



Global liquidity: where it stands, and why it matters

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1. Introduction

Thank you for inviting me. I am honoured to be speaking here at the Goethe University as you celebrate your one hundredth year. This University has become a global centre of intellectual achievement in many fields, from physics to medical research to philosophy. And of course, under the leadership of Volker Wieland and other scholars, and through the work of the Institute for Monetary and Financial Studies, the University is looked to as a centre of expertise in monetary policy and financial stability, as well as many other areas of economics. So I'm grateful for the opportunity to share some thoughts with you today on how we can monitor and address the challenges facing the global financial system.

Liquidity is an elusive and challenging term with many uses and definitions, in terms of both quantities and prices. For our purpose, let me define it as the "ease of financing" in the global financial system. What determines "ease of financing"? To be sure, there is official liquidity created as a consequence of central bank actions. But more broadly, it is market participants' perceptions and attitudes towards risk, valuations and cash flows that drive credit extension and liquidity. The important point here is that these shifts in risk-taking and credit creation can have monetary and financial stability consequences as well as real economy consequences.

Just in the last twenty years, a long list of advanced and emerging economies have experienced episodes where imbalances are accumulated for some time and a sudden shift in market sentiment leads to turbulence that disrupts the functioning of the financial system, ultimately leading to prolonged recessions and unemployment. Over the last several weeks, not to mention during the geopolitical tensions of the last few days, we've been reminded how quickly sentiment can change in financial markets. Periodic swings in risk sentiment are nothing new. But they always leave us somewhat puzzled – it's never clear why a given piece of news sometimes causes radical shifts in market prices and financial flows, while at other times similar news leaves the markets unaffected.

The analysis of global liquidity is important for a number of reasons. First, the interaction between financial booms and busts – what we call the financial cycle – and the real economy deserves more attention than it has received in the past. Even today these implications are not fully understood and internalised in our thinking and models. Global liquidity excesses can contribute to the endogenous build-up of vulnerabilities, and liquidity shortages can have important implications for stability and growth.

A second underestimated factor is the growing impact of global conditions on domestic economies and financial systems. In an interconnected world, global conditions – the global financial cycle – have a growing economic impact on domestic economic conditions. Policymakers need to take these feedback effects into consideration. More work is needed to internalise all these interdependencies and spillovers in a consistent framework.



Moreover, financial structures and flows are evolving. We are entering a new phase of global liquidity. Shocks can cross borders even when cross-border capital flows do not seem unusually high. In this new phase, dynamism comes from capital markets and the search for yield more than from the leverage cycle of global banks. Global liquidity analysis is a vehicle to help us think about these factors. We need to understand, to monitor and to address global financial cycles and liquidity risks as we formulate domestic macroeconomic policies. Our objective is to ensure open and adequate financing of the global economy, while addressing financial excesses at an early stage, in order to lay the foundations for long-term, sustainable growth.

In my remarks today I shall try to set out a framework that could be useful in thinking about these questions. I will focus on how financial risk-taking, asset prices and credit expansion tend to move together across countries, even when these countries are at different stages of the macroeconomic business cycle.

I will first try to set out what we know about these patterns, including the indicators that we at the BIS find to be useful for tracking and analysing them in real time. Next I will set out where I think things stand right now in the global financial system in terms of risk-taking and global liquidity. I will go through some of the main features of the new phase of global liquidity. And I will conclude with some implications for policymakers.

The message is that, notwithstanding efforts in some parts of the world to begin normalising policy, global liquidity conditions remain accommodative. We need to be aware of the new risks in this new phase of global liquidity. At some point, more normal conditions will return and should be welcomed. But both policymakers and the private sector will need to be prepared for the adjustment. This means watching out for vulnerabilities that may have built up while conditions were accommodative. It also means taking action to build resilience in the financial system. All types of policies – not just monetary policy – need to play a part in striving for economic growth that is sustainable. With this longer-term view in mind, policymakers should stay the course despite the inevitable bumps in the road associated with policy normalisation, though they should of course also remain alert to unexpected events and circumstances.

2. Understanding global liquidity

2.1 Concept

As I said, the concept of global liquidity refers broadly to the ease of financing in the international financial system. Thus, it encompasses the ability of banks and capital markets to fund real and financial assets. It is therefore a broad concept that captures a wide range of channels. It includes the capacity of corporations to fund investments, as well as the ability of intermediaries that participate in the securitisation chain to access the necessary funding to originate loans, to acquire loans for packaging into securities, and to finance various kinds of guarantees. Global liquidity conditions also affect the ability of hedge funds and other traders to finance their hedges and speculative positions.

Thanks to financial market integration, the degree of ease of financing tends to be correlated across geographies and asset classes. If rates are too high in one currency, financial market participants might seek funding in another.

Financing, of course, is necessary to facilitate investment and growth. But we've also learned in recent years how ample and low-cost funding in global financial markets can contribute to the build-up of financial system vulnerabilities. These take the form of high leverage in specific sectors, mismatches in currencies and maturities, weak underwriting standards, and the misallocation of investment to unproductive uses.



In other words, the ease of financing has very much a life of its own. It waxes and wanes with changeable perceptions of risk and valuations. It surges and collapses with risk appetite, and leveraging and deleveraging by private institutions. It is endogenous and tends to behave procyclically.

