

Markets precipitate tightening¹

Announcements in May that the Federal Reserve envisaged phasing out quantitative easing reverberated through global financial markets. These announcements triggered a surge in benchmark bond yields that spilled over across asset classes and regions in what market commentary referred to as a sell-off. During this episode, equities in both advanced and emerging market economies registered abrupt and sizeable losses. In addition, investor retrenchment from emerging economies led to steep depreciations of a number of local currencies. The sell-off abated in early July when the Federal Reserve, the ECB and the Bank of England reassured markets that monetary policy would remain accommodative until the domestic recovery was on a solid footing. As the rise in long-term interest rates continued, however, markets effectively precipitated a tightening of financial conditions worldwide.

The policy announcements occurred after a prolonged period of exceptional monetary accommodation in advanced economies, just as the economic outlook there was turning positive. They caught markets by surprise, reminding them that negative term premia cannot last indefinitely. Even though this resulted in temporarily higher market volatility, equities eventually recovered from the losses incurred during the sell-off. Furthermore, despite their rise, yields remained low by historical standards, thus perpetuating the relative appeal of higher-yielding asset classes. This extended the squeeze of credit spreads and fuelled strong issuance of bonds and loans in the riskier part of the spectrum, a phenomenon reminiscent of the exuberance prior to the global financial crisis.

The market-led tightening of financial conditions generated serious tremors in emerging market economies, which had been in a soft spot. The outlook for these economies was deteriorating, as imbalances inherited from a period of rapid credit and GDP growth were unwinding. The imported tightening thus amplified pressures on local markets and brought to the fore the vulnerability of countries dependent on fickle foreign capital. In the face of additional strong headwinds from escalating geopolitical tensions, the downward pressure on currency and equity values persisted in a number of emerging economies even after the sell-off had abated in advanced economies.

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Global markets slide on monetary policy expectations

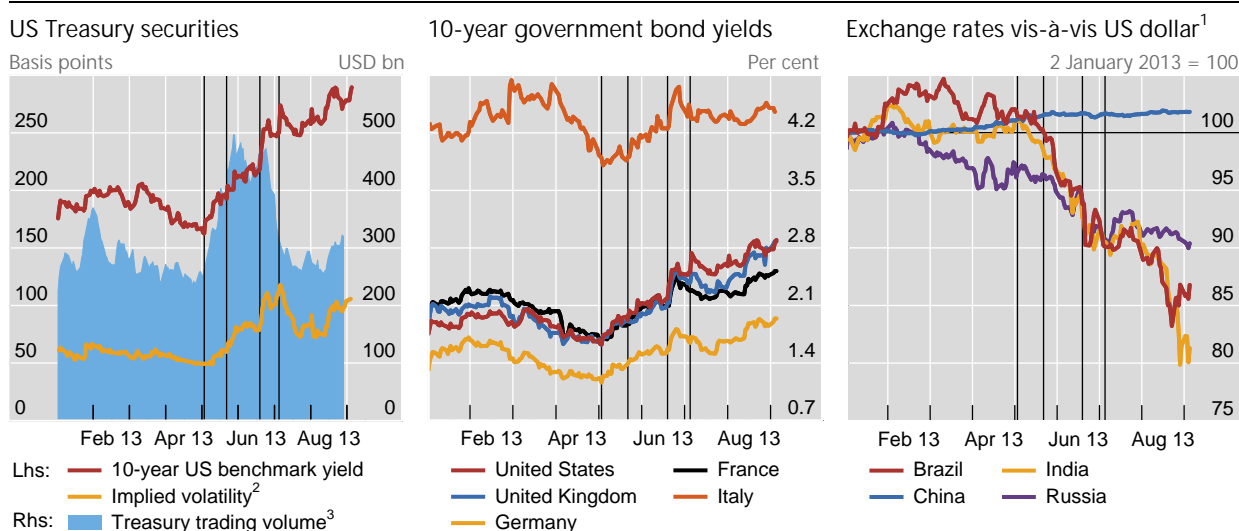
Market participants started pricing in the end of quantitative easing on 3 May, when upbeat news on employment confirmed the positive outlook for the US economy. This led to a bond market sell-off that set US Treasury yields on an upward path and effectively brought monetary tightening forward in time (Graph 1, left-hand panel). And even though higher policy rates remained a fairly distant prospect, volatility picked up and trading in the Treasury market reached record volumes owing to conflicting views on when and how various monetary policy instruments would be phased out.²

