

## Financial Stability Overview

*Short-term risks have moderated in the past six months as markets have shown resilience to a number of shocks. Pressures on emerging market assets have eased, helped by firmer commodity prices, reduced uncertainty about China's near-term prospects, and expectations of lower interest rates in advanced economies. But medium-term risks are rising in a new environment of increased political and policy uncertainty. Expectations for monetary normalization in advanced economies have shifted even further into the future, and weak growth and low interest rates are increasing the challenges for banks, insurers, and pension funds. Although most advanced economy bank balance sheets are robust, sustainable profitability is weak, reflecting unresolved legacy problems and bank business model challenges. Corporate leverage in many emerging market firms has peaked at high levels, and debt servicing capacity remains weak. These developments have complicated the outlook for attaining a more balanced and potent policy mix, and could lead to a prolonged era of economic and financial stagnation. Policymakers must take a more comprehensive and collaborative approach to protect and advance financial stability and inclusion and revitalize the global economy.*

### Short-Term Risks Are Abating

Short-term risks to global financial stability have moderated in the past six months (Figures 1.1 and 1.2). As noted in the October 2016 *World Economic Outlook* (WEO), the macroeconomic outlook has weakened modestly in advanced economies, leaving *macroeco-*

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*omic risks* largely unchanged. Central banks have provided additional monetary stimulus in response to the subdued outlook for growth and inflation, which has eased *monetary and financial conditions*. Easier financial conditions have supported the recovery in *risk appetite* from the turmoil earlier in the year and the unexpected outcome of Brexit, the June 2016 U.K. referendum result in favor of leaving the European Union.

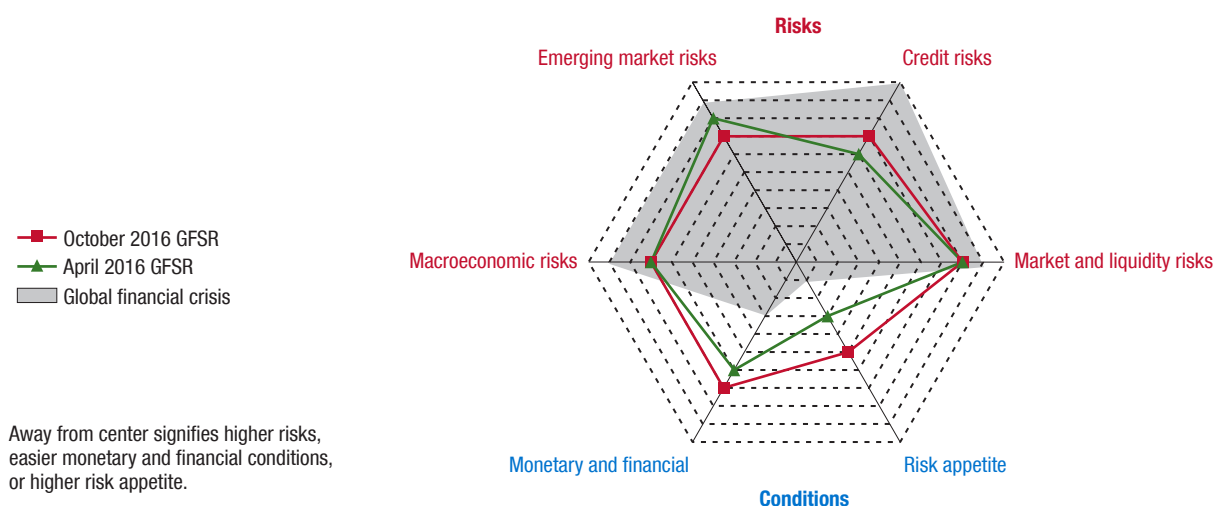
*Emerging market risks* have declined, led by a modest recovery in commodity prices and improved external financial conditions, fueling a pickup in capital flows. The economic outlook has improved for the recession-hit economies of Brazil and Russia, while supportive external conditions are providing an opportunity for a smooth deleveraging of firms in many emerging market economies. *Market and liquidity risks* are still elevated in an environment of extended positioning across major asset classes.

A key driver of short-term risks in the past six months was the Brexit vote (see Box 1.1), which caught investors by surprise and initially roiled global markets. The global financial system has been strengthened since the crisis, and the political shock was absorbed by markets:

- Despite the large adjustment in prices, markets managed high volumes well, without significant disruption, and no major disorderly events surfaced, other than a sharp sell-off in some U.K.-based real estate funds. Contingency plans and central bank communications helped underpin confidence in market functioning.
- New firewalls in the euro area, including the European Central Bank's asset purchase programs and other backstops, supported smooth market adjustment and prevented contagion.
- In contrast with past episodes of global turbulence, flows into emerging markets were resilient and have, in fact, increased since the referendum.

In the aftermath of the Brexit vote, markets quickly rebounded (Figure 1.3, panel 1). Equity markets in the United States rose to record levels, and the volatility of major asset classes dropped to levels below where they

**Figure 1.1. Global Financial Stability Map: Risks and Conditions**



Source: IMF staff estimates.

Note: The shaded region shows the global financial crisis as reflected in the stability map of the April 2009 *Global Financial Stability Report* (GFSR).

were at the beginning of the year as markets passed this severe stress test.

### Medium-Term Risks Are Rising

Despite lower short-term risks, medium-term risks are rising as policymakers grapple with a wide range of pre-existing vulnerabilities and new challenges. *Credit risks* are increasing as banks and insurance companies struggle to remain profitable in the low-growth, low-interest-rate environment. Challenges include rising side effects of prolonged monetary accommodation in advanced economies, still-elevated corporate leverage in many emerging market economies, and rising political risks.

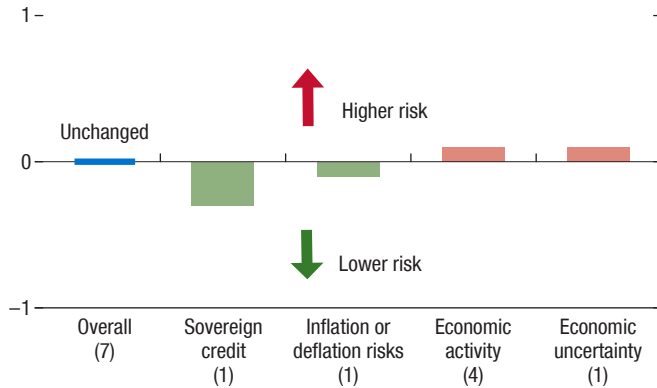
- In advanced economies, the prolonged slowdown in global growth has prompted financial markets to expect an extended period of low inflation and low interest rates, with normalization of monetary policy delayed even further into the future. Although monetary accommodation has helped boost demand by encouraging consumption and investment, prolonged low interest rates may undermine financial resilience in the medium term. Banks and other financial institutions face greater structural challenges in maintaining and improving their capital and solvency ratios in this new era of very low interest rates. Indeed, bank equities continue to remain under pressure this year, reflecting investor concerns about their medium-term profitability (Figure 1.3, panel 2) in the wake of declining growth and interest rates.

- Furthermore, the transmission of monetary policy through asset prices and onto the real economy may be weakening, limiting monetary effectiveness. In the period following the global financial crisis in 2008, monetary accommodation helped boost global equity prices in roughly equal parts through strengthening expected corporate earnings, lowering equity risk premiums, and reducing interest rates on government bonds. More recently, however, global equity valuations appear increasingly supported by low yields as the earnings outlook has weakened and equity risk premiums have increased in a more uncertain environment (Figure 1.4).
- In emerging market economies, the challenge is to achieve a smooth deleveraging of weakened corporate balance sheets in a new environment of lower commodity prices, slower credit growth, and weaker external demand.
- Policy uncertainties are increasing, as the political climate is undergoing a sea change in many countries. Growing discontent about anemic income growth and rising inequality has opened the door for more populist, inward-looking policies. Economic policy uncertainty has spiked to its highest levels since 2011 in the United States and the European Union (Figure 1.5, panel 1). Reflecting increased concerns over a widening range of possible policy outcomes, the sensitivity of markets to policy uncertainty has risen to its highest level since 2009 (Figure 1.5, panel 2).

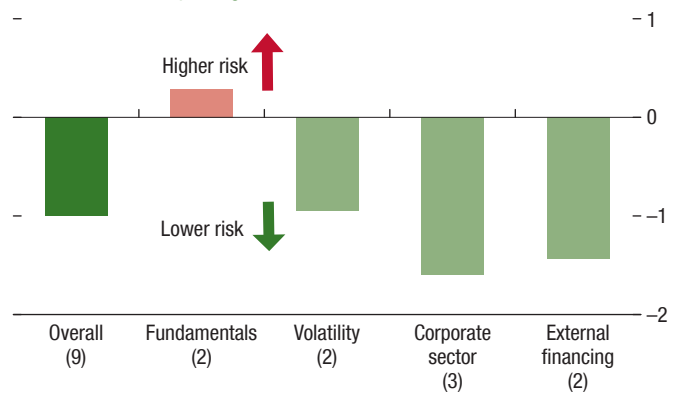
**Figure 1.2. Global Financial Stability Map: Assessment of Risks and Conditions**

(Notch changes since the April 2016 Global Financial Stability Report)

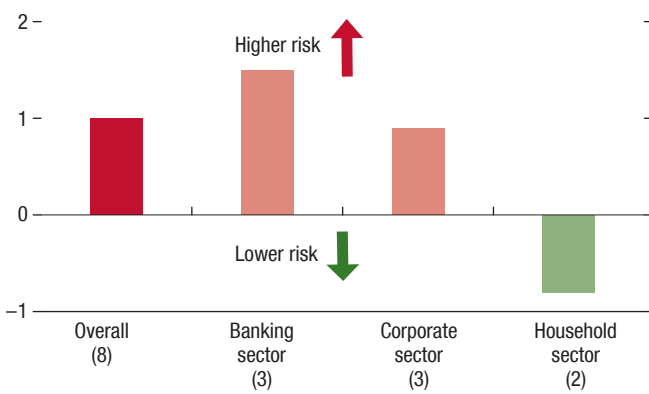
**1. Macroeconomic risks** are unchanged, as growth remains low but stable.



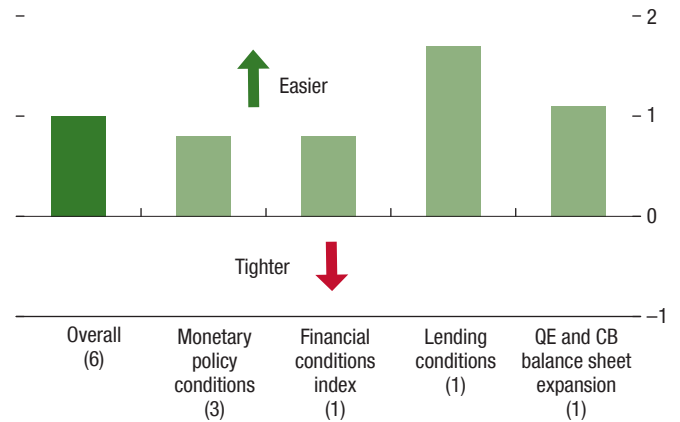
**2. Emerging market risks** are lower, reflecting benign market conditions and improving external imbalances.



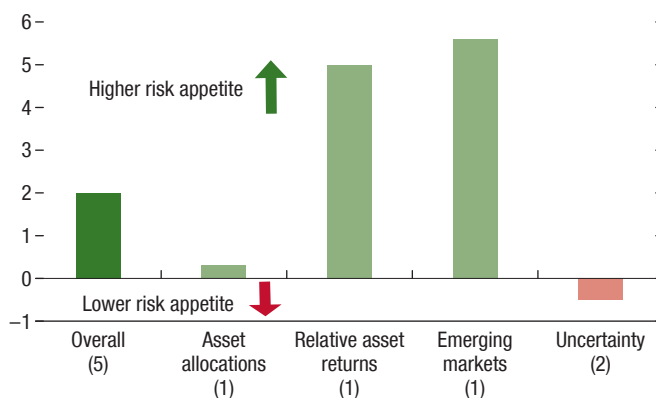
**3. Credit risks** are higher, driven by banking and corporate sector risks.



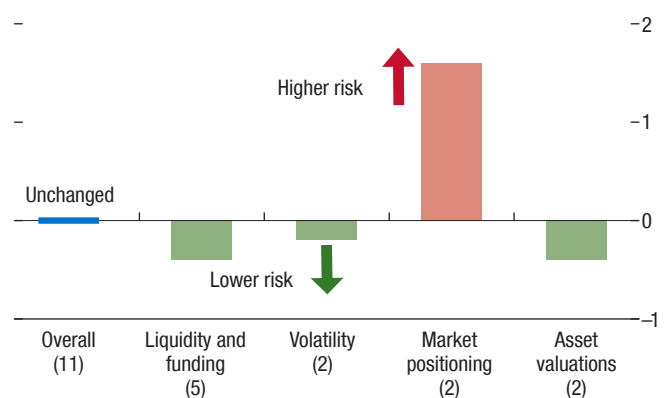
**4. Monetary and financial conditions** have improved as monetary policies and lending conditions became easier.



**5. Risk appetite** is higher as demand for risk assets increases.



**6. Market and liquidity risks** remain elevated, against the backdrop of extended positioning.



Source: IMF staff estimates.

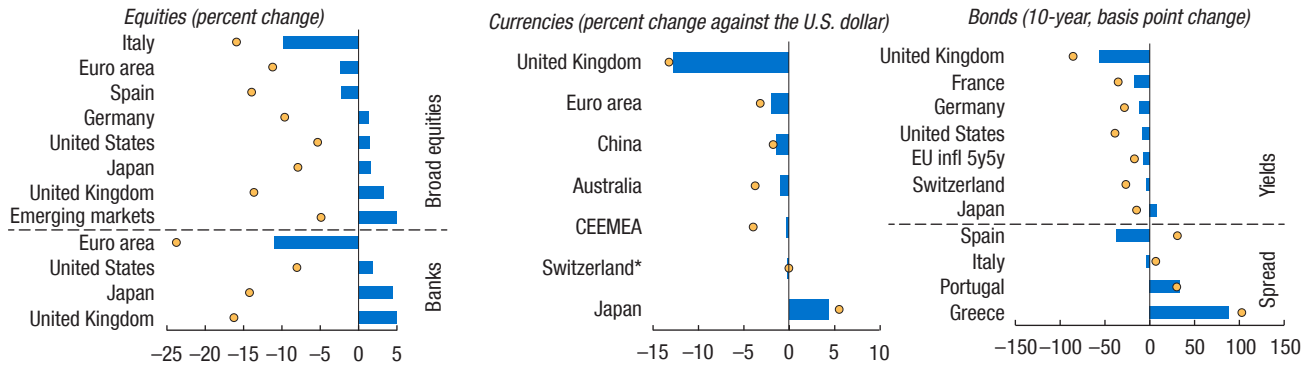
Note: Changes in risks and conditions are based on a range of indicators, complemented with IMF staff judgment (see Annex 1.1 in the April 2016 *Global Financial Stability Report* and Dattels and others 2010 for a description of the methodology underlying the Global Financial Stability Map). Overall notch changes are the simple average of notch changes in individual indicators. The number in parentheses next to each category on the x-axis 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.

**Figure 1.3. Brexit's Impact on Financial Markets**

Global risk markets absorb Brexit shock and rebound.

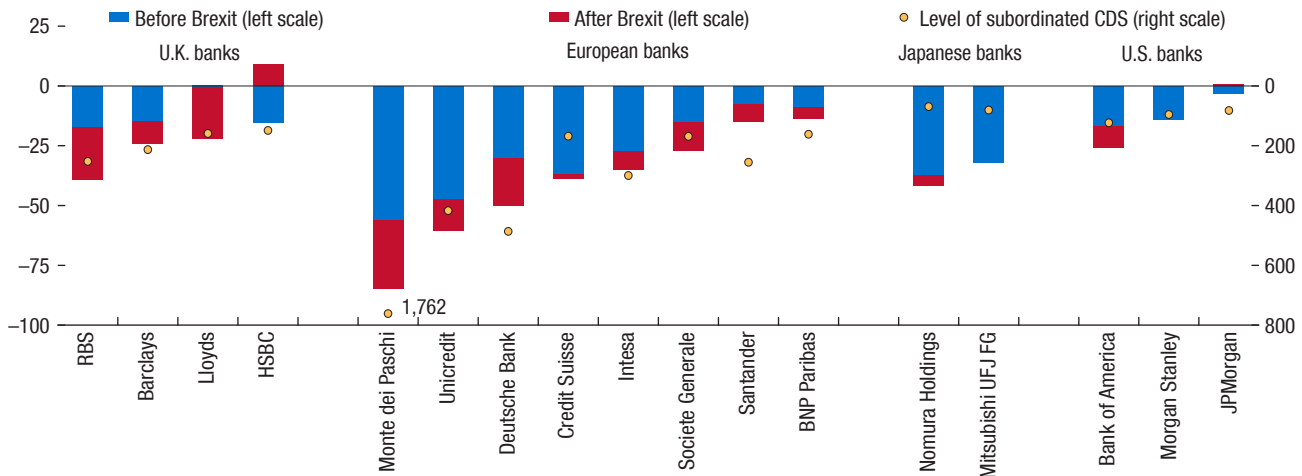
**1. Asset Market Performance after Brexit**

(Bar indicates asset performance after Brexit; dot indicates largest move since Jun. 23, 2016 = Brexit)



Bank equities remain under pressure, especially in the euro area, extending year-to-date losses, reflecting underlying vulnerabilities, and weakening medium-term prospects.

**2. Bank Equities and CDS Spreads (Year-to-date changes; basis points)**



Sources: Bloomberg L.P.; Federal Reserve; Haver Analytics; and IMF staff estimates.

Note: In Panel 2, the positive values are below the zero line for the right scale. Brexit = June 2016 U.K. referendum result in favor of leaving the European Union; CDS = credit default swap; CEEMEA = central and eastern Europe, Middle East, and Africa; EU infl 5y5y = euro area inflation-linked bond, five year, five year forward.

\* Against the euro.

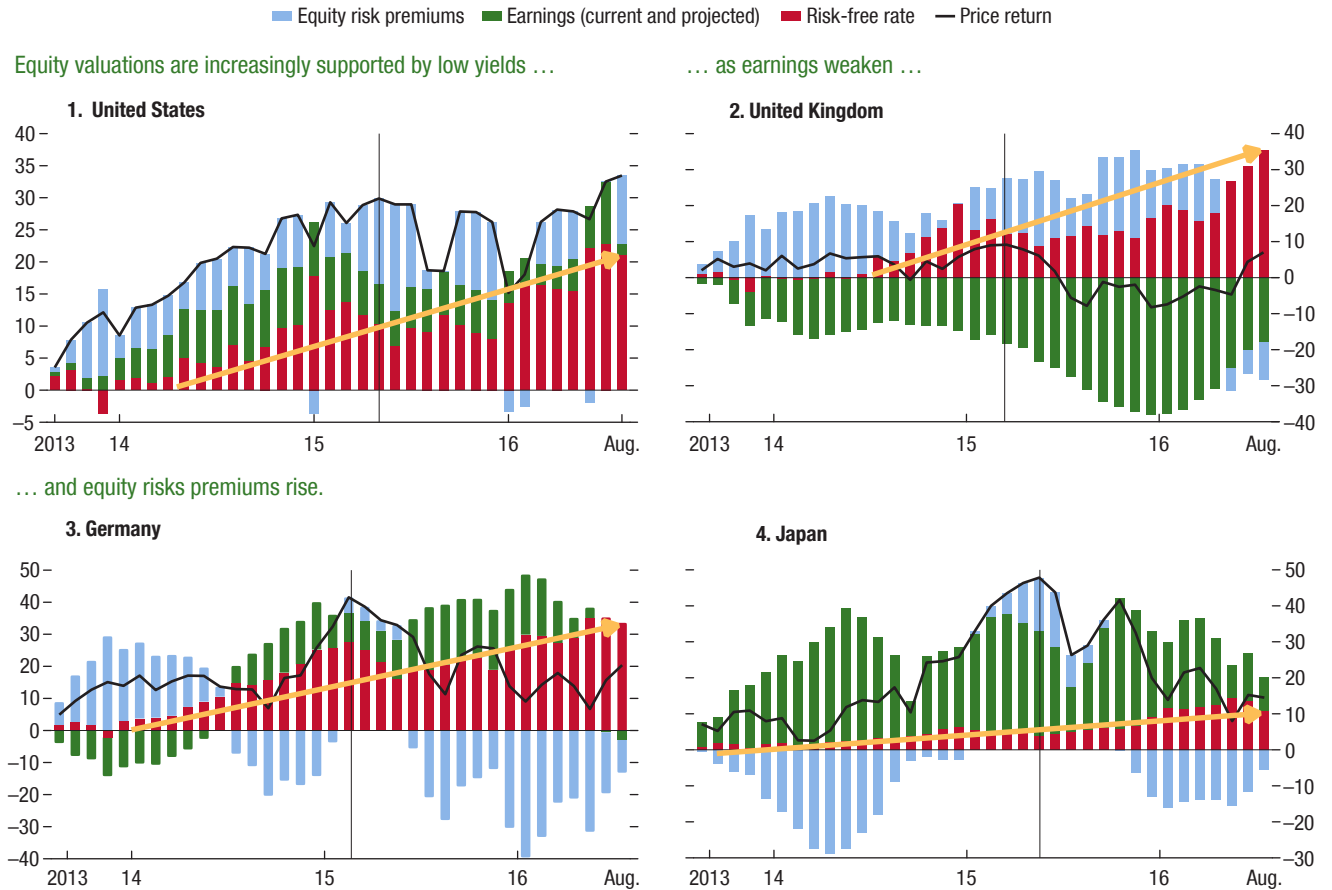
These developments make tackling legacy problems even harder, further expose economies and markets to shocks, and present new challenges to financial stability.

**Financial Institutions Face Strong Cyclical and Structural Challenges**

Most banks in advanced economies now have stronger balance sheets, but they are struggling to show sustainable profitability. A combination of disinflation-

ary pressures, flatter yield curves, legacy problems, regulatory uncertainty, and structural challenges to their business models have squeezed bank valuations, even as broad markets have recovered. Since the start of the year, the market capitalization of advanced economy banks has fallen by almost \$430 billion, increasing the challenge of addressing banking system vulnerabilities, particularly for weaker European banks. Japanese banks also face significant business model challenges; with thin margins and little domestic demand, they are

**Figure 1.4. Decomposition of Equity Market Performance**  
 (Percent contribution to cumulative return since September 2013)



Sources: Deutsche Bundesbank; European Central Bank; Haver Analytics; Thomson Reuters I/B/E/S; and IMF staff calculations.  
 Note: Based on a standard three-stage dividend discount model.

expanding abroad, but their dollar funding risks have increased as a result. Lower yields present significant challenges to insurers and pension funds that provide guaranteed returns and benefits. Together, these challenges could impair support from the financial system to the economic recovery, raising concern that financial stagnation could add to economic stagnation. These issues are examined in the section “Medium-Term Risks Rising.”

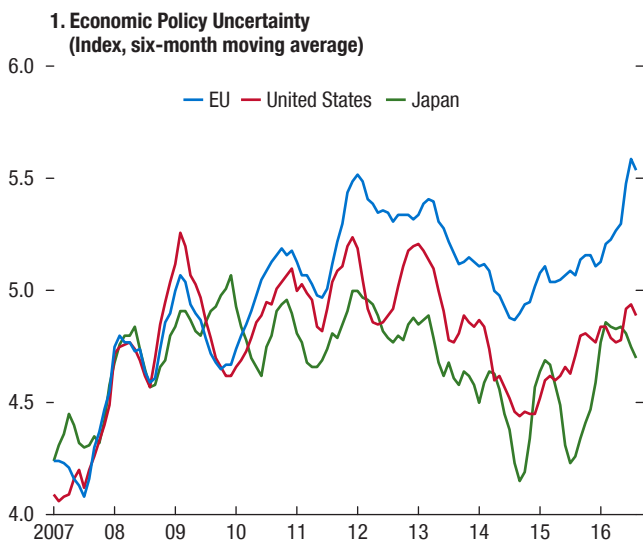
**The Favorable External Environment Supports Corporate Deleveraging in Emerging Markets**

As flagged in previous issues of the *Global Financial Stability Report* (GFSR), corporate leverage (for example, debt-to-equity ratio) is high in some countries, and debt-servicing capacity has deteriorated in

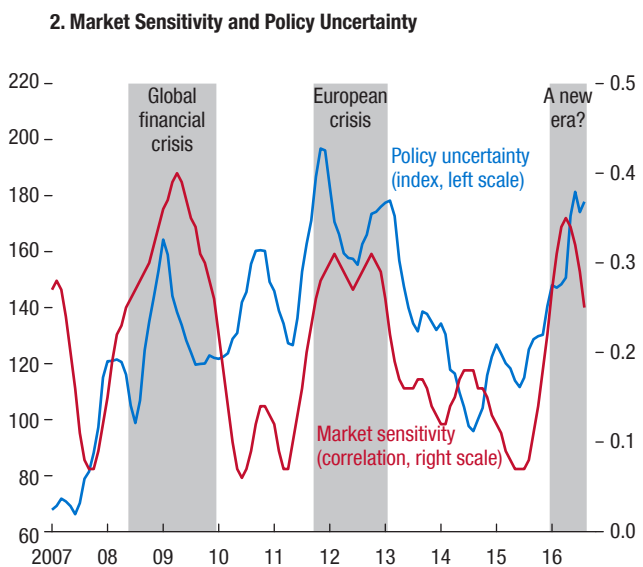
many emerging market economies. However, despite expectations of weak earnings for many emerging market companies, corporate bond yields have fallen sharply recently. This has been driven by lower bond yields in advanced economies and a recovery in risk appetite. These favorable external developments have improved prospects for smooth deleveraging of the corporate sector (where firms take advantage of supportive conditions to gradually reduce their debt) and have helped reduce short-term risks for emerging market economies. This GFSR explores good and disorderly scenarios for the corporate sectors in emerging market economies and some of the challenges that China faces in dealing with high credit growth in an increasingly complex financial system. These topics are discussed in the “Emerging Market Economies: A Smooth Deleveraging?” section of this report.