The financial cycle tends to have a longer duration than the conventional macroeconomic business cycle. Imbalances are often difficult to detect with certainty and tend to build up over a very long time. However, at some unpredictable point, they will expose the financial system to significant stress. Relatively small shocks can then threaten the stability of the system as a whole, as mismatches are exposed, positions unwound and investors flee to safety. A phase of risk-shedding ensues. And it lasts until balance sheets have been restored to health and market participants are ready to take on risk once again.

2.2 International transmission channels

These phases of the financial cycle are often synchronised across countries. This results from a number of channels of influence.

For one, GDP growth, and hence the demand for credit, tends to be correlated across countries, through trade and direct investment links.

A second set of channels relates to flows of funds. One example derives from the search for low-cost financing. When funding is cheaper elsewhere than at home, this encourages direct cross-border lending and foreign currency-denominated loans within a domestic market, including by global banks through local branches or subsidiaries. These activities effectively transmit financing conditions across national borders. Another example of the funding channel involves the incentives of asset managers. Fund managers chasing a common benchmark will often buy the same set of assets. Using similar volatility indicators to adjust performance for risk, fund managers may overinvest in assets that are temporarily viewed as low-risk – only to dump these assets when market volatility causes measured risk indicators to rise.

A third set of channels relates to asset price changes, including currency movements. The prices of similar kinds of risk tend to move in the same direction in different markets, and there also seems to be a global risk premium that is priced into many different global asset classes. Market participants can adjust their exposures, and thereby affect prices, through hedging transactions that do not show up in our data as gross or net flows.

A final channel relates to the role of policy, and especially monetary policy. Even in economies where monetary policy is independent and the exchange rate floats, central banks can be cautious about allowing their policy rates to get too far out of line with those of their peers, particularly the largest ones. This could reflect concerns about inducing unwanted currency movements or capital flows. There is also strong evidence that inflation has a common component worldwide. So there is a tendency for monetary policies in different countries to move together over long horizons.

But the influence of monetary policy on private sector liquidity is not one to one. Ultimately, the generation of private liquidity depends on the extent to which market participants translate the conditions set by monetary policy rates into actual financing costs. This in turn will depend on many other factors, including risk appetites, prudential regimes, and macroeconomic conditions.

2.3 Indicators

These considerations suggest that there will be no single measure of global liquidity conditions. Such conditions reflect actions by the private sector, including banks and non-banks. And for any given national economy it has both domestic and international components. Our indicators need to include



price and quantity measures, measures of investor risk appetite, and both global and domestic credit aggregates.

With these considerations in mind, we need to go beyond the traditional indicators of interest in the analysis of the global financial system.

For one, we need to look at *gross* flows. For example, in the years leading up to the global financial crisis of 2007–09, a great deal of attention was paid to current account imbalances, ie to *net* capital flows, and particularly to the deficit of the United States and the surpluses run by a number of Asian and oil-exporting countries. Europe was less of a concern because its external position was essentially balanced in net terms. The fall of US housing prices, however, hurt European banks, because they had been an important source of financing to the US market on a *gross* basis. This acted as a key channel of contagion from the United States to Europe. This isn't to say we shouldn't also monitor current account balances. It's just that they tell us only a small part of the story – they show us only the tip of the iceberg.

Second, along with *flows*, we also need to pay attention to the *stocks* of financing on sectoral balance sheets and their composition. The recovery after the most recent financial crisis has been slower than past recoveries, because of the substantial stock of debt on private and public sector balance sheets in many economies. And it is in the stocks that the vulnerabilities grow.

Third, *cross-border* financing deserves special attention. Open capital markets ordinarily promote efficiency and growth. But cross-border flows have also tended to be more volatile than domestic financing flows, amplifying both the build-up of credit and the subsequent crunch. It is not easy to say what is cause and what is effect here, since a rapid growth of cross-border credit usually occurs in tandem with excessive credit creation at the domestic level. When domestic credit demand outpaces the local growth of deposits and other funding, a cross-border flow can enable continued growth. Thus, we can use data on cross-border flows to indicate developments in global liquidity that deserve particular attention.

And fourth, we need to look at the *consolidated* global balance sheets of banks and non-financial corporations in order to understand the exposures and pressures facing financial systems. In a world where banks and other companies bring together branches and subsidiaries in many jurisdictions, the banking system of one country might be heavily affected by financial conditions in another. Our standard statistics, such as balance of payments or flow of funds statistics, tend to be based on a residence principle and do not pick up these connections.

3. The current financial environment and associated risks

With these considerations in mind, let's look at what some of these indicators can tell us about the past few years, and where we stand now.

3.1 Debt stocks remain high but divergences exist across economies, both in levels and in rates of credit growth

Let me start with credit stocks and flows. As you can see in the left-hand panel of this graph (Graph 1), stocks of private debt in advanced economies remain high, despite some deleveraging in a number of countries, mainly in the household sector.

But in the right-hand panel, it is clear that the picture for emerging economies is rather different. Private sector debt has risen rapidly in many of these countries, both before and after the crisis. The debt *stocks* remain relatively low, compared with advanced economies, in many but not all cases.



