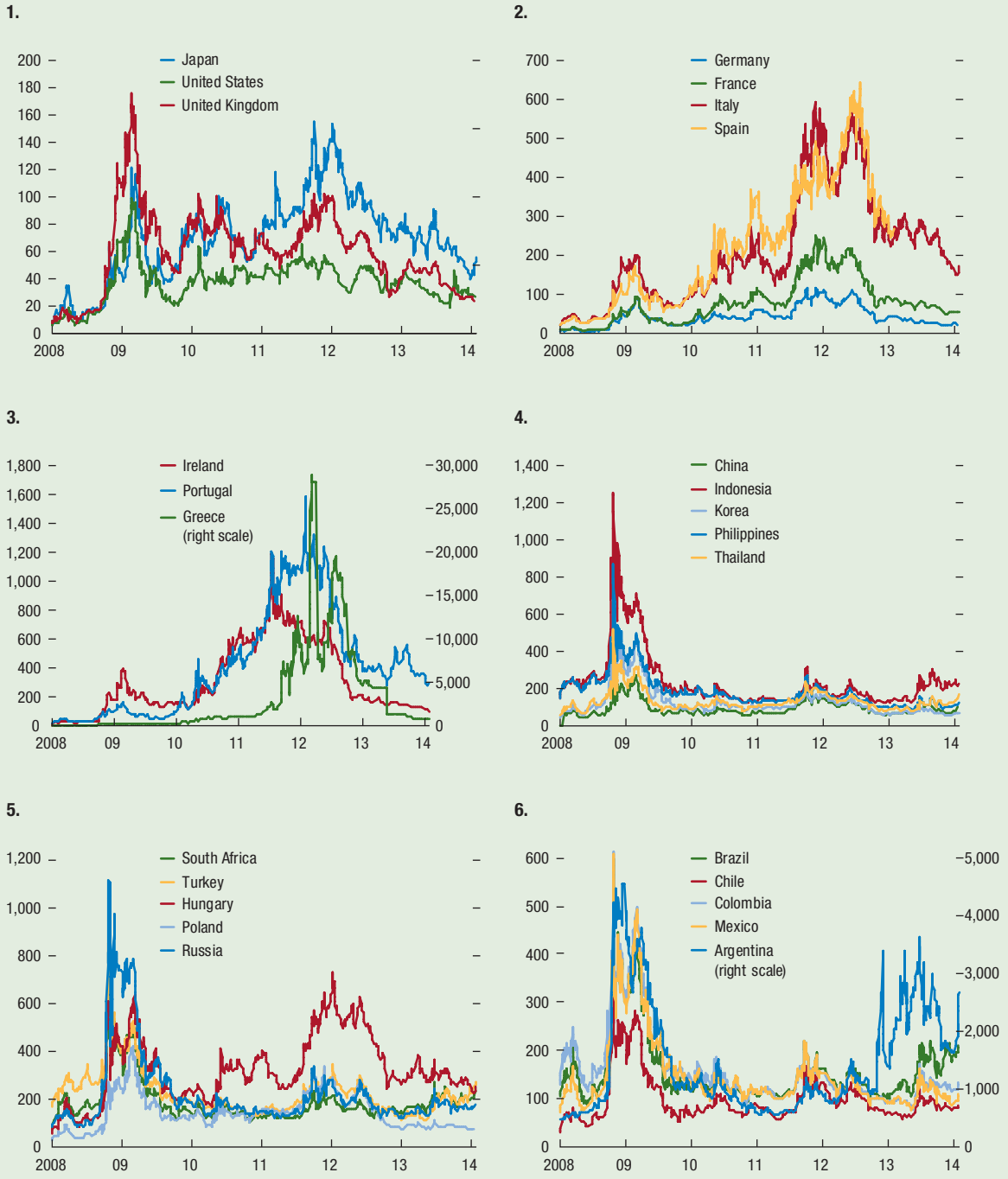
Figure 1. Major Net Exporters and Importers of Capital, 2013



Source: IMF, World Economic Outlook database as of March 28, 2014.
[1]As measured by economies' current account surplus (assuming errors and omissions are part of the capital and financial accounts).
[2]Other economies include all economies with shares of total surplus less than 2.3 percent.
[3]As measured by economies' current account deficit (assuming errors and omissions are part of the capital and financial accounts).
[4]Other economies include all economies with shares of total deficit less than 4.0 percent.

Figure 2. Sovereign Credit Default Swap Spreads

(Five-year tenors; basis points)

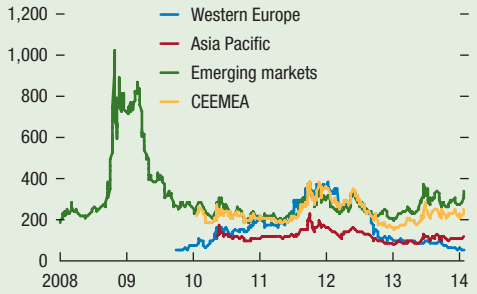


Source: Bloomberg L.P.

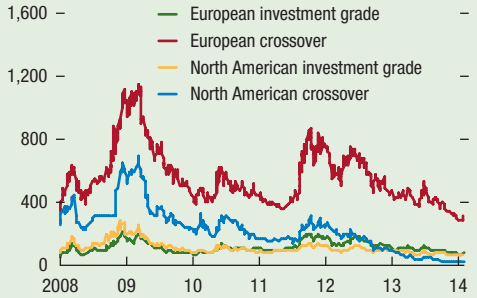
Figure 3. Selected Credit Default Swap Spreads

(Five-year tenors; basis points)

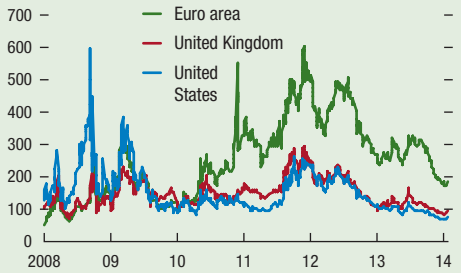
1. Sovereigns by Region



2. Corporates by Credit Quality



3. Banks by Region

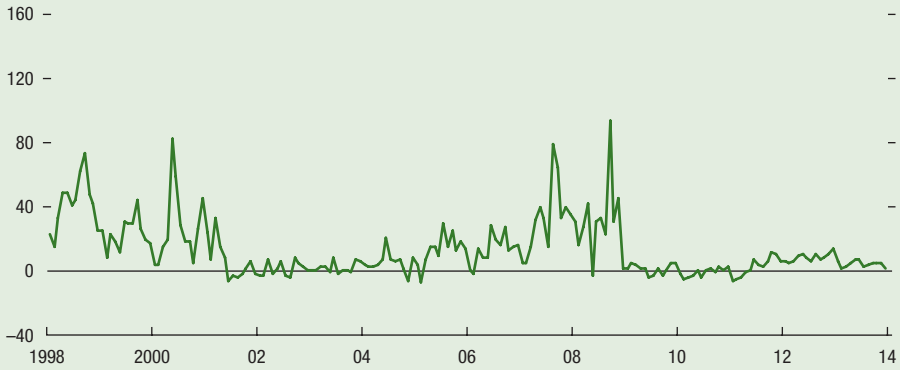


Sources: Bloomberg, L.P.; and Thomson Reuters Datastream.
Note: CEEMEA = Central and Eastern Europe, Middle East, and Africa.

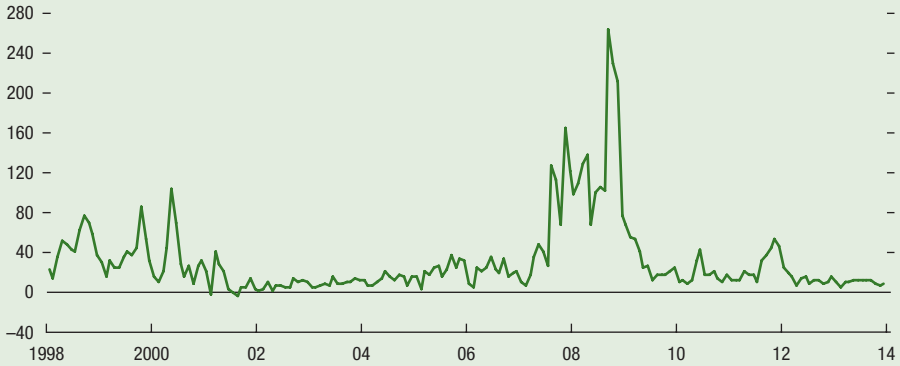
Figure 4. Selected Spreads

(Basis points; monthly data)

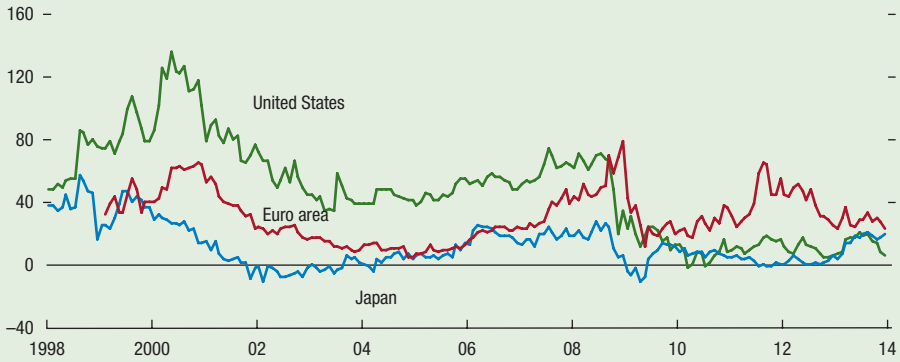
1. Repo Spread[1]