**Figure 1.5. Policy Uncertainty**

Policy uncertainty remains elevated ...



... while market sensitivity to policy uncertainty is also at the highest level since 2009.



Sources: Baker, Bloom, and Davis 2015; Bloomberg L.P.; and IMF staff estimates.

Note: Policy uncertainty is the six-month moving average of policy uncertainty measures for the European Union, Japan, and the United States. Market sensitivity is the six-month moving average correlation of policy uncertainty levels and the Chicago Board Options Exchange Volatility Index (VIX) in the United States and the Financial Times Stock Exchange (FTSE) 100 Index volatility in the United Kingdom.

**Is the Global Financial System Moving Closer to Financial and Economic Stagnation?**

The current environment of weak growth and low interest rates, elevated policy and political uncertainty, and growing structural impediments for banks is ushering in a new era of challenges and risks for the global financial system. Global financial markets have been dominated by political events since the April 2016 GFSR. The economic and financial fallout associated with the United Kingdom’s eventual exit from the European Union and unpredictable political events in Europe, the United States, and some key emerging markets are adding to fears about these risks. More broadly, dissatisfaction resulting from economic hardships, stagnant growth, income and wealth inequality, and legacy burdens is further reducing political cohesion and policy consensus. More extreme political outcomes could lead to increased isolationism and a retreat from trade expansion, with repercussions for growth and financial stability. These prospects are explored in a downside scenario of *financial stagnation and protectionism*, in which financial institutions struggle to sustain healthy balance sheets, crippling economic growth and financial stability. This report concludes that policymakers must take a more comprehensive and collaborative stance to protect financial stability, advance financial inclusion, and revitalize the global economy to provide for a shared and secure future.

**Medium-Term Risks Rising**

*Financial institutions face a number of cyclical and structural challenges as they adapt to a new environment of low growth, low interest rates, and a changed market and regulatory environment. These are significant challenges that affect large parts of the financial system, and if unaddressed, could undermine financial soundness. This calls for new policies to ensure the soundness of financial institutions as they evolve in this new environment, so that they can continue to support the smooth transmission of monetary policy and contribute to the economic recovery.*

**Low for Long and Implications for Financial Stability**

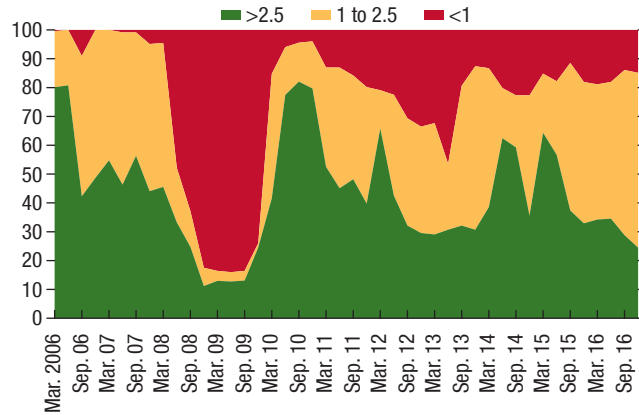
The prolonged slowdown in global growth since 2010 (Figure 1.6, panel 1), persistent low inflation (Figure 1.6, panel 2), and increased uncertainty about the medium term portend low policy rates far into the future. In the euro area and Japan, markets expect pol-



Figure 1.6. Global Growth Momentum and Interest Rates

Much of the world economy has mediocre or falling growth ...

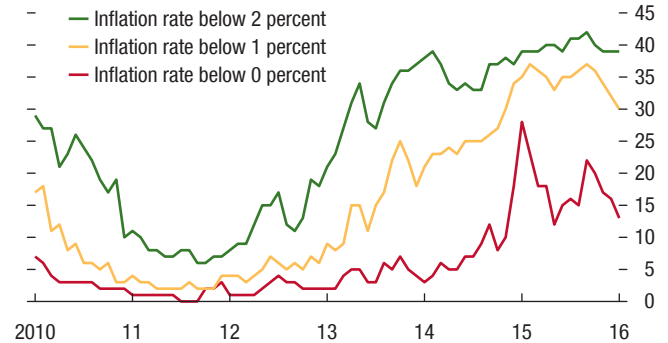
1. Distribution of Level of Real GDP Growth (Growth rate over previous four quarters, share of total GDP in each growth bracket; percent)



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

... persistent deflationary pressures ...

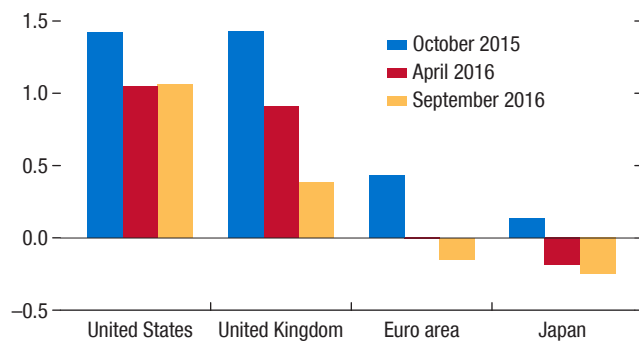
2. Headline Consumer Price Index Inflation: Number of Countries with Low Inflation Rates



Sources: Haver Analytics; and IMF staff estimates.

... and ever lower expected terminal rates ...

3. Expected Policy Rate, End-2020 (Percent)



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

... as the real global bond yield falls.

4. Global Real Rates (First principal component of inflation-linked securities, percent)



Sources: Barclays; and IMF staff estimates.

Note: The principal component analysis is based on the yield of inflation-linked securities from 16 developed and emerging market economies. The first principal component is transformed to have the same mean and variance as the sample.

icy rates to remain in negative territory even five years from now (Figure 1.6, panel 3). Interest rates on long-term bonds have continued their steady march lower through much of 2016, while global real long-term interest rates continue to decline (Figure 1.6, panel 4), reflecting a lack of confidence in sustained long-term growth and inflation rates converging back to central banks' targets in the near future.

These developments suggest that, at best, the normalization of monetary policy has been put on hold

until well into the future. Accommodative monetary policies, including quantitative easing, continue to be crucial to address the weak macroeconomic outlook in many countries. Banks and other financial institutions benefit from ongoing monetary accommodation, because of its support for their credit portfolios through improved growth and price stability and from capital gains on their bond holdings. But low interest rates also raise the present value of existing long-term liabilities, steadily eroding capital and solvency buffers

the longer the low-rate environment persists. Remaining profitable in an environment marked by lower growth, lower interest rates, and tighter regulation will also require a significant transition in business models, because many existing balance sheets and business practices are not currently structured in a way that can earn a sustainable return.

### *Why Have Global Bond Yields Fallen?*

The decline in short-term interest rate expectations explains an important part of the decline of sovereign bond yields (Figure 1.7, panel 1), but it only explains part of it. Bond yields can be considered as the sum of two parts: (1) short-term interest rate expectations (over the maturity of the bond); and (2) a term premium component,<sup>1</sup> which is simply a measure of risk compensation for investors. Decomposing the fall in yields over the past three years reveals that it was largely driven by the progressive erosion of term premiums, which turned negative in Germany, Japan, the United Kingdom, and the United States, for the first time in history (Figure 1.7). The erosion of term premiums reflects several factors that characterize the new era we are in:

- *First, central banks' sizable bond purchases* have flattened yield curves (Figure 1.8) and pushed term premiums further into unprecedented negative territory. Anticipated future demand from central banks has also caused additional compression of term premiums, as investors know that a reliable buyer will prevent sharp increases in bond yields.
- *Second, demand has increased for long duration assets from other investors, such as pension funds and insurance companies.* This increase in demand for long-duration assets may also reflect population aging and demographic shifts that result in higher demand for safe assets.
- *Third, political and policy uncertainty are higher.* Despite low and negative bond yields, their value in a portfolio for insurance against medium-term risks and economic uncertainty remains high.
- *Fourth, there are concerns over secular stagnation,* which has been accompanied by a lack of corporate investment and productivity growth and persistently low inflation.

<sup>1</sup>The term premium is not directly observable, but can be estimated. Here, estimations are based on Wright's (2011) model.

Another striking trend in long-term bond yields has been the high and rising degree of comovement across major global bond markets. This has occurred despite diverging monetary policies and forward guidance (and hence interest rate expectations) across Japan, the United Kingdom, the United States, and the euro area. This rising comovement is shown in Figure 1.8, panel 4, where a large share of the comovement in bond yields is driven by a single common factor for term premiums. In contrast, the heterogeneous stance of monetary policies is captured by the declining comovement in interest rate expectations. Term premiums have become increasingly driven by a single common factor as they have compressed in unison, pushing up correlations across global bond markets.

### *How Are Lending Conditions Impacted?*

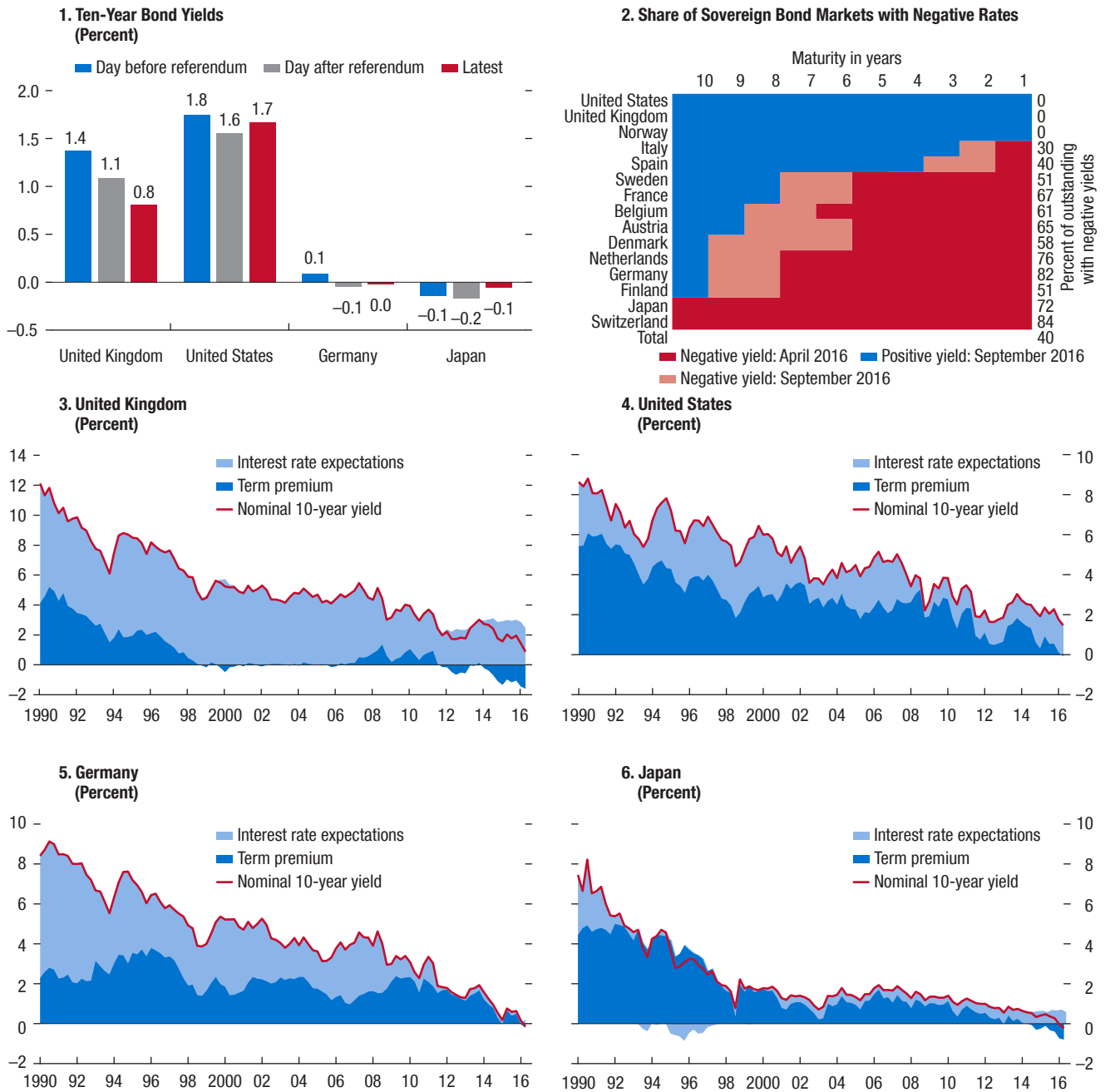
Cyclical pressures and weak growth have hurt the outlook for banks by flattening yield curves and weakening credit. A protracted period of low and negative policy rates and flat yields could undermine financial resilience in the medium term, but the risks of increased headwinds may materialize more immediately. For instance, the decline in bank equity prices seen in 2016 is likely to put pressure on banks to curtail lending as investors question whether banks can deliver sustainable profitability and dividends.

Our analysis suggests that the most recent sharp dive in bank equity prices could curb lending until early 2018 (Figure 1.9, panel 1). To get a sense of how credit growth in the euro area is affected by a range of shocks, a simple (autoregressive)<sup>2</sup> model is used to capture the (dynamic) interactions between euro area credit growth, euro area bank equity prices, the EU economic policy uncertainty index, the business cycle, real lending rates, and the slope of the yield curve. The first set of simulations (Figure 1.9, panel 2) shows that a one-off 20 percent fall in bank equity prices results in a prolonged

<sup>2</sup>A suite of simple unconstrained vector autoregressions (VARs) is estimated with no (exclusion) restrictions imposed on how equity prices affect credit and the other variables in the system (Sims 1981). The VARs comprise six equations, one for each endogenous variable, with four lags. The estimation from 2000 allows nearly 200 monthly observations. The business cycle is proxied by (log) changes in euro area industrial production, euro area lending rates to nonfinancial firms, and log changes of euro area credit growth, excluding the effect of securitization (European Central Bank), and the log level of the EU Economic Policy Uncertainty Index. The last two variables are the slope of the (GDP-weighted) yield curve and the cost of borrowing to nonfinancial firms (adjusted according to the consumer price index).



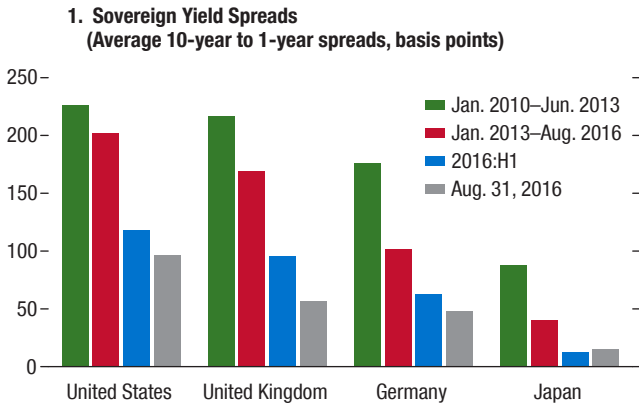
Figure 1.7. Sovereign Bond Yields and Term Premiums in Advanced Economies



Sources: Bloomberg L.P.; Consensus Economics; Deutsche Bundesbank; Haver Analytics; Organisation for Economic Co-operation and Development; and IMF staff estimates. Note: Term premiums are based on Wright 2011. Referendum refers to the June 2016 U.K. referendum on leaving the European Union.

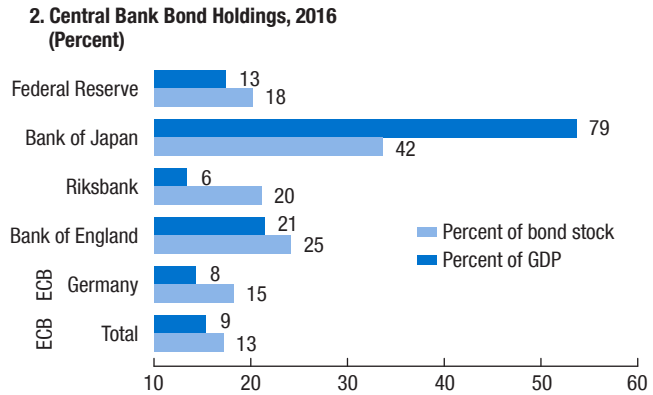
**Figure 1.8. Drivers of Government Bond Yields**

Flatter yield curves reflect the compression of term premiums ...



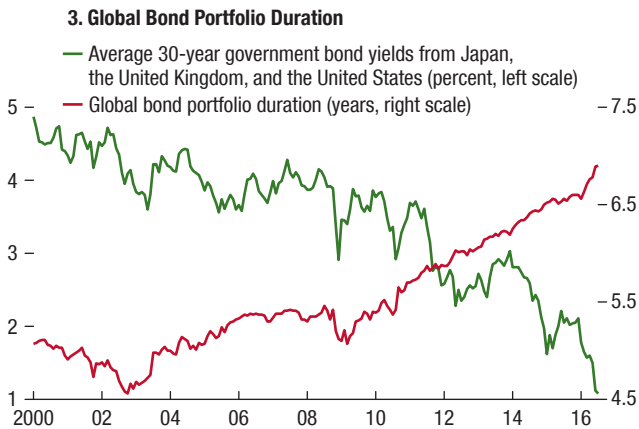
Sources: Bloomberg L.P.; and IMF staff calculations.

... increased demand for duration from central banks ...



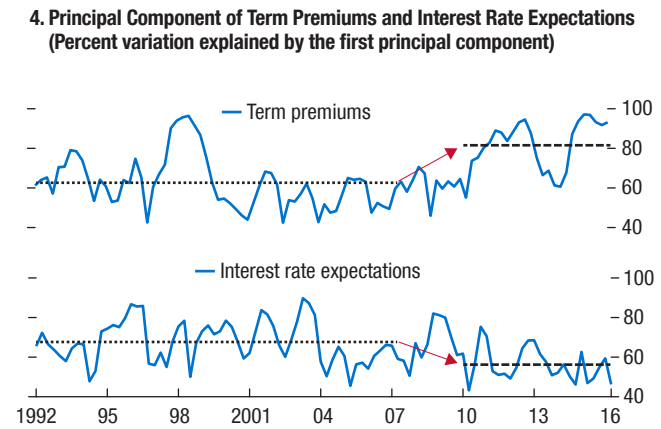
Source: Citibank.  
Note: ECB = European Central Bank.

... and private sector investors ...



Sources: Barclays Capital; and Bloomberg L.P.

... driving down term premiums across global bond markets, even as policy rates diverge.



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

period of negative credit growth. The impact on credit growth peaks within 18 months, after which the effect starts to ebb away. A 20 percent one-off fall in equity prices, when translated into levels of credit, results in credit being 4 percent lower three years after the shock.

**Advanced Economy Banks: The Profitability Problem**

*Banks in advanced economies face a number of cyclical and structural challenges. Weak profitability, particularly in Europe and Japan, could undermine their ability to support growth and could erode bank buffers over time. Even under a “cyclical recovery” scenario*

*of rising rates, lower provisions, and rising fee income generation, almost a third of the European banking system remains weak. This suggests the need for fundamental changes in both bank business models and system structure to ensure a vibrant and healthy banking system that can grow and sustain its rebuilt capital and liquidity buffers. In some cases, weak banks will have to exit and banking systems will have to shrink.*

**Bank Balance Sheets Are Stronger, but Weak Profitability Is a Looming Stability Challenge**

Bank balance sheets in aggregate are substantially stronger and more resilient than they were before the

global financial crisis, with higher and better-quality capital levels and more robust funding and liquidity profiles (Figure 1.10, panels 1 and 2). Banks in advanced economies now have more deposits relative to wholesale funding, longer-term liabilities, and much higher buffers of high-quality liquid assets.

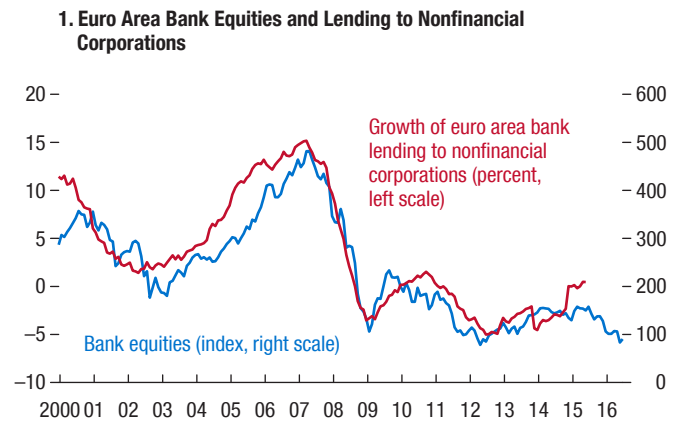
Nonetheless, weak bank profitability has emerged as a looming financial stability challenge for many advanced economy banks. Banks need to generate profits to sustain capital levels through adverse economic cycles (when higher provisioning charges can eat into capital buffers), support future expansion of their balance sheets, meet future increases in regulatory requirements, and pay dividends to shareholders. Banks' returns on assets have only partially recovered since the crisis, with euro area institutions earning less than half their 2004–06 average profits (Figure 1.12). The return on equity of most banks is unlikely to return to precrisis levels. This is the intended result of the postcrisis regulatory reforms, which were designed to make banks better capitalized, more liquid, and safer.

The market's current assessment of the ability of banks to meet these challenges is not optimistic, as valuations are well below the balance sheet value of banks, especially in Europe and Japan where they have dipped to levels in line with the worst points of the crisis (Figure 1.11, panel 1). Many banks earn less than the (persistently high) cost of equity capital (in the range of 8–10 percent).<sup>3</sup> If banks consistently earn less than their cost of equity, they will face considerable challenges in raising private capital and could again become undercapitalized after an unexpected loss or during a broader downturn in their business. Thus, ensuring that banks are able to earn an adequate rate of return on equity is important for maintaining a vibrant and healthy banking system that is able to provide credit and financial services to support the economy.

Rebuilding sustainable levels of bank profitability faces several cyclical, structural, and regulatory challenges:

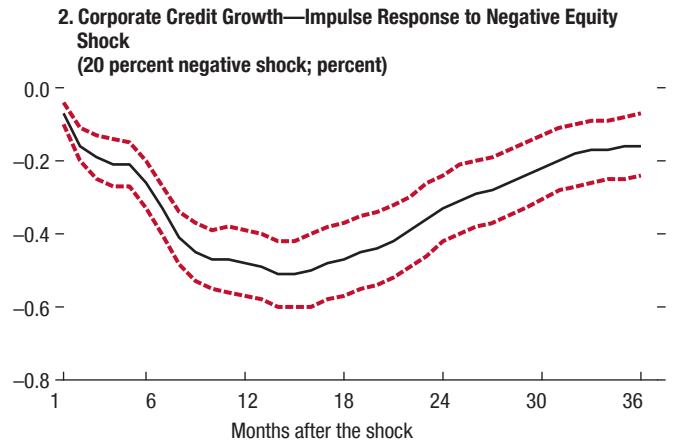
<sup>3</sup>According to a survey in the European Banking Authority's December 2015 risk assessment report, 49 percent of respondents estimated a cost of equity between 8 and 10 percent, 27 percent in the range of 10 to 12 percent, and 14 percent above 12 percent. On a blended basis, the average cost of equity is above 9 percent, based on banking authority estimates. For U.S. banks, the asset-weighted cost of equity is about 10 percent (Bloomberg estimates and IMF staff calculations).

**Figure 1.9. Effects on Credit Growth of Shocks to Equity Prices**  
A fall in bank equity prices could curb lending ...



Sources: Bloomberg L.P.; Haver Analytics; and IMF staff estimates.  
Note: The series for lending has been shifted forward 12 months (e.g., the year 2000 reflects lending for 2001).

... for a prolonged period of time.

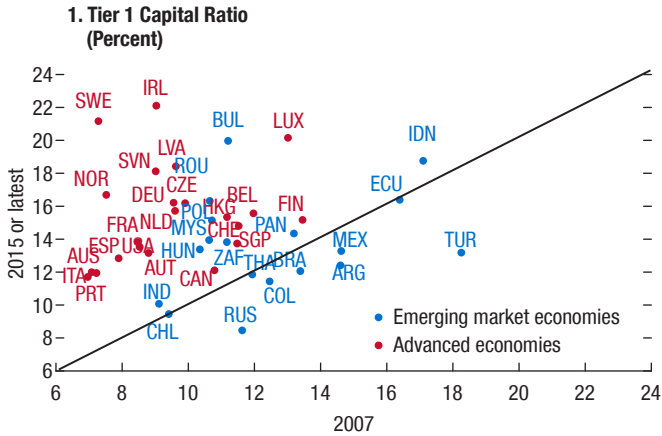


Sources: Baker, Bloom, and Davis 2015; Bloomberg L.P.; Haver Analytics; and IMF staff estimates.  
Note: The impulse responses are generalized (Pesaran and Shin 1997) so they do not depend on a specific ordering of the variables, and orthogonalization is not required. The responses are fully order invariant. The dashed lines show the 90 percent error bands.

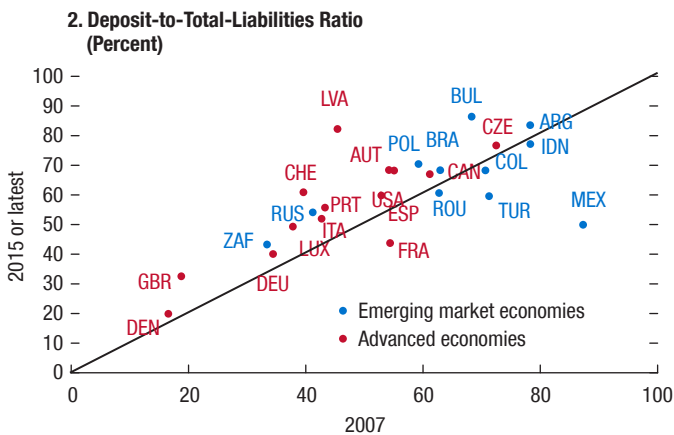
- Some loss in income generation may be attributable to the challenging interest rate and growth environment. Low rates and flattened yield curves reduce the ability to earn income from maturity transformation (borrowing short term and lending long term), while weak demand for credit also reduces income (Figure 1.12, panel 2). Some central banks have mitigated the impact of low or negative rates by providing longer-term funding at low (or no

**Figure 1.10. Developed and Emerging Market Economy Banks: Capital and Liquidity Indicators**

Advanced economy banks have higher levels of capital compared with the precrisis period ...