The US bond market sell-off reverberated globally, affecting a broad range of asset classes in both advanced and emerging market economies. For example, the yields on European long-term sovereign bonds also started their ascent on 3 May (Graph 1, centre panel) and the corresponding Japanese yields edged up. Mortgage-backed securities promptly followed suit, as less attractive refinancing prospects lengthened the duration of these instruments, thus increasing their interest rate sensitivity. At the same time, the rising yields in advanced economies set in motion a sustained depreciation of major emerging market currencies with respect to the US dollar (Graph 1, right-hand panel).

The markets for high-yield bonds and equities joined the sell-off with a three-week lag. This happened after 22 May, when the Federal Reserve Chairman stated that the Federal Open Market Committee could envisage reducing the pace of asset purchases to ensure that the stance of monetary policy remained appropriate as the

Sovereign bond and currency markets

Graph 1

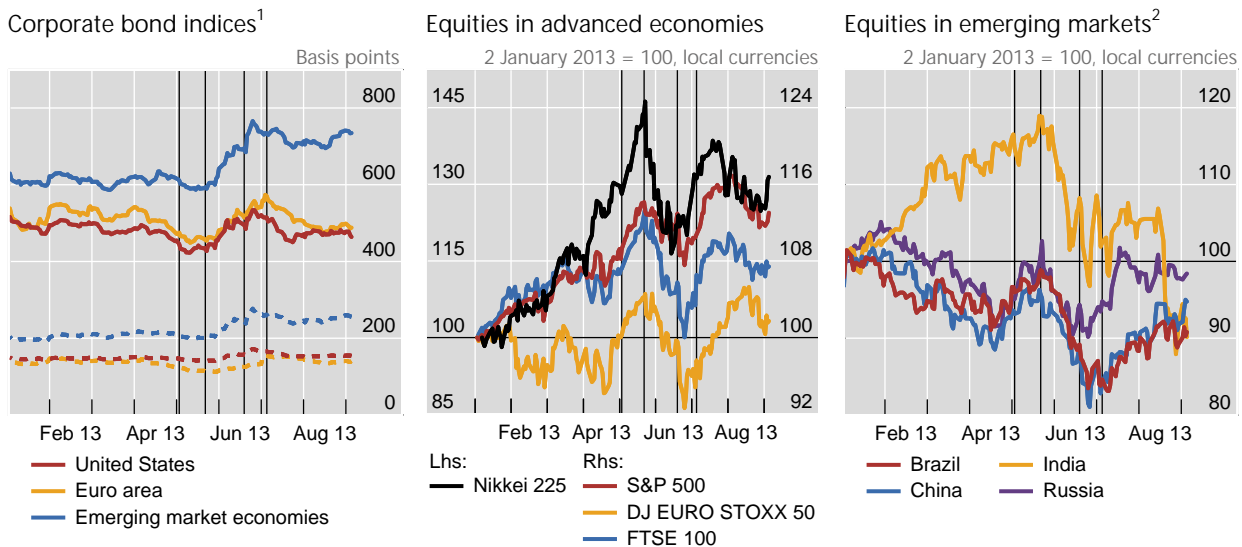


The black vertical lines indicate 3 May, 22 May, 19 June and 5 July 2013 respectively.

¹ US dollars per unit of local currency. A decrease indicates depreciation of the local currency. ² The Merrill Lynch Option Volatility Estimate (MOVE) is an index of Treasury bond yield volatility over a one-month horizon, based on a weighted average of Treasury options of two-, five-, 10- and 30-year contracts. ³ Daily trading volume for US Treasury bonds, notes and bills, reported by ICAP; centred 10-day moving average.

