

Debt, global liquidity and the challenges of exit

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I would like to thank the organisers for the kind invitation to participate in the 8th International Conference of FLAR-CAF and to address this distinguished group. It is a real pleasure to be in Cartagena de Indias.

Despite all the measures taken by policymakers, despite the healing of the global economy during the last six years, growth in the global economy remains elusive and uneven. The measures taken, particularly by central banks, have reduced extreme risks, but the economy has not been returned to normality, nor has a new balance been struck that would lead to stronger and more solid growth, and uncertainties remain particularly high. Financial markets' recent sensitivity has reminded us that there is still a long way to go before normality is achieved and that impediments to growth and fragilities in the global economy and financial system remain. To return to solid growth, we must not only acknowledge progress made, but also examine these fragilities. Where do they come from? What are the policy implications? I would like to offer some reflections on these questions in line with the title of this conference, analysing global liquidity and how it relates to financial and economic stability.

To anticipate the points I will develop, there are still unresolved imbalances as well as new risks. I will suggest that the best way forward is to continue private sector balance sheet repair and to prepare for the eventual normalisation of financing conditions; this will require making financial systems stronger and more resilient and expanding the room for manoeuvre on other fronts, for example fiscal policy. It is likely that existing imbalances will continue to complicate this exit process, so we must be prepared. Greater growth would certainly help, but we should not forget that rapid debt-financed growth masked the general downward trend in productivity and the distortion of resource allocation in boom periods. This important aspect is not the subject of my presentation today, but more work is required in these areas, and achieving solid and balanced growth would require accelerating reforms to increase the flexibility of the economy.

1. Growing debt

Market jitters and volatility have been very apparent in recent weeks. Bond yields have risen sharply and stock markets have slumped, although to varying degrees across economies. In emerging market economies (EMEs), exchange rates have depreciated, and capital flows have changed and reversed.

Markets are apparently reacting to the possibility that monetary accommodation might be withdrawn earlier than anticipated. A plausible explanation for the markets' atypical sensitivity and lack

of conviction is that market participants are concerned that existing imbalances and distortions, particularly persistently high debt levels, could produce large losses once the years of monetary accommodation come to an end. Rising levels of debt, much of it issued at very low interest rates, make markets more sensitive to interest rate fluctuations.

Since the global financial crisis, indebtedness in G20 economies has risen significantly. As shown in Graph 1, outstanding levels of both domestic and international debt, public and private, are well 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. This increase in total debt reflects a large increase in public indebtedness, particularly in advanced economies, that has not been offset by any decline in aggregate private indebtedness.

Turning first to *public indebtedness*, Table 1 shows that even though advanced economies' fiscal deficits are projected to have declined significantly by end-2013 compared to their 2009 levels, and their fiscal effort to have increased (lower primary deficits), gross public debt is still predicted to rise by an average of 22 percentage points of GDP in the period 2007–13. The situation is more favourable in emerging economies, notably among the larger economies in Latin America, where both fiscal deficits and public debt have declined on average. Among these economies, public debt-to-GDP is in most cases close to or well below the 40% ratio that is often considered a relatively safe threshold for sustainability in EMEs. Significant declines in debt-to-GDP ratios have also been projected in Colombia and particularly in Peru.

As for *private indebtedness*, bank credit growth is slow or negative in Europe and modest in the United States, but it is strong in countries less affected by the crisis, such as those in Asia and Latin America (Graph 2).

As a result, five years after the onset of the crisis, credit to households and firms in the economies most affected has fallen less than one would have expected given the experience of previous crises. Overall, despite an unprecedented easing of monetary policy, and despite fiscal support measures that have raised public debt to historically high levels in the most affected economies, balance sheet repair by the private sector lags. The United States is a partial exception. There, the household sector has reduced its debt 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. In Europe, countries that experienced property and credit booms, such as the United Kingdom and Spain, have seen some reduction in their household debt. However, in Europe, overall private debt has barely fallen in relation to GDP.

Banks have made significant progress, visible in the evolution of bank capital and in spreads on credit default swaps (CDS). But more work is also needed in this area: some banks in some countries need to do more to recognise their impaired assets and stabilise/extend funding, in order to regain investors' confidence.

In the meantime, credit to less affected EMEs has risen (Graph 2). In emerging Asia and Latin America, private credit in relation to GDP remains, on average, well below the levels in advanced economies, although in some cases it approaches or exceeds previous peaks. At the same time, real estate markets have shown strong price gains in a number of economies. All this gives rise to significant risks, which I will discuss later.

2. International financing

Taking an international perspective, aggregate international bank credit to both banks and non-banks has stopped growing or even gone negative. This reflects deleveraging of banks that has been more

intense in the cross-border component (Graph 3). By sector, the shrinkage of international bank credit is concentrated in the interbank market. Geographically, it reflects mainly the weakness in credit growth in Europe and, to some extent, the United States.

However, the preceding aggregate trends partly mask how easy global financial conditions have been in recent years. One indicator is cross-border and domestic bank credit to Asia and Latin America, which has grown more strongly (Graph 4).

Another indicator of expansionary financing is activity in global bond markets. Outstanding emerging market corporate bonds – mostly in the major currencies – have grown rapidly in recent years (Graph 5). Furthermore, prior to the recent reversal which I cited at the beginning of my presentation, major economies have seen strong flows for extended periods into funds for emerging market equities and bonds (Graph 6).

Bank financing and other capital flows have been large enough to prompt many countries to adopt macroprudential policies and capital controls. For instance, in Latin America several countries have implemented policies that tend to limit the inflow of foreign currency, including taxes on investments in fixed income instruments or on certain derivatives positions by foreigners (eg Brazil, which recently reduced them to zero) or reserve requirements in foreign currency (eg Peru).

Having looked at quantity indicators, let's turn now to price indicators. Expansionary financing conditions are most apparent in indicators of risk appetite and costs of financing. Indeed, in spite of the increased market volatility and repricing cited earlier, financing conditions on balance remain easy.

