



Global liquidity: where do we stand?

Assessing global liquidity in a global framework

Bank of Korea annual conference

Seoul, 4 June 2013

Jaime Caruana

General Manager, Bank for International Settlements

I would like to thank Governor Kim for his kind invitation to speak to the Bank of Korea International Conference. The topic of this conference is very special to the BIS. We have paid close attention to global liquidity in the past few years and have contributed to recent international efforts to understand it better, including those of the 2011 CGFS Working Group chaired by Jean-Pierre Landau¹ and the G20 groups. The BIS has subsequently reported to the G20 on global liquidity spillovers. The Bank of Korea has contributed actively to this work, and Governor Kim in particular has reminded us all, many times, in many meetings, of the importance of close international cooperation among central banks on this topic.

I shall start my remarks with some words on the concept of global liquidity and the reasons to monitor it. I will then try to characterise today's global financial conditions: the stubbornly high levels of debt in the advanced economies and the still-rising levels of debt in some advanced and emerging market economies. Then I shall review quantity and price indicators of global liquidity. Finally, I shall turn to the current, unprecedented levels of monetary accommodation and the challenges that the desirable interest rate normalisation could pose.

With regard to policy, I shall make three suggestions.

First, in most of the advanced economies hit by the crisis, banks, households and firms need to redouble their efforts to deleverage and to repair their balance sheets, while policymakers must redouble their efforts to enact far-reaching reforms. Crucially, progress with repairs and reforms would also allow central banks to normalise monetary policy in a manner consistent with a return to sustainable and balanced growth.²

Second, there are late-cycle risks in some of the advanced (less affected by the crisis) and emerging market economies that have been experiencing credit booms. In these cases, authorities should continue to augment the macroprudential policies adopted to date with policies to build up financial resilience.

¹ See Committee on the Global Financial System, "Global liquidity – concept, measurement and policy implications", *CGFS Papers*, no 45, Basel, 2011.

² See J Caruana, "Hitting the limits of 'outside the box' thinking? Monetary policy in the crisis and beyond", speech to OMFIF (Golden Series Lecture), London, 16 May 2013.

And third and more generally, policymakers need to strengthen prudential policies that anticipate and meet the challenges posed by the inevitable and desirable normalisation of global interest rates.

What is global liquidity?

Global liquidity is an elusive concept used in a variety of ways, and rigorous analysis of it is challenging. Given the current focus on financial stability, let me define it here as simply the “ease of financing” in the international financial system. Despite its conceptual difficulties, global liquidity is worth monitoring for at least two main reasons.

First, experience shows that the endogenous build-up of financial vulnerabilities may take a long time and is difficult to predict. But at some point, systemic liquidity stress can emerge very quickly and threaten the stability of the global financial system. These kinds of dynamics point to the need to monitor global conditions and to be ready to take decisions even under uncertainty and in a complex system. Waiting for irrefutable evidence may prove costly.

Central banks play an important role in the generation of global liquidity but, ultimately, ease of financing reflects the ability and willingness of market participants to provide funding or to trade in securities markets. In turn, their ability and willingness are determined by private perceptions of risk, and by risk appetite, as well as by broader financial and economic conditions.

Second, while global conditions matter for domestic policymaking, domestic policy decisions influence global conditions. We at the BIS remain convinced that policymakers should take into account how their domestic policies affect global conditions as well as the feedback effects thereof.³

Easy financing conditions can show up in a rapid growth of credit extended under weak underwriting standards. Excessive risk-taking and rapid credit growth can weaken the financial system through lower credit quality as well as through excessive leverage, maturity transformation and currency mismatches. Easy financing can show up in less deleveraging and repair than usual after a balance sheet crisis.

Proper analysis of global liquidity therefore requires monitoring of a variety of indicators. These include prices and quantities, and stocks and flows, at both the domestic and international level.

³ J Caruana, “International monetary policy interactions: challenges and prospects”, speech to the CEMLA-SEACEN conference on “The role of central banks in macroeconomic and financial stability: the challenges in an uncertain and volatile world”, Punta del Este, Uruguay, 16 November 2012; and “Policymaking in an interconnected world”, speech to the Federal Reserve Bank of Kansas City’s 36th Economic Policy Symposium on “The changing policy landscape”, Jackson Hole, 31 August 2012.

Deleveraging and leveraging in the global economy

In order to characterise global financial conditions, let me start with credit stocks and flows. Overall, we see a particularly differentiated picture, simultaneous slow deleveraging and leveraging, that is a combination of different trends:

- Stock measures indicate that outstanding levels of both domestic and international debt, public and private, are overall substantially above their pre-crisis levels in every region. Overall, G20 countries have seen their total debt increase by more than 30% since the beginning of the crisis (Graph 1).
- Bank credit growth is slow or negative in Europe and growing modestly in the United States, but it is showing strong growth in countries less affected by the crisis, such as in Asia and Latin America.
- Growth in foreign currency credit (eg dollar credit outside the United States) and in international bank credit points to more expansionary conditions in some regions.
- Finally, global bond markets have been very dynamic at historically low yields. The outstanding stock of non-financial corporate bonds in international markets has increased sharply since the beginning of 2012.

Five years after the onset of the crisis, households and firms in the economies most affected have adjusted their balance sheets less than one would have expected given the experience of previous crises (Graph 2).

The exception is the United States. There, the household sector has deleveraged through paydowns, write-offs and income growth. As a result, the ratio of household debt to disposable income in the United States has fallen back to the levels of the early 2000s, and the ratio of overall private debt to GDP has improved. But public debt has increased markedly.

In Europe, countries that experienced property and credit booms, such as the United Kingdom and Spain, have seen some deleveraging in their household debt. However, in Europe, overall private debt has barely fallen in relation to GDP, even as public sector indebtedness continues to rise.

Despite an unprecedented easing of monetary policy, and despite fiscal deficits being historically high, balance sheet repair by the private sector lags.

In emerging Asia, on average, private credit in relation to GDP remains well below the levels in advanced economies, but it is trending towards the peak reached before the Asian financial crisis of the late 1990s. Notably, real estate markets have shown strong price gains in a number of economies in the region.

As a result, policymakers in some Asian economies may face the risks of financial strains associated with the later stages of the financial cycle, when credit and price gains slow down and eventually reverse (Graph 3). Policymakers in the region have been leaning against such late-cycle risks. In many cases they have used macroprudential policies. Nevertheless, they would be well advised to use the current conditions to continue to make their financial systems more resilient.

Let me now complete this picture with the other trends that I mentioned at the outset.