... and have increased deposits as a share of their total liabilities.



Sources: Federal Reserve; and IMF, International Financial Statistics database. Note: Data labels in the figure use International Organization for Standardization (ISO) country codes.

cost—for example, the European Central Bank’s targeted longer-term refinancing operations and the Bank of England’s funding for lending schemes.

- Regulatory measures to increase safety may limit the scope for risky activities, including by ensuring more stable funding and requiring banks to hold more liquid assets. This is especially the case in capital market businesses. Revenue generation from activities such as market making and derivatives trading has fallen significantly, reducing banks’ fee, commission, and trading income as a percentage of assets (Figure 1.12, panel 4). In Europe and the United States, these income streams appear to have

stabilized at a level roughly one-third lower than during the precrisis period.

- Loan-loss provisioning charges stemming from large stocks of legacy problem loans are an important component of lower profitability in some banks in euro area countries still recovering from the crisis (Figure 1.12, panel 3). By contrast, U.S. banks wrote off larger portions of their bad loans and assets earlier in the crisis, enabling them to return to growth more quickly.
- Looking ahead, competitive pressures from non-banks and disruptive technology threaten to leave banks with substantial fixed costs, as new entrants face substantially reduced operating costs.

Banks have responded to declining revenue with deep cost cuts and by exiting noncore businesses. Institutions in the United States and northern Europe have reduced their operating expenses to assets by 30–35 percent relative to the precrisis average, suggesting some ability to adapt to the shrinking revenue base (see Figure 1.12, panel 5).

Weak underlying profitability has been an important contributing factor to the fall in return on equity, particularly in Europe. Increases in regulatory capital also contributed, but by less in the case of Europe. Figure 1.11 highlights that from 2006–07 to 2012–15, the overall return on equity fell by 11.4 and 3.0 percentage points for large European and U.S. banks, respectively. Higher equity levels accounted for only about 15 percent of this decline at European banks and for about two-thirds of the reduced return on equity at U.S. banks.

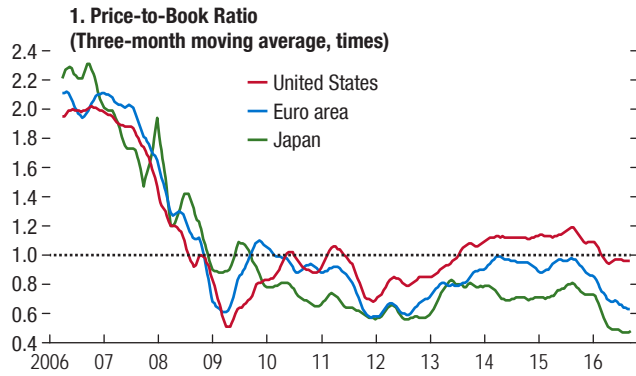
***A Cyclical Recovery Would Be Insufficient to Restore Sustainable Profitability***

A critical issue is whether current low levels of profitability are more of a cyclical problem, which will remedy itself as the economy recovers and monetary policy normalizes, or a structural problem that calls for more deep-rooted reforms and systemic management. To answer this question, this report outlines two scenarios—a “cyclical recovery” scenario during which rates rise and provisions fall to determine the impact on profitability and a bold “structural reform” scenario to quantify changes in business models that could increase efficiencies and profitability.

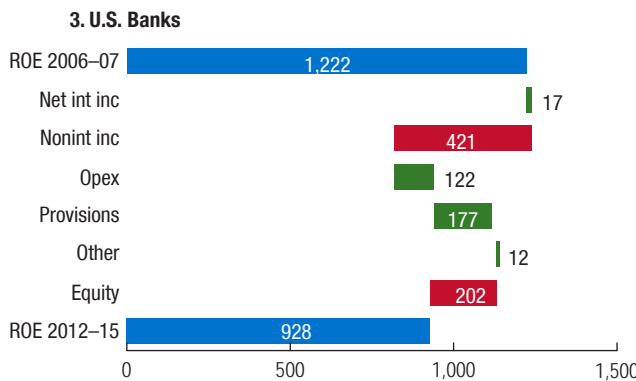
The cyclical recovery scenario consists of improvements along three dimensions. First, net interest income improves with monetary policy normalization,

**Figure 1.11. Price-to-Book and Return on Equity Decomposition, 2006–15**  
(Basis points, relative to average equity)

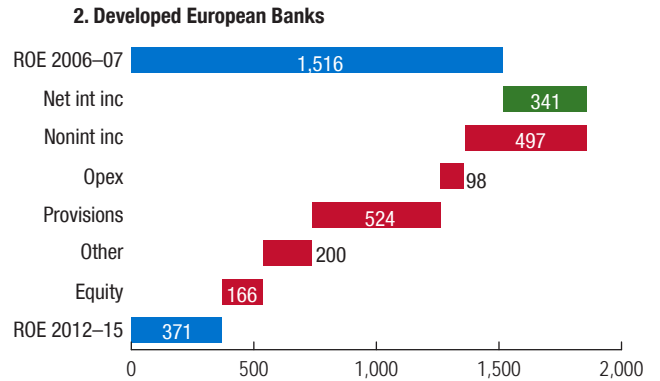
Valuations remain below the balance sheet values of banks, signaling market concerns about bank business models.



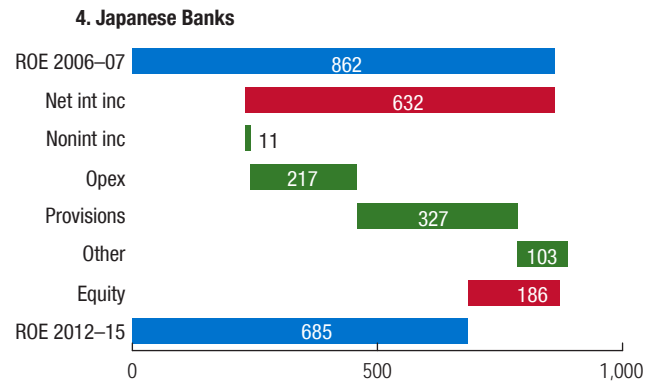
U.S. banks' cost flexibility and lower provisioning compensated for falling noninterest income.



European bank profitability has deteriorated, driven by falling noninterest income and rising provisions.



Japanese banks have offset net interest income compression with lower provisioning and operating costs.



Sources: Federal Reserve call reports; Fitch Ratings; SNL Financial; and IMF staff estimates.

Note: Price-to-book ratio is based on the KBW index for the U.S., Stoxx Europe 600 bank index for the euro area and TOPIX bank index for Japan. Int inc = interest income; Opex = operating expenses; ROE = return on equity; Other = taxes + nonoperating income. Blue = ROE levels; red = negative contribution to ROE; green = positive contribution to ROE.

as the benchmark short-term interest rate rises by 50 basis points. Second, provision expenses decline as economic recovery improves borrower credit quality. Third, economic recovery supports stronger fee-generating activity levels and market trading conditions, boosting non-interest income.<sup>4</sup> Return on assets is

<sup>4</sup>The scenario incorporates the following parameters for each bank: (1) *net interest income*: sensitivity to a 50 basis point change in the benchmark three-month interbank rate is calibrated using the most recent rate hike cycle (2005–08); (2) *fee income*: recovers to the median of 2006–15; (3) *other income (mainly trading gains)*: recovers to the midpoint between the median and the peak over 2006–15, with a cap at 20 percent above the 2015 level; and (d) *loan-loss provisions*: declines to the midpoint between the median and the trough over the period 2006–15 (with exceptions for countries with extraordinary nonperforming loan write-backs).

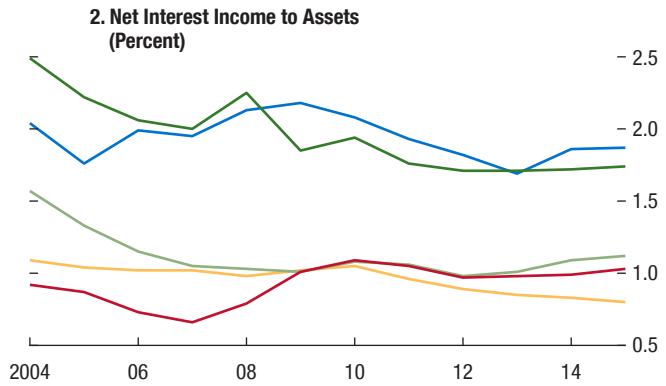
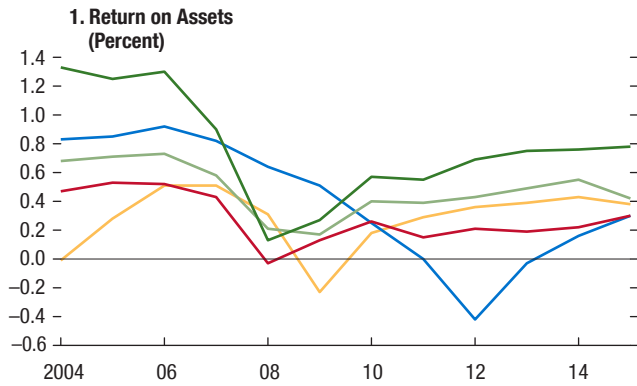
converted back to return on equity using the higher of current equity levels or equity corresponding to the minimum fully phased-in end-point 2019 capital level required based on the 2015 balance sheet.

In a cyclical recovery scenario, European bank profitability rises by over 40 percent in terms of return on assets (Figure 1.13, panel 1), recovering about two-thirds of the decline from precrisis levels. Nevertheless, 30 percent or about \$8.5 trillion of system assets still remain weak, falling short of meeting a cost of equity of 8 percent, suggesting that structural shortcomings will not be adequately addressed by a recovery in rates and business conditions (Figure 1.13, panel 2). U.S. banks benefit less from a cyclical recovery because of their stronger starting point, leaving a quarter of system assets weak (generally

**Figure 1.12. Advanced Economies: Trends in Bank Profitability**

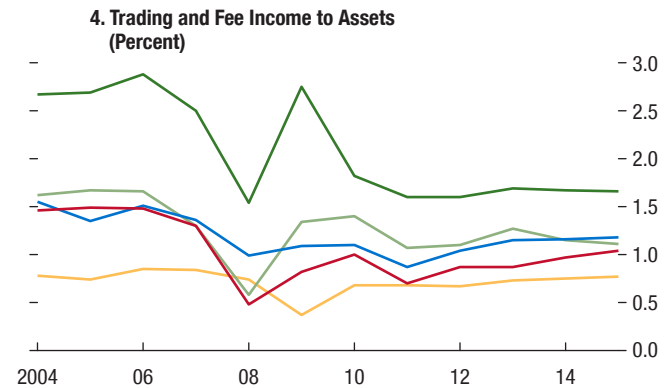
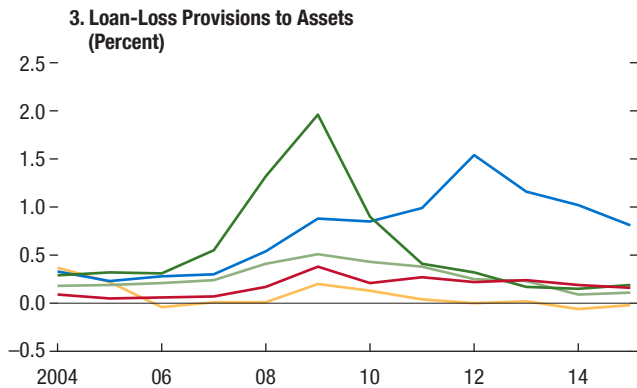
Banks' returns on assets have plateaued below precrisis levels after rising since 2008.

Declining net interest income has been a factor in the United States, Japan, and certain euro area countries.

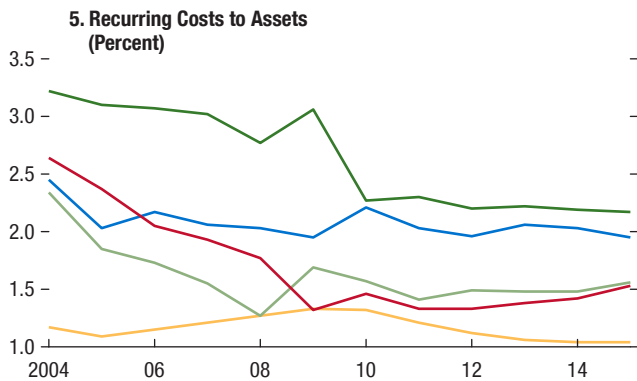


Provision costs have largely normalized outside of euro area countries highly affected by the crisis.

Noninterest income generation has fallen in Europe and particularly in the United States.



Costs have declined in keeping with revenues, although less so in hard-hit euro area regions.



- United States<sup>1</sup>
- Core area countries<sup>2</sup>
- Selected euro area countries<sup>3</sup>
- Other Europe<sup>4</sup>
- Japan

Sources: Bloomberg L.P.; and IMF staff estimates.  
 Note: Data depicted are asset-weighted percentages of average tangible assets.  
<sup>1</sup>Asset totals adjusted to include netted trading derivatives.  
<sup>2</sup>Core euro area = Austria, Belgium, France, Germany, Netherlands.  
<sup>3</sup>Selected euro area = Greece, Ireland, Italy, Portugal, Spain.  
<sup>4</sup>Other Europe = Czech Republic, Denmark, Norway, Sweden, Switzerland, United Kingdom.



less than 8 percent return on equity) or about \$3.2 trillion. While the share of weak banks is broadly similar between the United States and Europe, the United States has a much larger core of healthy banks (shown by the green bars in Figure 1.13, panels 3 and 4).

### *A Bold “Structural Reform” Program Is Needed to Boost Medium-Term Financial Stability*

Many European banks continue to struggle with still-high levels of impaired assets and low profitability. Even under a cyclical recovery, Europe retains a higher share of weak and challenged banks. To address this challenge, policymakers and banks must implement a bold structural reform program, which should include three broad elements:

- Address legacy issues of high nonperforming loans, corporate insolvency frameworks, and the weak tail of European banks.
- Enhance operational efficiencies and strengthen business models.
- Reform the system through consolidation and reduced excess capacity to support sustainable revenue and efficient allocation of credit.

### *Reducing Nonperforming Loans and Addressing Capital Deficiencies at Weak Banks*

The European banking system faces challenges in reducing its large stock of nonperforming loans, particularly in some countries. European and country authorities are taking a number of steps to address those loans and the resulting capital deficiencies. These measures could help reduce the cost of removing nonperforming loans from bank balance sheets. In addition, reforms that speed up asset recovery in insolvency and otherwise reduce the risk of investing in bad loans could potentially boost the price that third-party investors would be willing to pay for them by about 20 percent on average, according to standard distressed investor pricing models.<sup>5</sup> In a simple sensitivity analysis that incorporates these reforms and current levels of bad-loan provisioning, the net impact across the euro area of selling nonperforming loans could change from a loss of €85 billion in regulatory capital to an increase of €64 billion (Figure 1.14).<sup>6</sup>

<sup>5</sup>The price increase of 20 percent reflects the impact of reducing the period of time for asset recovery in euro area countries by up to two years and reducing a potential third-party buyer’s required internal rate of return on its bad loan investment from 15 percent to 6 percent.

<sup>6</sup>The changes in capital are relative to regulatory capital requirements and reflect the impact of nonperforming loan reduction on

Cleaning up nonperforming loans will be challenging without accompanying efforts to structurally boost bank profitability to sustainable levels. Without a clear improvement in weak banks’ ability to generate sufficient internal capital, investors are likely to be hesitant to fund injections of new capital to offset losses related to nonperforming loans.

The Italian authorities have adopted a multipronged strategy to strengthen Italy’s banking system. This includes measures aimed at improving the efficiency and speed of judicial and extrajudicial insolvency procedures; a public guarantee on senior tranches of securitized bad loans; the Atlante funds, politically supported by the government, financed and managed by the private sector; and reform of the tax treatment of loan losses. Nonetheless, government efforts to facilitate the credit enhancement and purchase of bad loans may not be sufficient to reduce them as much or as fast as needed to strengthen the banking system. Moreover, the authorities should promptly assess the asset quality for smaller banks not subject to the European Central Bank’s 2014 comprehensive assessment, and monitor the ambitious bank-by-bank targets set for medium-term nonperforming loan reduction to ensure they are achieved. Insolvency reforms should be extended to existing bad loans as well as to new ones.

Addressing capital deficiencies at weak banks is needed to ensure system stability and support for the broader economy. For example, the EU-wide stress test in July identified significant weaknesses at Monte dei Paschi di Siena (MPS). The bank immediately announced a fully private plan to move €27.7 billion in gross nonperforming loans, or more than €10 billion in net nonperforming loans, off its balance sheet, which would notably reduce its balance sheet weakness. MPS is also planning to raise €5 billion in capital through a rights issue. Addressing the challenges of weak banks is important to reduce pressure on the Italian banking sector more broadly.

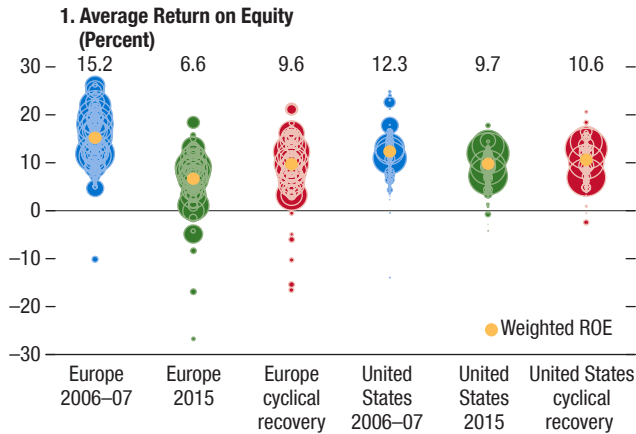
Portuguese banks face a similar series of challenges related to weak capital and earnings, with even greater potential spillback to the sovereign. As of the first quarter of 2016, Portuguese banks had the lowest

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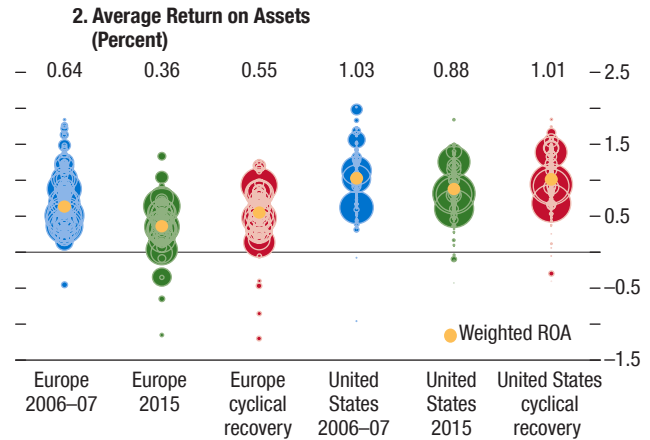
lowering total risk-weighted assets, which would reduce the minimum capital required by regulation by approximately €47 billion in both cases. On the other hand, capital requirements on the whole stock of performing loans at IRB banks could significantly increase as a consequence of the NPL disposal. Therefore, the estimated impact calculated in the exercise may be an upper bound of the possible improvement in the capital requirement.

**Figure 1.13. Bank Performance in a “Cyclical Recovery” Scenario, by Region**

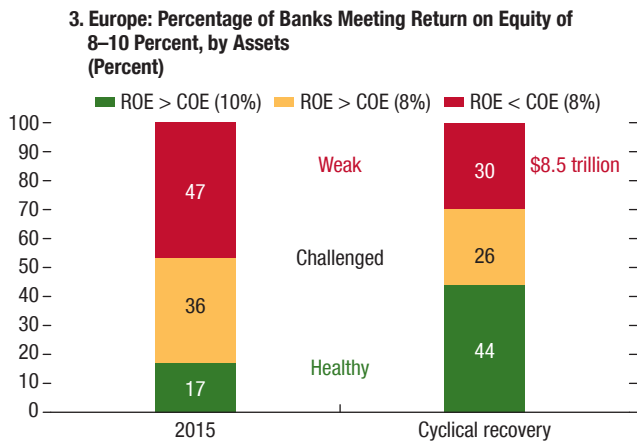
Profitability improves but does not return to precrisis levels ...



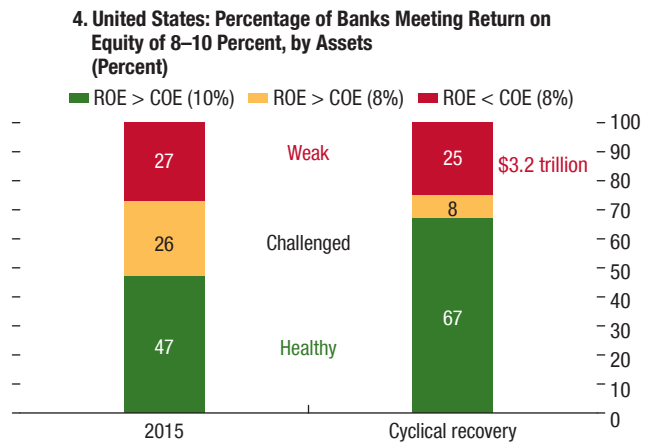
... and is not enough to fix Europe's large tail of weak banks.



Following a cyclical recovery, 30 percent of European banks remain weak ...

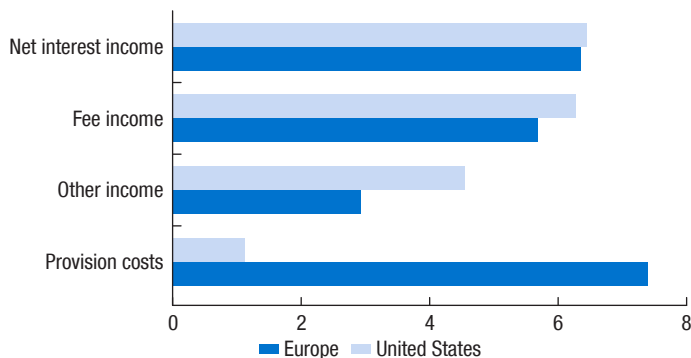


... as do one-quarter of U.S. banks.



Europe benefits more from falling provisions.

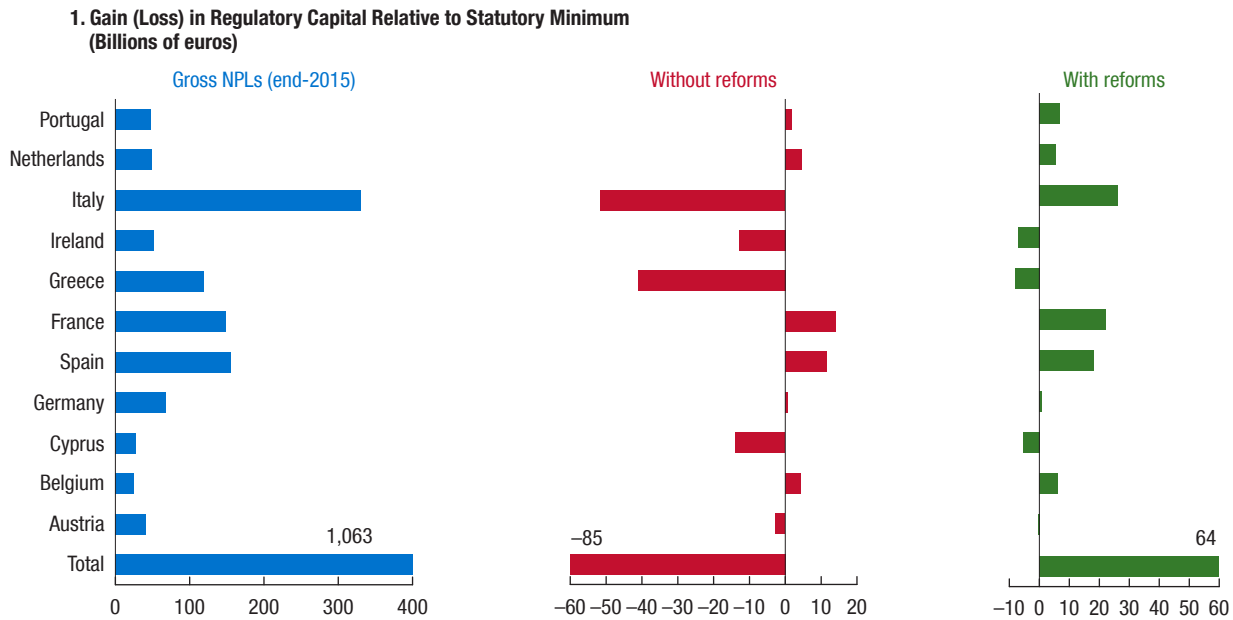
**5. Change from 2015: Key Earnings Drivers as a Percentage of Assets: Cyclical Recovery Scenario (Basis points)**



Sources: Bank financial statements; Bloomberg L.P.; CreditSights; Federal Reserve call reports; Fitch Ratings; Hypostat; SNL Financial; and IMF staff estimates and analysis. Note: Balls represent individual banks, with size of balls proportional to bank assets. The scenario includes 61 European banks (covering 60 percent of system assets) and 215 U.S. banks (covering 80 percent of system assets). The model treats earnings as instantaneous, not phased in over time and does not consider balance sheet evolution. COE = cost of equity; ROA = return on assets; ROE = return on equity.

**Figure 1.14. Stylized Net Capital Impact of Nonperforming Loan Disposal at Euro Area Banks**

Faster bankruptcy processes and lower investor return requirements could support balance sheet cleanup.



Sources: Bankscope; European Banking Authority (EBA); European Central Bank (ECB); Haver Analytics; SNL Financial; World Bank, Doing Business project; and IMF staff calculations.