And at least some of the upward trend reflects the deepening of financial intermediation, part and parcel of long-term economic development. However, credit in emerging economies has been rising very rapidly, often well beyond historical trends (Graph 2, right-hand panel). In several countries this has been accompanied by rapid increases in property prices (Graph 2, left-hand panel). We know from experience that any rapid increase in credit, even when it starts from a low level, is likely to involve its share of poor lending decisions. These usually become apparent when the boom turns to bust.

If we add public debt to the picture, the numbers for total debt increase substantially. Total debt (households, non-financial corporations and governments) in the countries of the G20 has increased since 2007 by more than 35%, reaching about 250% of GDP. Levels in emerging markets are substantially lower than in advanced economies, particularly in sovereign debt.

It's helpful to understand broad trends in credit in terms of two main channels of credit creation: bank lending and issuance of tradable debt. While the pricing of these two kinds of credit is usually closely aligned, the populations of borrowers and lenders differ and respond to different incentives. These differences become especially important in times of market stress. As we'll see in a moment, bond market finance has become the most dynamic source of credit.

Before talking about developments in bond finance, let's first take a look at the evolution of bank credit in different regions, distinguishing between domestic and cross-border bank credit (Graph 3). In this graph, the red lines are the year-on-year growth in domestic bank credit, while the blue lines show the growth in the cross-border component. The first point I want you to take away is that cross-border bank credit growth is generally more volatile than its domestic counterpart. Note in particular that cross-border bank credit grew rapidly ahead of the crisis and fell sharply during the crisis (indicated by the vertical lines in each panel). The second takeaway is that there are notable differences across regions in what happens afterwards. Cross-border lending has generally remained low in most regions. But it is rising rapidly in the Asia-Pacific region, as you can see in the lower left-hand panel. You can also see that the stock of cross-border debt (the blue area) is still quite low for the Asia-Pacific countries – but this rapid growth bears watching.

3.2 We are in a new phase of global liquidity

It's helpful to think about the growth and composition of financing in recent years in terms of three distinct phases. First, in the years preceding the crisis, credit of all kinds grew rapidly, but bank credit took on particular importance. You can see from this graph the hill that was building up before 2007 – the red areas represent bank credit to non-banks and the blue credit to banks (Graph 4). This is one example of a more general pattern: throughout the period shown in the graph, bank credit has tended to rise at times when global investors' aversion to risk, here represented by the VIX index of stock market volatility, is low. Then, in the second phase, during the crisis years 2007–09, banks in the advanced economies deleveraged rapidly and credit as a whole fell relative to GDP. The hill in the graph turns into a valley. And now, in the third and most recent phase, international bank credit remains muted, particularly interbank credit (the blue area).

Since the crisis, while bank credit has been subdued in aggregate, the dynamism in international liquidity has moved to capital markets (Graph 5). You can see in the left-hand panel of this graph how debt issuance by non-financial corporates in the advanced economies (the blue bars) has been strong, while financial institutions in these regions have tended to pay down their traded debt (the yellow bars). For emerging economies, meanwhile, both banks and non-banks have made extensive use of international debt markets, as you can see in the right-hand panel. We don't have as much detailed information linking borrowers and lenders in bond markets as we do for bank credit. But we do know that much of this issuance is taking place offshore – notably by financial and non-financial corporates using subsidiaries in international centres such as Hong Kong, the Caribbean, London or New York. We



can see this also in the fact that issuance by *nationals* of various emerging economies – the red lines in this graph – has risen much more rapidly than issuance by *residents* of those economies (Graph 6).¹

The shift from bank to bond finance, and the associated increase in corporate bond issuance, are welcome in that they have contributed to diversification in the sources of finance. But these developments may also give rise to new, still poorly understood risks. The behaviour of asset managers and intra-firm cross-border financing activities merit more attention.

3.3 Accommodative conditions and the beginning of normalisation

Along with quantity indicators such as the ones shown so far, it is also useful to listen to the message from prices (Graph 7). Despite some tightening of conditions in emerging markets, where both short- and long-term interest rates have gone up, global financial conditions remain accommodative.

The top right-hand panel looks at the term premium – that is, the difference between long-term government bond yields and the expected short-term yields over the same time period. In 2012 and much of 2013 these were negative, as asset purchases by central banks made private investors desperate for duration. A negative term premium on US Treasury notes or on German bunds means that investors accept a lower return than is expected on the series of rolled-over short-term bills in order to hold a longer-term instrument. This is very unusual. The term premium has now crept above zero, but it is still very low by historical standards. The lower panels summarise a range of risk appetite indicators from equity, bond and currency markets in advanced and emerging economies. Despite recent market turbulence, these remain mostly at the top of their recent ranges.

Taken together, these price indicators suggest that, despite the recent turbulence, investors are still moving out of safe, long-term assets and into riskier ones. This is good news to the extent that it indicates that the strategies of the major central banks are having their desired effect, namely reversing the flight to safe assets. But one wonders whether markets are now pricing all of the relevant risks at a time when the macroeconomic environment remains uncertain.

This brings us back to the question of whether, and in what ways, market participants are prepared for monetary policy to return to more normal settings. By this I mean an increase of policy rates from their current very low levels, and eventually actions by central banks to reduce the size of their balance sheets. Such a normalisation is increasingly justified by the progress of the recovery. However, it is likely to be accompanied by uncertainty, reassessments by markets and shifts in risk appetite. These shifts, as much as changes in the actual level of policy rates, can have important knock-on effects on financial systems.