Dollar and euro credit to non-residents growing at double-digit rates

Foreign currency credit in dollars and euros – including both bank loans and bonds – is growing to residents of the rest of the world. Accommodative monetary policy in the United States has been associated with a very gradual recovery in credit growth to US households and businesses. Meanwhile, dollar credit to non-US residents has been growing at a relatively rapid pace and now totals about \$7 trillion, or 13% of the GDP of the world ex United States. Its growth reached a high of almost 20% in 2011, fell back in 2012, but is moving up again and is at 10% in the latest data (Graph 4).

Dollar credit outside the United States is growing at double-digit rates even though many countries have adopted macroprudential policies or capital controls that raise the effective interest rate on dollars. For instance, China has imposed bank-by-bank quotas on bringing in dollars, which has driven up interest rates for dollar loans in China to well above global levels. Despite that, foreign currency credit extended by banks in China in the 12 months to April 2013 rose by 35%.

Growth has also resumed for euro-denominated credit to businesses and households outside the euro area. Currently at about 15%, the rate is even faster than that for dollar debt outside the United States. However, the outstanding amount of foreign euro credit, currently equivalent to \$2.5 trillion, implies that it has not grown as much in dollar (or euro) terms.

Global bank deleveraging

Aggregate international bank credit to both banks and non-banks has stopped growing or even gone negative, as the deleveraging of banks has been more intense in the cross-border component (Graph 5). By sector, the shrinkage of international bank credit is concentrated in the interbank market. Geographically, it reflects mainly the weakness in credit growth to Europe and to some extent to the United States.

By contrast, international bank credit to Asia and Latin America has grown more strongly (Graph 6). As a result, the weakness in aggregate international bank credit does not indicate globally tight financing conditions.

Ease of financing in global bond markets

Finally, let me mention the dynamism in global bond markets. This is the market where the global ease of finance is most evident. The return of equity and bond volatility to the low pre-crisis levels has supported the demand for credit risk in bond markets (Graph 7).

Risk appetite has returned to pre-crisis levels (Graph 8).

Corporate and emerging market bond yields are low (Graph 9, although spreads have not reached pre-crisis lows). Non-investment grade, first-time sovereign issuers have seen bids for bond issues at 10 times the issuance amount.

Outstanding emerging market corporate bonds – mostly in the major currencies – are growing rapidly (Graph 10).

Similarly, major economies have at times seen strong outflows into equities and bonds of emerging market economies (Graph 11).

Unprecedented monetary ease

Let me now leave the analysis of credit stocks and flows and move to monetary indicators. Monetary indicators point to unusual policy accommodation amid a still weak and uncertain economic outlook. By lowering policy rates to near zero and expanding their balance sheets, central banks in the major economies have bid up bond prices and pushed the corresponding yields well below levels implied by expected short-term rates. As a result, the price conditions for risk-taking and private liquidity generation are largely in place.

For their part, central banks in emerging market economies have followed a different path. They raised policy rates in 2010–11 as global trade recovered and inflationary pressures became evident. But starting in the latter half of 2012, they have been lowering their policy rates. As a result, not only are short-term interest rates on average substantially negative in real terms in the advanced economies, but they are also about zero (and in some cases below zero) in emerging market economies (Graph 12).

The major central banks have also hugely expanded their balance sheets. Central banks of advanced economies hold assets that have risen from about \$4 trillion just before the crisis to \$10 trillion today (Graph 13).

Yet broad money – that is, bank deposits backed by loans and securities holdings of banks – has grown slowly. In other words, the money multiplier in major advanced economies has collapsed, as it did in Japan in the early 2000s (Graph 14).

The large-scale bond purchases by major central banks have helped to push nominal bond yields down relative to prospective nominal GDP growth. The gap is very striking for advanced economies, in contrast to the situation before the global financial crisis (Graph 15). Bond yields in emerging market economies fell well short of expected nominal growth even before the crisis, in part because of the gap between single-digit bond yields and double-digit nominal growth in China. But in recent years, this gap has widened for emerging market economies too.

To appreciate just how unusual global bond market pricing is, we have to look at the term premium. Admittedly, the calculation requires a certain amount of econometric heavy lifting, so different analysts can reasonably produce somewhat different results. But in their work, my colleagues find a substantially negative term premium in major bond markets (Graph 16). Put more simply, this suggests that, given central bank removal of bonds from private hands, the term premium – the extra reward for bearing the price risk and inflation risk of holding a fixed rate bond – has flipped into a penalty that the investor must pay.

What this means is that exit from the currently accommodative monetary policy stance poses challenges in two dimensions. The first is the familiar one of managing expectations of policy rate setting. When will rates start to rise? How fast will they rise? Or better, how will the rate of their rise depend on macroeconomic conditions? The other is the unfamiliar one of managing the term premium as central banks signal any change of policy in relation to purchases or sales of bond duration. The very success of pushing the term premium down into negative territory has created the risk of its sudden rise, even if central banks succeed in communicating their intended paths for short-term policy rates. A global steepening of yield



curves could hit the capital of financial institutions, to the extent that they hold their government's debt, and worsen debt sustainability.

All this underscores the importance – both for market participants and for the authorities – of being prepared for eventual exit from the extraordinarily accommodative global monetary conditions. While central banks surely have all the tools necessary to technically engineer an exit and will doubtless do their utmost to communicate properly with market participants, it cannot be taken for granted that the process will be smooth.

Policy challenges

Let me summarise and draw three general policy implications, recognising that there are significant differences from country to country. Overall, the stock of international and domestic credit remains high, implying that private sector deleveraging is not yet complete in the major advanced economies most affected by the crisis. And increased leveraging in other advanced economies and in emerging market economies suggests vulnerabilities building in some regions.

At the same time, indicators of financing conditions and risk appetite are pointing to increased risk-taking in some markets. While unprecedented monetary easing has had difficulty in boosting broader money and bank lending in the domestic economies that it targeted, it has increased foreign currency credit in dollars and euros to non-residents, and pushed down yields in global bond markets to the point where investors are *paying* a term premium rather than *receiving* a term premium. Hence, the global ease of finance is most evident in global bond markets: those are the markets where volatility has been compressed to pre-crisis levels, risk appetite has returned, sovereign and corporate bond yields have reached record low levels, lending conditions have been weakened, outstanding emerging market corporate bonds have grown rapidly and portfolio capital flows have at times been strong.

In terms of policy, I have three general suggestions. First, private sector deleveraging and balance sheet repair need to continue in crisis-affected economies, and policymakers there need to press on with structural reforms. Balance sheet recessions are special, and more action on these fronts is required for a balanced recovery. Moreover, such action will allow central banks to normalise monetary policy in a manner consistent with a return to sustainable and balanced growth.