- Equity and bond market volatility has increased recently, although it is still well below the peaks observed following the Lehman bankruptcy, and remain close to low pre-crisis levels (Graph 7).
- Risk appetite is above the levels observed during the crisis, although it has declined recently (Graph 8).
- Corporate and emerging market bond yields remain low (Graph 9), in spite of their recent upward spike. The low costs of financing in global bond markets reflect an unusual degree of monetary accommodation that has resulted in very low nominal government bond yields, a subject I will turn to now.

3. The effects of monetary accommodation

Central banks in the major economies have lowered policy rates to near zero (Graph 10, left hand panel) and have hugely expanded their balance sheets. These central banks hold assets that have risen from about \$4 trillion just before the crisis to \$10 trillion today (Graph 11).

While EME central banks have followed a different path, on balance their policies have been accommodative despite stronger economic conditions. Central banks raised policy rates in 2010–11 as global trade recovered and inflationary pressures became evident. But starting in the second half of 2012, they lowered their policy rates. As a result, not only are real short-term interest rates on average substantially negative in the advanced economies, but they are also about zero (and in some cases below zero) in EMEs (Graph 10, right-hand panel).

The effects have been uneven. On the one hand, broad money – that is, bank deposits backed by loans and securities holdings of banks – has grown slowly in advanced economies. In particular, in line with evidence of balance sheet adjustment the money multiplier in the US has collapsed, as it did in Japan in the early 2000s (Graph 12).

Nominal bond yields have declined sharply, and have remained slightly below prospective nominal GDP growth. The gap is very striking in both advanced and emerging market economies. In the advanced economies, it is larger than it was before the crisis (Graph 13). In emerging market economies, the gap has also widened in recent years and has been influenced by single-digit bond yields and double-digit nominal growth in China.

To appreciate just how unusual global bond market pricing has been, we have to look at the term premium. This is the extra reward for acquiring long-term debt and bearing greater risk, and is normally positive. But a substantially *negative* term premium prevailed in major bond markets this year (Graph 14). Thus, the reward for holding a long-term bond became a penalty that the investor must pay – a very unusual situation that reflects the central bank removal of bonds from private hands through large-scale asset purchases. Graph 14 also suggests that, as yields increased last month, the term premium became less negative. These preliminary estimates suggest that major bond markets still have some way to go to reprice to a more normal positive term premium. The path to normalising the term premium is uncertain and hard to manage, which represents an additional risk.

4. Four types of risks

The conditions which I have described pose four types of interconnected risks. First, slow balance sheet repair in the countries most affected by the crisis has delayed a strong self-sustaining recovery. Second, signs of excessive risk-taking and weakening lending standards have emerged. Third, in some EMEs and (smaller) advanced economies, late financial cycle risks are becoming evident. Fourth, the challenges of exit from accommodative monetary policy compound these vulnerabilities.

Slow balance sheet repair

Historically, prompt and thorough balance sheet repair has proved to be the best way to restore growth and stability following a financial crisis. For example, in response to the Nordic banking crises in the early 1990s policymakers intervened quickly and comprehensively to enforce the full recognition of losses, the recapitalisation of the banking system, the disposal of impaired assets and the removal of excess bank capacity. These measures tackled the causes of the balance sheet recession and paved the way for a sustained post-crisis recovery. In the case of Japan, recovery in the 1990s was arguably slower because of delays in implementing balance sheet repair.

While aggressive monetary easing can facilitate balance sheet adjustment in the aftermath of a severe financial crisis,¹ as time passes the balance between costs and benefits can turn unfavourable, which can hinder and delay balance sheet repair and, consequently, economic recovery. The indicators of rising debt and easy financing conditions that I have presented suggest that this may be a concern in the present global environment. Monetary easing may have hampered balance sheet adjustment in a number of ways. In particular, it can reduce the perceived need to deal with impaired assets; reduce the opportunity cost of carrying non-performing loans on the balance sheet, thus encouraging evergreening; and distort asset prices, leading banks to overestimate repayment capacity at more normal interest rates and to keep alive non-viable and non-productive businesses. A flattened yield curve may also have reduced the financial sector's operating profits.

¹ By shoring up economic activity (including by boosting confidence) and generating income, and allowing refinancing at no cost, thus reducing the debt overhang.

Monetary policy can provide time to solve problems that are not monetary in nature, but it cannot substitute for other actions, by both the private and public sector, to repair balance sheets and correct sectoral imbalances that have built up. For this reason, the BIS's most recent annual report is entitled "Making the most of borrowed time".

Excessive risk-taking

Recently we have been seeing the deterioration of lending standards and signs of excessive risk-taking by investors. Investors have taken on greater risks and reduced protection against worse than expected outcomes: lower credit quality issuers have been able to borrow at historically low rates, and the share of this issuance in total bonds has been unusually large. In some countries it is already much higher than before the crisis. Covenant-lite loans are increasingly frequent, and leverage has risen. A number of "frontier" low-income countries with very low credit ratings were able to access bond markets with a strong excess demand.

Moreover, monetary accommodation through large-scale asset purchases may have distorted market signals, making it difficult for market participants to assess risks and equilibrium prices.

Late-cycle financial risks

Extended periods of monetary accommodation may be associated with booms in credit and asset prices, followed by a slowdown in credit, falling asset prices and marked changes in flows. The outcome can be significant financial strains. Some countries that have experienced this type of boom may be at risk of such strains (Graph 15). EMEs enjoy better growth and debt sustainability, and therefore a large part of the flows reflect this improvement in their economic fundamentals. In addition, policymakers in these countries have been leaning against such late-cycle risks, in many cases by using macroprudential policies. Nevertheless, these risks cannot be underestimated, the uncertainties are pronounced, and complex situations may arise when financial imbalances combine with other disruptions such as more difficult and volatile external financial conditions, declines in commodity prices and lower global growth. Policymakers would thus be well advised to use the current conditions to continue to strengthen their financial systems and make room for other policies to deal with possible adverse events.