Even if the large public and private debt stocks in advanced economies are stabilising, it remains the case that many governments and households in these countries, and some highly leveraged corporates, are exposed to higher nominal interest rates. Higher borrowing costs could themselves contribute to higher debt stocks, threatening sustainability. In some cases we should be concerned about rollover risk, that is, the possibility that short-term and maturing medium-term debt cannot be refinanced, putting borrowers under stress.

¹ By the way, standard balance of payments statistics look at credit flows on a residence basis, which means they may miss the exposures created by this kind of offshore issuance. Even if balance of payments data do not miss the exposures, they may misclassify them: for instance, if an offshore financing subsidiary sends the proceeds of a bond issue home to the parent, this may register as a direct investment rather than a debt inflow. This illustrates why it is important to look beyond the traditional balance of payments based approach when we try to monitor and to analyse risks in the global financial system.



Emerging economies are also exposed to these risks. Some authorities in emerging markets have responded to the turmoil by raising rates to defend their currencies, further increasing the pressure on borrowers. And local currency-denominated bond yields in emerging markets have generally risen farther than foreign currency yields, as foreign investors have learned that domestic currency bonds provide less diversification than they may have expected.

Furthermore, in some economies, including some of the emerging markets as well as some advanced economies which were less affected by the recent crises, we are seeing signs characteristic of the late stages of the financial cycle. These include worsening loan quality and a pervasive underpricing of risk. As I said earlier, any rapid, sustained expansion of credit, even in a fast-growing economy or from a very low base, is likely to include its share of bad lending decisions. These concealed problems accumulate the longer the expansion goes on – and they come to the surface when risk appetites change and easy financing disappears, as is likely in an environment of tighter monetary policy.

4. Implications for policy

Communication and cooperation

In this new phase of global liquidity, as central banks return prudently to more normal policy settings in an unsynchronised way, it is crucial that they do everything they can to manage expectations, both about their plans and about the uncertainties and contingencies surrounding their plans. Tighter monetary policy in some advanced economies will be a response to better growth prospects, so ideally the positive impact from the improved outlook would outweigh the negative effects of higher nominal borrowing costs. Central banks will need to show that they are “ahead of the curve”, by basing their actions on forward-looking assessments of the likely evolution of the economy and a good understanding of spillovers to other economies in different phases of the cycle. And they will need to explain the thinking that motivates their actions (and their non-actions), as well as how their policies might change as conditions evolve.

Sustainability over the longer term

At the same time, the move to tighter policy, however well it is communicated, is likely to produce some volatility in financial markets, as expectations shift and portfolios adjust. The events of the last year illustrate how this can happen. The process is not over. Central banks should stay the course of normalisation and not allow themselves to be distracted by the bumpiness associated with this adjustment. They should not be overly concerned by occasional disinflationary pressures – these are often a result of structural change on the supply side, including the consequences of globalisation, and the demand headwinds coming from the debt overhang and incomplete repair of balance sheets.

It's important to remember that monetary policy is only part of the picture. We should use the window of opportunity provided by stronger growth to repair and to reform the financial system and the real economy. Debts need to be paid down, and resolved or restructured where appropriate. Countries need to pursue structural reforms, in order to raise productivity, to enhance potential growth and to improve the ability of the economy to adjust. Fiscal policy should ensure medium-term sustainability, in order to create room for manoeuvre to support growth during structural reform.

Risks and resilience

In terms of global liquidity and the financial cycle, we need to continue to monitor excesses in leverage, risk-taking and credit creation, and to take appropriate action where we see them emerging, both domestically and at the global level. If we fail to take action, we are at risk of returning to the boom-and-bust cycle that has proved so disruptive in the past. Capital and liquidity requirements, along with the



other elements of the regulatory agenda, aim to increase the resilience of institutions and the financial system as a whole. These measures need to be implemented in full and complemented by macroprudential measures, such as actions to address the additional risks posed by systemically important institutions, and steps to reduce excessive risks that may emerge over time in specific sectors such as housing or commercial real estate.

I pointed to the increasing role of bond markets in providing external financing to emerging economies. Bond markets have also taken a more prominent role in *domestic* financing in many countries, as banks correct excessive leverage. The recent rapid growth in bond issuance suggests that the next strains may well originate in capital markets rather than banks. We should be alert to the incentives that could contribute to disruption and instability in markets. The possible interactions of these incentives with the signals of monetary policy merit further analysis by scholars, including those at the IMFS. Another concern is that bond issuance in foreign currencies by emerging market borrowers may give rise to currency mismatches. These are hard to detect and harder to influence when non-financial corporations take them on.

Just as strong policies in these areas promote macroeconomic resilience that can relieve the burden on monetary policy, a sound monetary policy is vital for financial stability. Through its policy rate, the central bank affects the price of leverage throughout the financial system – for both regulated and unregulated entities. In this sense, higher policy rates can “get in the cracks”, in the phrase of Federal Reserve Governor Jeremy Stein, by reducing the incentives for entities of all kinds to take on leverage. This helps to reduce the excesses that characterise the later stages of the financial cycle.