2. Commercial Paper Spread[2]

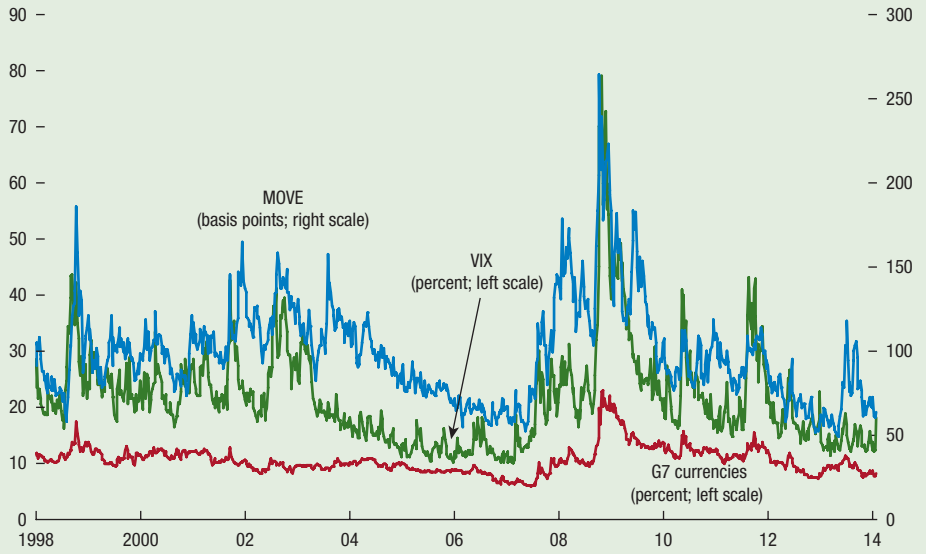


3. Swap Spreads[3]



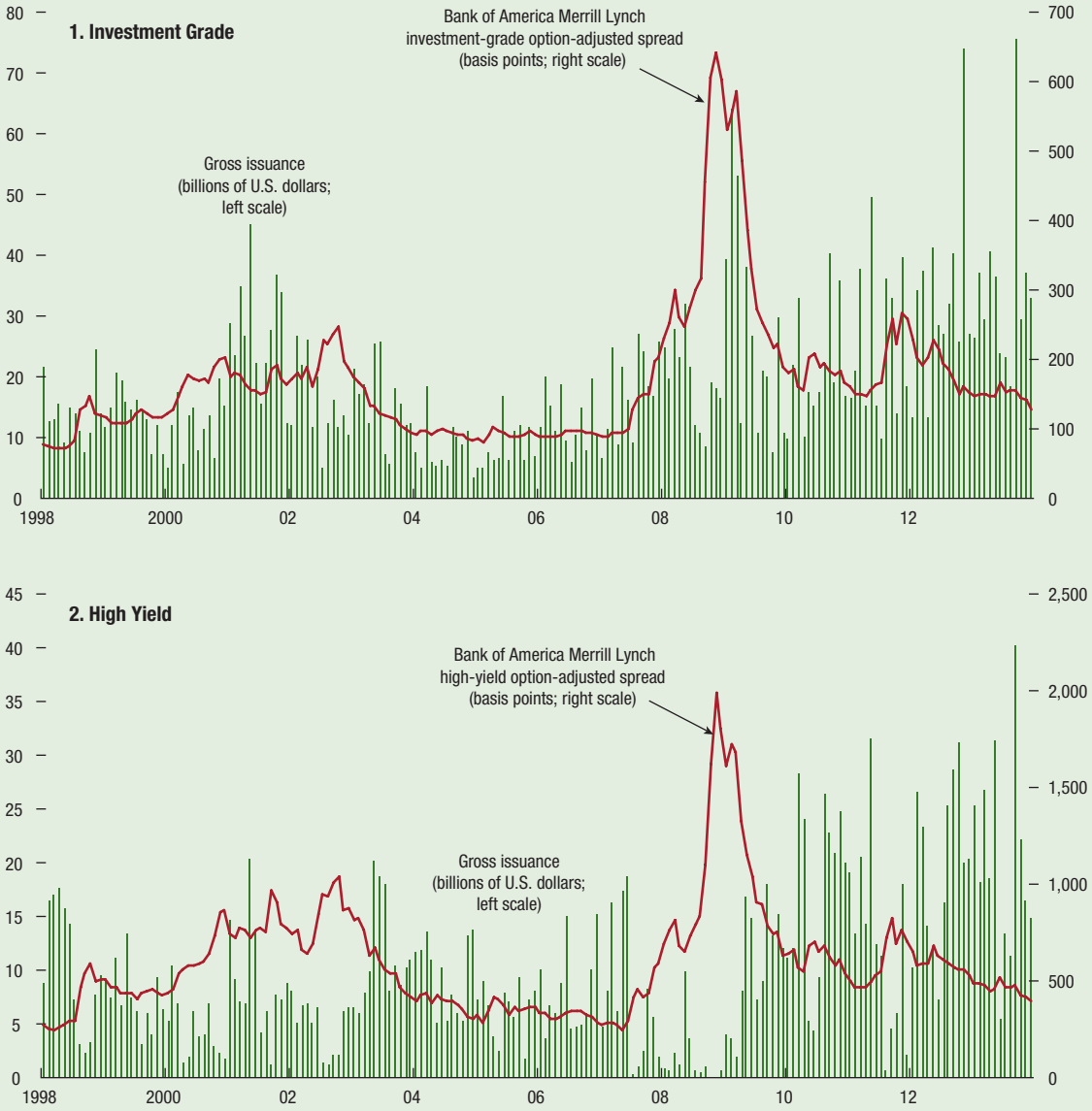
Sources: Bank of America Merrill Lynch and Bloomberg, L.P.
[1]Spread between yields on three-month U.S. Treasury repo and on three-month U.S. Treasury bill.
[2]Spread between yields on 90-day investment-grade (financial and nonfinancial) commercial paper and on three-month U.S. Treasury bill.
[3]Spread over 10-year government bond.

Figure 5. Implied Volatility Indices



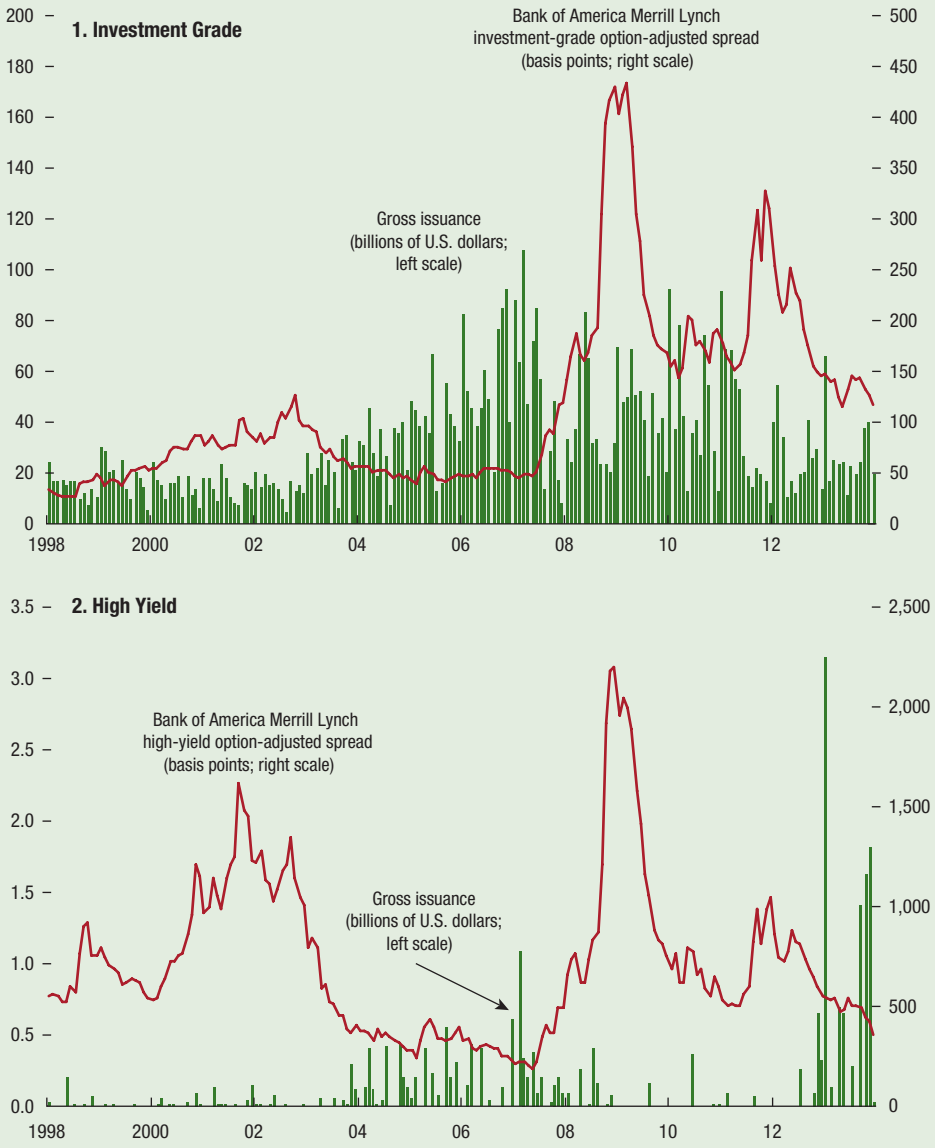
Source: Bloomberg, L.P.
Note: MOVE = Bank of America Merrill Lynch Option Volatility Estimate index and denotes one-month Treasury options volatility. VIX = Chicago Board Options Exchange volatility index on the Standard & Poor's 500 and denotes equity volatility. G7 currencies = VXY index from J.P. Morgan Chase & Co. and denotes G7 foreign exchange volatility.

Figure 6. U.S. Corporate Bond Market



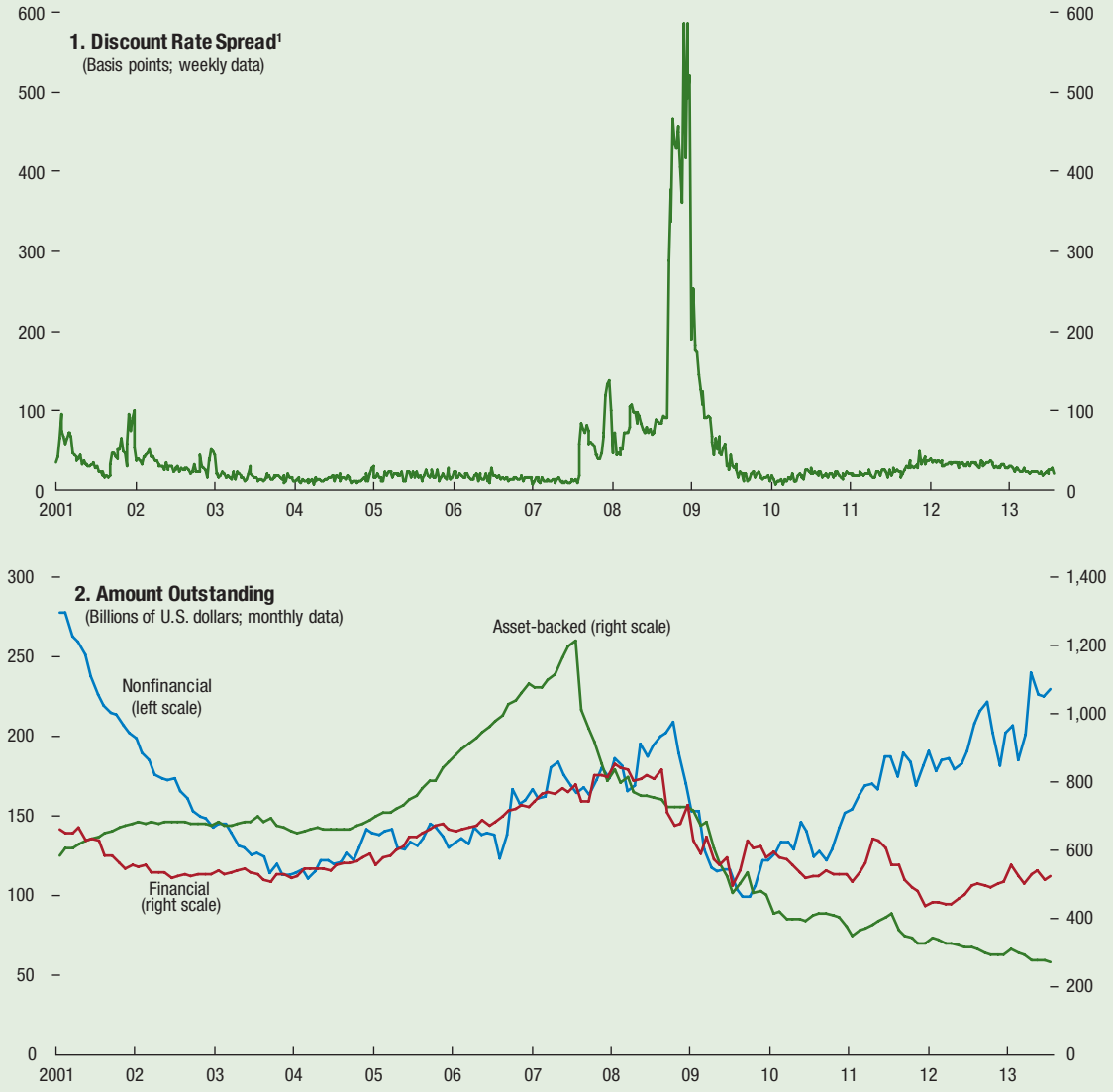
Sources: Bank of America Merrill Lynch and Board of Governors of the Federal Reserve System.

Figure 7. Euro Area Corporate Bond Market



Sources: Bank of America Merrill Lynch and Dealogic.