The challenges of exit

The challenges of exit from monetary accommodation add to and complicate the management of the risks cited earlier. While normalisation may be desirable, it is important to understand the challenges that exit may pose. An important concern is that the very success of pushing the term premium down into negative territory to support economic recovery creates the risk of its sudden rise when monetary accommodation is removed or even in doubt. A global steepening of yield curves could hit the balance sheets of financial institutions, to the extent that they hold their government's debt, and worsen debt sustainability. Financial institutions' balance sheets could be impaired or again questioned. The most recent period of market volatility underscores this risk, as term premia rose very suddenly, even though they remained negative.

In emerging markets, a sharper and quicker than expected tightening of financing conditions could trigger sell-offs of assets, reversals of capital inflows and a disorderly adjustment in credit markets. The increasing leverage in the private and corporate sectors in several EMEs in recent years accentuates concerns about the impact of a sudden rise in interest rates. Given these risks, uncertainty about the process of exit may partly explain the type of market volatility we have recently observed. The problem is not interest rate increases, which are part of the desired normalisation process, but rather financial

systems' resistance to rapid increases, given the dependence to which the prolonged period of low interest rates has given rise.

To bring about a smooth exit from monetary accommodation, authorities in advanced economies face two types of challenges. The first is how to manage expectations of policy rate setting. When will rates start to rise? How fast will they rise? Or better, how will the increase in rates depend on macroeconomic conditions?

The second challenge is the unfamiliar issue of how to manage the exit from large-scale asset purchases, which have a first-order impact on the term premium. Recent experience suggests that uncertainty about how long large-scale asset purchases will be maintained can lead to volatility and sudden repricing. This concern is particularly relevant for the United States at this time, because of continued improvements in economic conditions this year. Although authorities have stated that they intend to maintain monetary accommodation as long as there is significant economic slack, some market participants fear that such accommodation may be withdrawn sooner than is currently anticipated. Communication is very important, and central banks are better prepared today than they were in previous episodes, but it would be wise to prepare for a difficult exit.

5. Summary and policy implications

Let me summarise and draw *three* general policy implications, recognising that there are significant differences from country to country. Overall, the stock of debt 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, as well as the recent episodes of market volatility, suggests that the vulnerabilities that have been built up in some regions may be significant.

At the same time, indicators of financing conditions and risk appetite suggest that financing conditions have been very easy as a result of unprecedented and sustained monetary accommodation. Such global accommodation has pushed down yields in global bond markets to the point where investors are *paying* a term premium rather than *receiving* one. It may also have contributed to delays in balance sheet repair in the most affected economies, and possibly to credit booms and late financial cycle risks. These risks are complicated further by the challenges of exiting from monetary accommodation.

In terms of *economic 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 (repair and reform) 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 in those countries can use the current conditions to continue strengthening their financial systems. This requires repairing balance sheets, improving the stability of financing and making further progress in financial regulation reform.

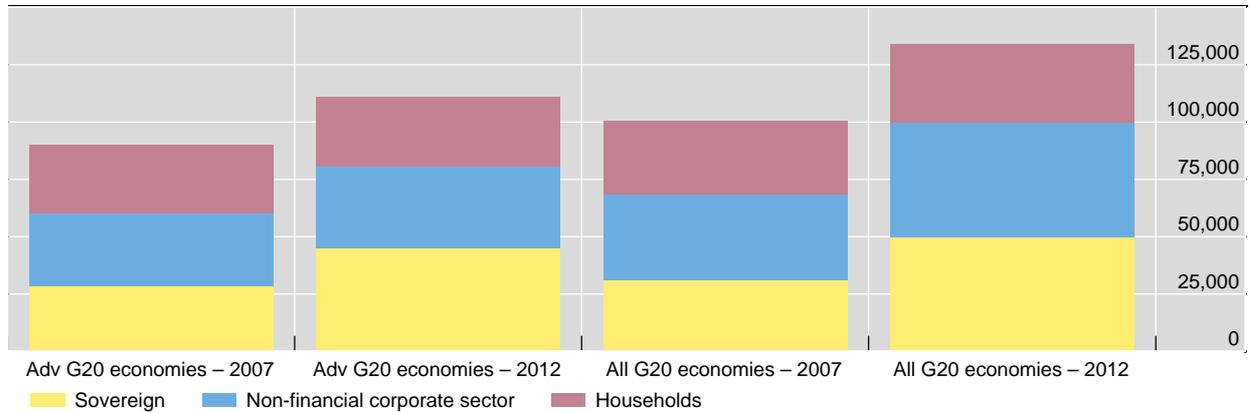
Finally and more broadly, authorities and market participants, including those in EMEs, must recognise the challenges inherent in the inevitable and desirable normalisation of interest rates. This includes taking steps to gain or preserve room for manoeuvre in other areas, such as fiscal policy. These steps may help reassure and stabilise markets as exit policies are implemented.



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. All G20 economies also include: China, India, Indonesia, Mexico and Turkey.

Sources: IMF; BIS calculations.

Fiscal positions¹

Table 1

	Overall balance ²			Underlying government primary balance ³			Gross debt ²		
	2009	2013	Change	2009	2013	Change	2009	2013	Change
Advanced economies	-9.5	-5.2	4.2	-5.9	-2.2	3.6	103.7	126.0	22.4
United States	-11.9	-5.4	6.6	-7.9	-3.1	4.8	88.8	109.1	20.3
Euro area	-6.4	-3.0	3.4	-2.6	1.6	4.2	88.3	106.4	18.0
Japan	-8.8	-10.3	-1.4	-7.0	-8.5	-1.6	188.7	228.4	39.7
Emerging Asia	-5.2	-4.1	1.2	-3.3	-1.5	1.8	35.6	35.4	-0.2
China	-3.1	-2.1	0.9	-2.2	-0.3	1.9	17.7	21.3	3.6
India	-10.1	-8.3	1.8	-5.8	-4.3	1.5	75.0	66.4	-8.6
Emerging Latin America	-3.7	-1.6	2.0	0.6	1.4	0.8	50.7	49.8	-0.9
Brazil	-3.1	-1.2	1.9	2.8	3.3	0.4	66.9	67.2	0.2
Chile	-4.1	0.1	4.2	-4.3	-0.5	3.8	5.8	11.1	5.3
Colombia	-2.8	-1.0	1.8	-0.1	0.5	0.6	36.1	32.0	-4.2
Mexico	-4.7	-3.1	1.6	-1.2	-0.5	0.7	44.5	43.5	-1.0
Peru	-2.1	1.8	3.9	0.6	2.3	1.7	28.4	17.5	-11.0

¹ For the general government. ² As a percentage of GDP. OECD estimates for advanced economies and Korea, otherwise IMF.