Second, in emerging market economies and some advanced economies that have been less affected by the crisis, but have experienced credit booms, the financial cycle may be reaching critical stages. Policymakers and market participants there can use the current conditions to continue to focus on making their financial systems more resilient.

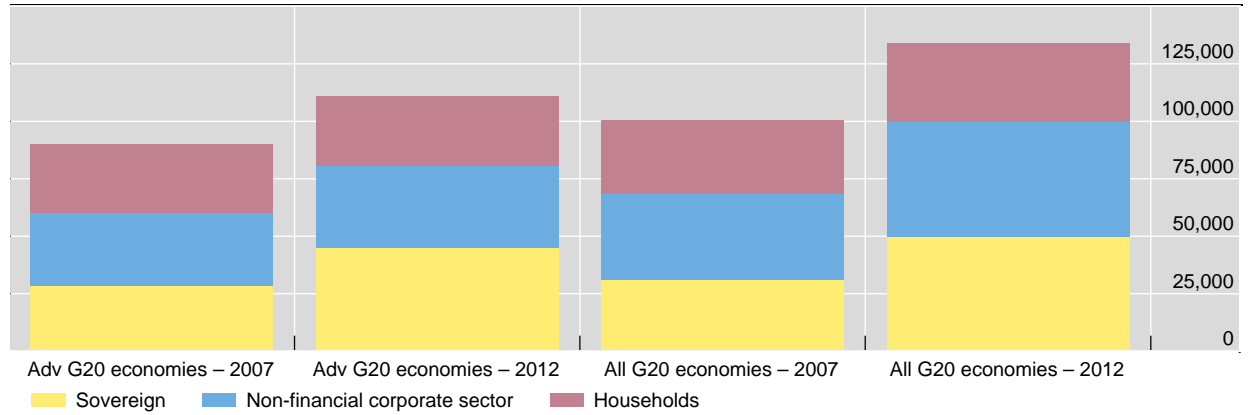
Finally and more broadly, authorities and market participants must recognise the challenges inherent in the inevitable and desirable interest rate normalisation and seek to make their financial firms and markets resilient in the face of potential strains.



Total non-financial debt

In billions of US dollars

Graph 1



Among all G20 economies, only those with available series on private debt data are included. Euro non-G20 economies are also included. Advanced G20 economies include: Australia, Canada, the euro area, Japan, the United Kingdom and the United States. Total G20 economies also include: China, India, Indonesia, Mexico and Turkey.

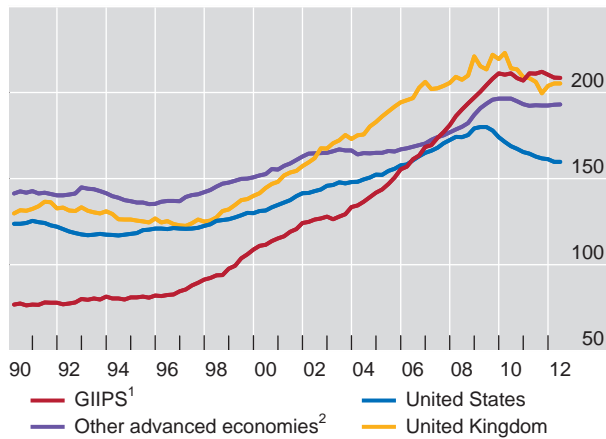
Sources: IMF; BIS calculations.

Credit to the private sector

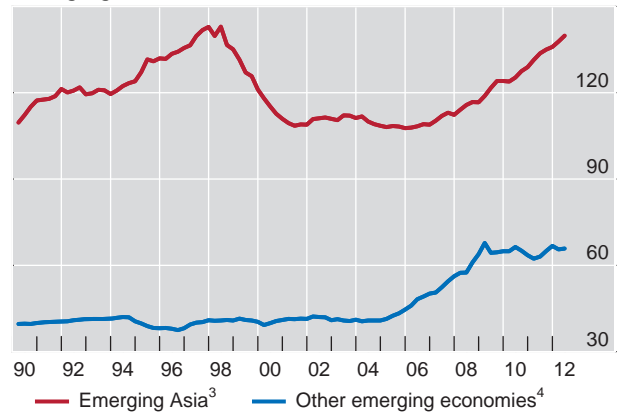
As a percentage of GDP; unweighted averages

Graph 2

Advanced economies



Emerging market economies



¹ Greece, Ireland, Italy, Portugal and Spain. ² Belgium, Canada, Denmark, France, Germany, Japan, the Netherlands, Norway and Sweden. ³ China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Singapore and Thailand. ⁴ Argentina, Brazil, the Czech Republic, Hungary, Mexico, Poland, Russia, South Africa and Turkey.

Sources: National data; BIS calculations.