Note: The “Without reforms” scenario assumes nonperforming loans (NPLs) are sold at the price implied by a distressed loan valuation model using current country-specific asset recovery times and an internal rate of return of 15 percent, whereas the “With reforms” scenario uses the price implied by an improvement in asset recovery time by up to two years (for countries where current asset recovery time exceeds two years, i.e., Cyprus, Greece, Ireland, and Italy) and an internal rate of return of 6 percent. In both cases, losses on the sale of NPLs are offset by a reduction in the minimum level of required capital associated with lower risk-weighted assets and the potential increase in capital requirements related to higher loss-given-defaults for banks using internal models. The net capital impact shown does not consider other potentially important factors, such as deferred tax assets/credits and hidden reserves that could reduce potential losses. Calculations are based on bank-level risk-weighted assets and provisioning data from the EBA Transparency Exercise 2015 and ECB-reported, country-level data for NPLs, with NPLs assumed to be sold down to restore the country-level NPL ratio as of end-June 2009. The specified regulatory minimum is a ratio of 16 percent total regulatory capital to risk-weighted assets. Asset recovery times are based on World Bank statistics. For further details, please see Jobst and Weber 2016.

common equity Tier 1 capital ratio in the European Union, along with Italian banks at 11.4 percent. Nonperforming exposures were among the highest in the European Union, at 15.7 percent. Return on assets and equity were the lowest in the European Union, at -0.2 and -2.5 percent, respectively. Contingent liabilities to the government arising from banking sector support could have a significant impact on the country’s fiscal position, raising the risk of an adverse feedback loop between banks and the sovereign.

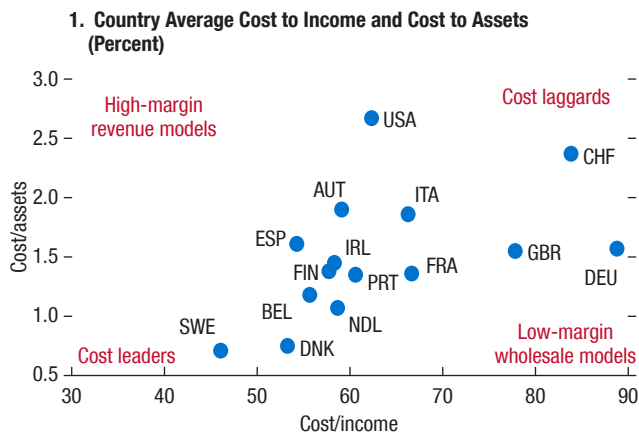
**Enhancing Operational Efficiency**

Some European banks and systems have considerable room to improve operational efficiency, in particular through branch rationalization. Overall, banks’ cost structures differ between more costly but high-value customer-oriented services, on the one hand, and low-

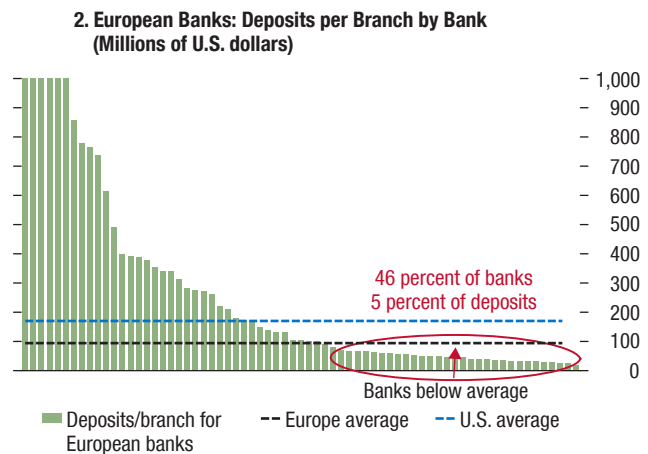
er-margin wholesale models on the other (Figure 1.15, panel 1). Nonetheless, wide variation in the efficiency of deposit-gathering branch networks is evident among European banks. Since branches are intended primarily to service deposit customers, deposits per branch provides a reasonable metric to compare efficiency across business models and service levels. Using this metric, European branch efficiency varies widely (Figure 1.15, panel 2), implying potentially large savings from rationalizing branch networks by banks with low deposits per branch, through closing enough branches to reach the European average (Figure 1.15, panel 3). If rationalizing bank branches were to occur, this could result in the closure of up to one-third of bank branches. This would reduce aggregate bank operating expenses of \$454 billion by about \$18 billion, assuming that branch costs are 25 percent of total operating

**Figure 1.15. European and U.S. Banks—Operating Efficiency and Cost Rationalization**

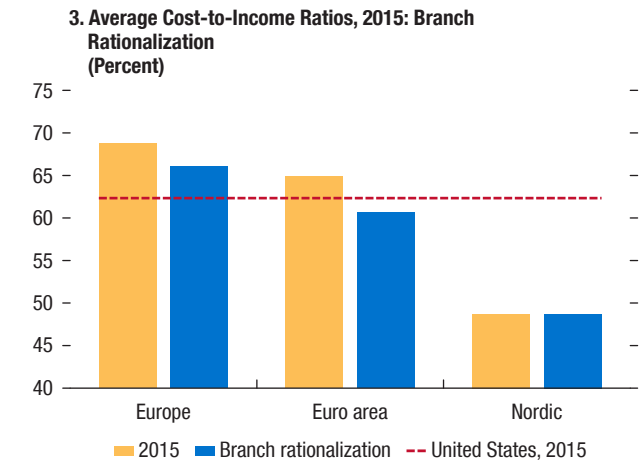
Appropriate cost structures vary by business model.



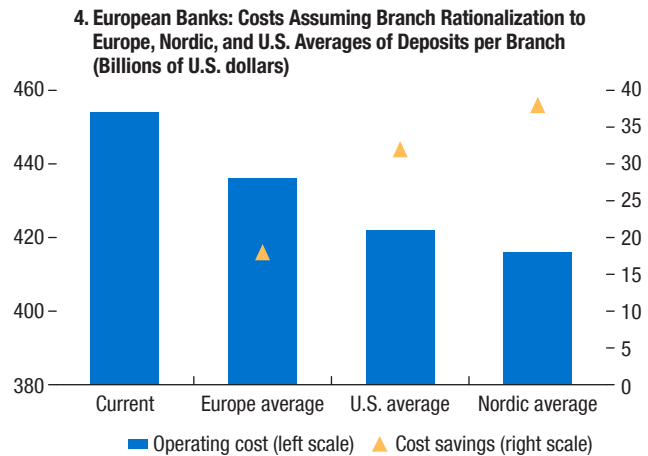
A long tail of inefficient branch networks ...



... keeps cost high relative to income ...



... providing scope for cost savings.



Sources: European Central Bank; Fitch Ratings; SNL Financial; and IMF staff estimates and analysis.

Note: Data labels in the figure use International Organization of Standardization (ISO) country codes. Nordic = Denmark, Finland, Norway, Sweden.

expenses.<sup>7</sup> This cost savings is equivalent to a 5 basis point increase in after-tax return on assets across the European banks considered here. If European bank branch networks were to consolidate branches to the average level of deposits per branch of Nordic banks, the cost reduction would more than double (to about

\$38 billion), with aggregate operating costs falling to close to \$416 billion (Figure 1.15, panel 4).

<sup>7</sup>Disclosures from 12 global systemically important banks (G-SIBs) indicate that, on average, 44 percent of operating expense is associated with retail banking, with branch expense a subset of that total. Estimates are few and vary, but technology and operations consultants (Diebold, Forrester) suggest branch costs constitute 47 to 60 percent of retail banking costs. We assume that revenue potential is fixed, so that reduction of bank branches does not result in a decrease in revenues.

It is important to note that applying such a metric is only indicative because it ignores differences in system structures across countries, heterogeneity of banks' business models, and potential costs associated with closures, which would need to be addressed. Nevertheless, it is instructive in identifying potential operating efficiencies that could form part of a bold structural reform agenda. Other cost elements are important and potentially susceptible to efficiency improvements, but are difficult to model quantitatively. This analysis is therefore intended to represent one possible source of structural cost improvement.

### *Improved Funding Models*

European banks' net interest income generation has historically been constrained by a high cost of funding relative to U.S. and Japanese peers, pointing to the potential for improving financial performance (Figure 1.16, panel 1). While the differential in their respective costs of funding reflects European banks' high degree of dependence on long-term wholesale funding, it is also driven by higher interest rates on deposits, as measured by the spread relative to the interbank rate (Figure 1.16, panel 2). Even though deposit rates are falling in the euro area, deposit rates persistently above interbank rates suggest strong competition for customer deposits, which is surprising in an environment of falling benchmark rates, minimal credit growth, and ample funding liquidity. The unfavorable deposit economics may be a reflection of still-large balance sheets and efforts of some banks to improve their funding mix through deposits. It is also notable that euro area banking systems where deposits have grown the most since 2012 have also seen the slowest downward adjustment in their deposit costs (Figure 1.16, panel 3).

Deposit costs could also benefit from policy efforts to encourage shifts in industry deposit-taking practices. In France, for example, nearly 50 percent of household deposits are in the form of government-regulated deposit products carrying above-market interest rates, which drive some of the highest overall interest rates in the euro area. In other markets, regulators could explore excess competition for high-cost deposits, developing a better understanding of pricing practices for time deposits with maturities in excess of two years, which represent 18 percent of system deposits and have seen relatively less downward adjustment in pricing since the crisis (Figure 1.16, panel 3).

To estimate the potential earnings boost from funding cost rationalization, structural improvements in both deposit mix and in pricing are assumed. Specifically, banks with a relatively low proportion of transaction deposits relative to higher-cost time and savings deposits improve their deposit mix to equal the average of their country peers. Banks with a low proportion of deposits (as a portion of their interest-bearing liabilities) improve their balance sheet mix to the average of their country peers. Each bank whose deposit spread exceeds its national average is assumed to lower its deposit pricing sufficiently to redress the excess deposit spread over the average.

Implementing these improvements generates 16 basis points of improvement to average net interest margins across our sample of European banks, which boosts post-tax return on assets by 11 basis points on average, and adds \$30 billion to profitability.

### *Rationalizing Banking System Balance Sheets and Industry Structures*

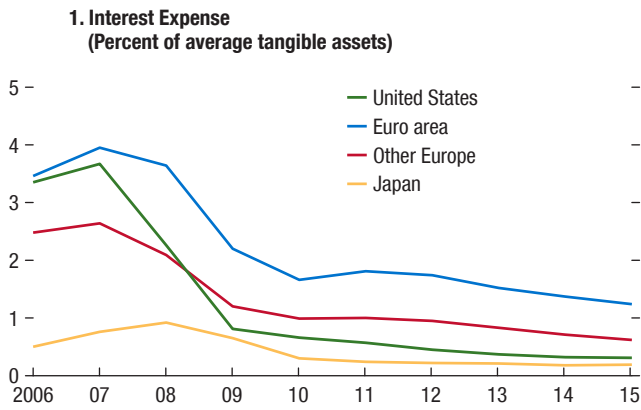
Sector consolidation and the exit of weak banks would likely further enhance revenue opportunities for sound banks while improving allocation efficiency. At the same time, consolidation would entail costs and investments in the short term, while the resolution of weak banks could pose risks stemming from the enforcement of burden sharing. Countries have and are taking various approaches, depending in part on the structure and needs of their individual banking systems. For instance, the savings bank sector in Spain underwent a substantial consolidation from 2009 to 2012 (IMF 2012), along with governance reforms. As outlined in the 2016 Germany Financial Stability Assessment Report, the German savings bank sector has deleveraged as banks refocused on core businesses, reduced noncore assets and participations, closed foreign offices, and sold a number of subsidiaries, although more restructuring and downsizing is needed. Foreign currency activities and refinancing risks were cut back, while dependence on wholesale market financing declined. Reforms to the cooperative sector under way in Italy aim to improve their access to capital markets and their efficiency, while strengthening the governance of cooperative lenders and their credit assessment standards. These efforts are welcome, but further structural measures are called for to support bank sustainability.

### *The Impact of Structural Reform on Bank Sustainability*

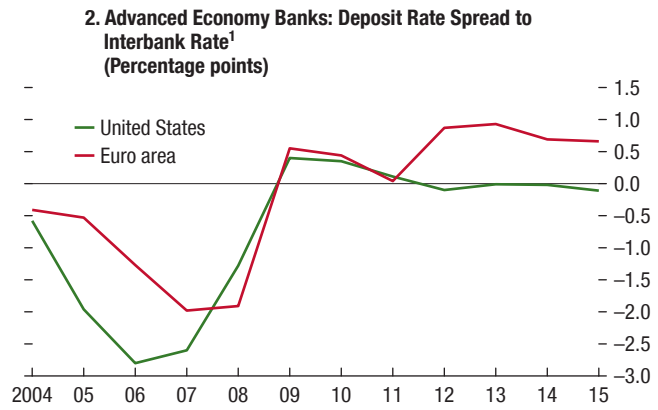
The cyclical recovery scenario would on average add 19 basis points to post-tax return on assets across the banks in this study, but that would still leave about 30 percent of bank assets in Europe in weak banks generating returns on equity below 8 percent. Thus, a cyclical recovery is insufficient to deliver sustainable profitability, without structural changes to bank business models supported by structural system-wide reforms. The structural reform scenario would improve average return on assets by 15 basis points, adding \$43 billion to profits. An outcome that combines the impact of a cyclical rebound in interest margins

**Figure 1.16. European Banks' Elevated Cost of Funding**

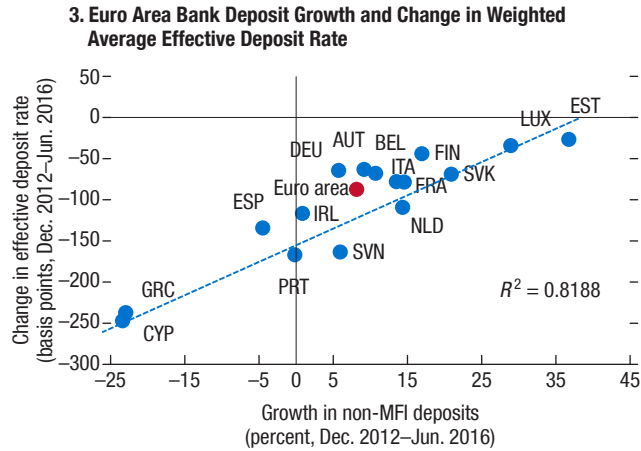
European banks face structurally higher funding costs ...



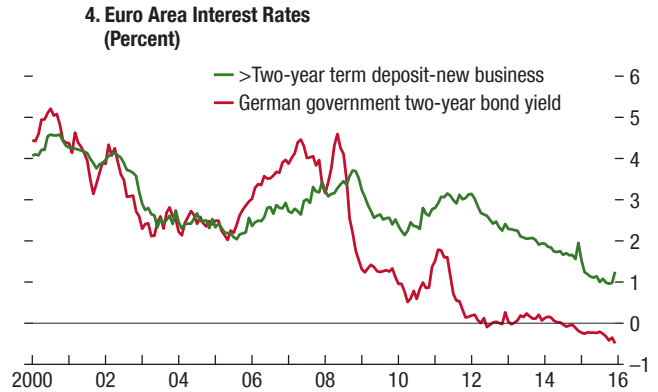
... reflecting higher deposit rates.



Bank deposit rates have fallen slowly in countries with higher deposit growth.



Yields on long-term deposits have been slow to adjust.



Sources: European Central Bank; Federal Deposit Insurance Corporation; Fitch Ratings; SNL Financial; and IMF staff estimates and analysis. Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. MFI = monetary financial institution. <sup>1</sup>Spread shown is the banking system weighted average deposit rate minus the average annual three-month interbank rate.

and moderation in provision charges with structural improvement in funding and operating costs would nearly double European banks' return on assets (Figure 1.17); over 80 percent of European bank assets would generate clearly sustainable returns. Furthermore, structural reforms combined with a cyclical recovery would increase the share of healthy banks to over 70 percent of system assets.

**Japanese Banks Are Expanding Overseas but Face New Challenges**

Since the global financial crisis, overseas expansion by Japanese banks has helped offset the pullback of

European banks from international banking. Although total foreign claims of Bank for International Settlements reporting banks were nearly unchanged between 2010 and 2016, the share of Japanese banks rose from 9.1 to 14.4 percent (Figure 1.18, panel 1). The overseas expansion of Japanese banks has been driven by weak domestic growth and low interest rates, which have constrained domestic lending and compressed net interest margins. In response, Japanese banks have dedicated more of their balance sheets to higher-yielding overseas borrowers, increasing the foreign asset share from 12 percent of their total assets in 2010 to 16.7 percent in 2015.



So far, major banks have taken a cautious approach with the credit and foreign exchange risks of their overseas expansion. Foreign currency positions are almost fully hedged, with limited exposure to lower-rated issuers. This has helped contain the risk weights and regulatory capital requirements on foreign assets. However, the recent rise in hedging and foreign currency funding costs (Figure 1.18, panel 2) means that Japanese investors are no longer able to make positive returns on securities holdings net of hedging costs on AA- and A-rated U.S. corporate paper (Figure 1.18, panel 3). As a result, going forward Japanese financial institutions would have to take on additional credit and duration risk to generate positive net returns on their investment portfolios. Given the larger incremental capital requirements associated with these higher risks, this may curtail the ability of Japanese financial institutions to continue expanding overseas investment.

**Japanese Banks May Face Increased Risks from External Funding, if Severe and Persistent Money Market Disruptions Occur**

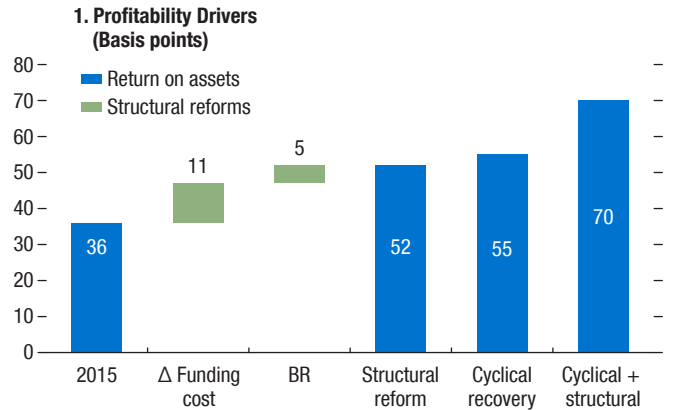
The overseas expansion has left Japanese banks more reliant on wholesale funding to finance their foreign assets, even though the largest three banks have been able to increase their access to foreign currency customer deposits through overseas acquisitions.<sup>8</sup> However, major banks have still had to increase their reliance on wholesale dollar funding markets to fund the growth of their overseas balance sheets (Figure 1.18, panel 1). As demand for currency hedging climbed, reliance on cross-currency swap markets grew from about \$600 billion in 2010 to more than \$1 trillion as of 2015. Most of this increase was due to regional banks and institutional investors, which, unlike the major banks, have little access to foreign currency interbank funding and deposits. The cost of hedging via swaps has increased recently, not only because of greater demand from Japanese investors, but also because of reduced supply stemming from impending U.S. money market fund reform. This has put upward pressure on three-month U.S. dollar London interbank offered rates.

If broad dollar funding markets from deposits to bond issuance were to become disrupted, Japan’s large foreign currency reserves and access to central bank

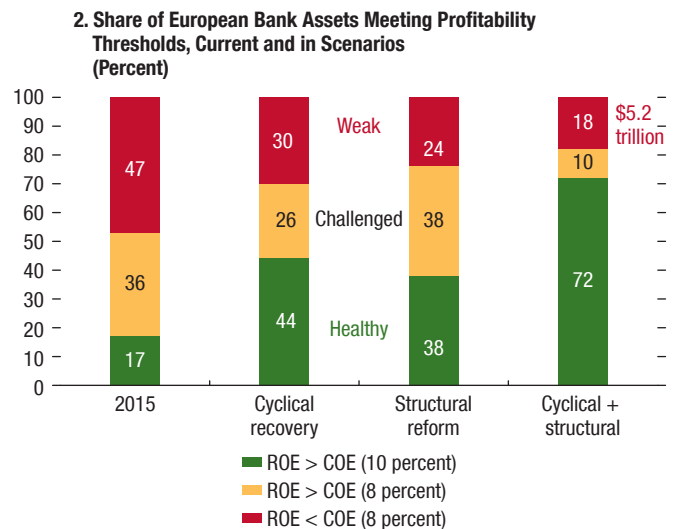
<sup>8</sup>The term “major banks” references the Bank of Japan classification. See Bank of Japan 2016.

**Figure 1.17. European Bank Profitability in a “Structural Reform” Scenario**

Cyclical recovery and structural reform combined would raise European banks’ return on assets by 34 basis points ...



... and allow over 80 percent of sector assets to satisfy an 8 percent cost of equity.

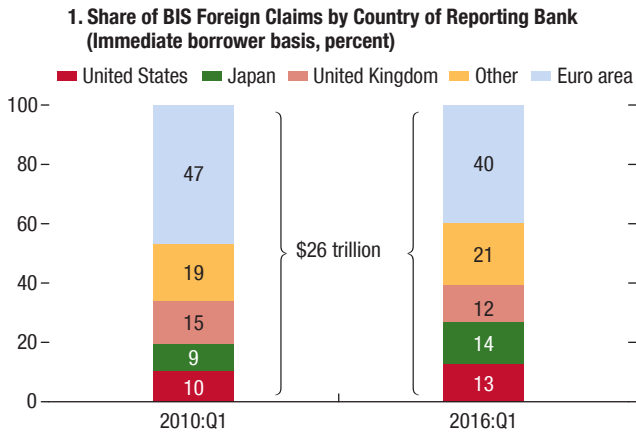


Sources: Bank financial statements; Bloomberg L.P.; Credit Sights; European Central Bank; Fitch Ratings; SNL Financial; and IMF staff estimates and analysis. Note: “Cyclical + structural” values do not add up because of rounding. The structural reform scenario is considered for European banks. The scenarios considered are different from the stress tests, and aim to focus on the profitability and sustainability distribution under the defined variables. BR = branch rationalization; COE = cost of equity; ROE = return on equity.

swap lines could be a critical backstop. In July, the Bank of Japan doubled available dollar lending of maturity up to four years to finance offshore lending against pooled collateral to \$24 billion and doubled the per counterparty loan limit to \$2 billion. In addition, banks will be able to borrow Japanese government bonds from the Bank of Japan through

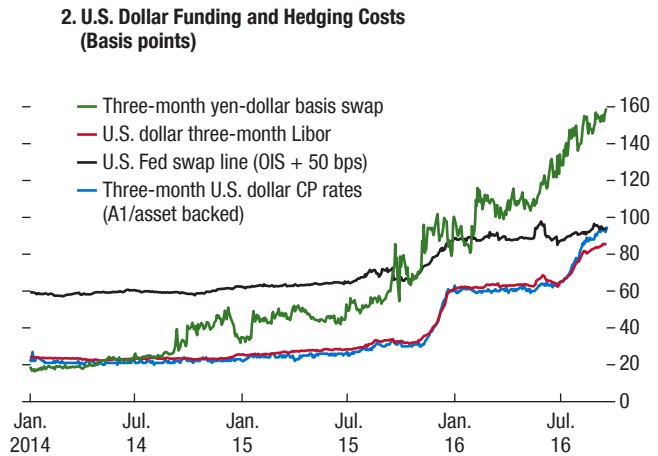
**Figure 1.18. Japanese Banks and Foreign Exchange Funding**

Japanese banks are expanding overseas ...



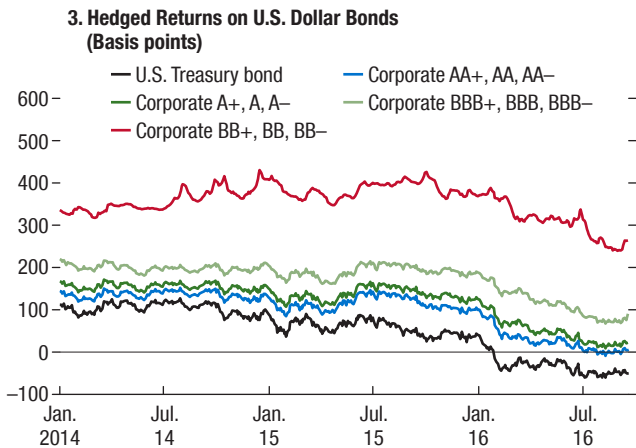
Source: Bank for International Settlements (BIS), Consolidated Banking Statistics.

... but dollar funding and hedging costs have risen ...



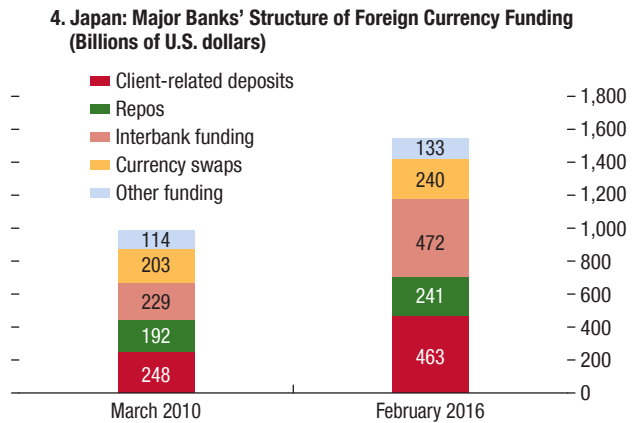
Sources: Bloomberg L.P.; and IMF staff calculations.  
 Note: Bps = basis points; CP = commercial paper; Libor = London interbank offered rate; OIS = overnight indexed swap.

... forcing investors into riskier bonds to maintain positive yields.



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

Japanese banks are more reliant on wholesale funding than deposits.