³ As a percentage of potential GDP; excluding net interest payments. OECD estimates for advanced economies and Korea, otherwise IMF. OECD estimates are adjusted for the cycle and for one-off transactions and IMF estimates are adjusted for the cycle.

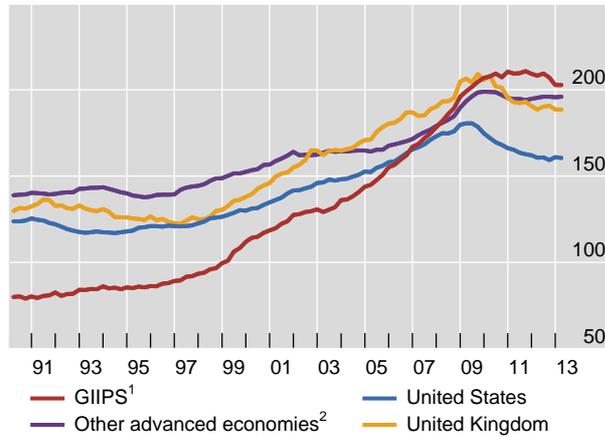
Sources: IMF; OECD.

Credit to the private sector

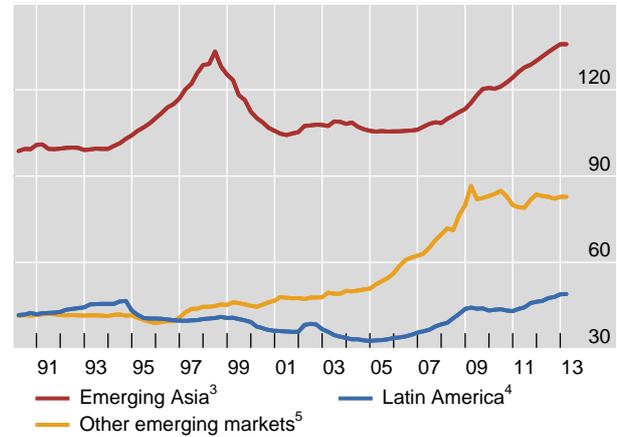
As a percentage of GDP; unweighted averages

Graph 2

Advanced economies



Emerging market economies

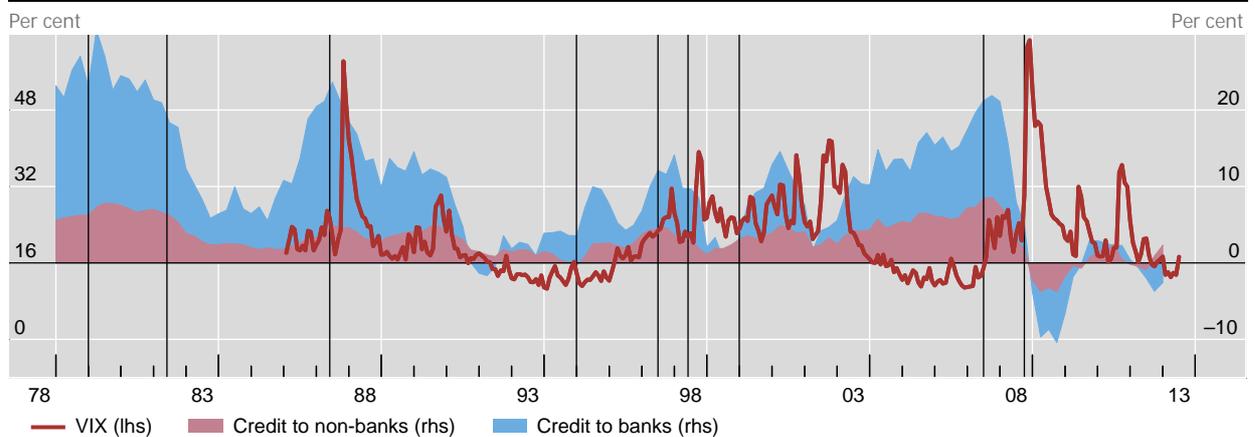


¹ Greece, Ireland, Italy, Portugal and Spain. ² Belgium, Canada, Denmark, France, Germany, Japan, the Netherlands, Norway and Sweden. ³ China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Singapore and Thailand. ⁴ Argentina, Brazil, Chile, Colombia, Mexico and Peru. ⁵ The Czech Republic, Hungary, Poland, Russia, South Africa and Turkey.

Sources: National data; BIS calculations.

Year-on-year rate of growth in international claims¹

Graph 3



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.

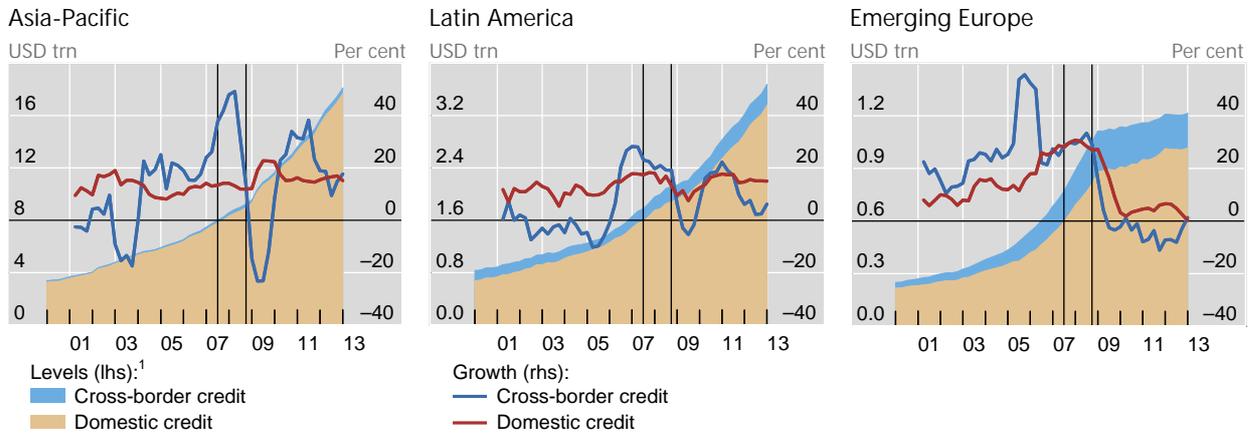
¹ Includes all BIS reporting banks' cross-border credit and local credit in foreign currency.