Before the financial crisis, many observers of the global economy commonly spoke of a “great moderation” – a long-term trend towards more stable growth and inflation. It was thought that this trend reflected improvements in our understanding of how sound monetary and fiscal policies can dampen business cycles and build resilience in the macroeconomy. Since then, of course, we’ve seen how quickly stability can give way to instability, as excesses build up in the financial system and contribute to disruptive crises. But we have also learned lessons from this experience. As we improve our understanding of global liquidity and the financial cycle, we can implement micro- and macroprudential policies that can address risks before they get out of hand, reduce the boom-and-bust cycle in the financial sphere, and create the conditions for sustainable, stable growth over the medium and long term.

To conclude, we are now in a new phase of global liquidity and we need to be aware of the new risks. We are also at a juncture where policy normalisation has cautiously started in some parts of the world. A return to more normal conditions should be welcomed. But we need to be prepared for the adjustment. This means watching out for vulnerabilities – not just in banks but also in other financial institutions and in markets – that may have built up while liquidity was abundant. It also means taking timely action to build resilience – at both the micro level and the macro level. All types of policies – not just monetary policy – will need to play a part in this effort. The road to normalisation is likely to have some unavoidable bumps in it, but that should not deter policymakers from carefully heading towards their destination, while remaining alert to unexpected events along the way.



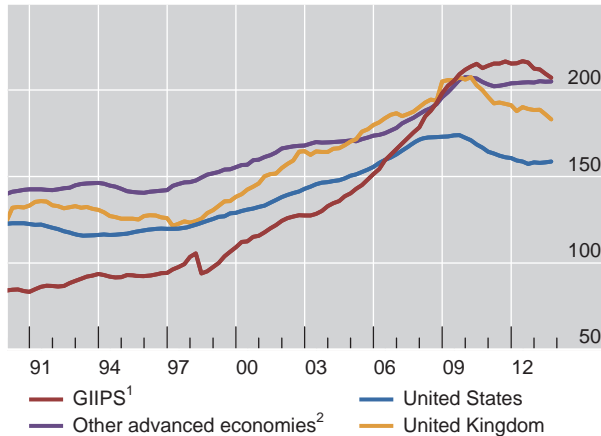
Graphs

Credit to the private sector

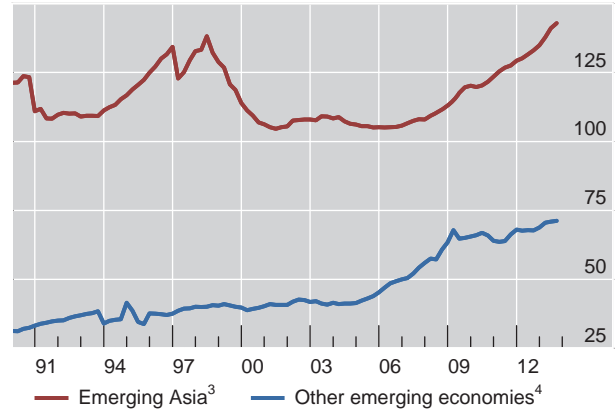
As a percentage of GDP; unweighted averages

Graph 1

Advanced economies



Emerging market economies



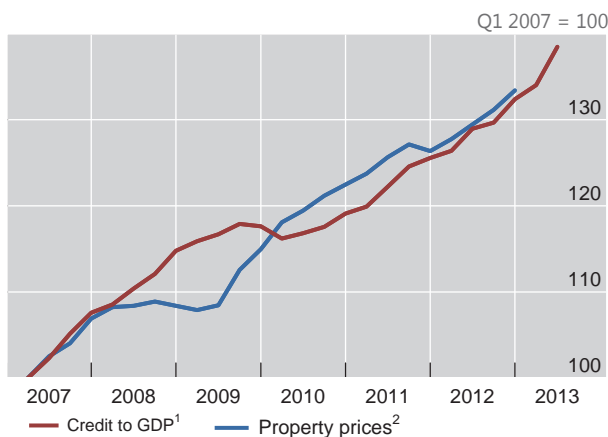
¹ Greece, Ireland, Italy, Portugal and Spain. ² Belgium, Canada, Denmark, France, Germany, Japan, the Netherlands, Norway and Sweden. ³ China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Singapore and Thailand. ⁴ Argentina, Brazil, the Czech Republic, Hungary, Mexico, Poland, Russia, South Africa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

Sources: National data; BIS calculations.

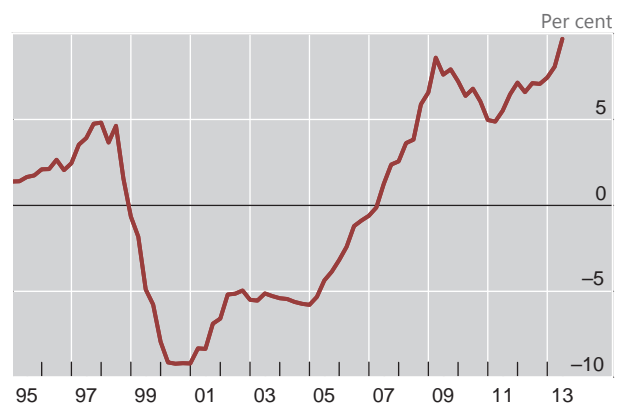
Credit-to-GDP ratios and property prices in emerging economies