Figure 8. U.S. Commercial Paper Market



Source: Board of Governors of the Federal Reserve System.
[1]Difference between 30-day A2/P2 and AA nonfinancial commercial paper.

Table 1. Capital Market Size: Selected Indicators, 2012

(Billions of U.S. dollars, unless noted otherwise)

	GDP	Total Reserves Minus Gold[2]	Stock Market Capitalization	Total Debt Securities[3]	Bank Assets[4]	Bonds, Equities, and Bank Assets[5]	Bonds, Equities, and Bank Assets[5] (percent of GDP)
World	**72,105.8**	**11,405.7**	**52,848.5**	**98,973.9**	**121,946.5**	**273,768.9**	**379.7**
European Union[1]	**15,515.1**	**498.0**	**10,085.9**	**29,296.6**	**47,856.3**	**87,238.7**	**562.3**
Euro area	12,191.6	332.5	5,845.7	21,822.9	34,969.7	62,638.3	513.8
North America	**18,066.0**	**207.5**	**18,883.2**	**37,292.4**	**18,679.0**	**74,854.6**	**414.3**
Canada	1,821.4	68.4	2,027.6	2,100.6	3,856.5	7,984.7	438.4
United States	16,244.6	139.1	16,855.6	35,191.7	14,822.5	66,869.9	411.6
Japan	5,937.8	1,227.1	3,638.6	14,592.4	12,324.3	30,555.4	514.6
Memorandum Items:							
E.U. countries							
Austria	394.7	12.2	112.3	637.4	1,295.7	2,045.4	518.2
Belgium	483.2	18.6	297.8	736.2	1,330.4	2,364.3	489.3
Denmark	315.2	86.1	243.8	920.2	1,188.2	2,352.1	746.3
Finland	247.3	8.5	163.0	281.8	583.7	1,028.5	415.9
France	2,612.7	54.2	1,662.7	4,533.0	9,458.2	15,653.9	599.2
Germany	3,427.9	67.4	1,567.1	4,355.2	8,743.8	14,666.1	427.9
Greece	248.6	1.3	44.9	237.5	445.1	727.5	292.7
Ireland	210.8	1.4	107.2	1,204.6	1,151.4	2,463.3	1,168.8
Italy	2,014.4	50.5	509.7	3,895.4	3,212.9	7,618.0	378.2
Luxembourg	55.2	0.9	70.3	729.7	969.8	1,769.9	3,207.9
Netherlands	770.5	22.1	651.0	2,285.3	2,673.7	5,610.0	728.1
Portugal	212.3	2.2	70.9	395.7	656.4	1,123.1	529.1
Spain	1,323.2	35.5	567.9	2,422.1	4,246.6	7,236.7	546.9
Sweden	523.9	45.5	580.6	775.3	816.4	2,172.4	414.6
United Kingdom	2,484.4	88.6	3,415.7	5,778.2	10,882.0	20,075.9	808.1
Newly industrialized Asian economies[6]	**2,151.9**	**1,302.7**	**5,943.6**	**2,316.5**	**5,043.3**	**13,303.4**	**618.2**
Emerging market economies[7] of which:	**26,834.4**	**7,378.4**	**11,196.3**	**10,834.1**	**30,412.8**	**52,443.3**	**195.4**
Asia	12,383.3	4,187.3	5,852.7	5,491.5	21,081.3	32,425.6	261.8
Latin America and the Caribbean	5,632.6	798.3	2,475.6	3,590.0	3,947.7	10,013.3	177.8
Middle East and North Africa	3,084.2	1,278.2	895.3	221.1	1,921.3	3,037.6	98.5
Sub-Saharan Africa	1,275.7	201.9	606.1	259.8	631.1	1,497.0	117.4
Europe	4,458.6	912.7	1,366.6	1,271.7	2,831.5	5,469.8	122.7

Sources: Bank for International Settlements (BIS); Bankscope; Board of Governors of the Federal Reserve System, *Flow of Funds*; Bloomberg, L.P.; IMF, International Financial Statistics (IFS) and World Economic Outlook databases as of March 28, 2014; Standard and Poor's; and World Federation of Exchanges.

[1]This aggregate includes euro area countries, Denmark, Sweden, and the United Kingdom.

[2]Data are from IFS. For euro area, the data also include the total reserves minus gold holdings of the European Central Bank.

[3]Data are from BIS as of January 24, 2014. The data include total debt securities, all issuers, amounts outstanding by residence of issuer. BIS compilation methodology changed in December 2012. For the new data definition and classification, refer to "Enhancements to the BIS Debt Securities Statistics" publication.

[4]Total assets of domestic commercial banks, including foreign banks' subsidiaries operated domestically. For Austria, the data are from Austrian National Bank. For Germany, the data are from Deutsche Bundesbank. They comprise the assets of monetary and financial institutions, excluding special purpose banks, mortgage banks, and building and loan associations. For Ireland, the data are from Central Bank of Ireland. For Luxembourg, the data are from Commission de Surveillance du Secteur Financier. They comprise the assets of commercial, savings, and private banks. For Portugal, the data are from Bank of Portugal. For the United States, the data are from the Flow of Funds. They comprise the assets of private depository institutions.

[5]Sum of the stock market capitalization, debt securities, and bank assets.

[6]Hong Kong SAR, Korea, Singapore, and Taiwan Province of China.

[7]This aggregate comprises the group of emerging and developing economies defined in the *World Economic Outlook*.

Table 2. Morgan Stanley Capital International: Equity Market Indices

(Period-on-period percent change)

	2010	2011	2012	2013	2013 Q1	2013 Q2	2013 Q3	2013 Q4
	Period-over-Period Percent Change							
Global	**10.4**	**–9.4**	**13.4**	**20.3**	**6.0**	**–1.2**	**7.4**	**6.9**
Emerging Markets Index[1]	**16.4**	**–20.4**	**15.1**	**–5.0**	**–1.9**	**–9.1**	**5.0**	**1.5**
Latin America	**12.1**	**–21.9**	**5.4**	**–15.7**	**0.5**	**–16.5**	**3.6**	**–3.1**
Brazil	3.8	–24.9	–3.5	–18.7	–1.3	–18.4	7.7	–6.2
Chile	41.8	–22.1	5.6	–23.0	4.1	–15.5	–5.6	–7.3
Colombia	40.8	–7.1	31.6	–23.7	–6.8	–15.1	9.1	–11.5
Mexico	26.0	–13.5	27.1	–2.0	5.9	–11.7	–2.0	7.0
Peru	49.2	–23.9	15.5	–31.0	–2.7	–28.4	–3.8	2.9
Asia	**16.6**	**–19.1**	**18.1**	**–0.2**	**–1.6**	**–6.3**	**4.5**	**3.6**
China	2.6	–20.4	18.7	0.4	–4.4	–9.1	11.5	3.7
India	14.7	–26.3	27.9	6.9	–3.5	2.6	–0.7	8.8
Indonesia	25.8	4.7	8.8	–5.3	14.1	–6.1	–11.5	–0.2
Korea	22.1	–11.5	11.7	1.6	–0.3	–7.7	8.1	2.2
Malaysia	19.3	–0.2	6.8	11.6	–0.1	7.0	–0.8	5.2
Pakistan	21.4	–12.9	33.5	36.9	2.8	14.3	4.9	11.0
Philippines	23.5	–3.1	34.7	3.4	17.1	–4.0	–4.9	–3.3
Taiwan Province of China	7.9	–20.3	8.8	9.4	2.8	1.8	–0.5	5.1
Thailand	36.4	–1.2	26.9	–10.7	4.7	–4.2	–5.3	–6.0
Europe, Middle East, and Africa	**20.9**	**–22.6**	**17.7**	**–8.0**	**–5.8**	**–9.8**	**8.5**	**–0.2**
Czech Republic[1]	–5.9	–6.8	–6.1	–11.2	–9.5	–12.2	7.8	3.6
Egypt	15.9	–46.8	52.5	15.9	–4.7	–8.6	10.5	20.4
Hungary	–1.6	–23.7	8.1	–11.2	0.2	4.5	–7.8	–8.1
Morocco	17.2	–16.5	–17.6	–10.4	–0.9	–7.1	–3.2	0.6
Poland	16.3	–21.7	19.0	–4.2	–7.0	–3.5	6.9	–0.1
Russia	17.2	–20.9	9.6	–2.6	–3.2	–11.1	13.1	0.2
South Africa	17.4	0.9	20.6	12.5	–2.4	–0.4	9.4	5.8
Turkey	21.5	–22.4	51.7	–13.4	9.7	–11.4	–2.2	–8.9
Sectors								
Energy	7.5	–20.1	2.5	–13.6	–6.0	–13.9	9.9	–2.8
Materials	14.7	–23.0	6.4	–13.4	–9.3	–14.1	7.9	3.1
Industrials	27.1	–30.6	14.9	–2.8	–1.5	–9.6	6.5	2.5
Consumer Discretionary	29.5	–10.4	14.6	4.3	–2.6	–3.6	8.6	2.3
Consumer Staples	27.6	–1.4	23.0	–5.5	1.6	–4.5	–0.7	–1.9
Health Care	25.7	–23.2	31.6	8.0	2.5	–1.0	2.0	4.4
Financials	14.5	–25.6	22.0	–7.0	1.5	–11.3	2.7	0.6
Information Technology	13.9	–17.1	26.3	12.2	0.8	–4.0	7.5	7.8
Telecommunications	10.9	–8.0	9.6	–5.3	–5.5	–1.0	1.6	–0.3
Utilities	4.9	–16.4	2.4	–5.9	1.6	–11.8	0.7	4.3

Table 2. *(concluded)*

	2010	2011	2012	2013	2013 Q1	2013 Q2	2013 Q3	2013 Q4
	Period-over-Period Percent Change							
Developed Markets	**9.6**	**–7.6**	**13.2**	**24.1**	**7.2**	**–0.1**	**7.7**	**7.6**
Australia	–3.5	–14.9	14.9	15.7	7.3	–2.9	8.1	2.7
Austria	14.8	–35.7	20.7	6.1	–2.4	–5.3	13.6	1.0
Belgium	4.6	–9.6	34.0	19.2	11.7	–7.4	9.0	5.7
Canada	12.0	–12.2	4.3	10.2	2.4	–4.5	5.4	6.9
Denmark	39.0	–14.3	28.1	18.1	5.6	–5.3	9.0	8.3
Finland	7.1	–34.2	10.0	41.6	1.8	–1.6	26.6	11.6
France	–6.7	–19.3	17.7	23.3	0.4	0.8	15.3	5.7
Germany	6.0	–20.1	27.2	28.2	–0.1	0.5	12.7	13.3
Greece	–46.4	–63.6	–0.8	46.2	14.0	–12.8	33.6	10.1
Hong Kong SAR	19.7	–18.4	24.4	8.1	3.1	–5.9	8.1	3.0
Ireland	–19.7	11.4	3.8	38.9	11.4	–3.7	16.4	11.3
Israel	2.2	–29.8	–7.0	8.0	6.6	–5.3	1.2	5.7
Italy	–17.6	–25.8	8.6	16.9	–9.8	–1.4	19.0	10.5
Japan	13.4	–16.2	5.8	24.9	10.7	4.2	6.0	2.1
Netherlands	–0.6	–14.4	17.2	28.5	2.2	1.3	14.4	8.4
New Zealand	3.2	1.1	23.0	6.2	8.0	–10.4	14.9	–4.5
Norway	7.4	–12.8	13.7	5.3	0.5	–8.5	8.6	5.5
Portugal	–14.6	–25.7	–0.7	7.5	–0.3	–3.6	10.5	1.3
Singapore	18.4	–21.0	26.4	–1.8	2.8	–7.6	3.2	0.2
Spain	–25.4	–16.9	–3.3	27.7	–6.4	–1.5	25.1	10.8
Sweden	31.3	–17.8	18.7	21.4	8.6	–7.7	15.2	5.2
Switzerland	9.8	–9.1	17.3	23.8	10.4	–1.7	9.4	4.3
United Kingdom	8.5	–5.4	5.9	14.1	8.6	–3.2	4.0	4.3
United States	13.2	–0.1	13.5	29.9	10.1	2.2	5.2	9.7

Source: Morgan Stanley Capital International (MSCI).