Sources: Bloomberg; BIS locational banking statistics by residence.

Global bank credit aggregates, by borrower region

At constant end-Q4 2012 exchange rates

Graph 4



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

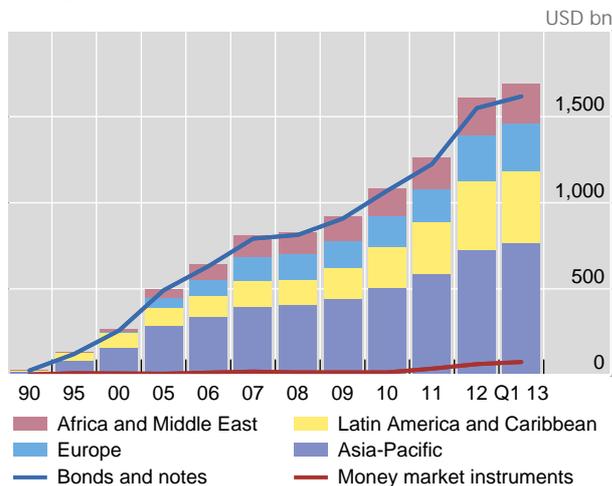
¹ Total bank credit to non-bank borrowers (including governments), adjusted using various components of the BIS banking statistics to produce a breakdown by currency for both cross-border credit and domestic credit.

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

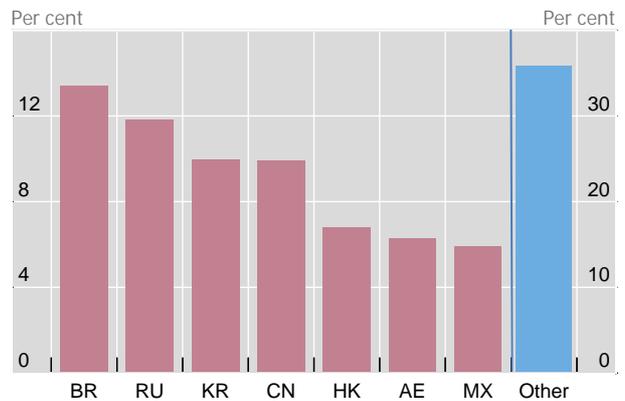
International corporate debt securities outstanding issued by EME firms¹

Graph 5

By region and type of instrument



By country, end-2012



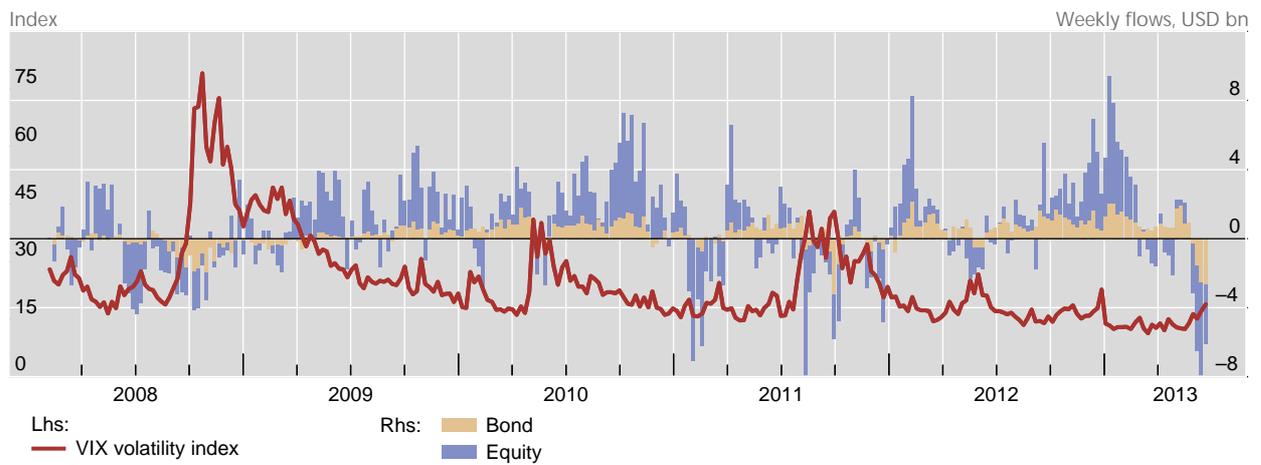
AE = United Arab Emirates; BR = Brazil; CN = China; HK = Hong Kong SAR; KR = Korea; MX = Mexico; RU = Russia; Other = other EMEs.