Source: Bank of Japan.  
 Note: Repo = repurchase agreement.

repurchase agreements, which can then be pledged as collateral to access U.S. dollar funding (using existing swap agreements with other central banks). These foreign currency facilities would help buffer banks from temporary dollar funding disruptions. Major banks are not facing funding difficulties currently, as other sources of dollar funding, including bond issuance and customer deposits, have been relatively stable. Major banks have about \$400 billion in liquid foreign currency assets that also serve as a buffer. Nevertheless, these funding sources might become

more restricted and expensive if broad and severe money market disruptions persisted. The conditions in dollar money markets and their implications for external funding conditions of Japanese banks need to be monitored closely.

***A Retrenchment by Japanese Banks and Financial Institutions Would Affect Global Financial Markets***

The sizable reliance by Japanese banks and other Japanese financial institutions on wholesale funding and swap markets to finance their foreign investments

means that any disruption to these funding sources could force Japanese banks to curtail their offshore investment and limit the growth of their offshore balance sheets. This could negatively affect cross-border capital flows and global financial market conditions.

In addition, Japanese banks face a number of challenges to their business models:

- *Further declines in domestic interest rates*—The gradual erosion of profits from falling domestic net interest margins will likely accelerate if rates move lower, reducing their ability to generate capital. Likewise, lower profits reduce the ability to pay dividends, which could further depress share prices and hurt the ability of banks to strengthen their capital levels through secondary offerings. If capital levels start declining, this could be a catalyst for a spiral of rating downgrades and higher funding costs.
- *Higher capital charges*—Although Japanese global systemically important banks (G-SIBs) are well capitalized relative to regulatory minimums (in part due to lower total loss-absorbing capacity add-ons than most other G-SIBs), capital buffers could be reduced by upcoming regulatory changes and the introduction of IFRS 9.<sup>9</sup> For example, if all the current proposals before the Basel Committee were to be adopted (such as the recalibration of the standardized approach for credit risk), analysts suggest that required capital amounts of Japanese G-SIBs could rise significantly.
- *Market risks*—Higher U.S. rates would immediately raise the cost of Japanese banks' short-term wholesale funding and reduce demand from foreign investors for hedged Japanese government bond holdings. According to the Bank of Japan, a 100 basis point increase in both domestic and foreign bond yields would result in losses by major banks of about ¥3.5 trillion, or 12 percent of common equity Tier 1 capital. Regional banks could be impacted even more, as they are more exposed to duration risks. Banks are also exposed to a reversal in equity prices; unrealized gains on stockholdings by major banks amount to another ¥3.8 trillion (13 percent of common equity Tier 1 capital ratio).

<sup>9</sup>IFRS 9 is an international financial reporting standard (IFRS) promulgated by the International Accounting Standards Board that addresses the accounting framework for financial instruments.

### *Policies to Address Challenges in Advanced Economies*

In many European countries, a more complete solution to address legacy bank problems can no longer be postponed. Specifically, both the high level of nonperforming loans and rising strains on profitability require urgent and comprehensive action.

- *Accelerating resolution of nonperforming loans*—A comprehensive strategy to reduce problem assets should implement the recently strengthened supervisory guidance for banks to resolve these loans more quickly (including through more conservative loan-loss provisioning and collateral valuation, capital surcharges, and time limits on disposal), strengthen and harmonize corporate insolvency and foreclosure frameworks, and promote active markets in distressed assets (including through asset management companies) (IMF 2016e).
- *Restoring bank profitability*—Excess capacity in the European banking system must be addressed steadily over time, including by assessing the viability of unprofitable banks and, where necessary, consolidating and liquidating nonviable entities to allow sufficient credit demand for remaining banks to increase their profits and capital positions. This would also motivate banks with high operating costs to reduce them, providing additional efficiency gains, including through branch rationalization and reducing funding costs and risks.
- *Fully utilizing the Bank Recovery and Resolution Directive (BRRD)*—Where financial stability risks arise, the flexibility allowed under the directive in resolution actions—such as excluding some creditors from bail-in—should be exercised as needed, taking due account of the principle that creditors should not be worse off than they would be under liquidation. To enhance the BRRD's effectiveness and avoid surprises in bail-in, differences in creditor hierarchies across countries should be clearly communicated to investors and a common hierarchy established. To ensure that the BRRD functions smoothly in a crisis, supervisors and resolution authorities should test how bail-in and cross-border coordination would work for large and complex banks. An assessment of the degree of flexibility afforded under the BRRD and its effectiveness should be undertaken as part of the next review of implementation of the directive, which is expected by June 2018.

- *Empowering the European Stability Mechanism*—Consideration should be given to reducing the thresholds for the direct recapitalization of viable European banks under the mechanism. To further safeguard financial stability in times of systemic stress, the mechanism could be empowered to deploy the direct recapitalization instrument on a precautionary basis, subject to appropriate conditions.

In Japan, intensified supervision is needed to ensure that banks maintain adequate profitability and healthy funding profiles, and are prepared to meet the demands of changing global regulatory standards, such as the implementation of total loss-absorbing capacity requirements. Large global banks are well capitalized compared with national regulatory minimums and have ample domestic liquidity. But the sustained low-profitability environment and increased exposure to foreign assets and funding markets leave them vulnerable to an economic slowdown, rising credit risks domestically or abroad, and higher U.S. dollar funding costs. Profitability strains for regional banks are more pressing. Supervisors should carefully monitor profitability stresses on both these and larger banks, as well as risks to larger banks from overseas commitments, which could intensify sharply should weaker domestic conditions lead to ratings downgrade pressure.

### Challenges for Life Insurance Companies and Pension Funds in a Low-Rate Environment

*Sustained low interest rates are eroding the viability of business models for many life insurance companies and pension funds, threatening solvency over the medium term.*

#### *Life Insurers' Solvency Is Eroded by Prolonged Low Rates*

The outlook for many insurance companies has continued to deteriorate in 2016 as expectations for an extended period of low interest rates have deepened. Like those of their bank counterparts, equity prices for many insurance companies have been declining in 2016 (Figure 1.19, panel 1) even as general equity prices have recovered from bouts of volatility. At the same time, credit default swap spreads have increased, suggesting that markets are pricing in greater solvency risks as the interest rate environment becomes more challenging (Figure 1.19, panel 2).

Insurance companies in Germany and Japan are particularly sensitive to further falls in interest rates because of the nature of their business models. The extensive use of insurance policies offering guaranteed returns by many German and Japanese firms can lead to an eroded asset-liability management gap as policies continue to pay out a return higher than current rates.<sup>10</sup> The recent IMF Financial System Stability Assessment Report for Germany (IMF 2016d) highlighted German life insurers' challenges as a result of their traditional business model, which is based on longer and higher guarantees. The significant deterioration of the embedded value disclosed by Japanese life insurers suggests that they face similar pressures from a prolonged period of low interest rates. Other insurers, such as some in the United Kingdom and the United States, face increasing longevity risk: low rates are straining their ability to control longevity risk (resulting from increased life expectancy of policyholders) because of the higher cost of hedging. This in turn could place negative pressures on their solvency under the Solvency II Directive, barring transitional measures.<sup>11</sup> Solvency concerns were flagged in stress tests of European insurers in 2014 (see the April 2015 GFSR), but the interest rate in the current environment is even lower than in the adverse scenario in those tests, with market expectations even more pessimistic (Figure 1.19, panel 4).

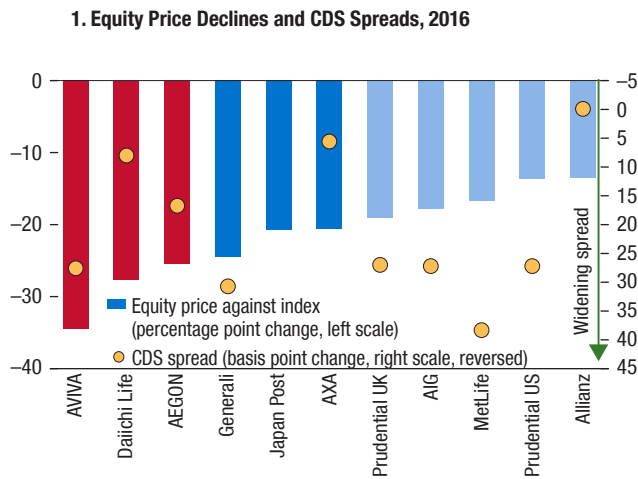
The insurance sector is an important participant in global financial markets, and as noted in Chapter 3 of the April 2016 GFSR, this sector's systemic risk and potential for contagion to the rest of the financial sector are rising. In particular, a double-hit scenario (characterized by low interest rates and additional market shocks) could materially impact insurance companies, thus damaging market confidence and possibly triggering contagion to the broader financial sector. A solvency threat to insurers could also pose stability concerns, given the interconnectedness of insurers, banks, and asset managers.

<sup>10</sup>Policyholders of existing policies with higher guarantees are more likely to keep their current contract, which increases the duration of the liability under lower and negative interest rates.

<sup>11</sup>The Solvency II Directive is a directive in EU law that codifies and harmonizes the EU insurance regulation. The Bank of England (2016) estimates that a 50 basis point interest rate change will affect the risk margin (which is part of the insurance liability) by 20 percent, leading to excessive volatility in solvency positions. While there is no explicit capital charge under U.S. risk-based capital, U.S. state regulators are currently working to incorporate risk sensitivity into the capital requirements.

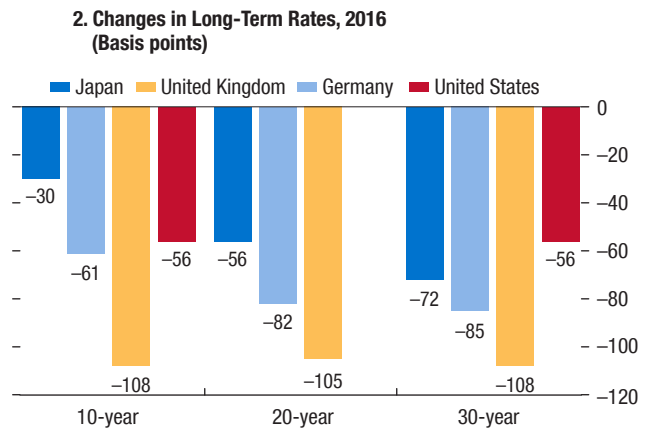
Figure 1.19. Low Interest Rates and Insurance Companies

Equity prices and CDS spreads show insurers under pressure ...



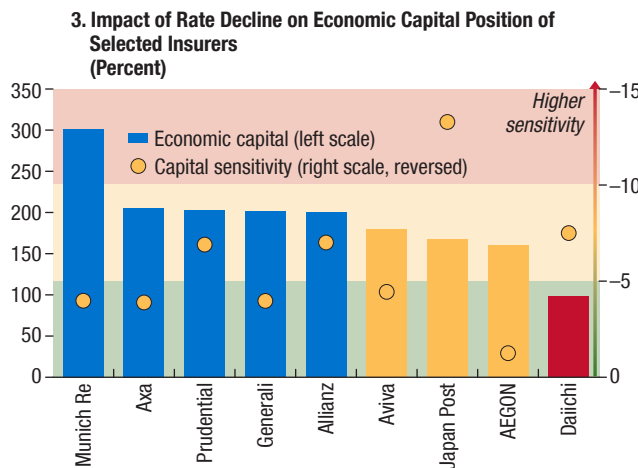
Source: Bloomberg L.P.  
 Note: Insurers are those designated global systemically important insurers (G-SIIs) by the Financial Stability Board in 2014 or 2015 plus two large Japanese insurers. Colors denote severity of the shortfall in equity prices. Red = decline of more than 25 percent; dark blue = decline of between 20 and 25 percent; light blue = decline up to 20 percent. The relative declines are calculated by comparing the decline in equity prices of an individual insurer with the indices of the Standard and Poor's 500, Euro Stoxx 50, and Nikkei 225. CDS = credit default swap.

... as long-term rates continue to plummet.



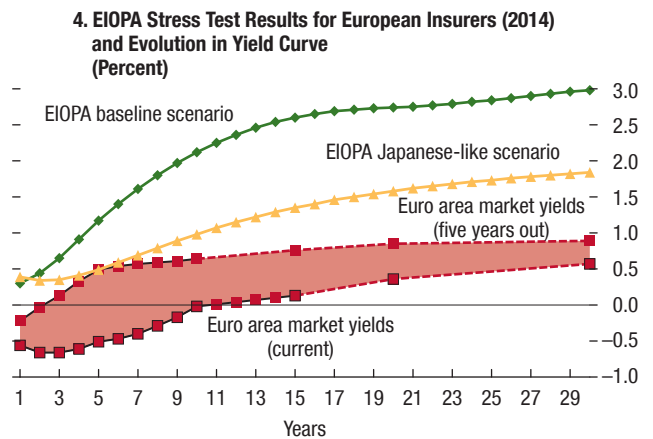
Source: Bloomberg L.P.

Lower rates are taking a toll on the solvency of insurers ...



Sources: Company disclosures; and IMF staff estimates.  
 Note: Bars show the level of economic capital of selected groups; the Solvency II SCR coverage ratio is used for European groups and the Economic Solvency Ratio is used for Japanese groups. The color of the bars indicates the level of the solvency ratio: red, below 100 percent; yellow, below 200 percent; and blue, 200 percent and over. Dots show the sensitivity of economic capital under a risk-free rate that is 50 basis points lower; the Solvency II coverage ratio is used for European groups, and the Embedded Value is used for Japanese groups. For the companies that disclose a sensitivity of either a 100 basis point or 25 basis point change, the sensitivity has been adjusted by dividing or multiplying by 2, respectively. Light yellow and pink zones indicate that the sensitivity is higher than 5 and 10 percent, respectively. Data are as of December 2015 for European insurers and March 2016 for Japanese insurers.

... with the outlook far more negative than previously thought.



Source: Bloomberg L.P.; and the European Insurance and Occupational Pension Authority (EIOPA).



**Figure 1.20. U.S. Pension Fund Discount Rate**  
(Percent)

The U.S. pension fund discount rate has plummeted in the low-interest-rate environment.



Source: Bank of America Merrill Lynch.

### *Low Rates Exacerbate Funding Gaps for Pension Funds*

The steady decline in interest rates adds to challenges facing many private pension funds, along with those from aging populations and low or volatile asset returns. Many pension funds face funding gaps, where the present value of future liabilities exceeds the market value of their assets. Funding gaps may widen due to low interest rates because of the lower associated discount rate applied to pension liabilities, which increases the present value of future obligations. Defined benefit pensions of U.S. and European companies have seen their funding gaps worsen since the onset of the crisis. This reflects a combination of low asset returns (especially on safe assets, such as sovereign bonds) and falling interest rates.

Although most equity prices have recently recovered, boosting pension funds' investment returns, the impact of declining interest rates and narrowing credit spreads has been substantial because it lowers the market-based discount rate applied to pension liabilities. Estimates of the U.S. discount rate point to a decline from about 6.5 percent in 2008 to about 3.5 percent in 2016 (Figure 1.20), raising pension

funds' projected benefit obligations and offsetting gains from rising equity prices. Similar effects are evident in the United Kingdom. Indeed, the average funding gap for U.S. and U.K. pension funds is about 30 percent, or aggregate shortfalls of \$520 billion and \$530 billion (£408 billion), respectively (Figure 1.21).<sup>12</sup>

### *Funding Gaps Could Impact Market Dynamics*

The low-interest-rate environment is also triggering adverse dynamics in many pension plans, which have the potential to drive interest rates even lower in a vicious self-fulfilling cycle. Pension funds, notably in the United States, have increasingly shifted their investment mix toward fixed income products (including high-quality long-term corporate debt) and away from equities, pursuing a so-called liability-driven-investing (LDI) strategy. LDI reduces the volatility of the funding gap of pension funds by better matching the interest rate sensitivity of their liabilities and assets through the purchase of more long-duration assets. Having similar interest sensitivity for assets and liabilities insulates the balance sheet from changes in interest rates. According to private estimates, just over 40 percent of U.S. pension funds currently use LDI, with another 40 percent considering this strategy. Applying this current ratio to the largest 100 pension funds of firms in the Standard and Poor's 500 stock index suggests that nearly \$700 billion in assets are managed under LDI strategies.

Many pension funds face funding gaps, as more firms are shifting to LDI strategies. This could substantially increase demand for duration in riskier assets, such as corporate debt and emerging market economy debt, as well as in safe haven sovereign bonds, particularly U.S. Treasuries. The more firms that shift their asset allocations toward such assets, the more the yields on these assets decline, reinforcing funding gaps and thus generating additional demand for bonds in a potentially negative spiral. The funding gaps of pension funds may put pressure on the supply of suitable investments, such as high-quality corporate bonds, favored by long-term investors because of their higher yield and relative safety over other investments. Outstanding high-quality, long-term U.S. corporate debt (10-year or longer maturity, rated AA- to AAA) amounts to about \$300 billion. This

<sup>12</sup>Respective funding shortfall estimates for the United States and the United Kingdom are from Bank of America Merrill Lynch and the U.K. Pension Protection Fund.



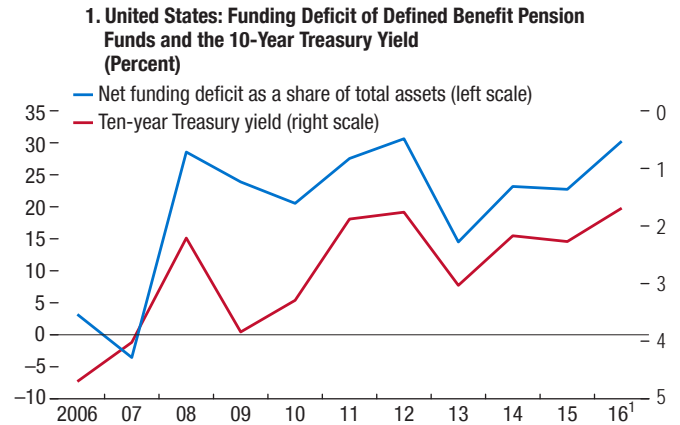
suggests that a meaningful rise in demand by pension funds could consume the current outstanding supply, driving corporate spreads much lower and boosting demand for duration in riskier markets. While lower corporate spreads may support investment and the broader economy, rising exposure to risky assets would increase the vulnerability of portfolios to shocks and higher volatility.

The interconnection of pension and insurance companies and their financial systems means that strains in large or medium-size entities could quickly spread, underscoring the need for prompt regulatory enhancements to ensure their health.

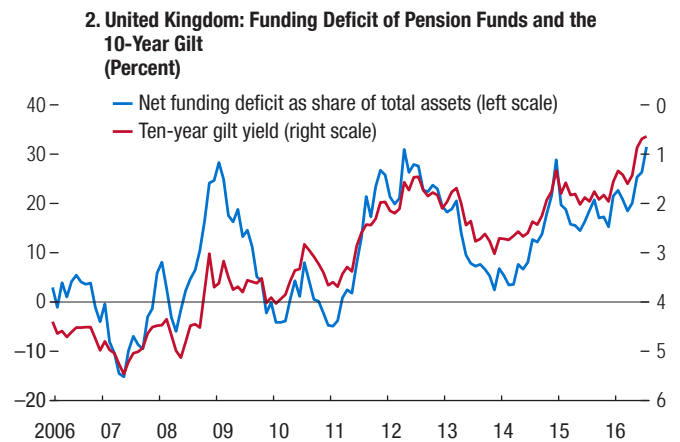
- Life insurers**—The International Association of Insurance Supervisors’ reform agenda should be enhanced across a number of avenues. Regulators and supervisors should act promptly to ensure the ongoing strength of insurance company balance sheets. The association should accelerate development of a sound insurance capital standard, which would ensure better asset and liability management. The development of high and robust standards surrounding the use of internal models is another priority. Macroprudential stress tests should also be employed to identify other challenges, such as a sudden increase in interest rates or more volatile capital markets. Regulatory uncertainty should be reduced by more clearly communicating transitional arrangements toward full implementation of final standards (for example, by establishing clear supervisory expectations and clarity on transitional arrangements). At the same time, consensus on an international capital standard appears to be further threatened by the possible exit of the United Kingdom from the European Union (and its approach to insurer solvency) and by indications from the U.S. Federal Reserve that it will not adopt international standards for the time being.
- Pension funds**—In Europe, regulations should be strengthened to ensure a common framework for risk assessment and enhanced transparency. This means valuing assets and liabilities on a market-consistent basis to facilitate standardized reporting and risk analyses, such as stress testing. Greater consistency would boost transparency, including by ensuring regular public disclosure of balance sheet metrics and risk analyses.

**Figure 1.21. Pension Funding Shortfalls in the United States and the United Kingdom**

The funding gaps of the U.S. and the U.K. pension funds have risen, reflecting the impact of lower interest rates on future pension obligations.



Sources: Bloomberg L.P.; Bank of America Merrill Lynch; and IMF staff calculations. Note: Top 100 firms in the Standard & Poor’s 500. The positive values are below the zero line for the right scale. <sup>1</sup>Bank of America Merrill Lynch estimate.



Sources: Bloomberg L.P.; Pension Protection Fund; and IMF staff calculations. Note: The positive values are below the zero line for the right scale.

**Emerging Market Economies: A Smooth Deleveraging?**

*Leverage of many emerging market firms appears to have peaked as lower commodity prices have reduced the need for more capital investment. Nevertheless, corporate leverage remains high in many countries, and balance sheet fundamentals are generally weak as growth has slowed, posing risks to emerging market banking systems. Therefore, a smooth path of deleveraging is crucial to preserve financial stability. Financial conditions have eased and economic activity has stabilized somewhat*

*in 2016 in many economies, but under the baseline scenario the pace of deleveraging over the next five years remains slow. Under an adverse deleveraging scenario, the increase in debt-at-risk (debt belonging to firms with limited ability to repay) is substantial for some major emerging market economies, with strong spillovers into banks that could overwhelm their buffers. Policymakers should use the improvement in near-term conditions to promote smooth deleveraging and to rebuild bank buffers where they are insufficient.*

### **Near-Term Risks Are Down, but Challenges Remain**

Short-term risks for emerging market economies have declined in recent months with commodity prices stabilizing and external conditions improving. The growing share of advanced economy sovereign bonds trading in negative territory, along with expectations for further easing by major central banks, have rekindled the global search for yield. The stabilization of capital outflows from China, and reduced uncertainty about China's near-term growth outlook, have supported broader positive sentiment toward emerging market currencies. Currency volatility has declined steadily after spiking earlier this year, lending support for local-currency-denominated assets. As a result, portfolio flows to emerging markets rebounded in March after three-quarters of retrenchment. Total emerging market portfolio inflows have strengthened further since the Brexit referendum in June. Domestic factors have also contributed to attracting portfolio flows. Signs of stabilization in economic activity have emerged in some countries, with business cycle indicators such as purchasing managers' indices recovering. The decline in borrowing costs and stability of currencies resulted in an improvement in financial conditions since the second quarter of 2016, which allowed firms to roll over their maturing debt (Figure 1.22).

### **Corporate Leverage in Many Emerging Markets May Have Peaked, but Medium-Term Challenges Remain**

As highlighted in previous GFSRs, nonfinancial corporate credit in emerging market economies rose substantially following the global financial crisis (Figure 1.23). Firms, particularly in commodity-related sectors, ramped up investment spending to increase production amid rising commodity prices. Many firms increased balance sheet leverage substantially, aided by low rates and easy financial conditions. The subsequent downturn in commodity prices in 2012, and especially

the plunge in oil prices since the second quarter of 2014, notably reduced the profitability of commodity firms and their suppliers. This forced many to undo or reduce capital investment plans in an effort to cut expenses and reorganize business strategies. Early indications suggest that corporate leverage is poised to fall for the first time in seven years. In many Latin American countries, leverage is high, but corporate debt is very concentrated, with the top 10 companies in most economies accounting for a majority of the debt stock.

The decline in global commodity prices spurred an initial phase of capital-expenditure-related deleveraging. However, additional efforts are needed to place balance sheets on a healthy footing for a number of reasons: growth is slowing because of cyclical and structural factors, thus suppressing earnings, and high leverage and reduced debt repayment capacity have added to potential corporate and banking system strains.

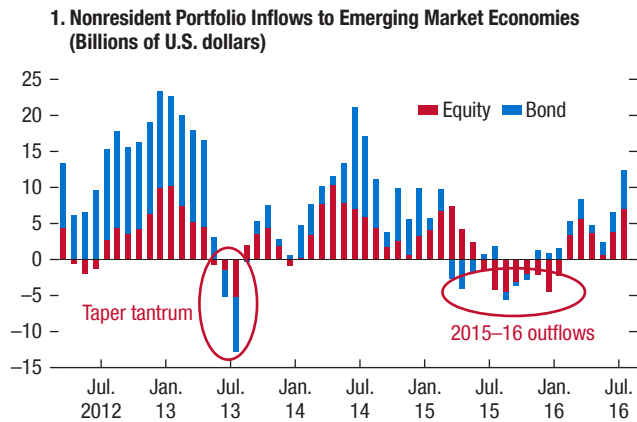
Some firms have already taken steps to address refinancing challenges by prefinancing upcoming maturities. Net bond financing (bonds issued after netting amortizations, interest payments, and debt buybacks) is expected to turn slightly negative this year and may move further into negative territory. Overall, however, emerging market corporate leverage is elevated as measured by the share of debt to equity (75 percent in 2015), while debt repayment capacity is challenged amid decelerating growth. As discussed in previous GFSRs, corporate debt service capacity is increasingly strained, particularly in emerging Asia. The amount of debt-at-risk (debt of firms with earnings<sup>13</sup> below their interest expenses) across emerging market economies is estimated at \$430 billion, or 11 percent of total corporate debt, and remains elevated compared with earlier years. Commodity firms, dominated by state-owned enterprises in many countries, are among the most vulnerable, elevating risks directly to sovereign balance sheets (the *corporate-sovereign nexus*). This can be cause for fiscal concern and can have second-order effects on other firms via the supply chain.

Excess corporate debt also increases risks to banks. The majority of the stock of emerging market corporate debt, some \$19.6 trillion out of \$25 trillion, resides on the balance sheets of domestic banks. Aggregate capital buffers of banks appear adequate for

<sup>13</sup>That is, firms whose earnings before interest, taxes, depreciation, and amortization are less than their interest expenses.