Note: Price indices are in local currency terms.

[1]The country and regional classifications used in this table follow the conventions of MSCI and do not necessarily conform to IMF country classifications or regional groupings.

Table 3. Emerging Markets Bond Index: Global Sovereign Yield Spreads

(Basis points)

	2010	2011	2012	2013	2013 Q1	2013 Q2	2013 Q3	2013 Q4
				End-of-Period Spread Levels				
EMBI Global	**289**	**426**	**266**	**327**	**307**	**353**	**355**	**327**
Latin America	**357**	**468**	**326**	**393**	**358**	**424**	**412**	**393**
Argentina	507	925	991	808	1,307	1,199	1,035	808
Belize	617	1,391	2,245	807	789	872	872	807
Brazil	189	225	140	230	190	243	245	230
Chile	115	172	116	148	153	180	171	148
Colombia	172	191	112	163	147	193	187	163
Dominican Republic	322	597	343	349	385	401	429	349
Ecuador	913	846	826	530	700	665	628	530
El Salvador	302	478	396	389	350	436	409	389
Jamaica	427	637	711	641	680	623	637	641
Mexico	173	222	155	177	182	223	210	177
Panama	162	201	129	199	169	218	208	199
Peru	165	216	114	162	147	201	184	162
Uruguay	188	213	127	194	173	235	200	194
Venezuela	1,114	1,258	786	1,141	797	976	1,010	1,141
Europe	**231**	**440**	**208**	**280**	**270**	**300**	**310**	**280**
Belarus	623	1,164	695	714	630	747	950	714
Bulgaria	195	340	94	…	99	114	65	68
Croatia	298	602	311	306	386	361	366	306
Georgia	504	471	357	382	363	402	416	382
Hungary	345	605	345	278	429	352	329	278
Kazakhstan	324	453	207	275	270	316	295	275
Lithuania	267	447	149	149	182	211	175	149
Poland	151	310	108	118	145	157	153	118
Romania	…	…	235	201	283	270	241	201
Russia	224	364	157	208	210	234	231	208
Serbia	418	601	391	374	416	440	432	374
Turkey	177	385	177	310	229	255	284	310
Ukraine	461	940	632	763	631	782	996	763
Middle East	**284**	**439**	**426**	**393**	**450**	**450**	**459**	**393**
Iraq	314	603	465	511	494	576	535	511
Jordan	…	500	436	290	446	348	321	290
Lebanon	270	384	412	366	437	419	443	366
Africa	**329**	**452**	**264**	**322**	**312**	**381**	**360**	**322**
Côte d'Ivoire	1,154	1,192	473	442	483	573	492	442
Egypt	221	607	453	443	672	764	537	443
Gabon	258	422	252	348	237	313	353	348
Ghana	363	534	397	547	412	525	552	547
Nigeria	…	435	261	293	288	369	348	293
South Africa	145	261	163	247	217	268	275	247
Asia	**175**	**271**	**165**	**224**	**201**	**239**	**260**	**224**
China	126	278	146	149	153	194	175	149
Indonesia	183	274	179	292	226	275	324	292
Malaysia	117	178	98	139	128	163	152	139
Pakistan	654	1,274	798	606	1,039	703	637	606
Philippines	163	242	121	133	153	172	173	133
Sri Lanka	290	461	342	439	379	436	469	439
Vietnam	323	510	304	274	280	358	329	274

Table 3. *(concluded)*

	2010	2011	2012	2013	2013 Q1	2013 Q2	2013 Q3	2013 Q4
				Period-over-Period Spread Level Changes				
EMBI Global	**–6**	**138**	**–161**	**61**	**42**	**46**	**2**	**–28**
Latin America	**2**	**111**	**–142**	**67**	**32**	**66**	**–12**	**–19**
Argentina	–153	418	66	–183	316	–108	–164	–227
Belize	–560	774	854	–1,438	–1,456	83	0	–65
Brazil	0	36	–85	90	50	53	2	–15
Chile	20	57	–56	32	37	27	–9	–23
Colombia	–26	19	–79	51	35	46	–6	–24
Dominican Republic	–83	275	–254	6	42	16	28	–80
Ecuador	144	–67	–20	–296	–126	–35	–37	–98
El Salvador	–24	176	–82	–7	–46	86	–27	–20
Jamaica	–292	210	74	–70	–31	–57	14	4
Mexico	–19	49	–67	22	27	41	–13	–33
Panama	–4	39	–72	70	40	49	–10	–9
Peru	0	51	–102	48	33	54	–17	–22
Uruguay	–50	25	–86	67	46	62	–35	–6
Venezuela	73	144	–472	355	11	179	34	131
Europe	**5**	**209**	**–232**	**72**	**62**	**30**	**10**	**–30**
Belarus	…	541	–469	19	–65	117	203	–236
Bulgaria	16	145	–246	…	5	15	–49	3
Croatia	103	304	–291	–5	75	–25	5	–60
Georgia	37	–33	–114	25	6	39	14	–34
Hungary	159	260	–260	–67	84	–77	–23	–51
Kazakhstan[1]	–69	129	–246	68	63	46	–21	–20
Lithuania	–65	180	–298	0	33	29	–36	–26
Poland	27	159	–202	10	37	12	–4	–35
Romania	…	…	…	–34	48	–13	–28	–40
Russia	21	140	–207	51	53	24	–3	–23
Serbia	85	183	–210	–17	25	24	–8	–58
Turkey	–20	208	–208	133	52	26	29	26
Ukraine	–528	479	–308	131	–1	151	214	–233
Middle East	**–51**	**155**	**–13**	**–33**	**24**	**0**	**9**	**–66**
Iraq	–133	289	–138	46	29	82	–41	–24
Jordan	…	…	–64	–146	10	–98	–27	–31
Lebanon	–17	114	28	–46	25	–18	24	–77
Africa	**118**	**123**	**–188**	**58**	**48**	**69**	**–21**	**–38**
Côte d'Ivoire	…	38	–719	–31	10	90	–81	–50
Egypt	224	386	–154	–10	219	92	–227	–94
Gabon	–132	164	–170	96	–15	76	40	–5
Ghana	–99	171	–137	150	15	113	27	–5
Nigeria	…	…	–174	32	27	81	–21	–55
South Africa	–4	116	–98	84	54	51	7	–28
Asia	**–31**	**96**	**–106**	**59**	**36**	**38**	**21**	**–36**
China	62	152	–132	3	7	41	–19	–26
Indonesia	-47	91	–95	113	47	49	49	–32
Malaysia	-19	61	–80	41	30	35	–11	–13
Pakistan	-34	620	–476	–192	241	–336	–66	–31
Philippines	-43	79	–121	12	32	19	1	–40
Sri Lanka	-92	171	–119	97	37	57	33	–30
Vietnam	9	187	–206	–30	–24	78	–29	–55

Source: J.P. Morgan Chase & Co.

Note: EMBI = emerging market bond index. The country and regional classifications used in this table follow the conventions of J.P. Morgan and do not necessarily conform to IMF country classifications or regional groupings.

[1]Kazakh debt consists of state-owned enterprises.

Table 4. Emerging Market Private External Financing: Total Bonds, Equities, and Loans

(Millions of U.S. dollars)

					2013			
	2010	2011	2012	2013	Q1	Q2	Q3	Q4
Total	**869,103.6**	**750,514.1**	**769,012.8**	**912,039.2**	**266,122.4**	**257,591.3**	**183,293.9**	**214,085.6**
Sub-Saharan Africa	**36,578.7**	**39,868.3**	**44,036.1**	**51,589.9**	**12,810.7**	**10,631.8**	**14,808.5**	**14,338.9**
Angola	4,391.2	3,110.7	3,847.9	4,996.2	2,500.0	1,241.7	1,014.8	239.8
Botswana	825.0	255.0	79.7	…	…	…	…	…
Burkina Faso	10.9	…	…	249.4	111.9	…	…	137.6
Burundi	15.0	69.5	157.6	…	…	…	…	…
Cameroon	…	239.6	492.1	91.0	91.0	…	…	…
Cape Verde	78.7	10.0	…	…	…	…	…	…
Chad	…	14.7	…	537.0	…	…	…	537.0
Congo	250.0	…	…	…	…	…	…	…
Congo, Democratic Republic of the	12.2	169.9	100.0	…	…	…	…	…
Côte d'Ivoire	97.0	930.9	152.6	523.0	163.0	…	60.0	300.0
Djibouti	…	1.2	…	…	…	…	…	…
Equatorial Guinea	…	390.0	600.0	…	…	…	…	…
Ethiopia	1,342.8	1,694.3	1,497.8	17.0	…	…	17.0	…
Gabon	500.2	197.5	493.8	2,104.5	…	300.0	…	1,804.5
Ghana	2,113.2	6,051.8	8,710.1	2,789.3	163.7	44.1	2,441.5	140.0
Guinea	…	34.8	198.9	100.0	…	…	100.0	…
Kenya	703.4	660.8	1,510.4	543.3	154.0	376.9	…	12.4
Liberia	1,902.5	11.0	24.9	220.0	130.0	…	90.0	…
Madagascar	78.8	…	…	75.2	75.2	…	…	…
Malawi	…	39.0	…	…	…	…	…	…
Mali	…	68.5	…	…	…	…	…	…
Mauritania	…	64.4	…	…	…	…	…	…
Mauritius	…	14.0	240.0	2,255.0	270.0	…	…	1,985.0
Mozambique	164.9	206.9	84.5	820.8	…	…	460.3	360.6
Namibia	…	536.2	23.2	60.6	60.6	…	…	…
Niger	20.0	…	15.0	550.0	…	550.0	…	…
Nigeria	3,851.5	4,372.3	3,171.6	16,205.7	5,210.4	5,497.7	4,749.9	747.8
Réunion	44.3	…	27.2	…	…	…	…	…
Rwanda	14.0	284.9	13.6	392.9	…	392.9	…	…
Senegal	348.1	515.4	…	…	…	…	…	…
Sierra Leone	44.4	217.6	95.3	…	…	…	…	…
South Africa	16,450.3	17,761.0	16,444.5	18,040.8	3,281.0	2,228.6	5,625.1	6,906.1
Sudan	89.3	…	2,000.0	…	…	…	…	…
Tanzania	398.0	1,078.4	331.4	898.2	600.0	…	250.0	48.2
Togo	…	…	52.4	…	…	…	…	…
Uganda	2,242.5	25.0	225.8	120.0	…	…	…	120.0
Zambia	533.0	576.2	3,065.9	…	…	…	…	…
Zimbabwe	57.5	267.0	380.0	…	…	…	…	…
Central and Eastern Europe	**95,287.8**	**124,007.1**	**91,452.7**	**95,866.2**	**27,370.2**	**27,711.6**	**15,912.5**	**24,872.0**
Albania	405.3	145.8	168.4	…	…	…	…	…
Bosnia and Herzegovina	70.5	92.0	6.2	138.7	…	132.2	6.5	…
Bulgaria	360.0	281.2	2,268.2	2,141.8	98.3	251.5	…	1,792.0
Croatia	2,602.0	4,376.9	4,213.0	4,186.0	1,485.8	464.1	243.2	1,993.0
Hungary	5,390.4	11,289.2	2,646.5	8,020.9	3,850.8	259.8	514.9	3,395.5
Latvia	374.5	528.8	2,233.5	…	…	…	…	…
Lithuania	3,023.6	1,666.4	2,442.4	899.4	860.4	38.9	…	…
Macedonia	113.6	357.3	61.5	32.9	…	…	…	32.9
Montenegro	369.2	287.0	15.9	108.5	…	…	…	108.5
Poland	42,385.8	49,518.6	20,789.3	13,474.7	7,297.3	1,054.5	1,742.5	3,380.4
Romania	3,241.7	13,469.9	6,181.9	6,763.7	1,759.9	709.8	2,359.0	1,935.0
Serbia	577.0	2,757.9	3,218.4	3,494.6	1,476.0	…	…	2,018.6
Turkey	36,374.1	39,235.9	47,207.6	56,605.0	10,541.7	24,800.8	11,046.3	10,216.2