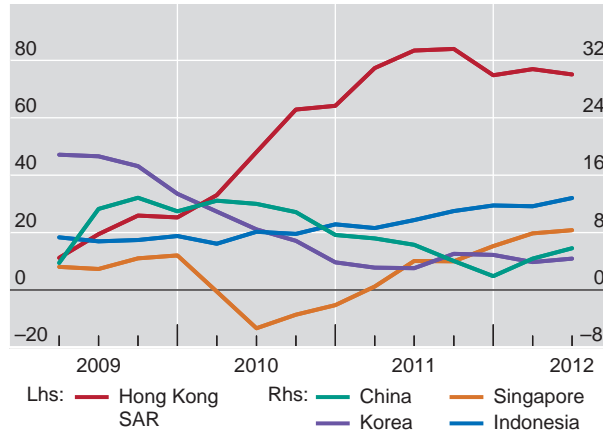


Late-cycle risks

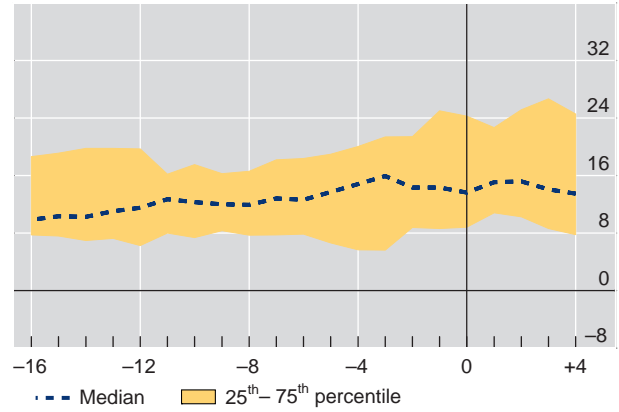
Graph 3

Credit-to-GDP gap¹

Current developments

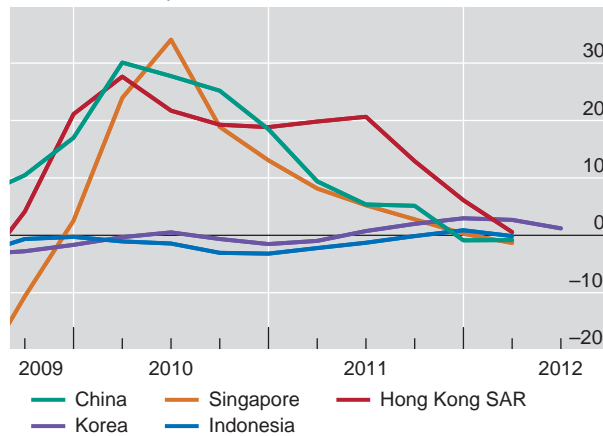


Typical pre-crisis developments²

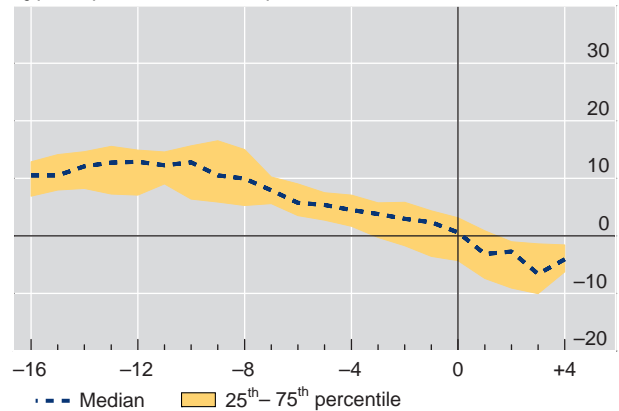


Real property price growth

Current developments



Typical pre-crisis developments²



¹ Calculated according to the Basel III methodology for the countercyclical capital buffer. Total credit to the private non-financial sector is used, which can include credit exposures where firms borrow in one country but invest in another, thereby not strictly reflecting domestic vulnerabilities. Typically, however, these types of credit exposures are not relevant. ² The horizontal axis depicts 16 quarters before and four quarters after a crisis, which is indicated by the vertical line. The historical dispersion of the relevant variable is taken at the specific quarter before past financial crisis episodes, based on a sample covering 17 crisis episodes in 27 advanced economies and emerging market economies from 1980 onwards.

Sources: IMF, *International Financial Statistics*; national data; BIS calculations.



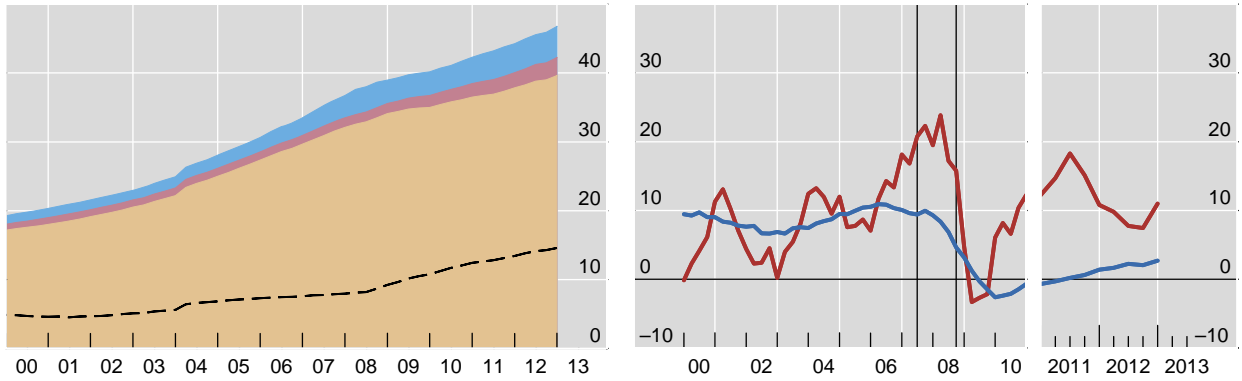
Global credit in dollars and euros¹

Graph 4

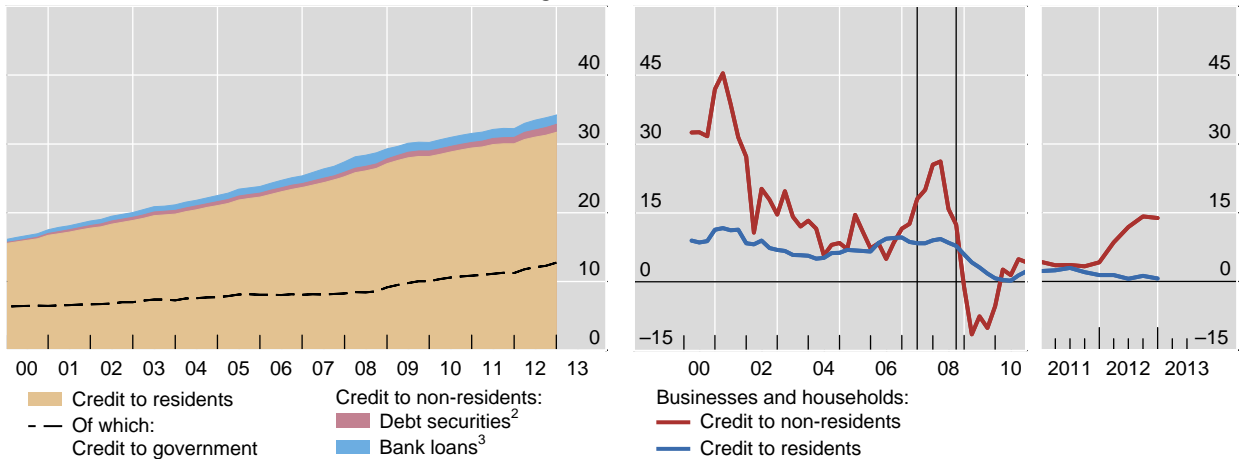
Stocks, in trillions of US dollars

Year-on-year growth, in per cent

US dollar credit to non-financial firms, households and governments



Euro credit to non-financial firms, households and governments



The vertical lines indicate the beginning of the global financial crisis and the collapse of Lehman Brothers, respectively.