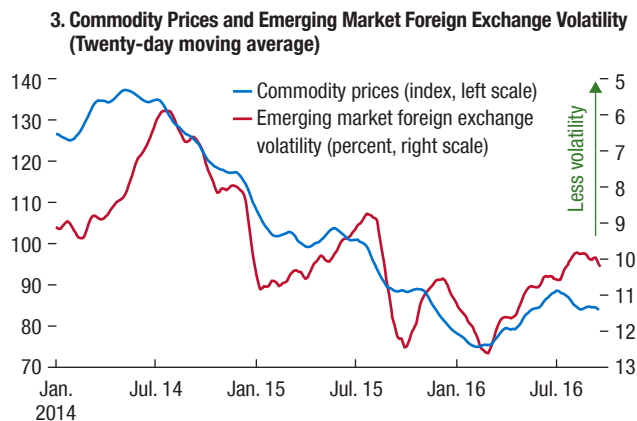
**Figure 1.22. Portfolio Flows to Emerging Market Economies and Asset Prices**

Portfolio flows to emerging market economies have rebounded since March ...



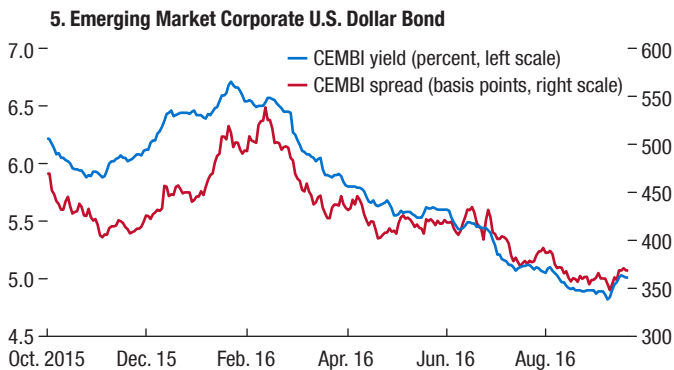
Sources: Bloomberg L.P.; and IMF staff calculations.  
 Note: Bond flows include India, Indonesia, Mexico, Russia, South Africa, Thailand, and Turkey. Equity flows include Brazil, India, Indonesia, the Philippines, South Africa, Thailand, and Turkey.

Stability in commodity prices and low currency volatility, along with ...



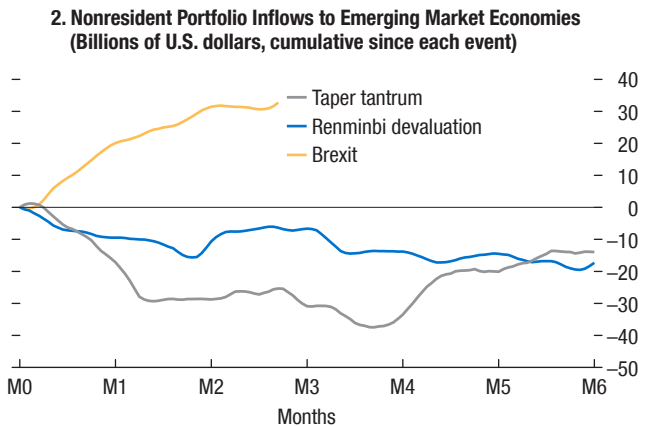
Source: Bloomberg L.P.

... and the low return of advanced economy assets has boosted the attractiveness of emerging market economy assets.



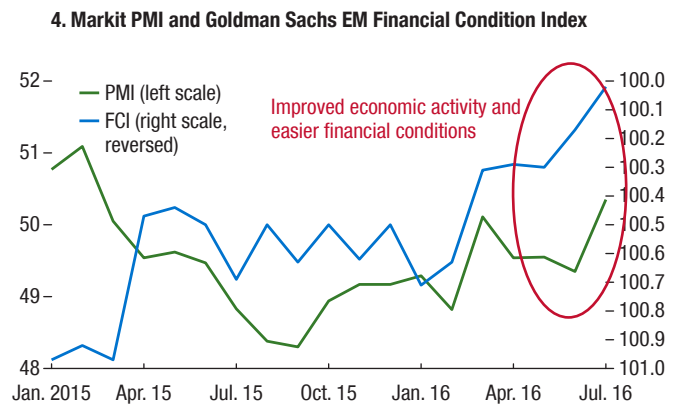
Sources: Bloomberg L.P.; JPMorgan & Chase Co; and IMF staff calculations.  
 Note: CEMBI = Corporate Emerging Markets Bond Index.

... and have so far proven more resilient to external shocks, such as Brexit, than before.



Sources: Bloomberg L.P.; and IMF staff calculations.  
 Note: Bond flows include India, Indonesia, Mexico, South Africa, and Thailand. Equity flows include Brazil, India, Indonesia, the Philippines, South Africa, Taiwan Province of China, and Thailand.

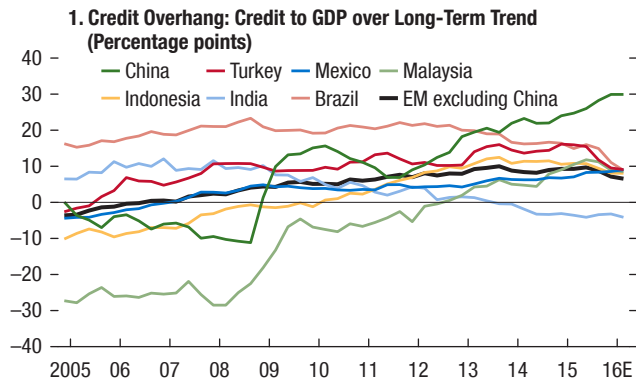
... economy-specific factors are supporting favorable sentiment in many emerging market economies ...



Sources: Goldman Sachs; and Markit.  
 Note: EM = emerging market; FCI = Financial conditions index; PMI = purchasing managers' index.

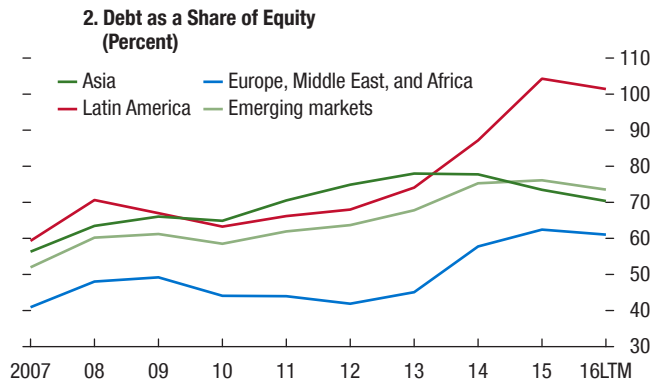
**Figure 1.23. Corporate Borrowing: Stabilized, but at a High Level**

Excess credit increased substantially in most emerging market economies, and it is now falling ...



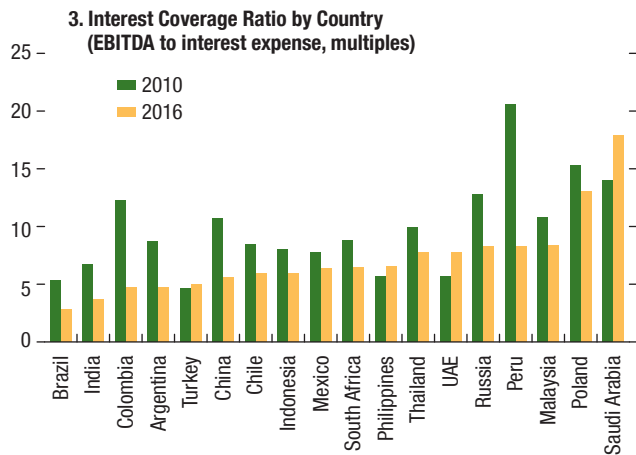
Sources: Bank for International Settlements; Haver Analytics; national authorities; and IMF staff calculations.  
 Note: Based on a one-sided Hodrick-Prescott filter with a smoothing parameter of 400,000. Data for 2016 are estimates. EM = emerging market.

... led by financing of capital investment.



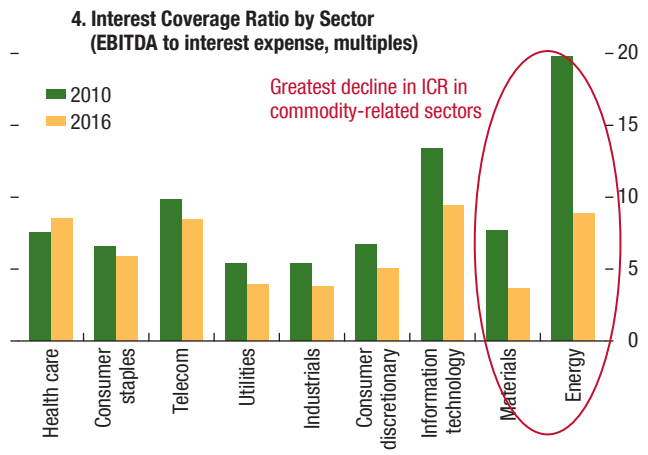
Sources: S&P Capital IQ; and IMF staff calculations.  
 Note: LTM = last 12 months.

Lower earnings impaired firms' ability to repay ...



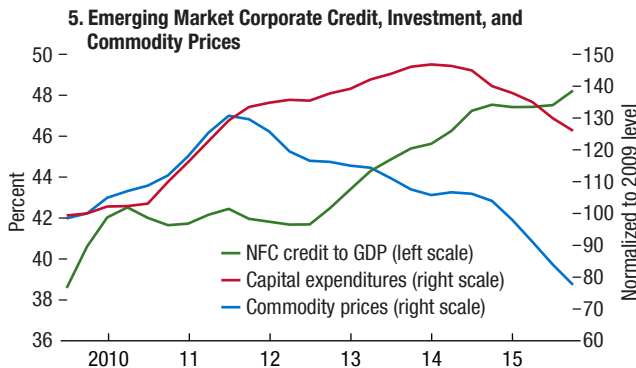
Sources: S&P Capital IQ; and IMF staff calculations.  
 Note: EBITDA = earnings before interest, taxes, depreciation, and amortization. UAE = United Arab Emirates.

... led by commodity-related sectors.



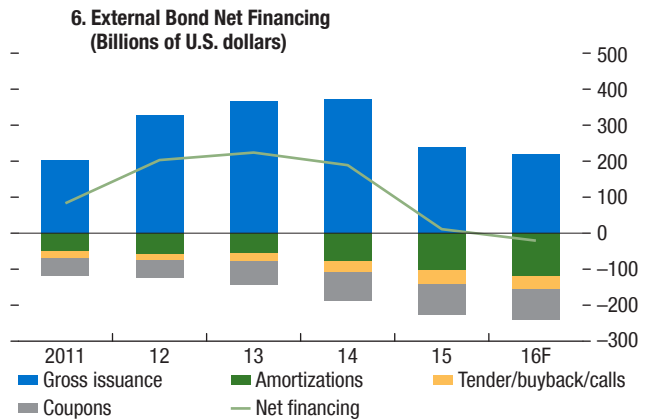
Sources: S&P Capital IQ; and IMF staff calculations.  
 Note: EBITDA = earnings, before interest, taxes, depreciation, and amortization; ICR = interest coverage ratio.

Low commodity prices have curbed investment, leading to ...



Sources: S&P Capital IQ; and IMF staff calculations.  
 Note: NFC = nonfinancial corporation.

... dollar corporate net financing turning negative this year.



Source: JPMorgan Chase & Co.  
 Note: Data for 2016 are forecast.

most systems (see the October 2015 and April 2016 GFSRs). However, banking systems are vulnerable to further declines in growth or profits, particularly in countries at later stages of the credit cycle (such as India), where slowing credit growth and risks from elevated levels of nonperforming loans are most acute (see the October 2015 GFSR).

Medium-term macroeconomic challenges also remain. Growth expectations for 2017 have been revised slightly higher in India, and for some Commonwealth of Independent States economies, compared with the July 2016 WEO forecasts (and for Brazil compared with the April 2016 WEO), but emerging Europe and sub-Saharan Africa are expected to decelerate further. External conditions may turn less supportive if U.S. dollar strength resumes, perhaps as a result of renewed expectations for higher rates in the United States, which could test the resilience of emerging market economies again.

### *The Path of Deleveraging Is Important for Financial Stability*

The challenge for emerging market firms is to deleverage in a smooth manner, taking advantage of supportive external conditions and policy measures to improve balance sheet fundamentals. In this regard, reducing borrowing in order to shrink the size of their overall debt burden, and refinancing existing debt at current favorable interest rates, would lessen balance sheet vulnerabilities and decrease the overall amount of corporate debt-at-risk. Banks, in turn, would benefit from healthier borrowers, particularly as provisioning needs would decline.

Our baseline deleveraging scenario assumes that economic and financial conditions continue to be benign and supportive, corporate earnings stop declining and instead normalize to a slightly improved level. Individual firm earnings are modeled over the next five years by increasing their earnings before interest, taxes, depreciation, and amortization (EBITDA) by a half standard deviation of their five-year earnings history, which is consistent with a small resumption in growth and economic activity. Firms are assumed to be able to service and roll over their debt stock over the next five years at interest rate and spread levels on par with the improvement in corporate bond yields since January 2016, or 40–50 basis points lower (on average) than their most recent borrowing costs.

Leverage falls under the baseline scenario, but only gradually, reaching 2014 levels by 2021 in most regions. Some economies, such as Brazil, Colombia, and Malaysia, achieve faster deleveraging—partly as they unwind the increase in leverage caused by the prior years' currency depreciation with the improvement in earnings and reduction in borrowing costs—but the pace of improvement for most other emerging market economies is subdued (Figure 1.24).

The slow pace of deleveraging reflects a new era that emerging market economies find themselves in: low growth in advanced economies keeping commodity prices well below levels seen in 2010–14, lower trade, and higher debt levels and excess capacity. In these circumstances, deleveraging is gradual and not fast enough to simply grow out of the problem, leaving them sensitive to downside external or domestic developments.

Firms in Latin America have been tested since 2014 with sharp earnings growth deceleration and substantial currency depreciation in most economies, which may explain the sharp rise in default rates in 2016 (Figure 1.24, panel 6). Nevertheless, so far the region has not had widespread corporate distress. While leverage may have peaked for some firms, the default rate may continue to rise, notwithstanding factors such as (1) ongoing debt restructuring, (2) government support to big and systemically important firms such as national champions and state-owned enterprises, and (3) evergreening by banks.

### *Bank Buffers Would Be Stressed Under Disorderly Deleveraging*

Emerging market economies remain vulnerable to shifts in investor sentiment and changes in policies of major central banks. Given only modest improvements in emerging market economy growth prospects, the recent rebound in capital flows appears to be driven more by external developments than by better economic fundamentals. As a result, a shock or sudden shift in market sentiment could quickly reverse these benign conditions and capital flows.

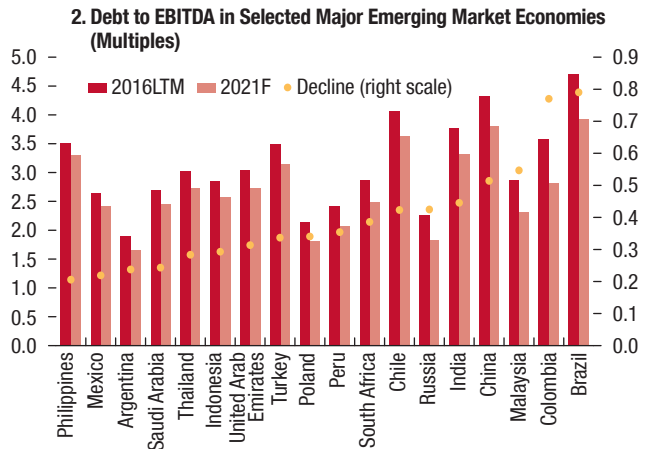
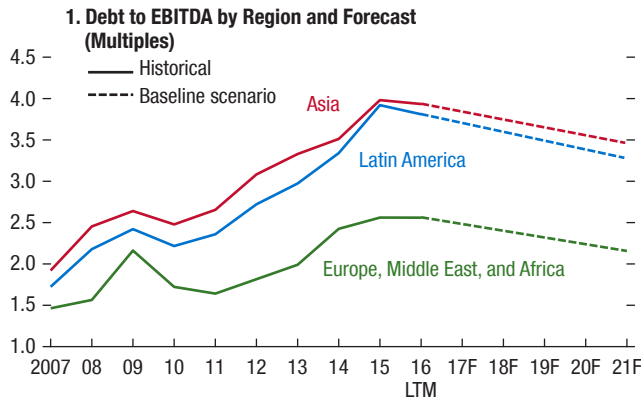
In an adverse deleveraging scenario, higher funding costs and lower corporate earnings could result in significantly higher debt-at-risk for non-financial firms (Figure 1.24, panel 3). A shock to earnings growth consistent with the continuation of subpar performance as in the most recent two years (modeled as a firm-by-firm half standard deviation



**Figure 1.24. Scenarios for Deleveraging in Emerging Market Firms and Default Rates**

Leverage is expected to continue coming down in the baseline scenario ...

... but slowly for most economies.

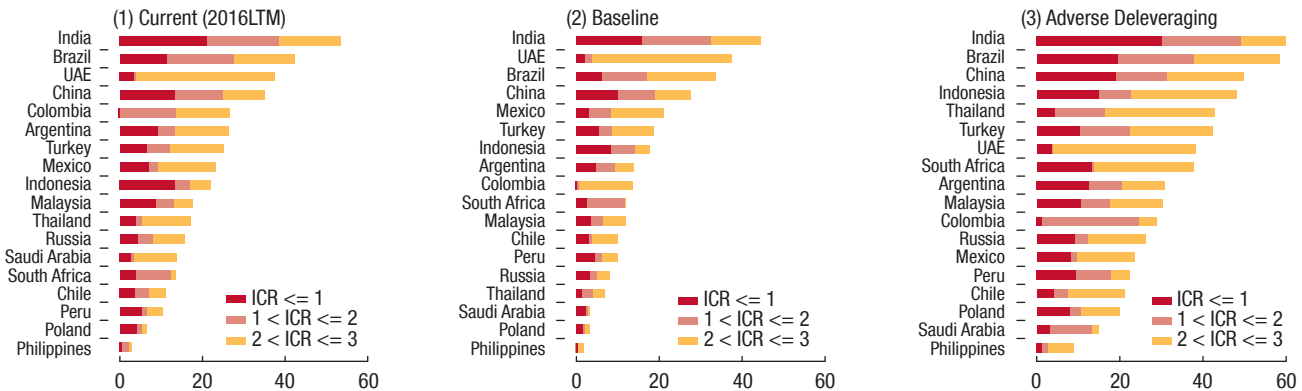


Sources: S&P Capital IQ; and IMF staff calculations.

Note: EBITDA = earnings before interest, taxes, depreciation, and amortization; F = forecast; LTM = last 12 months.

Debt-at-risk threatens to rise significantly, in an adverse deleveraging scenario.

**3. Share of Corporate Debt by Interest Coverage Ratio Bucket (Percent)**



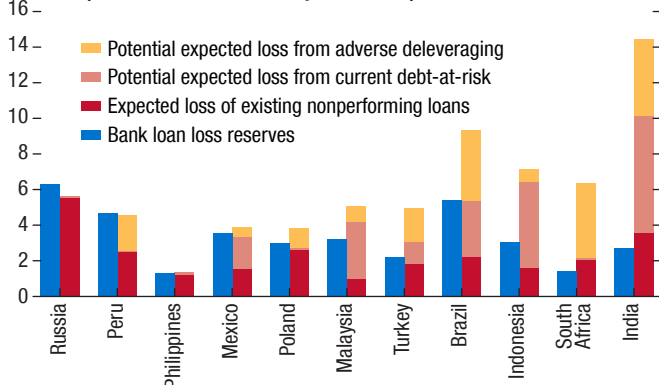
Sources: S&P Capital IQ; and IMF staff calculations.

Note: ICR = interest coverage ratio; LTM = last 12 months; UAE = United Arab Emirates.

Additional nonperforming loans from debt-at-risk could overwhelm bank buffers in some emerging market economies.

The increase in emerging market corporate default rates is led by firms in Latin America.

**4. Additional Nonperforming Market Loans from Debt-at-Risk (Percent share of total corporate loans)**



**5. Dollar Bond Default Rate (Percent)**



Sources: Fitch; IMF, Financial Soundness Indicators database; national sources; S&P Capital IQ; and IMF staff calculations.

Source: JPMorgan Chase & Co.

Note: Default rate calculated on the stock of high-yield debt. F = forecast.



decline of EBITDA over the next five years), and a permanent increase in debt risk premiums (by a half standard deviation of the interest expense) over the next five years, increases the debt-at-risk substantially for many economies, including Brazil, China, India, and Indonesia.<sup>14</sup>

Bank loan-loss reserves fall short of the expected loss on nonperforming loans under the current (2016) debt-at-risk in India (Figure 1.24, panel 4).<sup>15</sup> The additional potential losses from an adverse deleveraging scenario shown in Figure 1.24, panel 4, would require additional provisions for many banking systems.<sup>16</sup> Pressure is more acute where loan-loss reserves are low relative to potential losses, such as in India, Indonesia, and South Africa.<sup>17</sup>

### *Financial Market Implications of Political Risks*

Recent events have highlighted the importance of political stability and policy certainty to preserve macro-financial stability. The past year has seen major political events trigger increased uncertainty about the direction of policies and the prospects for reform. Brazil was downgraded by Fitch in May 2016, Turkey was downgraded by Standard & Poor's in July 2016 and put on review for a downgrade by Moody's and Fitch, and South Africa was downgraded by Fitch in December 2015 and barely avoided a downgrade to below investment grade status by Standard & Poor's and Moody's in June 2016. In all these cases, political uncertainty was cited as a major factor. In some cases, these developments have had an immediate impact on sovereign ratings or have triggered bouts of market volatility (Figure 1.25, panel 1). On a positive note, recent elections in Peru and policy measures in Argentina have been received favorably by investors, reflecting prospects for further reforms and political stability

in the region, while India continues to benefit from a stable political environment.

Increased financial linkages between emerging market and advanced economies have increased the risk of spillovers between the two (Figure 1.25, panel 2) and have left some countries particularly exposed to political risks from abroad. Notably, investor concerns about potential ramifications of the U.S. presidential election results on trade relations with Mexico continue to mount. Given the relatively large investment and trade linkages between the two countries, Mexico looks vulnerable to a deterioration in investor sentiment and a sharp drop in portfolio and foreign direct investment flows from the United States.

Heightened policy uncertainty could worsen the investment climate for many emerging market economies, with an impact on medium-term growth potential. There is also elevated event risk that large emerging markets could lose their investment grade ratings, potentially triggering forced selling of hard-currency debt by foreign investors (Figure 1.25, panels 3 and 4).

### *Policies Need to Aim at Ensuring Smooth Deleveraging and Enhancing Resilience*

Continued subdued growth prospects and lingering vulnerabilities in many countries underscore the need for more progress along a number of fronts. Although many countries wisely deployed macroeconomic policy buffers and allowed currency flexibility to cushion the impact of slower growth and lower commodity prices, some may be running out of room to maneuver. The turn of the credit cycle and weaker corporate balance sheets will continue to raise pressure on banks despite adequate levels of profitability and capitalization across most systems. Therefore, emerging markets should take advantage of supportive external conditions to enhance their resilience by addressing corporate and banking sector weaknesses.

- *Managing the impact of corporate distress*—Slower growth and corporate strains will erode banks' asset quality. Policymakers should proactively monitor and address corporate vulnerabilities, particularly those arising from excess leverage. Swift and transparent recognition of nonperforming assets is central to ensuring future banking system health. Some, such as India, are taking steps to reduce nonperforming loans, but additional and more timely action is needed. Corporate insolvency frameworks

<sup>14</sup>Discrepancies between country bilateral reports and the GFSR may arise due to different databases and time periods covered.

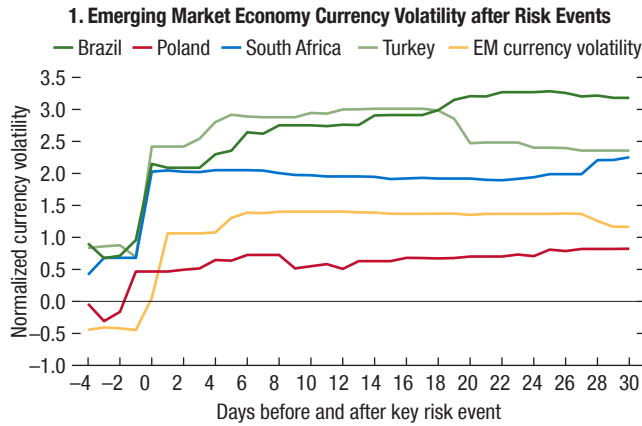
<sup>15</sup>Loan-loss reserve data for Malaysia are calculated as 100 percent of individual impairment provisions plus 70 percent of collective impairment provisions as per Bank Negara Malaysia methodology.

<sup>16</sup>Excess bank capital over minimum regulatory requirements would also cover some of these potential losses.

<sup>17</sup>To overcome the lack of loan-level information from the financial statements of individual banks, the analysis scales the debt-at-risk proportions for the sample of firms to the system level using national data and compares it to the stock of nonperforming loans and loan-loss reserves that banks have set aside to cover bad loans. The expected loss assumption on the loans-at-risk is 60 percent, and the nonperforming loan default probability is 0.8.

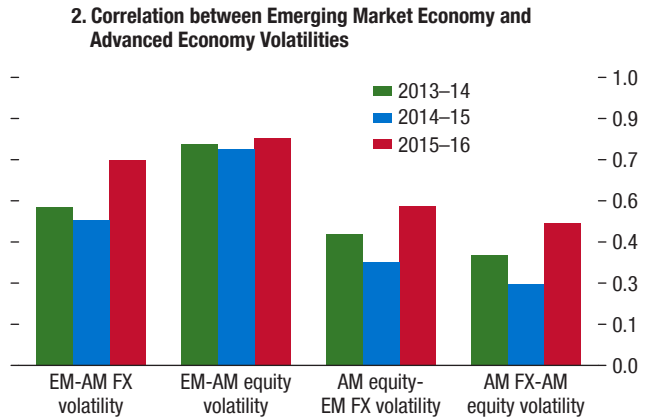
**Figure 1.25. Sensitivity of Emerging Market Economy Assets to Global Policy Uncertainty**

Market volatility is higher after political events across emerging market economies ...