Table 4. *(continued)*

	2010	2011	2012	2013	2013 Q1	2013 Q2	2013 Q3	2013 Q4
Commonwealth of Independent States	**106,090.4**	**118,690.7**	**138,358.1**	**142,115.3**	**62,344.4**	**37,689.9**	**20,875.9**	**21,205.1**
Armenia	105.6	143.6	31.0	840.2	…	…	840.2	…
Azerbaijan	3,615.1	1,417.0	1,372.7	1,604.3	1,000.0	446.3	120.5	37.5
Belarus	1,837.7	5,102.9	11,008.0	63.5	…	…	…	63.5
Kazakhstan	5,979.6	3,751.6	8,707.2	10,121.8	1,653.4	7,784.8	224.2	459.4
Kyrgyzstan	5.8	3.0	…	…	…	…	…	…
Moldova	23.2	21.7	60.0	…	…	…	…	…
Mongolia[1]	1,228.6	271.7	3,676.6	463.5	…	…	82.0	381.5
Russia	83,881.9	92,392.8	100,516.9	108,062.1	47,862.6	26,139.2	17,290.8	16,769.6
Tajikistan	10.5	8.0	…	…	…	…	…	…
Turkmenistan	500.2	4,225.0	…	297.2	…	…	297.2	…
Ukraine	8,491.1	11,328.6	10,031.7	12,762.7	3,928.4	3,319.6	2,021.0	3,493.7
Uzbekistan	411.2	25.0	2,954.0	7,900.0	7,900.0	…	…	…
Developing Asia	**248,634.2**	**201,663.7**	**223,110.2**	**303,401.0**	**79,041.0**	**99,899.9**	**48,385.1**	**76,075.1**
Bangladesh	197.0	228.0	1,686.6	791.1	46.1	345.0	…	400.0
Bhutan	47.4	…	…	…	…	…	…	…
Brunei Darussalam	…	…	353.5	170.0	…	…	…	170.0
Cambodia	65.0	591.0	155.8	216.5	156.0	60.5	…	…
China	111,037.8	78,647.8	90,693.0	159,111.4	35,156.1	49,046.9	28,428.0	46,480.4
Fiji	…	250.2	…	1.1	…	…	…	1.1
India	67,259.3	51,928.0	46,947.8	50,651.1	18,965.2	13,299.8	3,729.0	14,657.2
Indonesia	24,755.4	28,711.4	29,765.3	32,609.0	7,830.6	13,121.2	6,105.7	5,551.4
Laos	1,143.2	120.0	241.5	293.6	…	50.4	…	243.2
Macao SAR	732.6	2,751.8	2,850.0	2,020.7	1,072.7	75.3	272.7	600.0
Malaysia	12,690.4	10,775.4	18,300.4	13,382.6	5,306.7	4,297.6	2,436.8	1,341.6
Maldives	…	2.0	16.0	115.0	115.0	…	…	…
Marshall Islands	550.0	1,946.5	497.9	690.0	…	330.0	360.0	…
Myanmar	2,400.0	…	…	…	…	…	…	…
Pakistan	516.2	1,270.6	1,499.2	222.8	1.5	…	…	221.3
Papua New Guinea	…	980.3	222.0	600.0	…	…	…	600.0
Philippines	12,556.5	8,168.1	9,438.0	14,915.9	4,849.0	5,505.5	2,440.7	2,120.7
Sri Lanka	1,310.8	1,791.6	2,076.9	1,612.1	196.3	560.0	755.8	100.0
Thailand	7,975.3	6,674.4	14,776.0	17,793.1	5,245.8	7,855.4	2,974.1	1,717.8
Vietnam	5,397.1	6,826.5	3,590.3	8,205.1	100.0	5,352.4	882.3	1,870.3

(continued)

Table 4. *(concluded)*

					2013			
	2010	2011	2012	2013	Q1	Q2	Q3	Q4
Middle East and North Africa	**110,410.9**	**74,247.8**	**77,154.9**	**97,910.7**	**29,988.7**	**28,197.4**	**16,132.4**	**23,592.2**
Algeria	12.9	…	…	188.0	…	188.0	…	…
Bahrain	5,666.3	2,513.0	3,439.7	2,957.5	650.0	815.8	1,491.7	…
Egypt	16,541.0	8,788.1	3,628.2	5,153.1	40.0	4,543.7	133.5	436.0
Iran	…	…	214.9	419.0	…	…	419.0	…
Iraq	991.0	831.8	…	…	…	…	…	…
Jordan	1,479.0	1,860.0	277.0	2,064.5	608.0	…	…	1,456.5
Kuwait	3,962.2	2,246.0	1,223.5	4,658.8	266.7	861.7	911.7	2,618.7
Lebanon	1,925.0	2,687.4	2,324.3	1,839.6	…	1,095.6	…	744.0
Libya	…	40.0	…	…	…	…	…	…
Morocco	3,764.8	318.0	3,509.3	1,455.0	…	948.9	40.0	466.2
Oman	3,604.9	2,310.5	994.2	1,240.3	499.2	6.3	350.0	384.8
Qatar	14,025.9	13,900.9	16,379.6	8,910.1	2,235.8	2,825.5	180.0	3,668.8
Saudi Arabia	17,766.7	9,627.0	12,576.6	18,994.8	3,420.9	6,836.4	5,297.1	3,440.4
Tunisia	930.2	997.7	1,586.7	703.0	9.2	378.4	228.4	87.0
United Arab Emirates	39,320.9	27,563.7	30,876.0	49,327.1	22,258.9	9,697.3	7,081.1	10,289.8
West Bank and Gaza	50.3	…	125.0	…	…	…	…	…
Yemen	369.8	563.7	…	…	…	…	…	…
Latin America and the Caribbean	**272,101.7**	**192,036.5**	**194,900.9**	**230,210.0**	**54,567.4**	**53,460.8**	**67,179.5**	**55,002.4**
Anguilla	2.3	…	…	…	…	…	…	…
Antigua and Barbuda	…	…	…	94.0	…	94.0	…	…
Argentina	5,136.3	10,142.3	2,697.6	3,685.6	688.7	673.8	725.5	1,597.5
Aruba	…	…	253.0	…	…	…	…	…
Barbados	403.3	…	340.0	400.0	…	400.0	…	…
Bolivia	253.0	200.0	500.0	789.0	…	…	489.0	300.0
Brazil	154,757.3	77,274.4	73,347.1	74,299.9	15,844.3	29,307.8	16,000.7	13,147.1
Chile	12,541.6	17,444.7	22,714.9	29,626.7	9,756.9	5,015.1	3,689.3	11,165.4
Colombia	5,519.3	16,500.1	11,885.1	16,628.7	5,184.8	1,968.5	4,174.4	5,301.0
Costa Rica	31.0	479.0	1,322.4	3,225.8	…	1,658.8	500.0	1,067.0
Dominican Republic	2,475.6	1,209.0	900.0	1,822.4	297.4	1,000.0	25.0	500.0
Ecuador	22.0	36.0	…	1,355.2	85.0	625.0	645.2	…
El Salvador	644.1	653.5	1,099.9	418.5	304.5	114.0	…	…
Guadeloupe	…	…	…	26.4	26.4	…	…	…
Guatemala	604.0	333.2	1,429.9	1,518.9	690.8	109.2	…	718.9
Haiti	…	…	…	26.5	…	26.5	…	…
Honduras	…	…	…	1,000.0	500.0	…	…	500.0
Jamaica	1,833.5	1,568.4	1,770.5	1,821.5	1,300.0	0.5	1.9	519.1
Mexico	44,990.4	38,804.1	60,006.6	74,952.0	13,848.9	7,872.3	35,921.8	17,309.0
Nicaragua	185.0	…	…	130.0	…	…	130.0	…
Panama	1,478.2	3,138.2	2,455.4	3,365.8	508.0	1,303.0	538.1	1,016.7
Paraguay	…	100.0	651.0	500.0	500.0	…	…	…
Peru	9,323.9	4,841.5	10,460.3	10,923.2	4,815.9	3,011.9	1,784.7	1,310.7
Trinidad and Tobago	93.5	182.5	27.2	716.2	…	…	166.2	550.0
Turks and Caicos Islands	…	170.0	…	…	…	…	…	…
Uruguay	…	3,323.8	720.0	2,493.0	215.8	280.5	1,996.7	…
Venezuela	31,807.7	15,635.8	2,320.0	391.0	…	…	391.0	…

Source: Dealogic.

Note: For inclusion criteria, please see notes for Tables 5, 6, and 7.

[1]Mongolia is not a member of the Commonwealth of Independent States, but it is included in this group for reasons of geography and similarities in economic structure.

Table 5. Emerging Market Private External Financing: Bonds

(Millions of U.S. dollars)