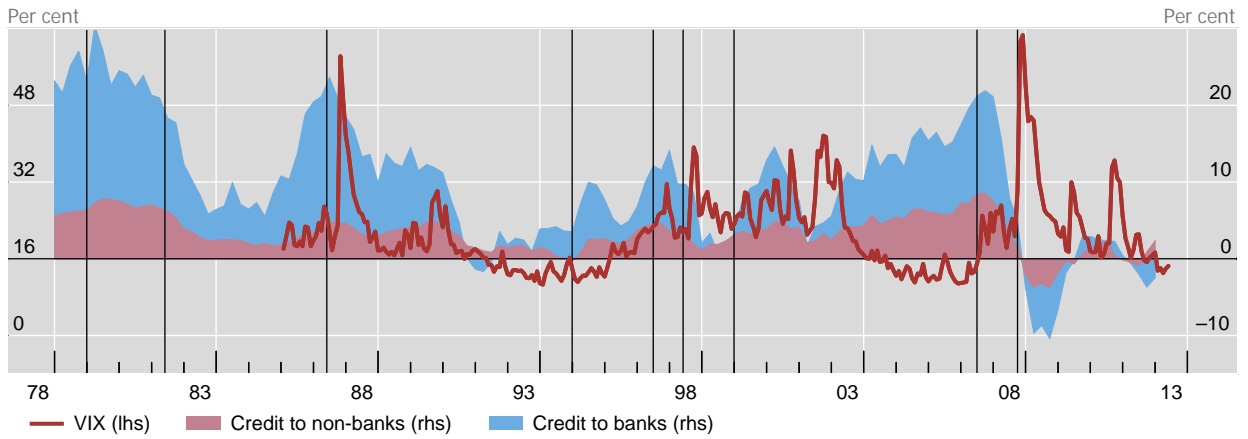
¹ Credit to non-financial sector residents in the United States and the euro area from national flow of funds data, excluding identified credit to these borrowers in non-domestic currencies (ie cross-border and local loans and outstanding international bonds in non-domestic currencies); for the euro, at constant end-Q4 2012 exchange rates. ² Outstanding debt securities issued by non-financial non-residents of the United States and the euro area. ³ Cross-border and local loans to non-banks outside the United States and the euro area.

Sources: IMF, *International Financial Statistics*; BIS international debt statistics and locational banking statistics by residence.



Year-on-year rate of growth in international claims¹

Graph 5



The vertical lines indicate: 1979 second oil shock; 1982 Mexican default; 1987 stock market correction; 1994 Mexican peso devaluation; 1997 Asian financial crisis; 1998 Russian default and Long-Term Capital Management episode; 2000 Nasdaq peak; 2007 beginning of global financial crisis; and 2008 collapse of Lehman Brothers. VIX = Chicago Board Options Exchange Market Volatility Index, a measure of the implied volatility of S&P 500 index options.

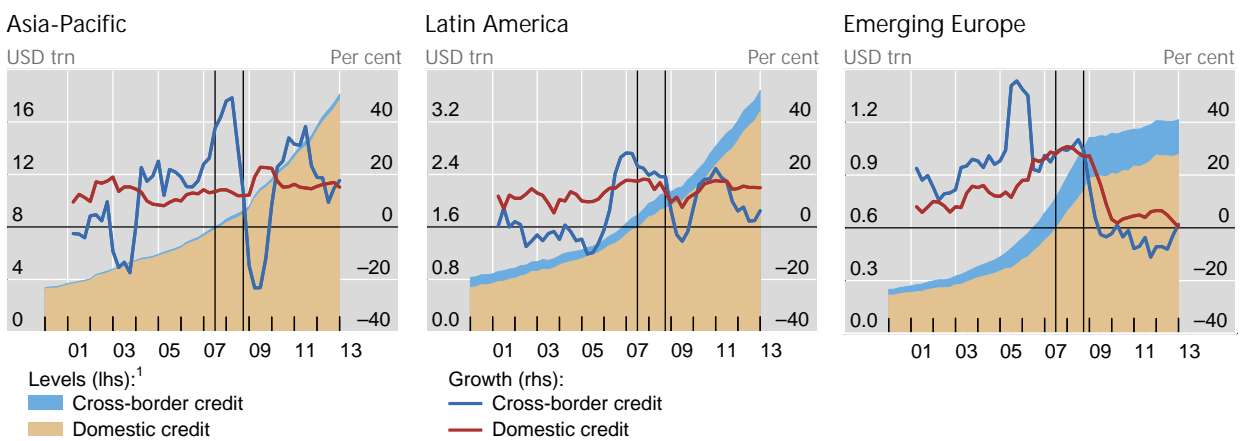
¹ Includes all BIS reporting banks' cross-border credit and local credit in foreign currency.

Sources: Bloomberg; BIS locational banking statistics by residence.

Global bank credit aggregates, by borrower region

At constant end-Q4 2012 exchange rates

Graph 6



The vertical lines indicate the beginning of global financial crisis and the collapse of Lehman Brothers, respectively.

¹ Total bank credit to non-bank borrowers (including governments), adjusted using various components of the BIS banking statistics to produce a breakdown by currency for both cross-border credit and domestic credit.

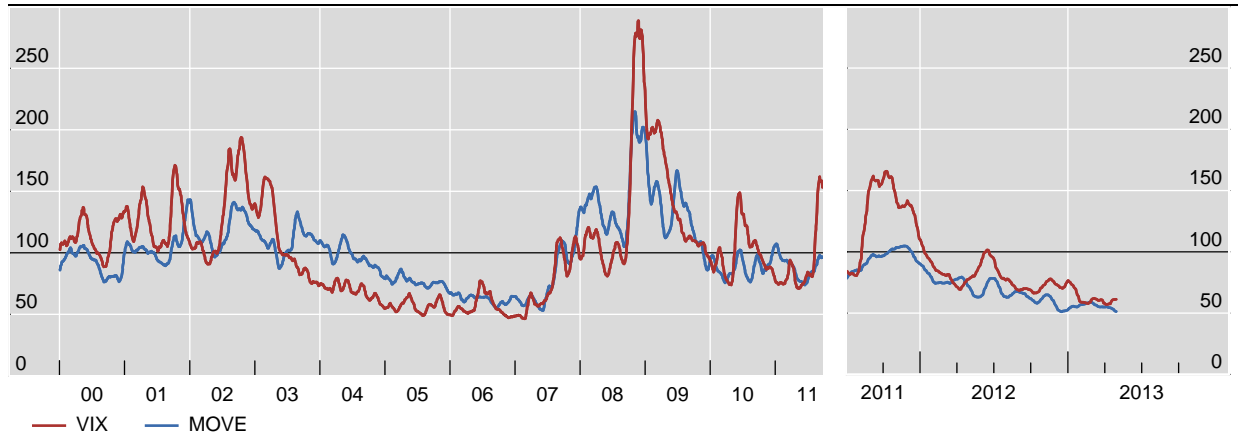
Sources: IMF, *International Financial Statistics*; BIS international banking statistics; BIS calculations.