Graph 2

Credit-to-GDP ratio and residential property prices



Credit-to-GDP gap³



¹ The index is based on the difference between quarter-on-quarter changes in nominal credit to the private sector and quarter-on-quarter changes in the four-quarter moving sum of nominal GDP. Simple average of Argentina, Brazil, Chile, China, Colombia, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Saudi Arabia, Singapore, South Africa, Thailand and Turkey; Saudi Arabia is excluded before Q1 2009. Bank credit for Chile, Colombia, Peru and the Philippines; total credit otherwise. ² Seasonally adjusted, quarterly averages, in real terms; definitions may differ across economies. Simple averages of Brazil, China, Colombia, Hong Kong SAR, Indonesia, Korea, Malaysia, Mexico, Peru, Singapore, South Africa and Thailand; Thailand is excluded before Q2 2008. ³ The credit-to-GDP gap is the deviation of the credit-to-GDP ratio from a one-sided long-term trend. The smoothing parameter lambda is 400,000. Simple average of total credit for Argentina (until Q2 2012), Brazil (from Q2 1995 to Q4 2012), Chile (from Q4 2008), China (from Q3 2001), the Czech Republic (from Q3 1995), Hong Kong SAR, Hungary (from Q3 1996), India (from Q4 1997), Indonesia, Korea, Malaysia, Mexico (until Q2 2012), Poland (from Q3 1996), Russia (from Q1 1996), Singapore, South Africa, Thailand and Turkey.

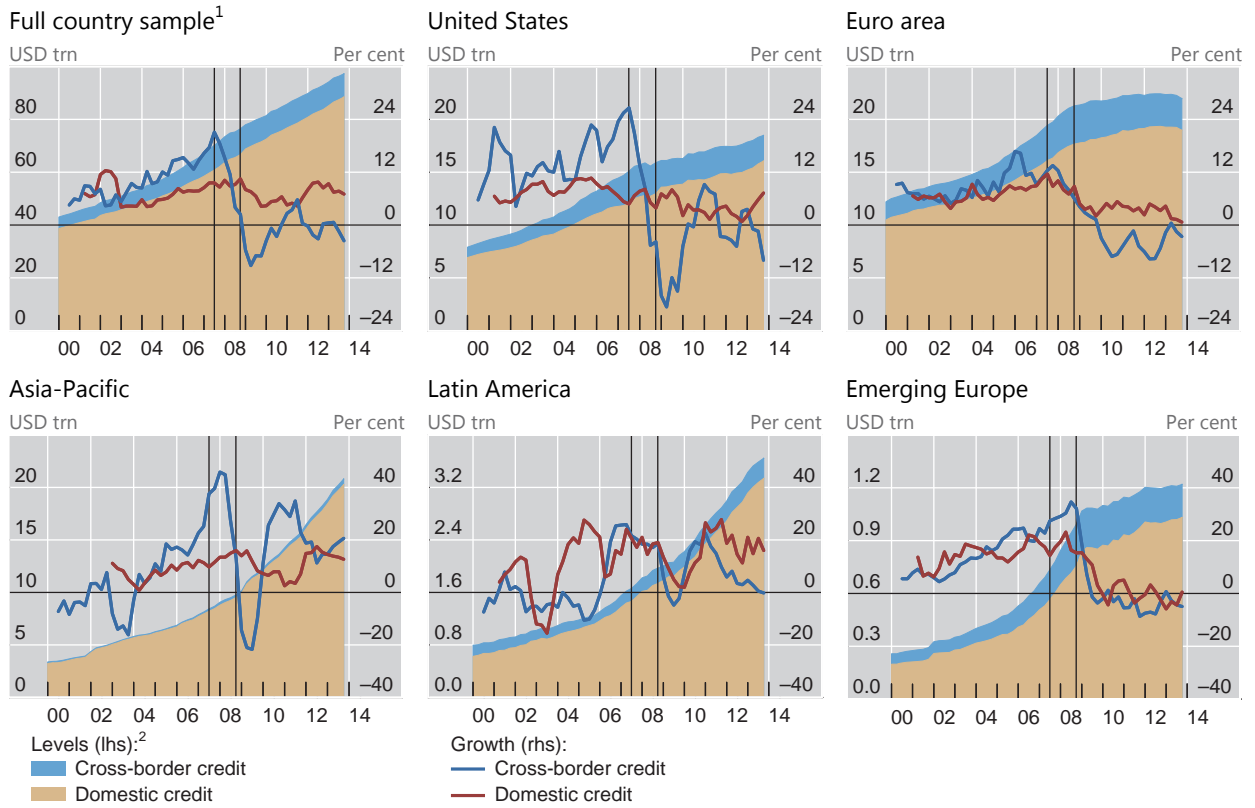
Sources: IMF, *International Financial Statistics*; Datastream; national data; BIS calculations.



Global bank credit aggregates, by borrower region

At constant end-Q1 2013 exchange rates

Graph 3



The vertical lines indicate: 2007 beginning of global financial crisis; 2008 collapse of Lehman Brothers.