					2013			
	2010	2011	2012	2013	Q1	Q2	Q3	Q4
Total	**253,377.8**	**252,271.1**	**363,653.5**	**402,183.8**	**115,391.5**	**112,563.8**	**81,313.9**	**92,914.6**
Sub-Saharan Africa	**4,673.1**	**8,113.1**	**9,306.3**	**13,923.8**	**1,565.7**	**900.0**	**8,063.6**	**3,394.5**
Angola	…	…	1,000.0	…	…	…	…	…
Botswana	…	…	79.7	…	…	…	…	…
Gabon	…	…	…	1,593.0	…	…	…	1,593.0
Ghana	…	…	…	993.6	…	…	993.6	…
Mozambique	…	…	…	810.3	…	…	460.3	350.0
Namibia	…	490.6	…	…	…	…	…	…
Nigeria	…	986.0	350.0	2,553.9	575.0	298.4	1,282.6	397.9
Rwanda	…	…	…	392.9	…	392.9	…	…
Senegal	…	487.9	…	…	…	…	…	…
South Africa	4,673.1	6,148.7	7,140.8	6,980.2	390.7	208.7	5,327.2	1,053.7
Tanzania	…	…	…	600.0	600.0	…	…	…
Zambia	…	…	735.8	…	…	…	…	…
Central and Eastern Europe	**30,879.2**	**31,853.1**	**53,189.2**	**42,113.7**	**15,529.7**	**6,576.1**	**4,817.6**	**15,190.3**
Albania	405.3	…	…	…	…	…	…	…
Bulgaria	…	…	1,343.3	1,225.3	…	…	…	1,225.3
Croatia	1,238.8	2,748.4	3,104.0	3,408.4	1,485.8	…	199.0	1,723.5
Hungary	3,518.1	8,752.3	1,763.5	7,406.2	3,236.0	259.8	514.9	3,395.5
Latvia	…	490.8	2,233.5	…	…	…	…	…
Lithuania	2,710.1	1,495.7	2,214.4	860.4	860.4	…	…	…
Montenegro	252.8	252.5	…	108.5	…	…	…	108.5
Poland	11,512.9	7,773.0	16,283.2	4,683.5	1,950.2	…	1,184.5	1,548.8
Romania	1,418.4	2,106.1	5,182.5	4,162.4	1,484.4	…	1,974.6	703.4
Serbia	…	982.6	1,785.3	3,106.9	1,476.0	…	…	1,630.8
Turkey	9,822.9	7,251.6	19,279.6	17,152.2	5,036.8	6,316.3	944.5	4,854.6
Commonwealth of Independent States	**42,484.7**	**30,802.3**	**61,425.9**	**69,103.0**	**22,120.2**	**22,451.5**	**12,202.4**	**12,328.9**
Armenia	…	…	…	690.2	…	…	690.2	…
Azerbaijan	…	125.0	500.0	1,093.3	1,000.0	93.3	…	…
Belarus	1,327.3	800.0	…	…	…	…	…	…
Kazakhstan	4,840.5	1,072.9	3,242.7	4,902.7	422.4	4,080.9	…	399.4
Mongolia[1]	174.0	…	2,979.0	310.5	…	…	…	310.5
Russia	30,869.5	22,924.6	49,261.5	52,683.4	16,790.7	15,761.6	11,512.2	8,618.9
Ukraine	5,273.4	5,879.8	5,442.8	9,423.0	3,907.1	2,515.8	…	3,000.0
Developing Asia	**46,560.7**	**59,911.0**	**83,335.9**	**115,217.1**	**36,263.1**	**37,695.7**	**14,719.1**	**26,539.2**
China	18,058.6	31,580.7	39,906.4	70,987.5	16,450.8	23,673.0	8,858.0	22,005.7
Fiji	…	250.0	…	…	…	…	…	…
India	9,045.8	9,307.0	10,435.2	14,685.7	6,427.4	4,840.6	648.3	2,769.4
Indonesia	5,794.1	6,363.9	12,336.4	12,239.1	2,508.8	6,886.4	2,693.9	150.0
Laos	…	…	…	143.6	…	50.4	…	93.2
Macao SAR	592.0	354.2	825.0	1,600.0	1,000.0	…	…	600.0
Malaysia	2,638.5	4,170.7	8,929.0	5,210.1	4,217.1	700.0	170.4	122.5
Philippines	6,400.0	4,175.6	3,769.5	3,653.5	2,208.9	1,045.3	99.2	300.1
Sri Lanka	1,000.0	1,000.0	1,500.0	1,350.0	…	500.0	750.0	100.0
Thailand	2,046.0	2,622.3	5,387.1	5,149.4	3,450.1	…	1,499.3	200.0
Vietnam	985.8	86.6	247.5	198.3	…	…	…	198.3

(continued)

Table 5. *(concluded)*

					2013			
	2010	2011	2012	2013	Q1	Q2	Q3	Q4
Middle East and North Africa	**32,505.3**	**26,666.5**	**40,670.9**	**39,012.2**	**12,090.9**	**12,293.6**	**4,106.4**	**10,521.3**
Bahrain	2,460.5	1,050.0	2,343.6	2,187.4	…	695.7	1,491.7	…
Egypt	2,095.3	500.0	…	4,236.4	40.0	4,196.4	…	…
Jordan	741.6	…	…	1,250.0	…	…	…	1,250.0
Kuwait	989.3	446.7	923.5	323.4	…	161.7	161.7	…
Lebanon	1,925.0	2,687.4	2,278.3	1,496.9	…	1,095.6	…	401.4
Morocco	1,340.1	…	1,479.6	1,045.7	…	748.9	…	296.8
Oman	320.0	…	…	846.5	496.5	…	…	350.0
Qatar	8,743.5	5,087.7	10,508.8	6,064.2	1,324.9	1,495.5	…	3,243.8
Saudi Arabia	2,586.4	…	3,800.0	5,739.6	2,000.0	1,447.6	995.6	1,296.4
Tunisia	…	…	1,288.4	228.4	…	…	228.4	…
United Arab Emirates	11,303.8	16,894.7	18,048.7	15,593.7	8,229.5	2,452.3	1,229.1	3,682.8
Latin America and the Caribbean	**96,274.8**	**94,925.2**	**115,725.3**	**122,814.0**	**27,821.9**	**32,647.0**	**37,404.8**	**24,940.4**
Argentina	4,122.4	2,552.8	1,111.2	1,550.1	298.0	200.0	554.5	497.5
Aruba	…	…	253.0	…	…	…	…	…
Barbados	403.3	…	250.0	400.0	…	400.0	…	…
Bolivia	…	…	500.0	489.0	…	…	489.0	…
Brazil	40,513.3	38,988.5	51,539.5	39,069.7	8,491.3	16,772.9	7,920.3	5,885.3
Chile	7,522.3	5,795.8	9,631.6	12,036.3	3,097.5	3,198.5	2,187.5	3,552.8
Colombia	1,939.8	6,374.3	7,342.5	10,191.7	3,289.8	1,089.1	4,058.9	1,753.8
Costa Rica	…	250.0	1,262.4	2,983.8	…	1,491.8	500.0	992.0
Dominican Republic	750.0	777.6	550.0	1,797.4	297.4	1,000.0	…	500.0
El Salvador	444.1	653.5	799.9	304.5	304.5	…	…	…
Guatemala	…	…	1,389.9	1,293.9	690.8	109.2	…	493.9
Honduras	…	…	…	1,000.0	500.0	…	…	500.0
Jamaica	1,083.3	695.2	1,750.0	1,815.0	1,300.0	…	…	515.0
Mexico	26,733.7	20,537.9	31,424.4	39,376.4	6,121.2	5,100.7	19,441.8	8,712.7
Panama	…	1,045.8	797.8	1,388.6	…	750.0	99.0	539.6
Paraguay	…	100.0	500.0	500.0	500.0	…	…	…
Peru	6,466.3	2,394.7	6,123.1	5,977.7	2,837.9	2,534.9	157.1	447.8
Trinidad and Tobago	…	175.0	…	550.0	…	…	…	550.0
Turks and Caicos Islands	…	170.0	…	…	…	…	…	…
Uruguay	…	1,969.8	500.0	2,090.0	93.4	…	1,996.7	…
Venezuela	6,296.5	12,444.2	…	…	…	…	…	…

Source: Dealogic.

Note: Search criteria are by deal nationality and filtered by international tranche and exclude money market and short-term bonds and supranationals. Deal inclusion conforms to the vendor's criteria for external public and private sector syndicated gross issuance, generally excluding bilateral deals.

[1]Mongolia is not a member of the Commonwealth of Independent States, but it is included in this group for reasons of geography and similarities in economic structure.

Table 6. Emerging Market Private External Financing: Equity

(Millions of U.S. dollars)

					2013			
	2010	2011	2012	2013	Q1	Q2	Q3	Q4
Total	**246,955.6**	**102,642.5**	**118,703.9**	**126,620.0**	**39,739.5**	**32,925.3**	**16,776.1**	**37,179.2**
Sub-Saharan Africa	**3,699.6**	**2,810.5**	**3,440.7**	**4,369.0**	**880.0**	**1,063.1**	**397.9**	**2,028.1**
Ghana	45.5	…	…	…	…	…	…	…
Kenya	…	37.9	30.2	…	…	…	…	…
Madagascar	78.8	…	…	75.2	75.2	…	…	…
Mauritius	…	14.0	…	…	…	…	…	…
Mozambique	…	…	…	10.6	…	…	…	10.6
Niger	20.0	…	…	…	…	…	…	…
Nigeria	140.3	…	219.9	782.6	189.5	393.2	100.0	99.9
Rwanda	…	90.9	…	…	…	…	…	…
South Africa	3,411.5	2,572.8	3,119.3	3,452.5	615.3	669.8	297.9	1,869.4
Tanzania	…	23.7	…	48.2	…	…	…	48.2
Togo	…	…	2.4	…	…	…	…	…
Uganda	3.5	…	65.8	…	…	…	…	…
Zambia	…	71.2	3.1	…	…	…	…	…
Central and Eastern Europe	**10,452.8**	**5,980.9**	**6,986.3**	**10,220.0**	**4,641.8**	**986.4**	**113.7**	**4,478.1**
Bulgaria	…	18.4	1.6	…	…	…	…	…
Hungary	…	14.7	…	134.7	134.7	…	…	…
Lithuania	209.7	…	30.2	38.9	…	38.9	…	…
Poland	8,827.6	4,865.3	2,911.2	6,272.5	4,507.1	333.8	…	1,431.7
Romania	…	…	76.3	1,000.3	…	167.8	87.4	745.0
Turkey	1,445.6	1,082.5	3,967.0	2,773.6	…	445.9	26.2	2,301.4
Commonwealth of Independent States	**9,663.7**	**11,517.4**	**10,083.2**	**10,019.9**	**1,653.9**	**4,418.7**	**864.3**	**3,083.0**
Armenia	…	11.6	…	…	…	…	…	…
Kazakhstan	309.2	1.3	593.6	…	…	…	…	…
Kyrgyzstan	5.8	…	…	…	…	…	…	…
Mongolia[1]	683.5	…	81.6	…	…	…	…	…
Russia	8,005.0	11,137.0	9,400.6	9,961.1	1,637.6	4,400.2	840.3	3,083.0
Ukraine	660.1	367.5	7.4	58.8	16.3	18.5	24.0	…
Developing Asia	**120,585.9**	**51,235.0**	**67,908.1**	**60,599.5**	**19,101.2**	**14,047.4**	**8,389.2**	**19,061.7**
Bangladesh	…	86.0	…	…	…	…	…	…
Cambodia	…	…	155.8	156.0	156.0	…	…	…
China	74,966.2	31,816.5	30,993.5	36,253.3	9,060.4	5,745.0	6,290.6	15,157.4
Macao SAR	140.6	2,397.6	2,025.0	420.7	72.7	75.3	272.7	…
Fiji	…	0.2	…	1.1	…	…	…	1.1
India	26,200.8	8,409.5	14,476.6	8,626.1	5,393.0	1,953.1	260.8	1,019.2
Indonesia	8,066.6	3,259.4	3,581.8	3,536.2	1,837.0	1,299.2	314.8	85.2
Laos	111.2	…	241.5	150.0	…	…	…	150.0
Malaysia	6,930.5	2,644.1	7,315.6	2,799.3	507.5	1,182.2	163.2	946.4
Maldives	…	…	16.0	…	…	…	…	…
Pakistan	…	…	…	2.8	1.5	…	…	1.3
Philippines	1,783.3	1,047.1	2,721.3	5,372.4	1,019.1	2,131.6	926.1	1,295.7
Sri Lanka	5.6	…	…	…	…	…	…	…
Thailand	2,379.0	1,514.7	6,381.0	3,212.0	1,054.1	1,661.2	161.1	335.7
Vietnam	2.1	60.0	…	69.7	…	…	…	69.7

(continued)

Table 6. *(concluded)*

	2010	2011	2012	2013	2013 Q1	2013 Q2	2013 Q3	2013 Q4
Middle East and North Africa	**4,466.7**	**414.7**	**5,296.8**	**3,109.7**	**370.0**	**544.1**	**1,331.5**	**864.0**
Bahrain	1,585.4	…	…	…	…	…	…	…
Egypt	1,095.3	…	…	133.5	…	…	133.5	…
Iran	…	…	…	419.0	…	…	419.0	…
Iraq	…	8.5	…	…	…	…	…	…
Morocco	20.8	13.0	…	169.3	…	…	…	169.3
Oman	474.8	63.9	357.2	181.8	2.7	6.3	138.0	34.8
Qatar	137.5	…	2,073.6	260.9	260.9	…	…	…
Saudi Arabia	720.8	105.6	2,384.8	269.2	97.2	28.0	…	144.0
Tunisia	175.7	…	…	251.2	9.2	155.0	…	87.0
United Arab Emirates	206.2	223.7	481.3	1,424.8	…	354.8	641.1	428.9
West Bank and Gaza	50.3	…	…	…	…	…	…	…
Latin America and the Caribbean	**98,056.9**	**30,684.1**	**24,988.8**	**38,302.0**	**13,092.7**	**11,865.5**	**5,679.5**	**7,664.3**
Anguilla	2.3	…	…	…	…	…	…	…
Argentina	109.7	4,978.0	60.2	127.9	127.9	…	…	…
Brazil	94,356.7	14,339.4	8,650.6	14,457.7	3,114.2	8,301.9	850.9	2,190.7
Chile	1,309.7	5,252.9	4,319.3	8,972.7	5,302.9	436.3	736.0	2,497.5
Colombia	295.5	5,307.2	2,461.5	1,957.4	…	879.4	…	1,078.0
Jamaica	…	…	…	6.5	…	0.5	1.9	4.1
Mexico	1,692.7	765.3	8,705.1	12,081.3	4,518.3	2,247.3	3,494.4	1,821.2
Panama	103.0	41.3	…	…	…	…	…	…
Peru	187.4	…	792.2	532.4	29.5	…	430.1	72.9
Trinidad and Tobago	…	…	…	166.2	…	…	166.2	…

Source: Dealogic.