VIX and MOVE indices¹

1 Jan 1991 = 100

Graph 7



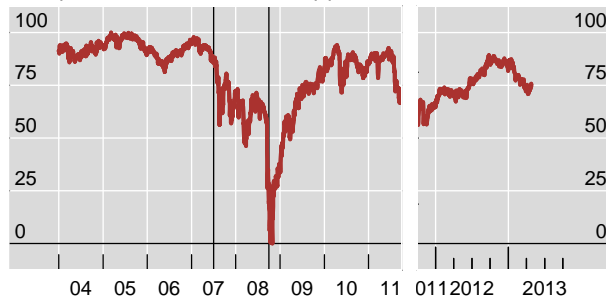
¹ VIX = Chicago Board Options Exchange Market Volatility Index, a measure of the implied volatility of S&P 500 index options. MOVE = yield curve-weighted index of the normalised implied volatility on one-month Treasury options.

Source: Bloomberg.

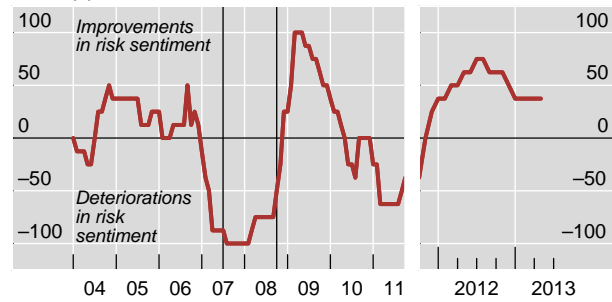
Risk appetite, market positioning and valuation¹

Graph 8

Composite indicator of risk appetite²



Risk appetite diffusion index³



The vertical lines indicate the beginning of global financial crisis and the collapse of Lehman Brothers, respectively.

¹ Principal component of risk appetite indicators. An upward movement indicates an improvement in risk appetite. ² Principal components of the following price indicators: VIX; DAX implied volatility; spreads between S&P financial stocks and S&P public-sector stocks; US small-cap stocks; MSCI Emerging Markets Index; implied volatility of the US dollar and Australian dollar against the Japanese yen; implied volatility of the euro against the Swiss franc; swap spreads in the United States, Europe and Japan; credit spreads of speculative grade corporate bonds in the United States and Europe; TED spreads in the United States and Europe; and spreads on emerging market economy bonds. ³ Positive (negative) values indicate that more than half of the included risk appetite indicators are improving (deteriorating).

Sources: Bank of America Merrill Lynch; Bloomberg; Datastream; BIS calculations.

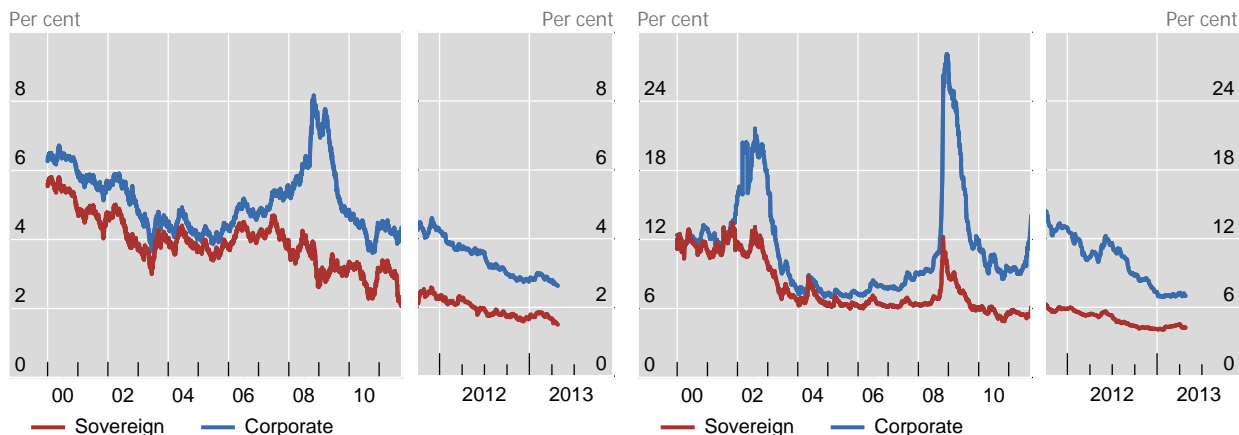


Financing conditions: bond yields for sovereigns and firms

Graph 9

Advanced economy yields on investment grade bonds (seven- to 10-year maturity)

Emerging market economy yields



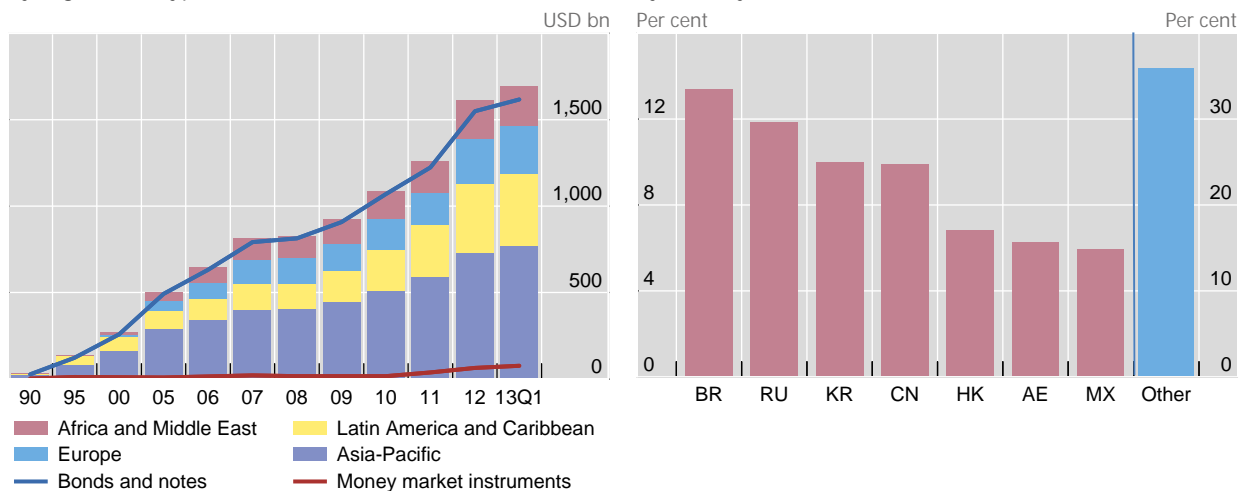
Source: Bank of America Merrill Lynch.