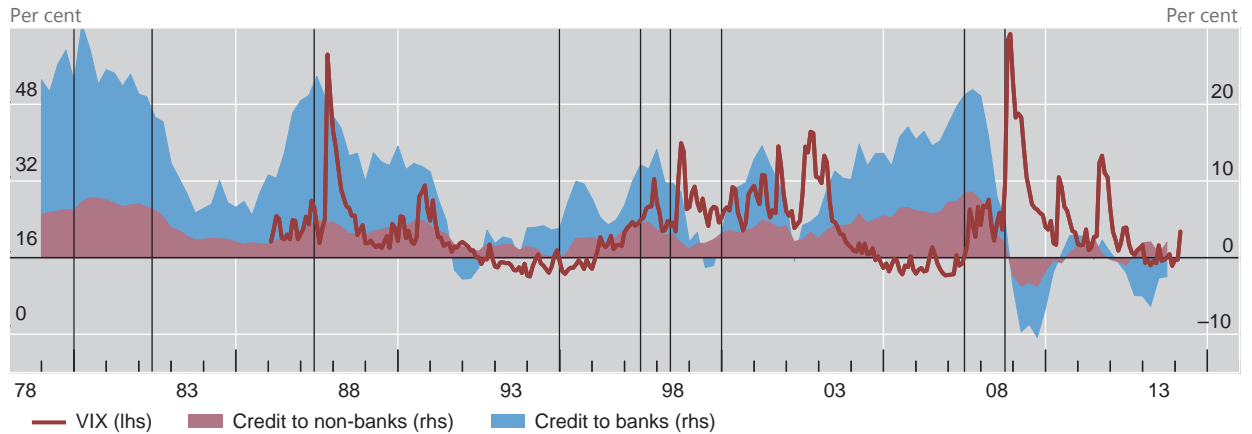
¹ Aggregate for a sample of 56 reporting countries. ² Total bank credit to non-bank borrowers (including governments), adjusted using various components of the BIS banking statistics to produce a breakdown by currency for both cross-border credit and domestic credit.

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



Year-on-year rate of growth in international bank claims¹

Graph 4



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 LTCM; 2000 Nasdaq peak; 2007 beginning of global financial crisis; 2008 collapse of Lehman Brothers.

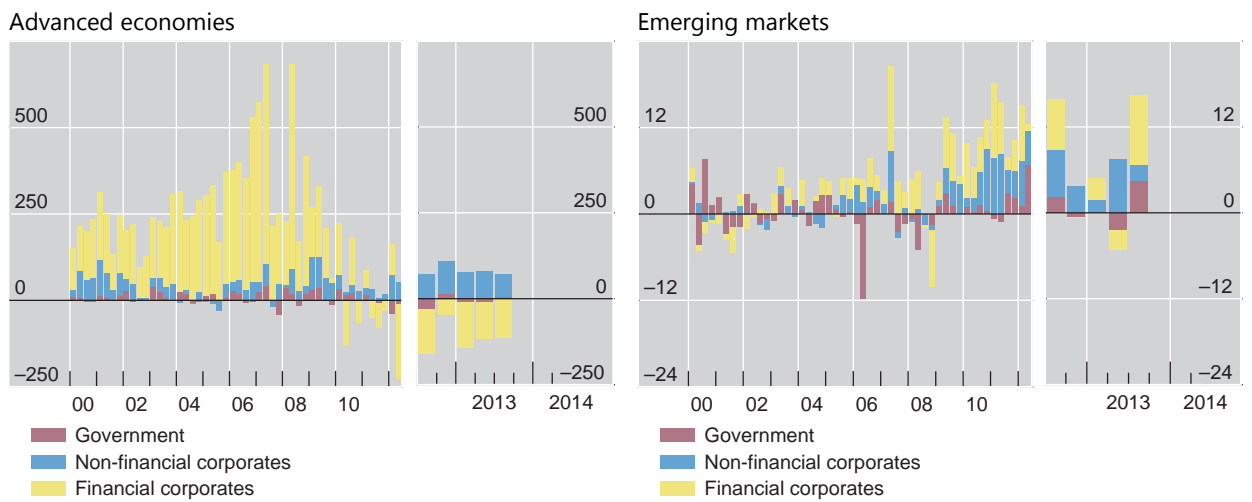
¹ Includes all BIS reporting banks' cross-border credit and local credit in foreign currency.

Sources: Bloomberg; BIS locational banking statistics by residence.

Net international debt issuance¹

In billions of US dollars

Graph 5



¹ In December 2012 the BIS revised the compilation of its debt securities statistics to enhance their comparability across different markets. International issues were redefined as debt securities issued outside the market where the borrower resides.