Note: Search criteria are by issuer nationality and filters by initial and follow-up offerings and international tranche. Deal inclusion conforms to the vendor's criteria for external public and private sector syndicated gross issuance, generally excluding bilateral deals.

[1]Mongolia is not a member of the Commonwealth of Independent States, but is included in this group for reasons of geography and similarities in economic structure.

Table 7. Emerging Market Private External Financing: Loans

(Millions of U.S. dollars)

					2013			
	2010	2011	2012	2013	Q1	Q2	Q3	Q4
Total	**368,770.2**	**395,600.5**	**286,655.5**	**392,289.4**	**110,991.4**	**112,102.2**	**85,203.9**	**83,991.8**
Sub-Saharan Africa	**28,206.0**	**28,944.7**	**39,289.1**	**33,297.1**	**10,365.1**	**8,668.7**	**6,347.0**	**7,916.3**
Angola	4,391.2	3,110.7	2,847.9	4,996.2	2,500.0	1,241.7	1,014.8	239.8
Botswana	825.0	255.0	…	…	…	…	…	…
Burkina Faso	10.9	…	…	249.4	111.9	…	…	137.6
Burundi	15.0	69.5	157.6	…	…	…	…	…
Cameroon	…	239.6	492.1	91.0	91.0	…	…	…
Cape Verde	78.7	10.0	…	…	…	…	…	…
Chad	…	14.7	…	537.0	…	…	…	537.0
Congo	250.0	…	…	…	…	…	…	…
Congo, Democratic Republic of the	12.2	169.9	100.0	…	…	…	…	…
Côte d'Ivoire	97.0	930.9	152.6	523.0	163.0	…	60.0	300.0
Djibouti	…	1.2	…	…	…	…	…	…
Equatorial Guinea	…	390.0	600.0	…	…	…	…	…
Ethiopia	1,342.8	1,694.3	1,497.8	17.0	…	…	17.0	…
Gabon	500.2	197.5	493.8	511.5	…	300.0	…	211.5
Ghana	2,067.7	6,051.8	8,710.1	1,795.6	163.7	44.1	1,447.9	140.0
Guinea	…	34.8	198.9	100.0	…	…	100.0	…
Kenya	703.4	622.8	1,480.2	543.3	154.0	376.9	…	12.4
Liberia	1,902.5	11.0	24.9	220.0	130.0	…	90.0	…
Malawi	…	39.0	…	…	…	…	…	…
Mali	…	68.5	…	…	…	…	…	…
Mauritania	…	64.4	…	…	…	…	…	…
Mauritius	…	…	240.0	2,255.0	270.0	…	…	1,985.0
Mozambique	164.9	206.9	84.5	…	…	…	…	…
Namibia	…	45.6	23.2	60.6	60.6	…	…	…
Niger	…	…	15.0	550.0	…	550.0	…	…
Nigeria	3,711.2	3,386.3	2,601.8	12,869.3	4,445.9	4,806.0	3,367.4	250.0
Réunion	44.3	…	27.2	…	…	…	…	…
Rwanda	14.0	194.0	13.6	…	…	…	…	…
Senegal	348.1	27.5	…	…	…	…	…	…
Sierra Leone	44.4	217.6	95.3	…	…	…	…	…
South Africa	8,365.7	9,039.6	6,184.4	7,608.1	2,275.0	1,350.1	…	3,983.0
Sudan	89.3	…	2,000.0	…	…	…	…	…
Tanzania	398.0	1,054.7	331.4	250.0	…	…	250.0	…
Togo	…	…	50.0	…	…	…	…	…
Uganda	2,239.0	25.0	160.0	120.0	…	…	…	120.0
Zambia	533.0	505.0	2,327.0	…	…	…	…	…
Zimbabwe	57.5	267.0	380.0	…	…	…	…	…
Central and Eastern Europe	**53,925.8**	**86,173.1**	**31,277.2**	**43,532.6**	**7,198.8**	**20,149.1**	**10,981.2**	**5,203.6**
Albania	…	145.8	168.4	…	…	…	…	…
Bosnia and Herzegovina	70.5	92.0	6.2	138.7	…	132.2	6.5	…
Bulgaria	360.0	262.8	923.4	916.5	98.3	251.5	…	566.7
Croatia	1,363.3	1,628.5	1,109.0	777.7	…	464.1	44.2	269.4
Hungary	1,872.3	2,522.3	883.0	480.0	480.0	…	…	…
Latvia	374.5	38.0	…	…	…	…	…	…
Lithuania	103.8	170.8	197.7	…	…	…	…	…
Macedonia	113.6	357.3	61.5	32.9	…	…	…	32.9
Montenegro	116.5	34.5	15.9	…	…	…	…	…
Poland	22,045.3	36,880.3	1,594.9	2,518.8	840.1	720.7	558.0	400.0
Romania	1,823.3	11,363.8	923.1	1,601.0	275.5	541.9	296.9	486.6
Serbia	577.0	1,775.3	1,433.1	387.7	…	…	…	387.7
Turkey	25,105.6	30,901.8	23,960.9	36,679.3	5,504.9	18,038.7	10,075.5	3,060.2

Table 7. *(continued)*

					2013			
	2010	2011	2012	2013	Q1	Q2	Q3	Q4
Commonwealth of Independent States	**53,942.0**	**76,371.1**	**66,848.9**	**62,992.5**	**38,570.4**	**10,819.6**	**7,809.1**	**5,793.3**
Armenia	105.6	132.0	31.0	150.0	…	…	150.0	…
Azerbaijan	3,615.1	1,292.0	872.7	511.0	…	353.0	120.5	37.5
Belarus	510.5	4,302.9	11,008.0	63.5	…	…	…	63.5
Kazakhstan	829.9	2,677.4	4,871.0	5,219.1	1,231.0	3,703.9	224.2	60.0
Kyrgyzstan	…	3.0	…	…	…	…	…	…
Moldova	23.2	21.7	60.0	…	…	…	…	…
Mongolia[1]	371.0	271.7	616.0	153.0	…	…	82.0	71.0
Russia	45,007.4	58,331.2	41,854.8	45,417.7	29,434.4	5,977.4	4,938.2	5,067.7
Tajikistan	10.5	8.0	…	…	…	…	…	…
Turkmenistan	500.2	4,225.0	…	297.2	…	…	297.2	…
Ukraine	2,557.6	5,081.2	4,581.5	3,281.0	5.0	785.3	1,997.0	493.7
Uzbekistan	411.2	25.0	2,954.0	7,900.0	7,900.0	…	…	…
Developing Asia	**81,487.6**	**90,517.7**	**71,866.3**	**127,584.5**	**23,676.6**	**48,156.7**	**25,276.9**	**30,474.2**
Bangladesh	197.0	142.0	1,686.6	791.1	46.1	345.0	…	400.0
Bhutan	47.4	…	…	…	…	…	…	…
Brunei Darussalam	…	…	353.5	170.0	…	…	…	170.0
Cambodia	65.0	591.0	…	60.5	…	60.5	…	…
China	18,013.0	15,250.7	19,793.1	51,870.6	9,644.9	19,629.0	13,279.4	9,317.3
India	32,012.7	34,211.5	22,036.0	27,339.4	7,144.9	6,506.1	2,819.9	10,868.6
Indonesia	10,894.8	19,088.2	13,847.1	16,833.7	3,484.8	4,935.6	3,097.0	5,316.2
Laos	1,032.0	120.0	…	…	…	…	…	…
Malaysia	3,121.4	3,960.5	2,055.8	5,373.2	582.0	2,415.4	2,103.1	272.7
Maldives	…	2.0	…	115.0	115.0	…	…	…
Marshall Islands	550.0	1,946.5	497.9	690.0	…	330.0	360.0	…
Myanmar	2,400.0	…	…	…	…	…	…	…
Pakistan	516.2	1,270.6	1,499.2	220.0	…	…	…	220.0
Papua New Guinea	…	980.3	222.0	600.0	…	…	…	600.0
Philippines	4,373.2	2,945.4	2,947.2	5,890.1	1,621.0	2,328.6	1,415.5	525.0
Sri Lanka	305.2	791.6	576.9	262.1	196.3	60.0	5.8	…
Thailand	3,550.4	2,537.5	3,008.0	9,431.7	741.6	6,194.2	1,313.7	1,182.1
Vietnam	4,409.3	6,680.0	3,342.8	7,937.1	100.0	5,352.4	882.3	1,602.4
Middle East and North Africa	**73,438.9**	**47,166.6**	**31,187.2**	**55,788.9**	**17,527.7**	**15,359.7**	**10,694.5**	**12,206.9**
Algeria	12.9	…	…	188.0	…	188.0	…	…
Bahrain	1,620.4	1,463.0	1,096.1	770.1	650.0	120.1	…	…
Egypt	13,350.4	8,288.1	3,628.2	783.2	…	347.2	…	436.0
Iran	…	…	214.9	…	…	…	…	…
Iraq	991.0	823.3	…	…	…	…	…	…
Jordan	737.4	1,860.0	277.0	814.5	608.0	…	…	206.5
Kuwait	2,972.9	1,799.3	300.0	4,335.4	266.7	700.0	750.0	2,618.7
Lebanon	…	…	46.0	342.7	…	…	…	342.7
Libya	…	40.0	…	…	…	…	…	…
Morocco	2,403.9	305.0	2,029.7	240.0	…	200.0	40.0	…
Oman	2,810.1	2,246.6	637.0	212.0	…	…	212.0	…
Qatar	5,145.0	8,813.3	3,797.2	2,585.0	650.0	1,330.0	180.0	425.0
Saudi Arabia	14,459.6	9,521.4	6,391.8	12,986.1	1,323.7	5,360.8	4,301.5	2,000.0
Tunisia	754.5	997.7	298.3	223.4	…	223.4	…	…
United Arab Emirates	27,811.0	10,445.2	12,346.0	32,308.6	14,029.4	6,890.2	5,211.0	6,178.1
West Bank and Gaza	…	…	125.0	…	…	…	…	…
Yemen	369.8	563.7	…	…	…	…	…	…