International corporate debt securities outstanding issued by EME firms¹

Graph 10

By region and type of instrument

By country, end-2012



AE = United Arab Emirates; BR = Brazil; CN = China; HK = Hong Kong SAR; KR = Korea; MX = Mexico; RU = Russia; Other = other EMEs.

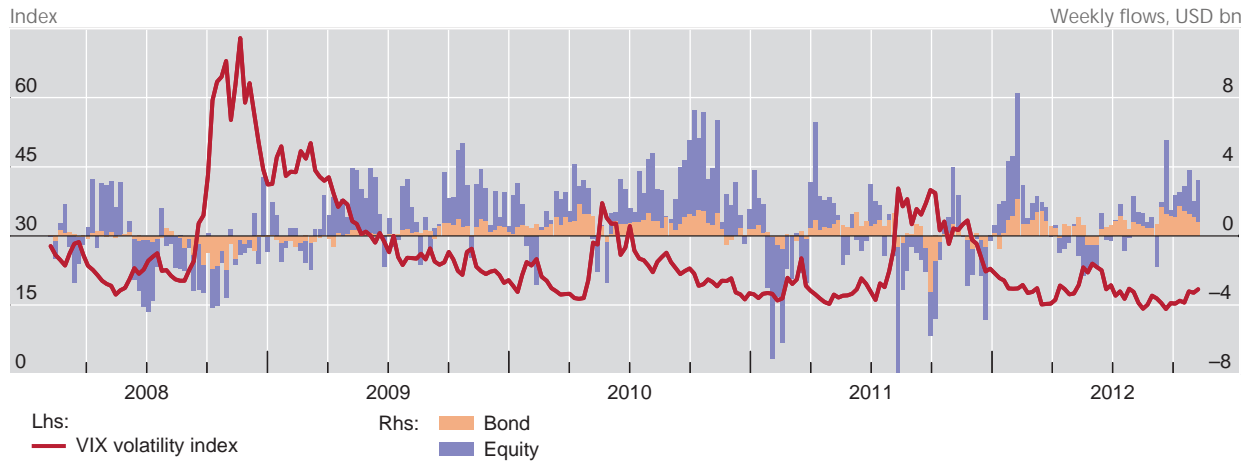
¹ Issuers are financial and non-financial corporations whose owners are resident in selected emerging market economies (EMEs) grouped by region: Africa and the Middle East (Bahrain, Egypt, Israel, Kuwait, Nigeria, Oman, Qatar, Saudi Arabia, South Africa and the United Arab Emirates); Europe (Croatia, the Czech Republic, Hungary, Poland, Russia, Turkey and Ukraine); Latin America and the Caribbean (Argentina, Barbados, Brazil, Chile, Colombia, the Dominican Republic, El Salvador, Jamaica, Mexico, Peru and Venezuela); and Asia-Pacific (China, Chinese Taipei, Hong Kong SAR, India, Indonesia, Kazakhstan, Korea, Macao SAR; Malaysia, Mongolia, the Philippines, Singapore and Thailand).

Sources: Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; BIS calculations.



VIX¹ volatility and EME equity and bond fund flows

Graph 11



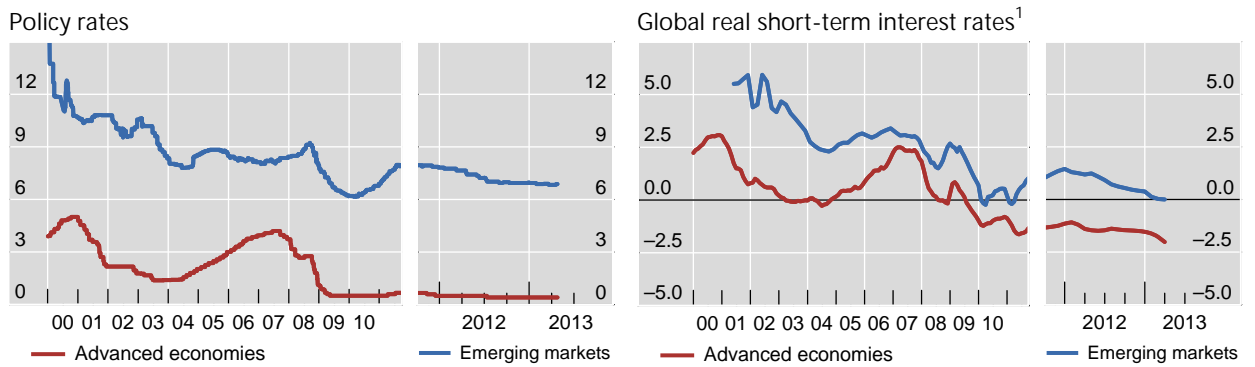
¹ VIX = Chicago Board Options Exchange Market Volatility Index, a measure of the implied volatility of S&P 500 index options.

Sources: Bloomberg; EPFR.

Interest rates in advanced and emerging market economies

In per cent

Graph 12



¹ Based on 12-months-ahead averages of inflation expectations.

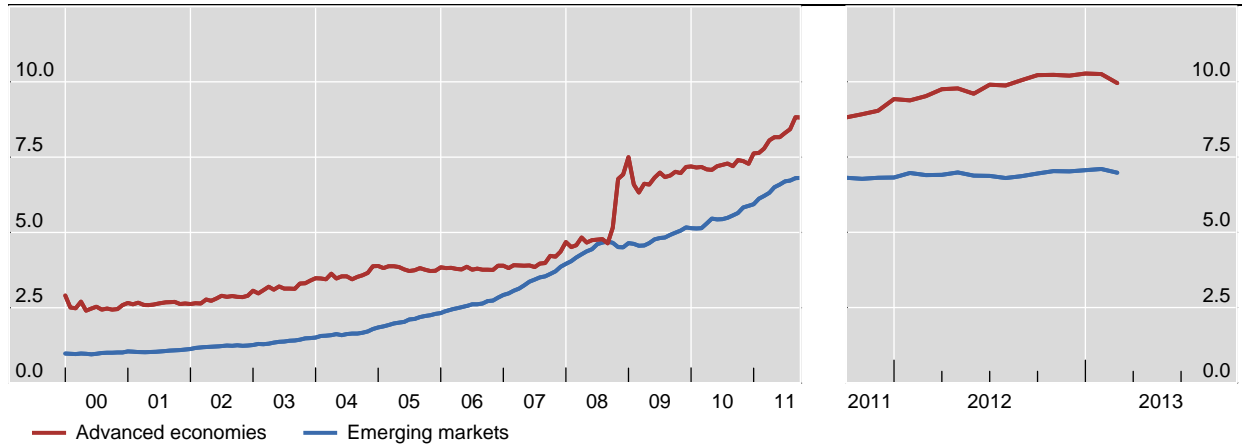
Sources: Bloomberg; Consensus Economics; Datastream; national data; BIS calculations.