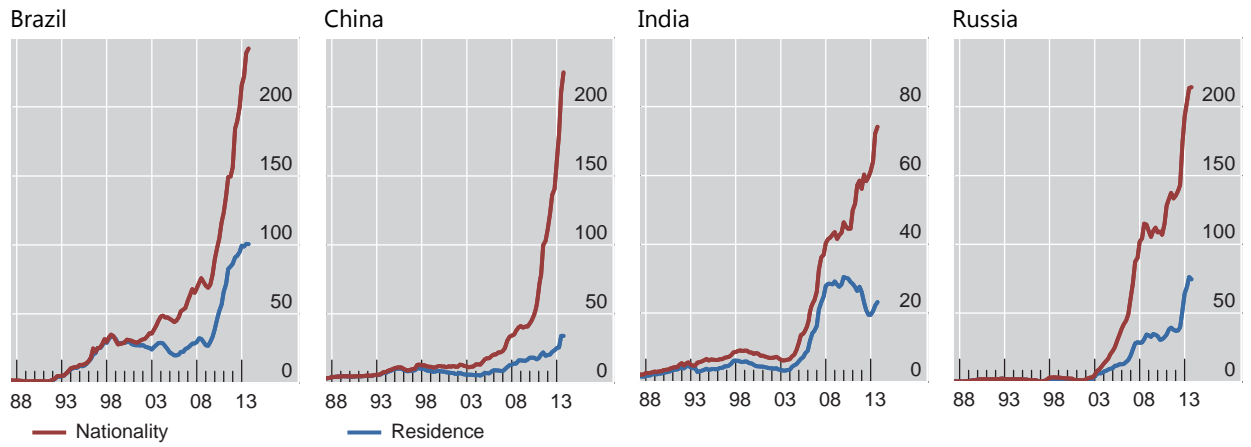
Sources: BIS, *International Debt Securities*.



Corporate international debt issuance by residence and nationality¹

Amounts outstanding, in billions of US dollars

Graph 6



¹ International debt securities issued by the corporate sector (financial and non-financial corporations), in all maturities.

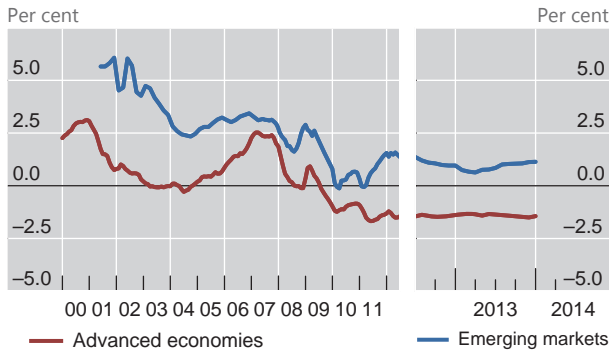
Sources: BIS securities statistics by nationality; BIS securities statistics by residence.



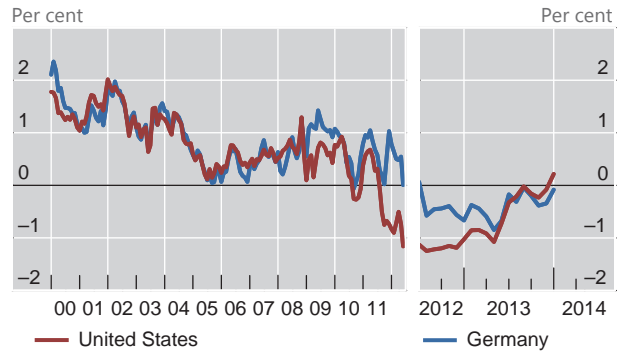
Price indicators for global liquidity

Graph 7

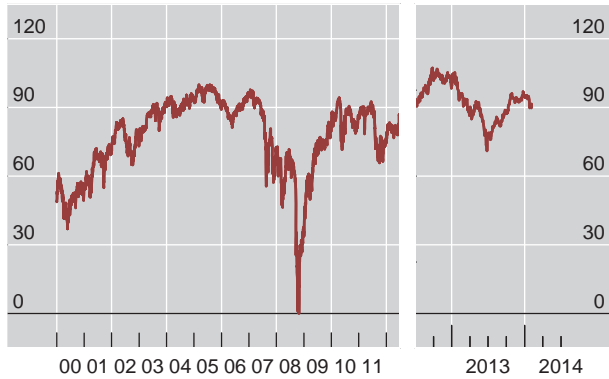
Global real short-term interest rates¹



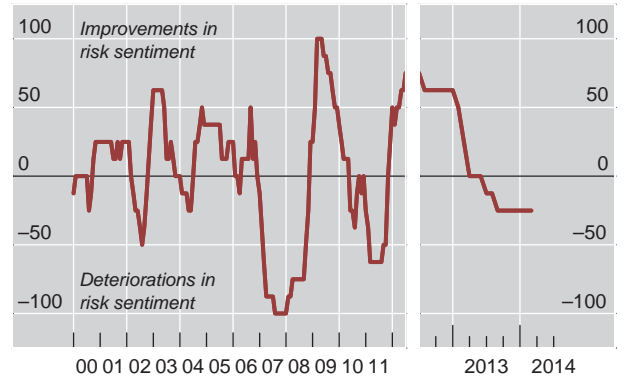
Ten-year nominal term premium²



Composite indicator of risk appetite^{3,4}



Risk appetite diffusion index^{4,5}



¹ Based on 12-month-ahead averages of inflation expectations. ² Ten-year nominal term premium (the sum of the real risk premium and the inflation risk premium) as derived from econometric term structure models. ³ Principal component of risk appetite indicators. An upward movement indicates an increase in risk appetite. ⁴ Composite 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 index, implied volatility of the USD and AUD against the JPY, implied volatility of the EUR against the CHF, swap spreads in the United States, Europe and Japan, credit spreads on speculative grade corporate bonds in the United States and Europe, TED spreads in the United States and Europe, and spreads on emerging market bonds. ⁵ Positive (negative) values indicate that more than half of the included risk appetite indicators are improving (deteriorating). For each input series, we assign 1 if it increases, -1 if decreases and 0 otherwise, and add them up.

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



Further readings

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