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 6



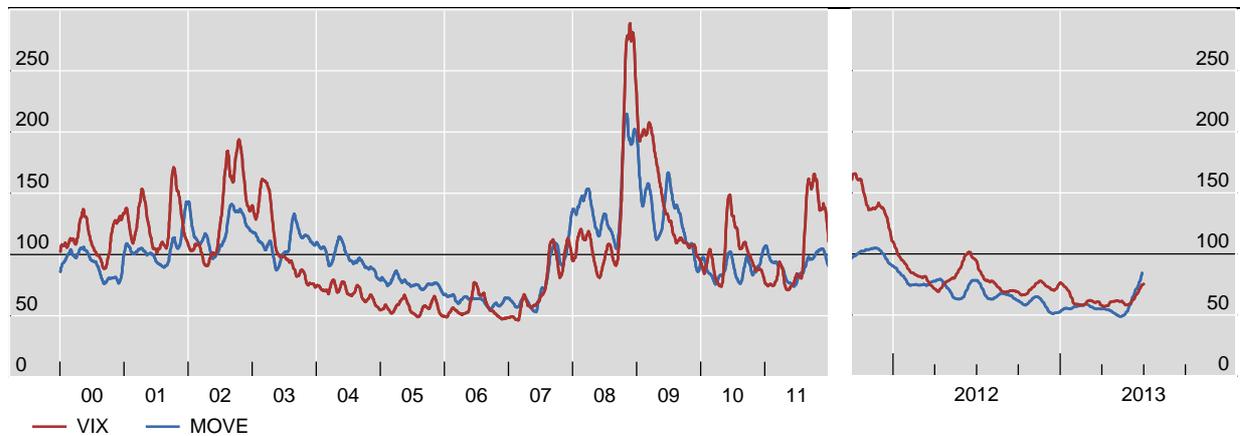
¹ VIX = Chicago Board Options Exchange Market Volatility Index, a measure of the implied volatility of S&P 500 index options.

Sources: Bloomberg; EPFR.

VIX and MOVE indices¹

1 Jan 1991 = 100

Graph 7



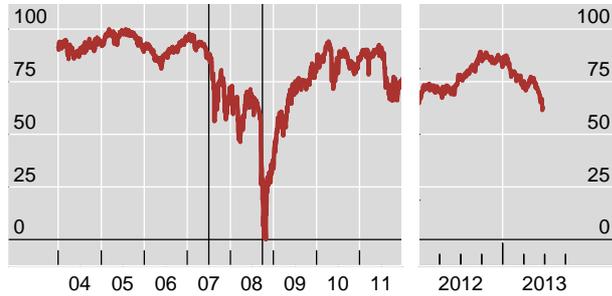
¹ VIX = Chicago Board Options Exchange Market Volatility Index, a measure of the implied volatility of S&P 500 index options. MOVE = yield curve-weighted index of the normalised implied volatility on one-month Treasury options.

Source: Bloomberg.

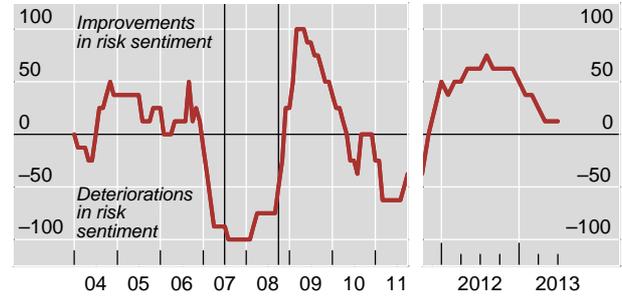
Risk appetite, market positioning and valuation¹

Graph 8

Composite indicator of risk appetite²



Risk appetite diffusion index³



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

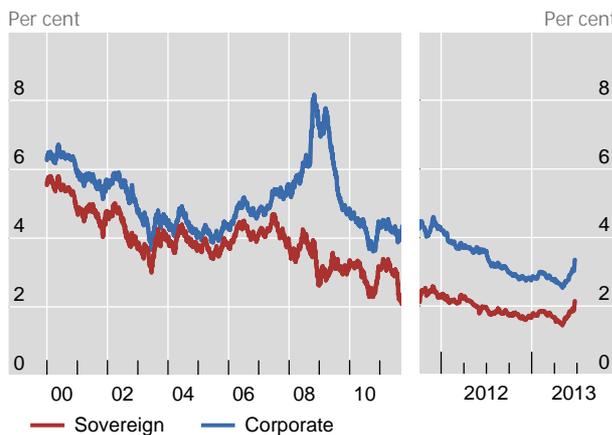
¹ Principal component of risk appetite indicators. An upward movement indicates an improvement in risk appetite. ² Principal components of the following price indicators: VIX; DAX implied volatility; spreads between S&P financial stocks and S&P public sector stocks; US small-cap stocks; MSCI Emerging 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.

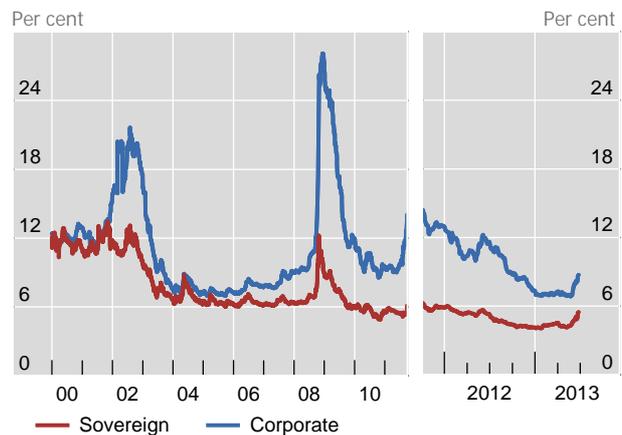
Financing conditions: bond yields for sovereigns and firms

Graph 9

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



Emerging market economy yields



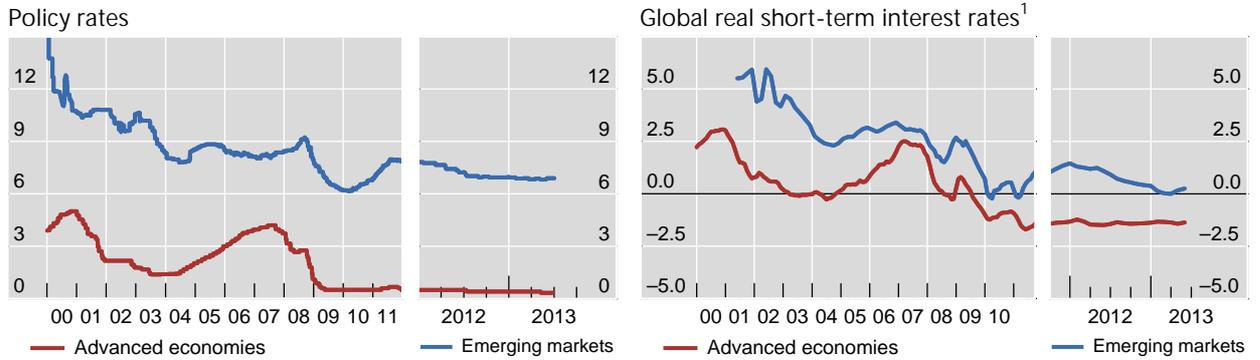
Source: Bank of America Merrill Lynch.