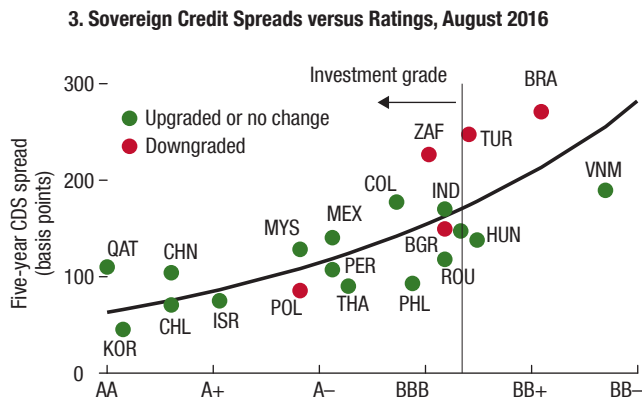
Sources: Bloomberg L.P.; and IMF staff calculations.  
 Note: Events over the past 12 months. Brazil: Congressional vote (Sep. 23, 2015); Turkey: failed coup attempt (Jul. 15, 2016); South Africa: Fitch rating downgrade (Dec. 4, 2015); Poland: S&P rating downgrade (Jan. 15, 2016); EM = emerging market: Brexit vote (June 23, 2016).

... with tighter financial linkages between emerging market economies and advanced economies potentially transmitting shocks across countries.



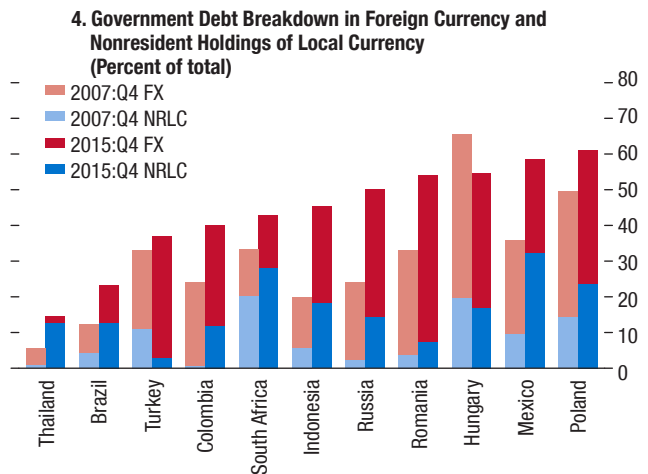
Sources: Bloomberg L.P.; and IMF staff calculations.  
 Note: AM = advanced markets; EM = emerging market economies; FX = foreign exchange.

Sovereigns face growing risk of rating downgrades due to political uncertainty ...



Sources: Bloomberg L.P.; and IMF staff calculations.  
 Note: Data labels in the figure use International Organization for Standardization (ISO) country codes. Line corresponds to the best fit of the logarithm of CDS spreads against ratings. CDS = credit default swap.

... and downgrades could trigger forced selling of dollar and local currency sovereign debt by nonresidents.



Sources: Bank for International Settlements; Haver Analytics; national authorities; and IMF staff calculations.  
 Note: FX = foreign exchange; NRLC = nonresident holdings of local currency.

should be upgraded (including by facilitating out-of-court settlement and debt-for-equity swaps, with well-defined and transparent rules) and contingency plans to manage corporate distress put in place. This should include a timely, market-based restructuring framework that minimizes moral hazard while providing for limited state support if necessary (see also the October 2016 *Fiscal Monitor* for a broader exposition of targeted fiscal interventions). Where available, banks should draw on their capital reserves to cushion losses. But where these reserves are insufficient, policymakers will have to balance necessary prudential tightening against the risk of being excessively procyclical.

- *Boosting capacity*—Reforms to macroprudential and supervisory frameworks should be accelerated to ensure timely and effective responses to these challenges. Enhanced supervision of banks will be needed, requiring better coordination among institutions and central banks in some countries.
- *Ensuring continued access to international financial services*—Strengthened regulatory and supervisory regimes, including by ensuring effective implementation of standards to combat money laundering and the financing of terrorism, would enhance capacity and transparency and help lower risk perceptions in some emerging market and developing economies. Such actions would also help moderate impact from global banks' reduced financial services (derisking)—in correspondent banking activity, for example—and promote greater financial inclusion for these economies.<sup>18</sup>

### *China: Growing Credit and Complexities*

China continues its transition to a slower and safer pace of growth and a more market-based financial system. Reforms are progressing on multiple fronts, driving economic rebalancing. Measures to boost productivity in the past have delivered strong wage and income growth and a resilient labor market, lifting the share of consumption and services in GDP, while manufacturing activity and investment have become less prevalent sources of growth. Additional plans to reduce capacity in some sectors, such as coal and steel, should support further rebalancing of China's economy and a more efficient allocation of credit. The move toward

more market-based mechanisms for interest rates and the exchange rate has strengthened the monetary policy framework and increased the flexibility of the renminbi against the U.S. dollar. Capital outflow pressures and expectations of further renminbi depreciation have eased, stabilizing international reserves, while equity market volatility has diminished, further boosting market sentiment. The combination of reforms and policy measures has supported near-term growth and bolstered the resilience of the economy, helping Chinese financial markets stabilize after recent bouts of global financial market turmoil.

Nevertheless, as discussed in the recent IMF consultation for China (IMF 2016f), uneven reform progress—especially in key areas such as strengthening governance and imposing hard budget constraints on state-owned enterprises, tackling excessive corporate debt, and opening up state-dominated service sectors to private firms—has led to rising vulnerabilities.

- Credit and financial sector leverage continue to rise faster than GDP, and state-owned enterprises in sectors with excess capacity and real estate continue to absorb a major share of credit flow. The deviation of credit growth from its long-term trend, the so-called credit overhang—a key cross-country indicator of potential crisis—is estimated somewhere in the range of 22–27 percent of GDP (Figure 1.26, panel 1), which is very high by international comparison.
- The surge in shadow credit products adds to underlying credit risks. They could be another source of bank losses, especially for a number of smaller banks with relatively large exposure, and could add to potentially significant loan losses in the face of weakened corporate balance sheets, as discussed in the April 2016 GFSR.
- The rapidly growing financial system is increasingly leveraged and interconnected, further increasing banks' vulnerability. This reflects a complex network of credit and funding linkages between banks and nonbank financial institutions, facilitated by a recently developed variety of innovative investment products and vehicles.

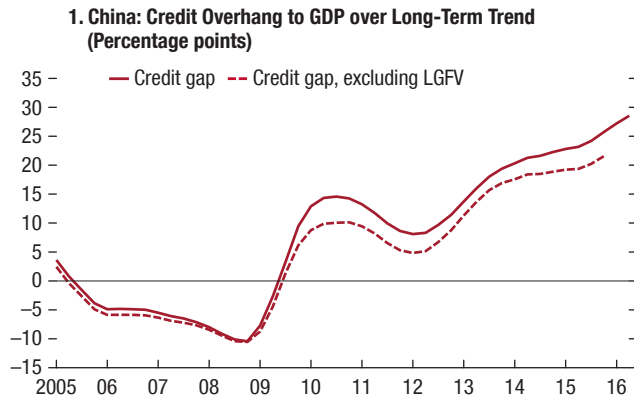
### *Proliferation of Shadow Credit Assets Adds to Financial Sector Risks*

Bank balance sheets expanded at a rapid pace in 2015 (by about 16 percentage points to 286 percent of GDP), driven in part by surging exposure to shadow credit products and claims on other financial insti-

<sup>18</sup>Sahay and others (2015) show that strengthened supervision and reputation enhance the benefits of financial inclusion.

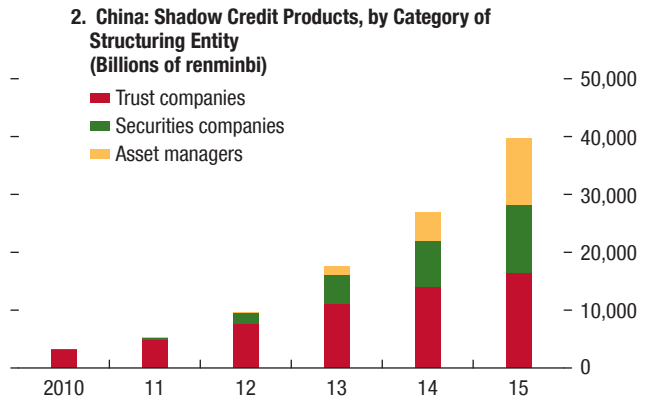
**Figure 1.26. China: Credit Overhang and Shadow Credit**

China's credit overhang is rising ...



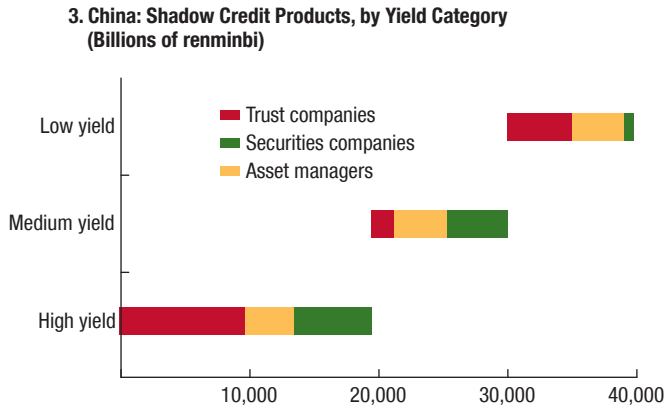
Sources: Bank for International Settlements; Haver Analytics; IMF, World Economic Outlook database; and IMF staff estimates.  
 Note: Based on a one-sided Hodrick-Prescott filter with a smoothing parameter of 400,000. LGFV = local government financing vehicle.

... as the proliferation of shadow credit products adds to financial sector vulnerabilities.



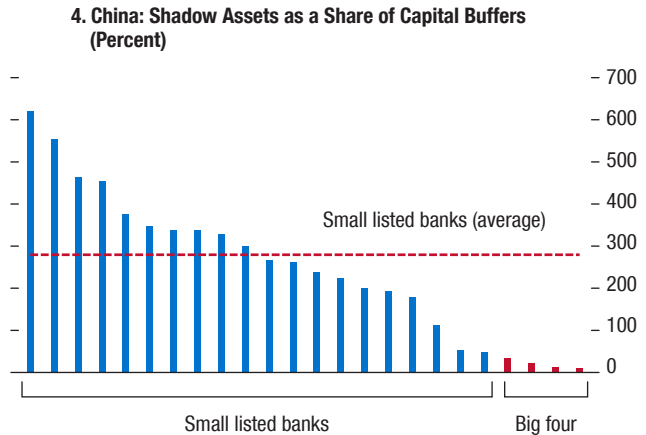
Source: CEIC.

About half of outstanding shadow credit products carry a relatively high yield ...



Sources: ChinaBond; China Trustee Association; Morgan Stanley; WIND; and IMF staff estimates.

... while small banks are heavily exposed to shadow credit as a share of capital buffers.



Sources: Bank financial statements; and IMF staff estimates and analysis.  
 Note: Big four = Agricultural Bank of China, China Construction Bank, China Development Bank, and Industrial and Commercial Bank of China.

tutions. Although bank loans continue to dominate credit to the private sector, corporate bonds and other credit products are rapidly increasing. Notably, shadow products—credit products composed of trust and other structured products—surged by almost 50 percent to ¥40 trillion last year (Figure 1.26, panel 2). By comparison, over the same period, loans grew 13 percent and bonds 20 percent.

Often, shadow credits' underlying assets are non-standard credit assets—untradeable debt, typically repackaged loans that used to carry lower capital

charges than standard loans. A large number of these products come with a high yield, suggesting higher risk than standard bank loans (Figure 1.26, panel 3). A sample of 24 banks (virtually all listed banks, accounting for over 60 percent of total bank assets) reveals that risks are not distributed evenly across banks. At the end of 2015, the “big four” banks had relatively modest exposures (between 1 and 2 percent of total assets), or 10–15 percent of loss-absorbing buffers (equity plus loan-loss reserves; Figure 1.26, panel 4). However, shadow product exposure of smaller banks

averaged 280 percent of total buffers, and reached nearly 600 percent.

**Growing Linkages Increase Potential for Spillovers**

The rapid growth of bank assets, including rising exposure to shadow credit, increased banks' reliance on wholesale funding as deposit growth slowed. Wholesale funding surged by 5 percentage points relative to a year ago and reached over 30 percent of total funding at the end of 2015 (Figure 1.27, panel 1). Reliance on wholesale funding was the highest among small banks; this dependence is rising fast. Notably, this growing reliance on the interbank and repo markets has been dominated by overnight and weekly repurchase agreements, which account for more than 90 percent of transaction volume. Banks and other financial institutions are net borrowers from the interbank market; money market investment vehicles that are typically regarded as yield-enhancing deposit substitutes—wealth management products, trust plans, money market funds—are net liquidity providers. This growing interconnectedness of banks, other financial institutions, and investment products through the interbank and repo markets raises the potential for spillovers in the event of increased turbulence.

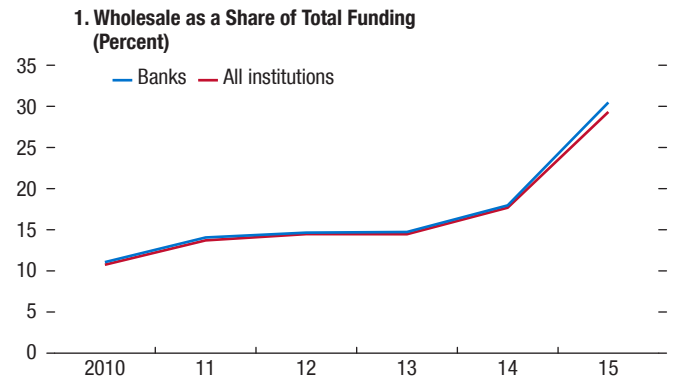
Although most of the underlying collateral for products that invest in the interbank market consists of government paper and bonds issued by financial institutions, corporate bonds and other tradable credit products are used as well. A deterioration in credit quality and repricing of credit risk for the latter could quickly damage investor confidence with repercussions for banks' funding. Moreover, funds invested by trusts and asset and wealth management product managers in the interbank market tend to have short maturities. For example, in 2015, 61 percent of total wealth management product assets had terms of less than three months, and 13 percent had maturities shorter than one month. The short maturity of these assets that fund interbank lending exacerbates liquidity risks facing banks and financial institutions.

Three risks stand out from increased reliance on wholesale funding, especially for the smaller banks:

- First, the very short-term nature of China's repurchase agreement funding implies that borrowers must roll over their liabilities on average almost daily, whereas funded credit products have mostly longer maturities. This maturity mismatch makes borrowers highly vulnerable to a sudden liquidity crunch.

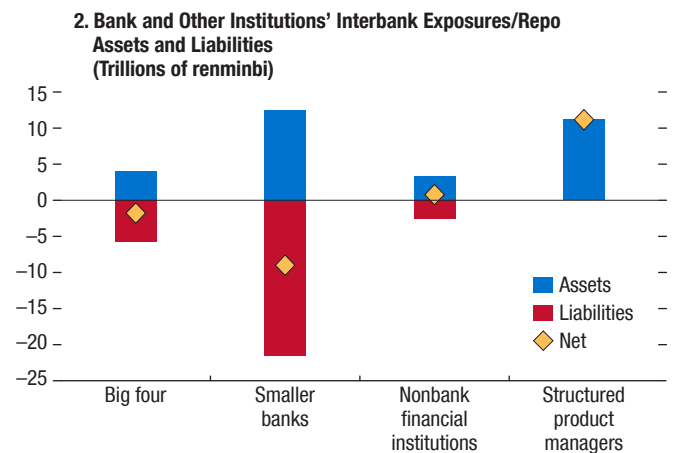
**Figure 1.27. China: Bank Linkages to the Structured Investment Complex**

Wholesale funding has increased ...



Sources: Bank financial statements; and IMF staff estimates and analysis.

... and small banks are more reliant on it.



Sources: Bloomberg L.P.; CEIC; WIND; and IMF staff estimates and analysis. Note: Big four = Agricultural Bank of China, China Construction Bank, China Development Bank, Industrial and Commercial Bank of China; repo = repurchase agreement.

- Second, a significant portion of wholesale and repo funding is provided by nonbank investors and third-party funds tied to products that are potentially prone to flight in the event of a negative credit shock.
- Third, the growing interconnection between borrowers—banks and financial institutions—and lenders—money market investment vehicles—through the interbank market and increasingly complex products creates an opaque system in which vulnerabilities are difficult to locate and targeted support may be more difficult to deliver.



### *Smoothing the Rebalancing Process in China*

The Chinese authorities' latest reform efforts have led to more balanced growth and a greater role for market forces, improving the resilience of the Chinese economy and financial system. While growth is slowing to a healthier pace, economic activity remains robust and China continues to contribute significantly to global growth. Nonetheless, China's corporate debt overhang and other emerging financial sector vulnerabilities must be addressed promptly through a comprehensive approach to facilitate deleveraging and upgrade the supervisory and macroprudential framework. Specifically (IMF 2016f):

- *Deleveraging firms*—As discussed in previous GFSRs, high corporate leverage and debt-at-risk call for a proactive recognition of losses shared among relevant parties, including the government if necessary. Overindebted but viable firms can be restructured, but nonviable firms should be closed on the basis of a sound legal and institutional framework for facilitating bankruptcy and debt workout processes. Faster debt write-offs should be accompanied by a strengthening of banks' capital positions and better governance, together with hardened budget constraints, especially for state-owned enterprises, including through the elimination of implicit guarantees. The authorities' proposed debt-equity swap could be a useful part of this overall agenda, aimed at reducing nonperforming loans. But it should be done on a limited basis with transparent and well-defined rules, including strong eligibility criteria both for borrowers (such as ensuring business solvency and good governance) and for banks (such as limitations on the scope and time of ownership).
- *Upgrading the supervisory framework*—Risks emerging in the financial sector point to several regulatory challenges: the growth of shadow products reflects regulatory arbitrage and the interconnection and complexity of the financial system underscore the absence of harmonized regulatory treatment of similar institutions and products. Against this backdrop, regulatory oversight should standardize and coordinate oversight of parties involved in the interbank market and install common standards across products to limit regulatory arbitrage. Closer monitoring of the link between banks and non-bank financial institutions and timely reporting of underlying system leverage are needed to reduce vulnerabilities. Solvency, liquidity, and other norms

should be standardized or coordinated to limit vulnerabilities and the potential for risk propagation. These initiatives require regulatory upgrades and a more effective coordination and information sharing among regulatory bodies. In addition, efforts should be made to gradually reduce moral hazard and implicit guarantees to foster better credit risk pricing while limiting default risk flowing back to banks via bailouts. Finally, contingency plans are needed to deal with a sudden stop in wholesale funding from nonbank financial institutions.

The Chinese authorities have made significant progress in building supervisory capacity and strengthening the macroprudential framework. They have also taken steps to contain the growth of shadow credit products and reduce risks. The stakes are high: the risks remain manageable but they need to be managed promptly to ensure that financial stability risks do not undermine China's progress toward balanced and sustainable growth.

### **Global Stability Challenges in the New Era**

*Policymakers need a more potent and balanced policy mix to deliver a stronger path for inclusive growth and financial stability and ward off risks of sliding into a state of economic and financial stagnation.*

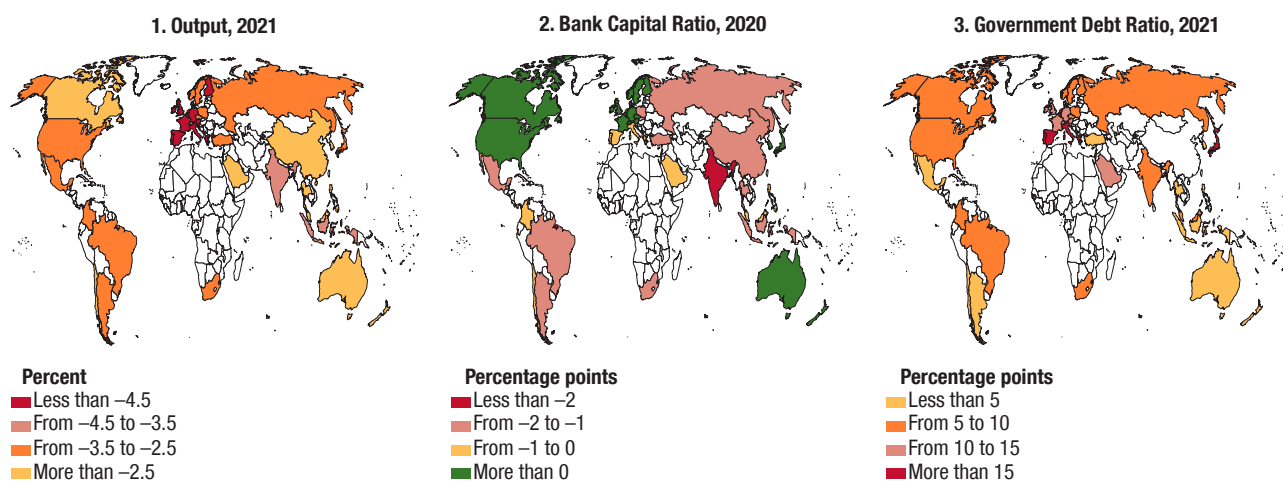
#### **The Challenges**

Financial markets have benefited from renewed risk appetite in the wake of unprecedented central bank actions. But there is an urgent need to raise global growth, strengthen the foundation of the global financial system, and bolster confidence to avoid slipping into a state of economic and financial stagnation.

The weak economic environment has driven rising discontent over income growth and inequality, unearthing protectionist and populist sentiment and making consensus on growth-enhancing reforms and additional supportive policies more difficult to achieve. This underscores the potential for political developments to pose a major challenge to financial stability going forward. In particular, tail risk political outcomes (those that are severe but not very likely) could increase isolationist policies (see Scenario Box 1 on tariff scenarios in the October 2016 *World Economic Outlook*) and prevent needed reforms. Such outcomes would carry negative economic consequences



Figure 1.28. Financial Stagnation and Protectionism Scenario: Simulated Peak Effects



Source: IMF staff estimates.

and could tip the global financial system into a state of financial stagnation: financial institutions would struggle to sustain healthy balance sheets, which would jeopardize economic growth and financial stability.

If such a scenario of *financial stagnation and protectionism* were to materialize, it would likely lead to a marked shift into safer assets in financial markets. Confidence losses could cause firms and households to postpone spending, reducing private investment and consumption. Banking systems would come under increased profitability stress and experience widening funding spreads. This could hasten derisking by global banks, with implications for correspondent banking activities in emerging market and developing economies. Moreover, capital flows would steer toward safer assets, undercutting the supportive external environment that is benefiting emerging markets. Tighter global financial conditions and high corporate leverage would exacerbate credit cycle downturns in emerging market economies. Implementing such a scenario using the Global Macro-financial Model suggests that in aggregate, world output would fall by around 3 percent by 2021. Scenario details are found in Annex 1.1 and are summarized in Figure 1.28.

A number of pressing global challenges must be addressed to ensure that the global financial system can continue to support the recovery and sustain hard-won resilience. Although monetary accommodation is still needed to support recovery, a more comprehensive set of policies would ease mounting burdens

on central banks. Some monetary policies, such as negative interest rates, are reaching the limits of their effectiveness, and the medium-term side effects of low interest rates are rising for banks and other financial institutions. Progress on the following fronts—together with a more balanced set of macroeconomic policies outlined in the *World Economic Outlook* and the *Fiscal Monitor*—together with enhanced macroprudential policies would help promote a virtuous cycle between financial markets and the real economy. The resolution of debt overhangs in an era of low nominal growth is also likely to require growth-friendly fiscal policies to support economic activity and create incentives for restructuring private debt while facilitating the repair of banks' balance sheets.

Financial policy details are discussed in each specific section and are summarized below:

- Remaining profitable in an environment marked by lower growth, lower interest rates, and tighter regulation will also require a significant shift in business models, because many existing balance sheets and business practices are not currently structured in a way that can earn a sustainable return. Rationalizing banking system balance sheets and industry structures is an urgent challenge. Banks must adjust to this low-interest-rate environment by reducing large stocks of legacy problem loans. They must adjust dated business models in order to maintain profitability and adapt to new business realities and regulatory standards.

- Sustained low growth and low interest rates also raise significant challenges for long-term investment and savings institutions, such as life insurers and pension funds. Regulators and supervisors should act promptly to sustain ongoing strength of insurance and pension fund balance sheets, including identifying and addressing medium-term insolvency risks and funding gaps.
  - Policymakers can help reduce uncertainty by completing the regulatory reform agenda, without significantly increasing overall capital requirements, while preserving the integrity of the capital framework (Box 1.2). Regulators and supervisors need to also enhance the reform agenda for insurers and pension funds by strengthening standards for internal models and capital frameworks and improve transparency.
  - Emerging market economies should take advantage of supportive external conditions to achieve a smooth path of deleveraging to enhance resilience and preserve financial stability. They should proactively monitor and address corporate vulnerabilities, particularly those arising from excess leverage and foreign exchange exposures. Actions are needed on three fronts: (1) managing the impact of corporate distress, through swift and transparent recognition of nonperforming loans and strengthening insolvency frameworks; (2) boosting oversight and response capacity through reforms to macroprudential and supervisory frameworks; and (3) ensuring continued access to international financial services, including by strengthened regulatory and supervisory regimes that help lower risk perceptions, including those supporting correspondent banking activity.
  - The Chinese authorities' latest reform efforts have led to more balanced growth and a greater role for market forces, improving the resilience of the Chinese economy and financial system. Nonetheless, China's corporate debt overhang and other emerging financial sector vulnerabilities must be addressed promptly through a comprehensive approach to facilitate deleveraging and upgrade the supervisory framework. Curbing excessive credit growth, including in the form of riskier shadow credit products and ensuring sound interbank funding structures, would reduce the potential for system stress and spillovers.
  - Global institutions have a role to play in upholding political cohesion by promoting inclusive growth and enhancing an open dialogue on globalization. Research (Sahay and others 2015) shows that most countries would reap macroeconomic growth benefits from greater access of firms and individuals to banking services. Moreover, sectors dependent on external finance tend to grow more rapidly in countries with greater financial inclusion. When financial sector supervision keeps up, greater financial inclusion can reduce output volatility without hurting financial stability. Closing gender gaps in account usage and promoting depositor diversity can have broader economic benefits while creating opportunities for the disadvantaged.
- Progress in addressing these challenges would help promote a virtuous cycle between financial markets and the real economy, lifting growth and inflation, and would ease the rising burdens and risks from an environment of sustained low interest rates.