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

² Foreign residents reduced their holdings of long-term US securities by \$77.8 billion in June, with net sales of US Treasury bonds accounting for \$40.8 billion.



The black vertical lines indicate 3 May, 22 May, 19 June and 5 July 2013 respectively.

¹ High-yield (solid line) and investment grade (dashed line) option-adjusted spreads. ² Calculated by MSCI.

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

outlook for the labour market or inflation changed. On this statement, high-yield indices started cheapening markedly in advanced economies on both sides of the Atlantic, as well as in emerging market economies (Graph 2, left-hand panel). At the same time, a half-year rally in advanced economies' equity indices came to an end amid elevated volatility, as market players, scathed by years of sub-par returns, reassessed a rapidly evolving financial landscape (Graph 2, centre panel). And following their lacklustre performance earlier on, emerging market equity indices plummeted (Graph 2, right-hand panel).

Then, global markets evolved largely in sync until 19 June, when the Federal Reserve Chairman emphasised that the envisaged slowdown of asset purchases should be consistent with the unemployment rate decreasing to 7% by mid-2014. As an immediate response, market volatility and bond yields edged further up, and equity prices dropped abruptly. Within a week, however, the bearish mood in equity markets subsided, sending major indices on an upward path. Likewise, there soon was a distinct reduction in the upward pressure on US and emerging market corporate bond spreads, as well as on euro zone sovereign yields. By contrast, the sell-off on the US Treasury and the euro area corporate bond markets continued until early July, when major central banks joined forces to reassure markets that the monetary stance would remain supportive on the path to recovery.

To alleviate the market-induced tightening of funding conditions, central banks on both sides of the Atlantic issued forward guidance as regards the future path of monetary policy. The Federal Reserve had emphasised for some time the continuation of its low interest policy as long as macroeconomic conditions warranted it. On 4 July, the Bank of England and the ECB also took steps towards forward guidance by stating explicitly that rising bond yields were not in line with monetary policy intentions and fundamentals. In a clear departure from its previous communication practice, the ECB pledged that policy rates would remain at current or lower levels for an extended period of time, conditional on its assessment of

economic conditions. A month later, the Bank of England's new Governor confirmed the Bank's forward guidance by specifying that – barring unforeseen adverse developments³ – the policy interest rate would not rise from 0.5% until unemployment declined to 7%. Under the Bank's own forecast, this would take until 2016.

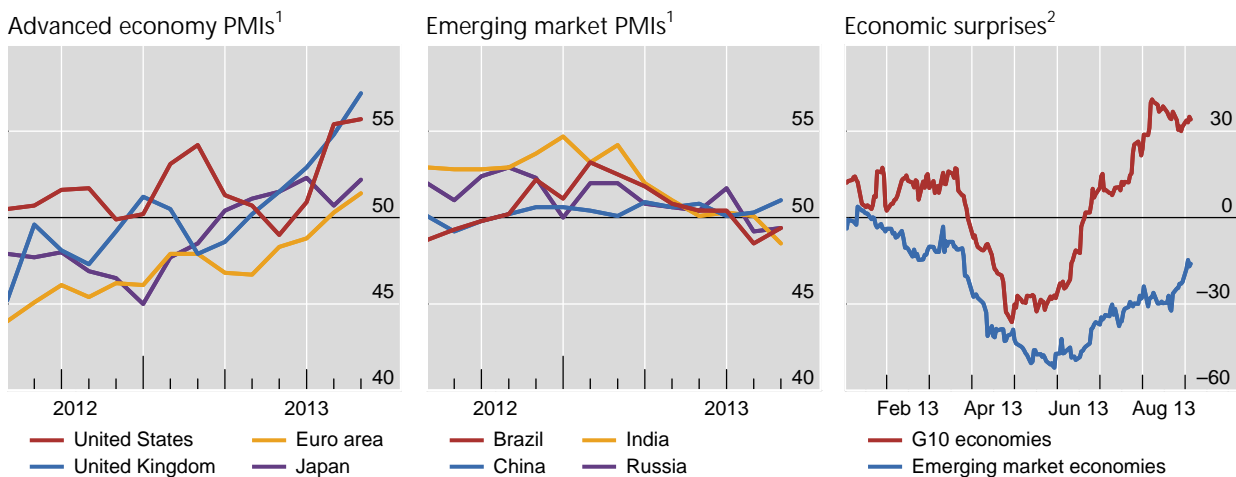
By the time central banks' forward guidance finally halted the two-month-long gyrations in global markets, bond yields as well as equity and currency valuations had evolved substantially (Graphs 1 and 2). Between 3 May and 5 July, the yield on the 10-year US Treasury note increased by 100 basis points, to 2.74%. This run-up was similar to that over the last two months of 2010, which occurred in anticipation of monetary policy tightening, but fell short of the rate hikes during the episodes of actual tightening in 1994 and 2004. In addition, the May and June increases in the 10-year sovereign yields of Japan, Germany and the United Kingdom amounted to roughly 30, 50 and 75 basis points respectively. And even though they were in a sell-off mode for only part of this period, high-yield indices in advanced economies saw their spreads rise by 60 to 90 basis points. By contrast, mature equity markets went through swings without clear direction, with the EURO STOXX 50 and FTSE 100 registering 6% and 2% losses, and the Nikkei and the S&P 500 gaining 4.5% and 1%, respectively.