Interest rates in advanced and emerging market economies

In per cent

Graph 10



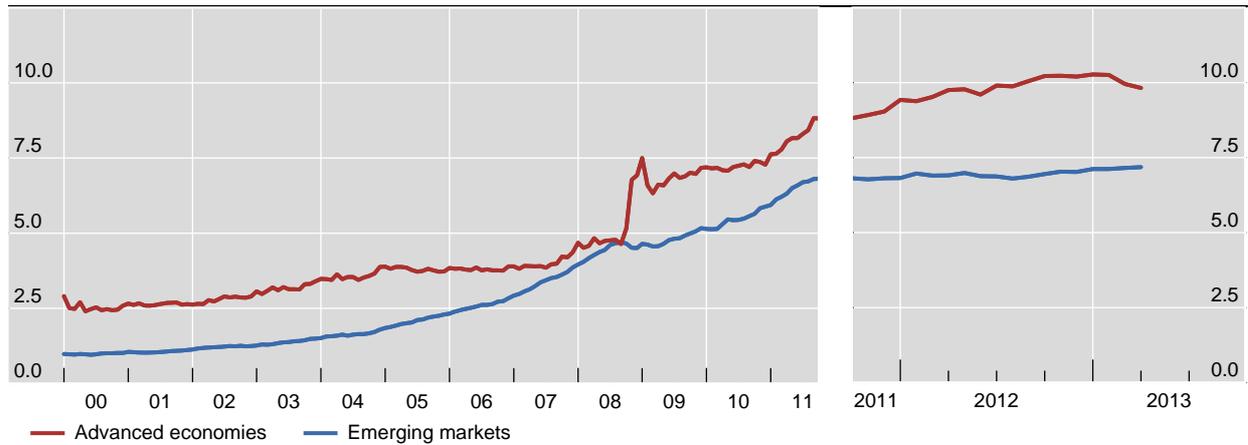
¹ Based on 12-months-ahead averages of inflation expectations.

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

Central bank assets

In trillions of US dollars

Graph 11

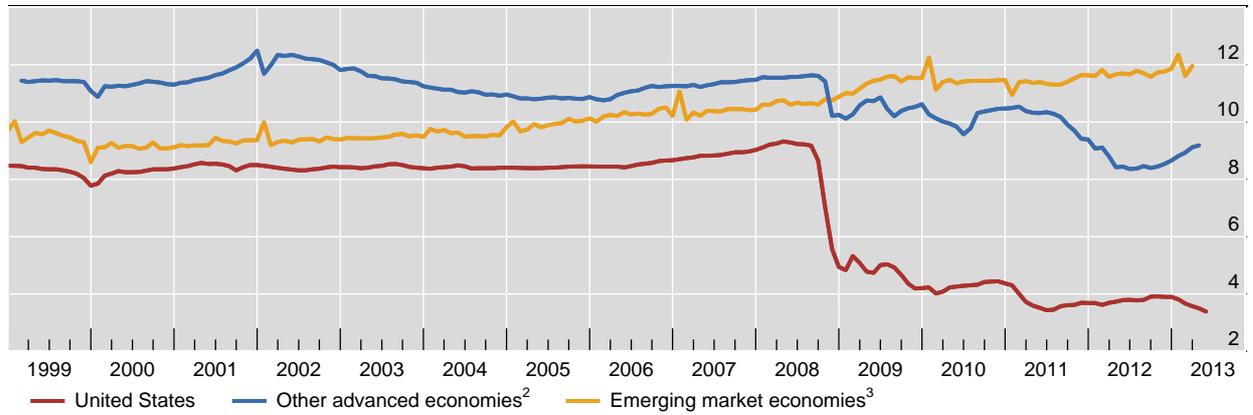


Sources: IMF, *International Financial Statistics*; Datastream; BIS calculations.

Money multiplier¹

Broad money over monetary base

Graph 12



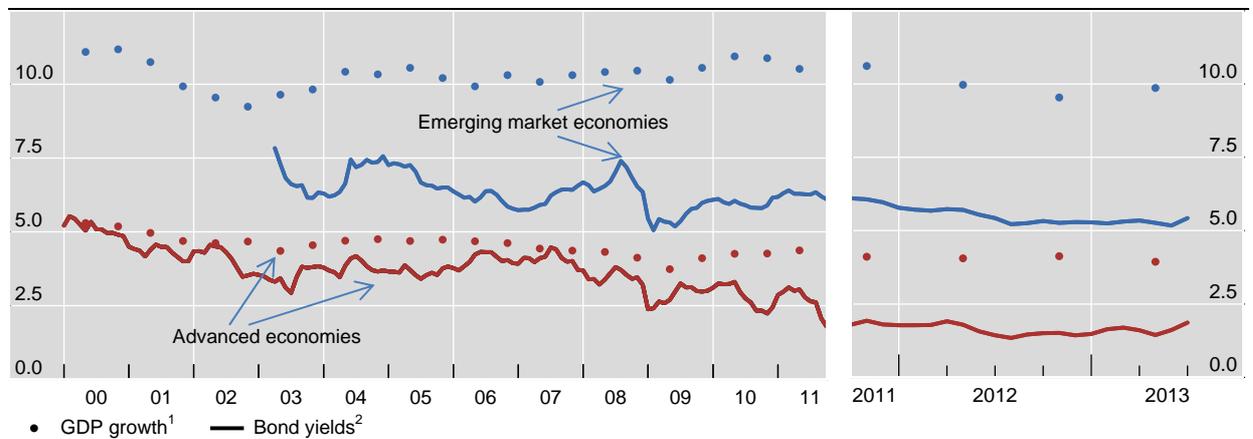
¹ Weighted averages based on 2005 GDP and PPP exchange rates. ² Canada, the euro area, Japan and the United Kingdom. ³ Brazil, China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Mexico, the Philippines, Poland, Russia, Saudi Arabia, Singapore, South Africa, Thailand and Turkey.