### Box 1.1. Impact of Brexit

The unexpected decision by U.K. voters to leave the European Union (EU) in June 2016 (Brexit) caught investors by surprise and initially roiled global markets. The post-referendum bout of market volatility faded after central banks responded promptly; no major disorderly market events surfaced, other than a sharp sell-off in some U.K.-based real estate funds.

Yet the biggest challenges remain ahead. The shape of future trade arrangements and the uncertain impact of Brexit on the United Kingdom's large and globally integrated financial system have created uncertainty over the longer-term financial prospects of the United Kingdom.<sup>1</sup> As noted in recent IMF publications,<sup>2</sup> there is a high degree of uncertainty surrounding future arrangements and the implications for the U.K. financial sector. Table 1.1.1 highlights the relative importance of different financial activities carried out in London, and how decisions on future relations with the EU may impact the provision of financial services in the United Kingdom. The impact on the financial sector and economy could work through three different channels:

- *Bank operating costs.* Unless passporting for banking services is preserved under future trade arrangements, banks could incur additional expenses associated with moving operations out of London or duplicating functions in the United Kingdom and EU. They may also have to bear the cost of setting up and maintaining subsidiaries rather than branches, including additional capital, liquidity, and total loss-absorbing requirements for new subsidiaries. EU banks, which have €1–€1.5 trillion in assets (excluding derivatives) in U.K. branches, could also incur some of these same costs.
- *Changes in the financial services “rulebook.”* The financial sector more broadly could be subject to change depending on the outcome of negotiations. Some 60 percent of the current financial services “rulebook” is estimated to be composed of EU rules.<sup>3</sup> Even if only modestly revised, these revisions

would require legal, compliance, operational, and information technology changes.

- *Macroeconomic impact.* Protracted negotiations could weigh on confidence, not only postponing consumption and investment decisions, and thus reducing short-term growth, but also leading to permanently lower foreign investment and physical and human capital flows into the United Kingdom. The U.K. economy's longer-term prospects could be affected. Sustained declines in portfolio inflows could create more challenging financing conditions for firms.

Heightened concerns about the financial and macroeconomic impact of Brexit have contributed to a sharp drop in market participants' expectations of the (median) growth of U.K. GDP, especially for 2017, and the perceived risk of recession in 2017 remains elevated (Figure 1.1.1, panel 1). This reflects major uncertainties about negotiations of several trade, financial, and regulatory arrangements not just with the EU, but also with the rest of the world. Further, the post-Brexit upward shift in investors' inflation expectations did not ease back in August (Figure 1.1.1, panel 2), reflecting the continued anticipation of a weaker exchange rate in lifting domestic inflation. Finally, investors' forecasts of U.K. 10-year government bond yields became even more widely dispersed in August (Figure 1.1.1, panel 3), signaling elevated uncertainty and a prolonged period of low interest rates, reflecting persistent economic and financial risks.

#### *Commercial Real Estate and Housing*

Expectations that Brexit would trigger investor outflows from the real estate market prompted especially pronounced market volatility for financial assets exposed to this sector, and broader concern over the funding of the external current account, given the sizable participation of foreign investors in these sectors. As shown in Figure 1.1.2, commercial real estate transactions fell sharply in anticipation of the referendum. The exit of the United Kingdom from the European Union is expected to result in further significant declines in foreign investment in U.K. commercial real estate. These concerns triggered an abrupt wave of redemptions in U.K. property funds following the decision to leave the European Union.

This box was prepared by Jennifer Elliott, Vladimir Pilonca, and Luca Sanfilippo.

<sup>1</sup>See IMF 2016c. This paper discusses the potential macroeconomic impacts and ramifications in detail.

<sup>2</sup>See IMF 2016a and 2016b.

<sup>3</sup>Morel and others 2016.

**Box 1.1 (continued)****Table 1.1.1. Brexit Implications for the U.K. Financial Sector**

Market Function	Importance	What Could Happen? <sup>1</sup>	
<b>Banking</b>			
Cross-Border Lending	20 percent of global total	Unless passporting is maintained, both the U.K. and EU are likely to require branch operations to become subsidiaries. The extent of the relocation or duplication of operations would vary according to the agreement with the host country.	
Investment Banking	20 percent of global investment banking revenue		
Wholesale Banking	\$7 trillion in assets		
Interest Rate Trading	50 percent of global total		If banks relocate some operations, as above, some euro rates trading could relocate.
European Equity Trading	70 percent of EU bank trading conducted through London		If banks relocate some operations, as above, some equities trading could relocate.
Foreign Exchange Trading	40 percent of global total 51 percent of U.S. dollars 54 percent of euros		Foreign exchange trading is not directly impacted by a change in the EU/U.K. relationship.
<b>Market Infrastructure</b>			
OTC Derivatives Clearing (global leader)	Clear 50 percent of interest rate swaps globally, total of \$384 trillion annually	U.K. clearing of OTC derivatives meets EU standards but the use of U.K. clearing by EU banks will be subject to negotiation, and if not fully recognized by the EU, some relocation of clearing activities is likely.	
<b>Insurance</b>			
Reinsurance	24 percent of global total	U.K. reinsurance meets EU standards but the use of reinsurance provided by U.K. entities will be subject to negotiation, and if not fully recognized by the EU, some relocation of reinsurance business is likely.	
Marine Insurance	30 percent of global total	Unaffected.	
<b>Asset Management</b>			
Investment Funds	Total £6.8 trillion under management; £2.5 trillion for foreign investors; UCITS are 12.5 percent of total market share of UCITS in EU; 17 percent of global funds	Unless passporting is retained, a negotiated arrangement will be required; UCITS will need to be domiciled in the EU and some relocation of operations may be required.	
Hedge Funds	13 percent of global hedge fund assets managed in U.K.	Many clients are not EU based and funds may be unaffected even if passporting is not retained.	

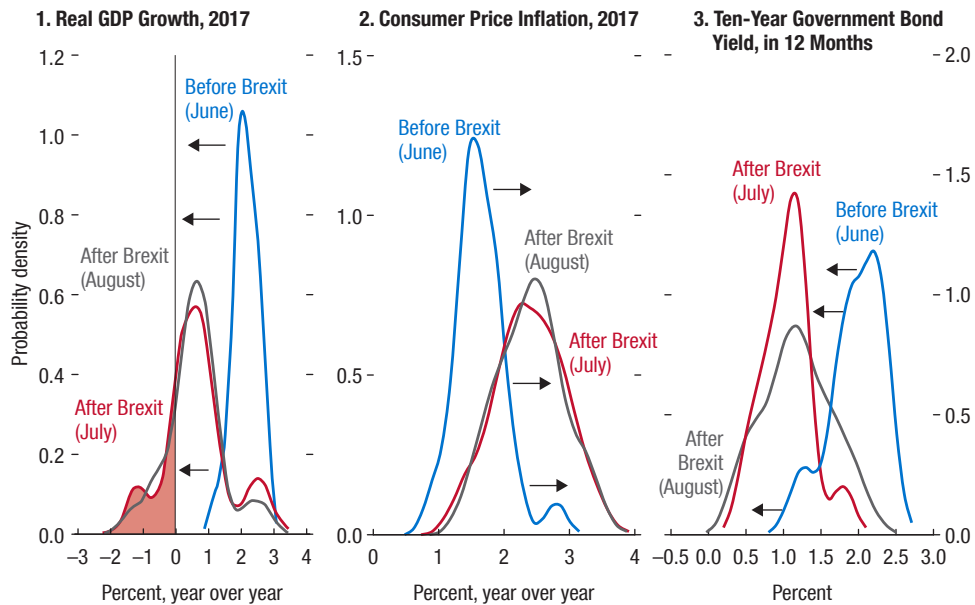
Sources: Autonomous Research LLP; Bank for International Settlements; Boston Consulting Group; Financial Conduct Authority 2015; TheCityUK 2016; and IMF Staff estimates.

Note: OTC = over the counter; UCITS = Undertakings for Collective Investment in Transferable Securities.

<sup>1</sup> Reflects a combination of estimates from Autonomous Research LLP, Boston Consulting Group, and IMF staff.

Box 1.1 (continued)

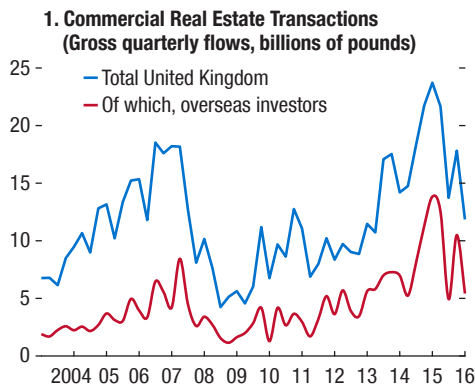
Figure 1.1.1. Brexit Implications for the United Kingdom



Source: IMF staff calculations, based on Consensus Economics data.  
 Note: The probability distributions of market participants' forecasts were estimated using a Kernel density estimation approach—a nonparametric algorithm to estimate probability density functions of random variables. Data before and after Brexit were obtained from the June 13, 2016, July 11, 2016, and August 8, 2016 surveys, respectively. Brexit = June 2016 U.K. referendum result in favor of leaving the European Union.

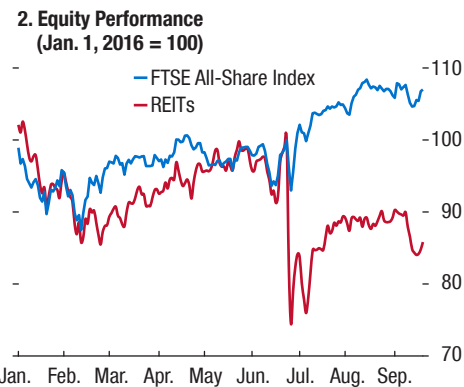
Figure 1.1.2. Brexit Impact on the U.K. Commercial Real Estate Markets

Foreign commercial real estate transactions fell sharply in anticipation of the U.K. referendum ...



Sources: Bank of England; and Property Archive.

... and assets exposed to this market sold off sharply after the U.K. vote to leave.



Sources: Bloomberg L.P.; and IMF staff calculations.  
 Note: Brexit = June 2016 U.K. referendum result in favor of leaving the European Union. FTSE = Financial Times Stock Exchange; REITs = real estate investment trusts.

### Box 1.2. The Basel Committee Agenda: Achieving Certainty without Compromising Integrity

The international agreement on the Basel III capital adequacy and liquidity framework in 2010–11 was a key plank of the postcrisis reform agenda. It has led to enhanced resilience of banking systems following its phased-in implementation. At the time of its introduction, some elements, such as the leverage ratio, the countercyclical capital buffer, and capital for banks' exposures to central counterparties, were still a work in progress and were calibrated and refined in the years that followed. Work also continued in parallel to address other remaining issues that had implications for bank capital. For example, consultations were launched on the global systemically important bank designation process and fundamental review of the trading book to replace the value-at-risk-based methodology, which significantly underestimated losses in tail events.

The Regulatory Consistency Assessment Program was also launched in 2012 to monitor consistent implementation of Basel III across countries. The results of these exercises are revealing: there is excessive risk-weight variability across banks using internal models that cannot be explained even after taking into account national and institutional differences in practices. Addressing this material variability to ensure the credibility of the risk-weighted framework and comparability of its outcomes has since become central to the Basel agenda. Fresh consultations were launched in 2014 to revise the standardized approaches to credit, market, operational, and counterparty credit risks with the objective of developing an improved “complement and alternative approach to internal models.” These proposals seek to constrain the use of internal models, including, for example, by reaffirming the Basel framework's existing “output floor,” which limits the regulatory capital benefit a bank can achieve through the use of its internal models compared to the revised standardized approach. Such a floor would help ensure credible and comparable outcomes.

The Basel Committee's final round of postcrisis regulatory reforms has led to consternation in the industry which is still struggling to reorient its business models to restore sustainable profitability. Industry associations, banks, and other interested parties have balked at the prospects of higher regulatory capital requirements for outlier institutions. They argue that

this would further affect their ability to lend in this low-growth environment. Others are resigned to the changes but have called for finalization to achieve greater certainty that will facilitate capital planning. Still others believe that the resilience that comes from implementing a robust and comprehensive framework would only support sustainable profitability and intermediation. In 2016 the Basel Committee consulted on its final round of proposed reforms and, in parallel, conducted a comprehensive, cumulative quantitative study to assess the overall impact of its proposals. With the exception of the standardized approach for market risk, which was finalized in early 2016, the Basel Committee's proposed reforms are subject to change based on its analysis of comments and the results of its quantitative impact assessments.

In January 2016, the governing body of the Basel Committee weighed in on the discussions and announced that it would review the design and calibration of these measures of constraints and floors by the end of the year. It also cautioned the committee against “further significantly increasing the overall capital requirements,” a call that has been reiterated by the G20 leaders. While this phrase has been interpreted variously by different interest groups, it was intended to convey the view that the amount of regulatory capital relief some outlier banks receive through the use of their internal models versus the standardized approach is not prudent. The challenge is to finalize the remaining reforms in the few months left while following the due process of impact assessment, consultation, and review without compromising the robustness and integrity of the capital framework.

These reforms are an integral part of the reform agenda and will contribute further to the long-term resilience of banks and the financial system. It is better to obtain agreement on a robust risk-weighted capital framework, even if the agreement takes more time, than to risk dilution or withdrawal to meet the challenging constraints of “no further capital increase” and the end-2016 deadline. The implementation of the framework may also have to be phased in over a longer period to prevent potentially procyclical consequences under the current circumstances. The more robust the design of regulation, the less likely it is that quick fixes will be needed again very soon in the future.



## Annex 1.1. Financial Stagnation and Protectionism Scenario<sup>19</sup>

This annex analyzes the effects of a *financial stagnation and protectionism scenario*. This scenario is simulated using the Global Macro-financial Model, a structural macroeconomic model of the world economy, disaggregated into 40 national economies, documented in Vitek 2015 (see Annex Table 1.1.1 for assumptions). This estimated panel dynamic stochastic general equilibrium model features a range of nominal and real rigidities, extensive macro-financial linkages with both bank- and capital-market-based financial intermediation, and diverse spillover transmission channels.

The *financial stagnation and protectionism scenario* is triggered by risk-off reactions in financial markets to protectionist initiatives driven by political developments in Europe and the United States. These initiatives limit or reverse international trade and financial integration, generating a sell-off in stock markets on profitability concerns and reduced risk appetite, with the real equity price falling by 20 percent in the euro area, the United Kingdom, and the United States over two years.

Banking systems come under increased profitability stress and experience a widening of funding spreads, by 100 basis points in high-spread euro area economies and the United Kingdom, and by 50 basis points in low-spread euro area economies and the United States (Annex Figure 1.1.1). This banking sector stress induces sovereign stress in high-spread euro area economies, where long-term government bond yields rise by 100 basis points. In the rest of the world, flight to quality reduces long-term government bond yields by 25 basis points in low-spread euro area economies, the United Kingdom, and the United States, but raises them by 50 basis points in exposed emerging market economies.

Heightened uncertainty regarding the nature of future international trade and financial arrangements induces firms and households to postpone their expenditures, reducing private investment and consumption by a further 2.0 percent and 0.5 percent in the United Kingdom, versus 1.0 percent in the euro area and 0.25 percent in the United States, over three years.

Financing conditions tighten further as regulatory pressure to build bank capital buffers in high-spread euro area economies exacerbates credit cycle downturns, with the bank capital ratio requirement rising by

2.0 percentage points. Furthermore, market pressure to build bank capital buffers in other advanced economies in response to regulatory uncertainty, represented by an increase in the bank capital ratio requirement of 1.0 percentage point, also constrains credit supply in these countries.

High corporate leverage in emerging market economies exacerbates their credit cycle downturns, with the default rate on bank loans to nonfinancial firms rising by an additional 1.0 percentage point on average, with economy-specific increases proportional to estimated corporate debt-at-risk shares.

Protectionist measures in Europe and the United States ultimately generate secular stagnation, given constrained macroeconomic policy responses. These protectionist measures undermine the efficiency gains from specialization and exchange, inducing persistent weakness in aggregate demand and supply while disproportionately reducing trade flows. In particular, confidence losses concentrated in Europe and the United States induce firms and households to postpone their expenditures, reducing private investment and consumption by a further 6.0 and 2.0 percent there, and by 3.0 and 1.0 percent, respectively, in the rest of the world over five years. In addition, higher trade barriers concentrated in Europe and the United States contribute to reductions in exports and imports by a further 20.0 percent and by 10.0 percent in the rest of the world. Finally, less efficient resource allocation concentrated in Europe and the United States reduces productivity by 1.0 percent and by 0.5 percent in the rest of the world. This layer of the *financial stagnation and protectionism scenario* is broadly aligned with the *global tariff scenario* in the October 2016 *World Economic Outlook*.

Conventional monetary policy remains at or returns to the effective lower bound in the systemic advanced economies, while the calibration of global financial market adjustments is interpreted as net of the effects of unconventional monetary policy responses where warranted, in particular in the euro area and Japan. Automatic fiscal stabilizers are allowed to operate fully, but there are no discretionary fiscal stimulus measures worldwide.

This scenario hits banking sector capitalization in some emerging market economies and government debt sustainability in some advanced economies hard (see Figure 1.28). Largely reflecting lower economic and financial risk taking, output falls by 1.6 to 6.8 percent relative to the baseline across economies by 2021.

<sup>19</sup>This annex was prepared by Francis Vitek.

**Annex Table 1.1.1. Financial Stagnation and Protectionism Scenario, Assumptions**

<b>Layer 1: Risk-off reactions in Europe and United States, 2017:Q1–18:Q4</b>	
Real equity price; equity risk premium shocks	
Euro area, United Kingdom, United States	–20 percent
Money market interest rate spread; credit risk premium shocks	
High-spread euro area, United Kingdom	+100 basis points
Low-spread euro area, United States	+50 basis points
Long-term government bond yield; duration risk premium shocks	
High-spread euro area	+100 basis points
Exposed emerging markets	+50 basis points
Low-spread euro area, United Kingdom, United States	–25 basis points
<b>Layer 2: Heightened uncertainty in Europe and United States, 2017:Q1–19:Q4</b>	
Private investment; investment demand shocks	
United Kingdom	–2.0 percent
Euro area, United States	–1.0 percent
Private consumption; consumption demand shocks	
United Kingdom	–0.50 percent
Euro area, United States	–0.25 percent
<b>Layer 3: Balance sheet vulnerabilities in euro area and emerging markets, 2017:Q1–19:Q4</b>	
Bank capital ratio requirement; capital requirement shocks	
High-spread euro area	+2.0 percentage points
Other advanced economies	+1.0 percentage points
Loan default rate; loan default shocks	
Emerging markets	+0.0 to +3.2 percentage points
<b>Layer 4: Protectionism in Europe and United States, 2017:Q1–21:Q4</b>	
Private investment; investment demand shocks	
Euro area, United Kingdom, United States	–6.0 percent
Rest of world	–3.0 percent
Private consumption; consumption demand shocks	
Euro area, United Kingdom, United States	–2.0 percent
Rest of world	–1.0 percent
Exports and imports; export and import demand shocks	
Euro area, United Kingdom, United States	–20.0 percent
Rest of world	–10.0 percent
Productivity; productivity shocks	
Euro area, United Kingdom, United States	–1.0 percent
Rest of world	–0.5 percent

Source: IMF staff calculations.

Note: All scenario assumptions are expressed as deviations from the October 2016 WEO baseline. Endogenous variable adjustments peak in 2018:Q4 or 2019:Q4 where indicated and one-quarter dissipate by 2021:Q4. The high-spread euro area economies are Greece, Italy, Portugal, and Spain. The low-spread euro area economies are Austria, Belgium, Finland, France, Germany, Ireland, and the Netherlands. The exposed emerging markets are Argentina, Brazil, Colombia, Indonesia, Mexico, the Philippines, Poland, Russia, South Africa, Thailand, and Turkey.

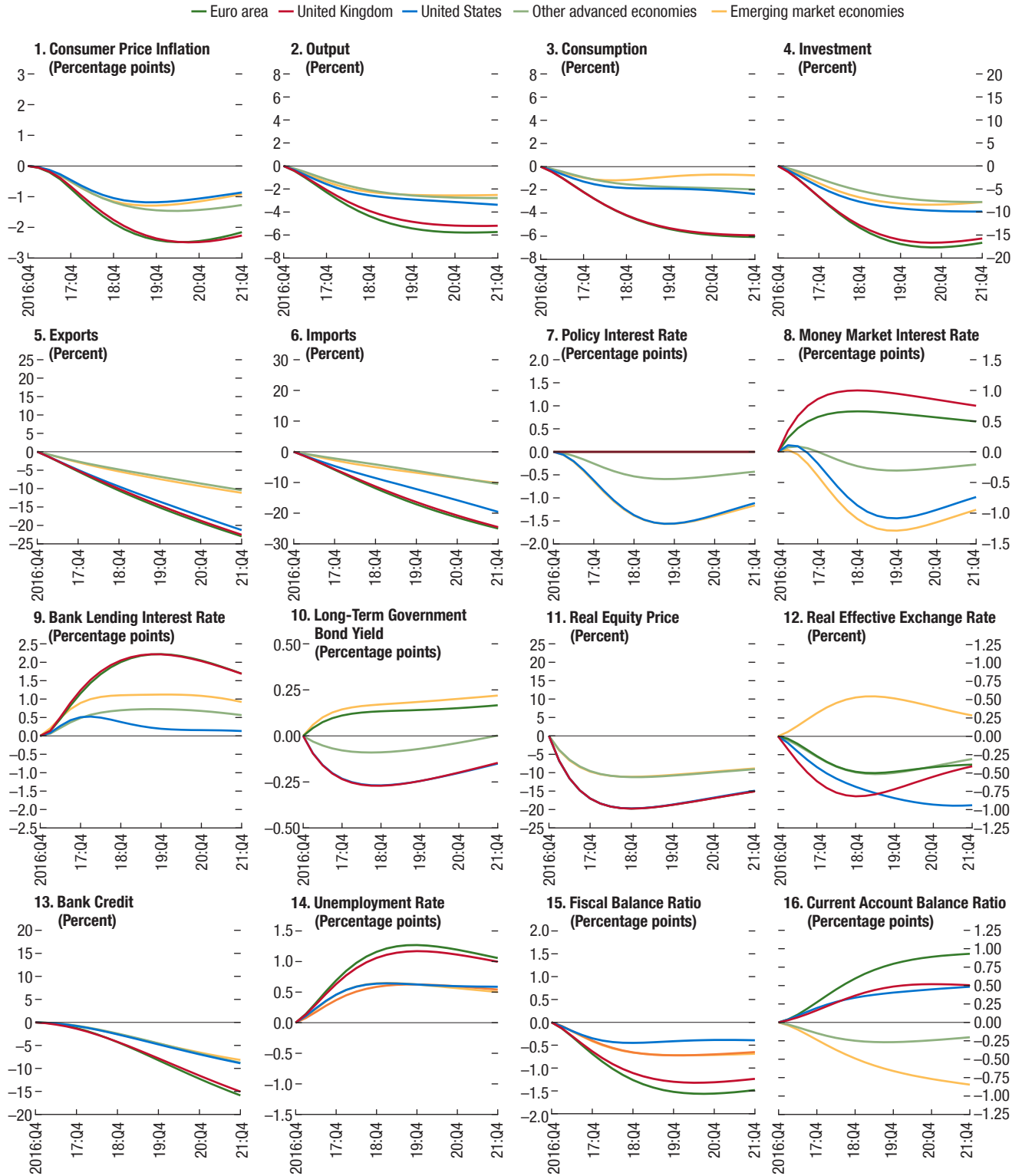
Given this secular stagnation, consumer price inflation declines by 0.8 to 2.9 percentage points by 2019, and the unemployment rate rises by 0.4 to 1.7 percentage points across countries.

These disinflationary macroeconomic contractions induce policy interest rate cuts of up to 2.3 percentage points by 2019. The banking sector accommodates and contributes to reductions in private investment with 5.2 to 17.1 percent decreases in bank credit by 2021. Bank capital ratios fall by 0.3 to 3.1 percentage points across emerging market economies by 2020, where credit loss rates generally increase more, compared with

at most 0.2 percentage point across advanced economies, given regulatory or market pressure to build bank capital buffers.

Largely reflecting lower nominal output, government debt ratios rise, ranging from 2.1 to 28.2 percentage points across advanced economies by 2021, where initial government debt ratios are generally higher, compared with 1.6 to 11.9 percentage points across emerging market economies. In aggregate, world output falls by about 3 percent relative to the baseline by 2021, while energy and nonenergy commodity prices fall by 34.9 and 19.0 percent, respectively.

Annex Figure 1.1.1. Financial Stagnation and Protectionism Scenario, Aggregated Simulated Paths



Source: IMF staff estimates.

Note: Depicts variable paths expressed as output weighted average deviations from baseline. Real effective exchange rate increases represent currency depreciations in real effective terms.

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