Table 7. *(concluded)*

	2010	2011	2012	2013	2013 Q1	2013 Q2	2013 Q3	2013 Q4
Latin America and the Caribbean	**77,770.0**	**66,427.2**	**54,186.7**	**69,094.0**	**13,652.9**	**8,948.3**	**24,095.2**	**22,397.6**
Antigua and Barbuda	…	…	…	94.0	…	94.0	…	…
Argentina	904.3	2,611.6	1,526.2	2,007.6	262.8	473.8	171.0	1,100.0
Barbados	…	…	90.0	…	…	…	…	…
Bolivia	253.0	200.0	…	300.0	…	…	…	300.0
Brazil	19,887.3	23,946.5	13,156.9	20,772.5	4,238.8	4,232.9	7,229.5	5,071.2
Chile	3,709.5	6,396.0	8,764.0	8,617.8	1,356.5	1,380.3	765.8	5,115.2
Colombia	3,284.0	4,818.6	2,081.2	4,479.7	1,895.0	…	115.5	2,469.2
Costa Rica	31.0	229.0	60.0	242.0	…	167.0	…	75.0
Dominican Republic	1,725.6	431.4	350.0	25.0	…	…	25.0	…
Ecuador	22.0	36.0	…	1,355.2	85.0	625.0	645.2	…
El Salvador	200.0	…	300.0	114.0	…	114.0	…	…
Guadeloupe	…	…	…	26.4	26.4	…	…	…
Guatemala	604.0	333.2	40.0	225.0	…	…	…	225.0
Haiti	…	…	…	26.5	…	26.5	…	…
Jamaica	750.2	873.2	20.5	…	…	…	…	…
Mexico	16,564.1	17,500.9	19,877.1	23,494.3	3,209.4	524.3	12,985.6	6,775.1
Nicaragua	185.0	…	…	130.0	…	…	130.0	…
Panama	1,375.1	2,051.1	1,657.6	1,977.1	508.0	553.0	439.1	477.0
Paraguay	…	…	151.0	…	…	…	…	…
Peru	2,670.3	2,446.8	3,545.0	4,413.0	1,948.5	477.0	1,197.5	790.0
Trinidad and Tobago	93.5	7.5	27.2	…	…	…	…	…
Uruguay	…	1,354.0	220.0	402.9	122.4	280.5	…	…
Venezuela	25,511.2	3,191.6	2,320.0	391.0	…	…	391.0	…

Source: Dealogic.

Note: Search criteria are by deal nationality and filters by hard currency. Deal inclusion conforms to the vendor's criteria for external public and private sector syndicated gross lending on a committed basis, which may or may not be fully disbursed and generally excludes bilateral deals.

[1]Mongolia is not a member of the Commonwealth of Independent States, but is included in this group for reasons of geography and similarities in economic structure.

Table 8. Equity Valuation Measures: Dividend-Yield Ratios

	2009	2010	2011	2012	2013	2013 Q1	2013 Q2	2013 Q3	2013 Q4	10-year average
Emerging Markets	**2.0**	**2.1**	**3.0**	**2.7**	**2.6**	**2.7**	**2.8**	**2.9**	**2.6**	**2.6**
Asia	**1.7**	**2.0**	**2.8**	**2.3**	**2.3**	**2.3**	**2.4**	**2.5**	**2.3**	**2.4**
Europe/Middle East/Africa	**2.2**	**2.1**	**3.2**	**3.5**	**3.2**	**3.5**	**3.5**	**3.7**	**3.2**	**2.7**
Latin America	**2.7**	**2.3**	**3.3**	**3.2**	**3.0**	**3.2**	**3.2**	**3.5**	**3.0**	**2.9**
Argentina	1.1	1.9	8.4	5.6	1.5	5.6	5.4	5.8	1.5	3.3
Brazil	2.9	2.7	4.1	4.1	3.8	4.1	4.1	4.7	3.8	3.5
Chile	1.6	1.4	2.3	2.1	2.2	2.1	2.1	1.9	2.2	2.1
China	1.9	2.2	3.2	2.9	3.1	2.9	3.1	3.5	3.1	2.4
Colombia	2.8	2.1	2.6	2.9	3.2	2.9	3.0	3.2	3.2	2.6
Egypt	4.8	3.5	5.3	3.5	2.2	3.5	3.1	3.3	2.2	3.4
Hungary	1.3	1.6	2.4	3.5	2.6	3.5	3.5	3.6	2.6	2.4
India	0.9	0.9	1.5	1.3	1.4	1.3	1.4	1.4	1.4	1.3
Indonesia	1.9	2.2	2.4	2.4	2.7	2.4	2.2	2.4	2.7	2.8
Jordan	3.1	2.5	3.1	4.3	4.4	4.3	4.7	4.8	4.4	2.8
Malaysia	2.4	2.3	2.8	2.9	2.8	2.9	2.9	2.9	2.8	2.7
Mexico	2.4	1.6	1.2	1.4	1.5	1.4	1.5	1.5	1.5	1.8
Morocco	4.9	4.3	5.5	4.7	4.5	4.7	4.8	4.5	4.5	3.9
Pakistan	6.4	5.6	8.3	7.1	6.3	7.1	7.6	7.0	6.3	6.5
Philippines	2.2	2.4	2.7	2.0	1.9	2.0	1.6	1.8	1.9	2.4
Poland	3.0	2.5	5.4	5.6	4.6	5.6	5.9	6.1	4.6	3.7
Russia	1.4	1.5	2.4	3.6	3.5	3.6	3.8	3.9	3.5	2.2
South Africa	2.7	2.3	3.2	3.2	2.9	3.2	3.2	3.2	2.9	3.0
Sri Lanka	1.6	1.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.6
Thailand	2.9	2.6	3.3	2.8	3.3	2.8	2.8	2.9	3.3	3.4
Turkey	2.1	2.2	3.3	2.2	2.7	2.2	1.8	2.3	2.7	2.9

Source: Morgan Stanley Capital International (MSCI).

Note: The country and regional classifications used in this table follow the conventions of MSCI and do not necessarily conform to IMF country classifications or regional groupings.

Table 9. Equity Valuation Measures: Price/Earnings Ratios

	2009	2010	2011	2012	2013	2013 Q1	2013 Q2	2013 Q3	2013 Q4	10-year average
Emerging Markets	**20.6**	**14.6**	**10.8**	**12.7**	**12.1**	**12.7**	**12.5**	**11.8**	**12.1**	**13.8**
Asia	**24.3**	**15.2**	**11.4**	**13.2**	**12.3**	**13.2**	**13.1**	**12.1**	**12.3**	**14.7**
Europe/Middle East/Africa	**16.2**	**12.1**	**8.2**	**9.2**	**9.2**	**9.2**	**8.8**	**8.5**	**9.2**	**12.3**
Latin America	**18.3**	**15.9**	**11.8**	**16.4**	**16.0**	**16.4**	**16.1**	**15.8**	**16.0**	**14.0**
Argentina	8.0	8.8	5.2	3.3	6.3	3.3	3.8	3.9	6.3	18.2
Brazil	17.0	13.8	9.8	14.3	13.4	14.3	13.8	13.5	13.4	12.2
Chile	18.7	21.4	17.2	23.2	21.0	23.2	23.9	25.6	21.0	21.3
China	21.1	14.6	9.4	11.3	10.0	11.3	10.7	9.2	10.0	15.0
Colombia	25.1	23.5	17.2	19.3	18.0	19.3	19.3	18.4	18.0	19.7
Egypt	13.9	17.4	10.3	13.8	22.7	13.8	13.6	17.2	22.7	16.1
Hungary	14.2	12.2	8.7	13.7	12.3	13.7	10.4	12.6	12.3	11.5
India	21.8	22.4	14.4	16.3	17.1	16.3	15.4	15.4	17.1	18.6
Indonesia	16.4	19.0	15.2	16.2	14.6	16.2	18.7	17.7	14.6	15.3
Jordan	15.9	21.3	16.9	11.6	14.5	11.6	12.3	13.0	14.5	22.5
Malaysia	20.3	18.1	16.9	14.8	17.5	14.8	15.5	16.6	17.5	16.3
Mexico	22.7	23.9	21.8	21.5	22.9	21.5	21.2	20.9	22.9	17.9
Morocco	14.3	17.5	14.0	12.3	13.8	12.3	12.5	11.6	13.8	20.2
Pakistan	10.1	9.1	6.2	7.6	10.4	7.6	7.8	8.9	10.4	9.6
Philippines	19.1	17.5	15.8	19.9	18.8	19.9	22.4	20.6	18.8	16.8
Poland	19.3	14.1	8.0	8.7	12.8	8.7	9.6	10.2	12.8	13.0
Russia	15.6	8.3	4.9	5.6	5.2	5.6	5.1	4.9	5.2	9.9
South Africa	16.6	18.9	16.4	15.9	18.7	15.9	16.4	16.4	18.7	15.5
Sri Lanka	77.7	20.5	13.2	14.1	14.9	14.1	15.2	14.6	14.9	19.2
Thailand	19.3	14.8	11.1	15.9	12.8	15.9	15.1	15.0	12.8	12.9
Turkey	12.6	10.8	9.2	12.0	8.7	12.0	12.5	10.5	8.7	11.2

Source: Morgan Stanley Capital International (MSCI).

Note: The country and regional classifications used in this table follow the conventions of MSCI and do not necessarily conform to IMF country classifications or regional groupings.

Table 10. Emerging Markets: Mutual Funds

Net Flows

(Billions of U.S. dollars)

					2013			
	2010	2011	2012	2013	Q1	Q2	Q3	Q4
Bonds	**53.3**	**15.9**	**58.8**	**–25.1**	**21.2**	**–9.2**	**–19.5**	**–17.6**
Global	46.5	13.6	47.1	–19.5	18.2	–8.0	–15.8	–13.9
Asia	6.6	2.6	0.8	–2.4	2.9	–0.6	–2.7	–2.0
Europe/Middle East/Africa	–0.2	–1.0	–0.4	0.5	0.3	0.6	–0.2	–0.2
Latin America	0.4	0.8	0.7	–3.7	–0.3	–1.2	–0.7	–1.5
Equities	**95.7**	**–46.2**	**52.3**	**–25.1**	**29.8**	**–31.9**	**–13.6**	**–11.0**
Global	63.6	–4.6	33.8	–19.5	23.3	–10.7	1.1	–3.5
Asia	22.1	–23.7	–6.2	–2.4	8.8	–14.5	–10.0	–1.4
Europe/Middle East/Africa	7.3	–7.0	–1.7	0.5	–1.5	–2.6	–1.6	–1.9
Latin America	2.6	–10.9	–1.5	–3.7	–0.7	–4.0	–3.1	–4.1

Net Asset Values

(Billions of U.S. dollars)

					2013			
	2010	2011	2012	2013	Q1	Q2	Q3	Q4
Bonds	**162.0**	**183.3**	**301.8**	**326.2**	**349.0**	**343.0**	**336.8**	**326.2**
Global	141.9	157.3	264.7	265.5	291.7	287.6	277.9	265.5
Asia	14.5	20.0	28.7	30.3	32.5	32.6	30.8	30.3
Europe/Middle East/Africa	3.2	3.0	4.5	6.0	5.3	5.7	6.2	6.0
Latin America	2.4	2.9	4.0	24.5	19.6	17.1	21.9	24.5
Equities	**950.2**	**774.1**	**1016.9**	**1071.2**	**1057.0**	**989.7**	**1055.3**	**1071.2**
Global	476.8	416.4	562.4	580.1	582.9	535.2	569.8	580.1
Asia	329.7	262.6	343.9	385.1	361.4	344.7	372.8	385.1
Europe/Middle East/Africa	62.6	40.1	52.2	55.3	53.1	53.4	57.1	55.3
Latin America	81.1	55.0	58.4	50.7	59.6	56.4	55.7	50.7

Source: EPFR Global.

Note: Flows data derive from both tradtional and alternative funds domiciled globally with $23.5 trillion in assets. The country and regional classifications used in this table follow the conventions of Emerging Portfolio Fund Research and individual fund managers and do not necessarily conform to IMF country classifications or regional groupings.