Sources: IMF; Datastream; national data.

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

In per cent

Graph 13



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

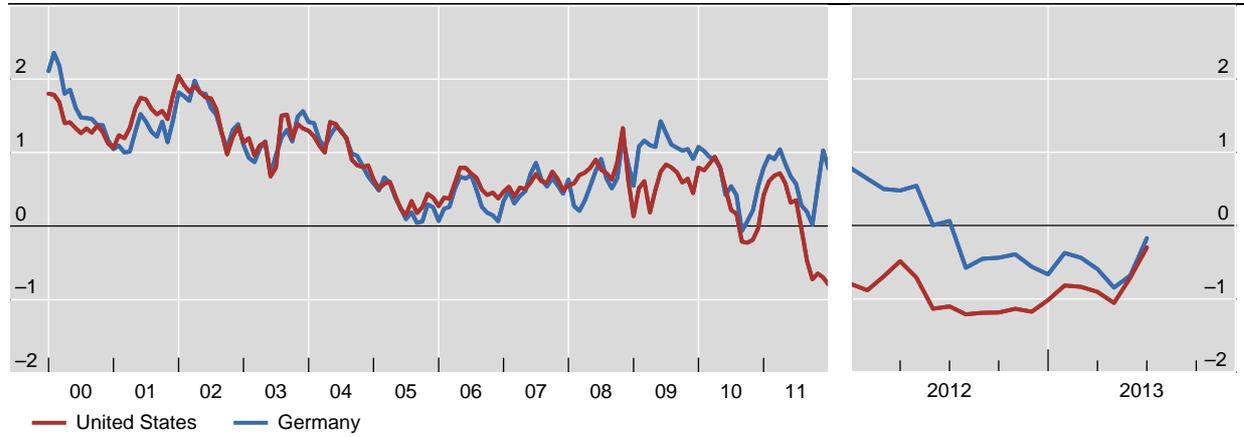
Sources: Bloomberg; Consensus Economics; Datastream; national data; BIS calculations.



Ten-year nominal term premium¹

In per cent

Graph 14



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. June 2013 observations are partially based on estimates.

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

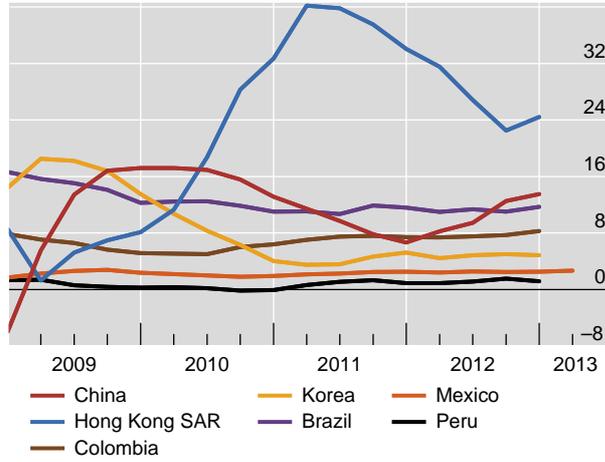


Late-cycle risks

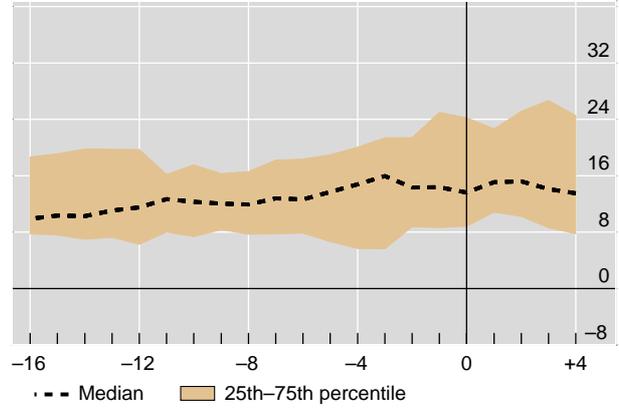
Graph 15

Credit-to-GDP gap¹

Current developments

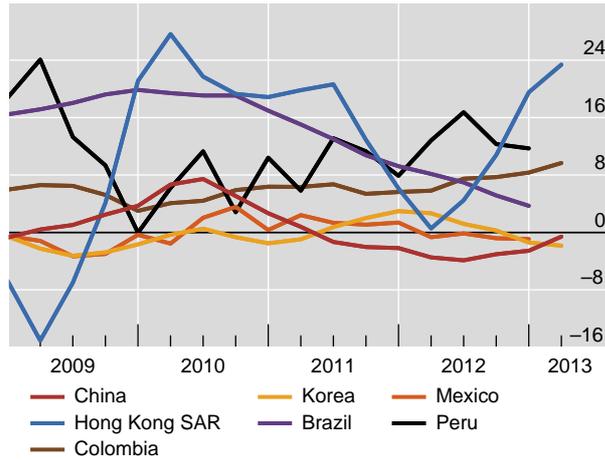


Typical pre-crisis developments²

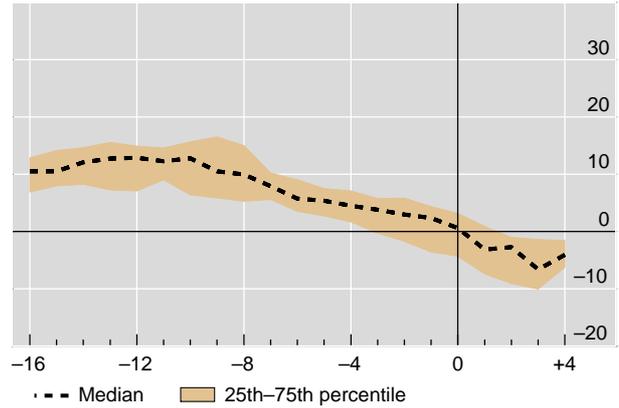


Real property price growth

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.