Central bank assets

In trillions of US dollars

Graph 13

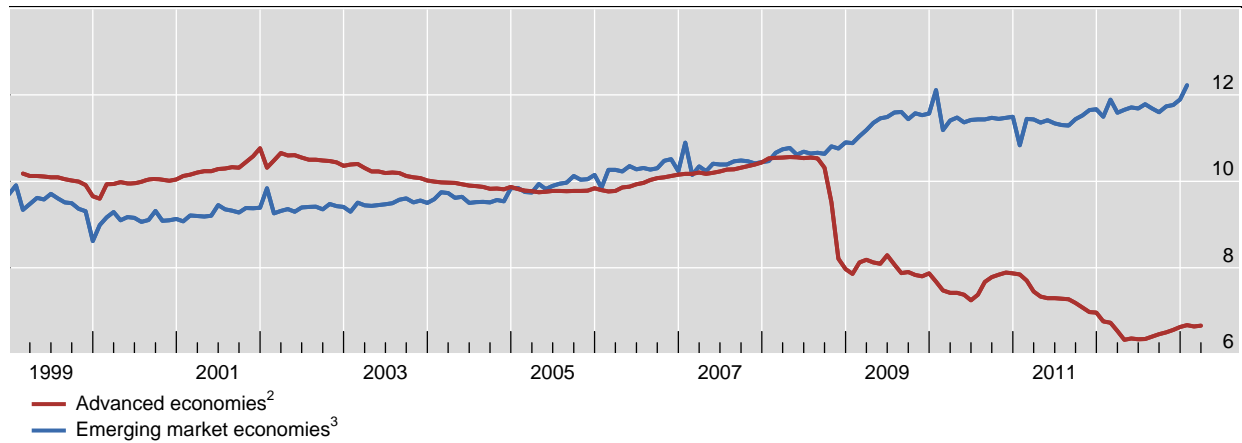


Sources: IMF, *International Financial Statistic*; Datastream; BIS calculations.

Money multiplier¹

Broad money over monetary base

Graph 14



¹ Weighted averages based on 2005 GDP and PPP exchange rates. ² Canada, the euro area, Japan, the United Kingdom and the United States. ³ Brazil, China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Mexico, the Philippines, Poland, Russia, Saudi Arabia, Singapore, South Africa, Thailand and Turkey.

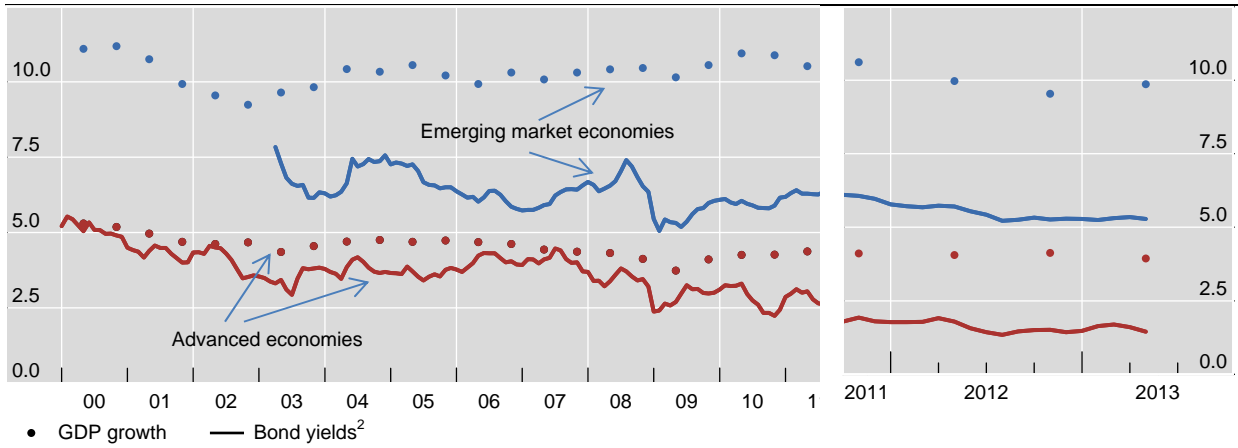
Sources: IMF; Datastream; national data.



Long-term expected nominal GDP growth and 10-year government bond yields¹

In per cent

Graph 15



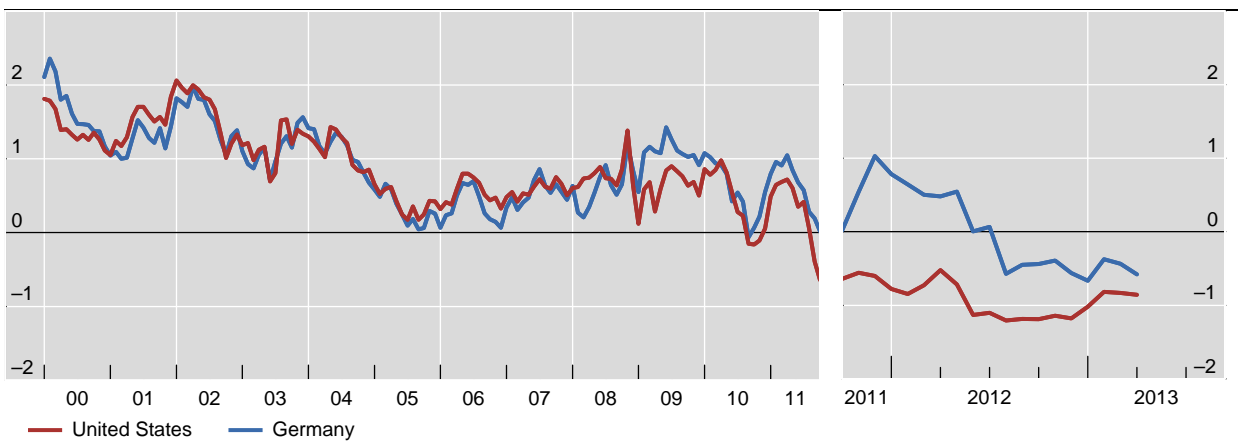
¹ Sum of long-term GDP forecasts and consumer prices. ² For Brazil, three-year government bond.

Sources: Bloomberg; Consensus Economics; Datastream; national data; BIS calculations.

Ten-year nominal term premium¹

In per cent

Graph 16



¹ Ten-year nominal term premium (the sum of the real risk premium and the inflation risk premium) as derived from econometric models of the term structure.

Sources: Bloomberg; Datastream; national data; BIS calculations.