In emerging market economies, the concurrent losses were much larger. For instance, the yield on the composite emerging market high-yield index rose by 130 basis points and the equity indices of the BRIC economies lost 3–13% of their local currency values between 3 May and 5 July. Over the same period, the currencies of Brazil, India and Russia depreciated by roughly 10% with respect to the US dollar. Likewise, the yields on the latter two countries' US dollar-denominated bond indices rose by more than 100 basis points, outstripping the rise in yields on local currency bonds.

Broader perspective on the bond market sell-off

The announcements about the future path of US monetary policy occurred against an improving growth outlook in advanced economies, which stood in sharp contrast to the slowdown in emerging market economies. The US recovery proceeded at a moderate pace, even as unemployment was expected to decline only slowly. At the same time, upward revisions in growth neutralised any remaining fears of a triple-dip recession in the United Kingdom. In turn, the euro area emerged from a six-quarter contraction, with Germany and France pushing area-wide growth to a modest but positive 0.3% in the second quarter, a growth rate that was expected to weaken only slightly in the third quarter and then persist over the following year. In addition, market participants drew confidence from manufacturing PMI indices in the second and third quarters, pointing to expansion in most advanced economies (Graph 3, left-hand panel). On the other hand, PMI indices in emerging market economies generally deteriorated (Graph 3, centre panel). Moreover, the balance of economic surprises in major advanced economies moved into positive territory for

³ The Bank of England specified that it would adjust the policy stance if it posed a significant threat to financial stability, if the Bank's own forecast of inflation 18 to 24 months ahead reached or exceeded 2.5% per annum or if the public's medium-term inflation expectations no longer remained sufficiently well anchored.



¹ Purchasing managers' index (PMI) derived from monthly surveys of private sector companies. Values above (below) 50 indicate expansion (contraction). ² The Citigroup Economic Surprise Indices are defined as the weighted sum of data surprises (balance of actual releases versus Bloomberg survey median). A positive reading indicates that economic releases have on balance beaten the consensus forecast. The indices are calculated daily in a rolling three-month window.

Sources: Bloomberg; Citigroup; Datastream; HSBC; Markit.

the first time since March but remained negative in emerging markets (Graph 3, right-hand panel).

It was the interplay between improving economic outlooks and anticipated changes to the monetary policy stance that shaped the recent behaviour of bond markets in advanced economies. The two drivers reinforced each other in raising the term premia embedded in bond prices. Even though credit spreads rose as a result, they remained below the levels seen in 2012, reflecting an ongoing search for yield.

Drivers of the rise in bond yields

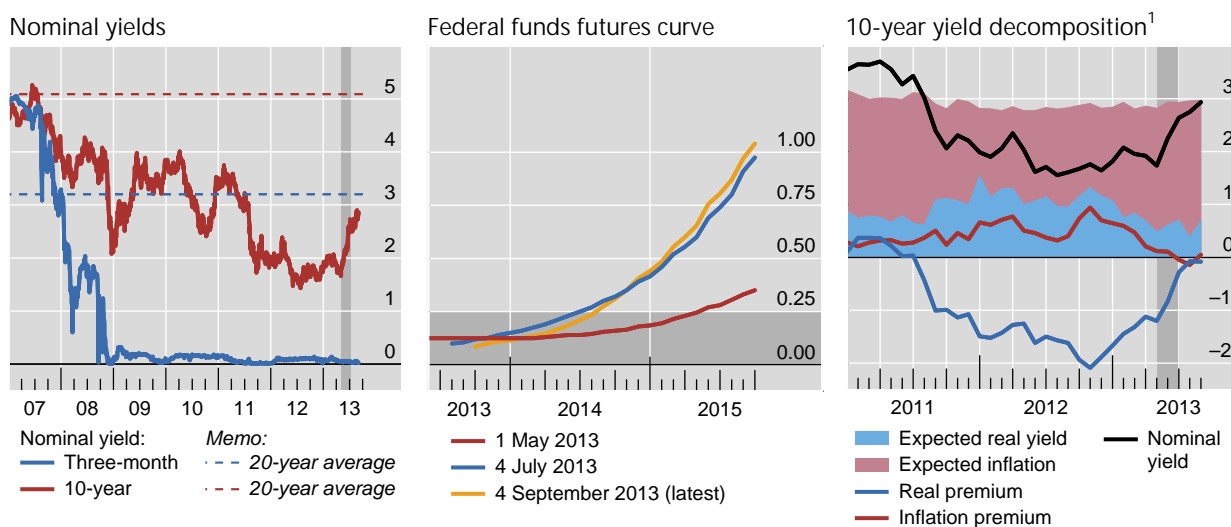
An examination of the rise in US bond yields between May and July reveals as a key driver the uncertainty about the future stance of monetary policy. The sell-off mainly shifted bond yields at long maturities, while the short end of the yield curve remained anchored by the Federal Reserve's continued low interest rate policy (Graph 4, left-hand panel). In addition, the federal funds futures curve also shifted upwards, signalling market perceptions that a policy rate exit from the current 0–0.25% band had become quite likely to occur as early as in the second quarter of 2014 (Graph 4, centre panel). A model-based decomposition of the 10-year US Treasury yield, which sheds light on the various drivers of these shifts, indicates that the recent yield spike was largely the result of a rising term premium (Graph 4, right-hand panel).⁴ This is consistent with markets reacting to uncertainty about the extent to which an improving economic outlook would affect future policy rates. It is also consistent with uncertainty as regards the impact that a reduction in the Federal Reserve's purchases of long-term Treasuries would have on these securities' prices.

⁴ In their recent entry in *Liberty Street Economics* (<http://libertystreeteconomics.newyorkfed.org>), Tobias Adrian and Michael Fleming also find that a rising term premium explains most of the recent bond market sell-off.

US interest rates

In per cent

Graph 4



The shaded areas in the left- and right-hand panels indicate the bond market sell-off period, 3 May to 5 July 2013.

¹ Decomposition based on a joint macroeconomic and term structure model. See P Hördahl, O Tristani and D Vestin, "A joint econometric model of macroeconomic and term structure dynamics", *Journal of Econometrics*, vol 131, 2006, pp 405–44; and P Hördahl and O Tristani, "Inflation risk premia in the term structure of interest rates", *BIS Working Papers*, no 228, May 2007.

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

In comparison, the bond market sell-offs in 1994 and 2003–04 were different in nature. During those episodes, long-term nominal yields rose together with policy rates or on the back of expected increases in future real interest rates and inflation. By contrast, inflation expectations were largely unchanged in the second and third quarters of 2013 (Graph 4, right-hand panel).

Their recent spike notwithstanding, bond yields in mature markets remained low by historical standards. For one, the yields on sovereign bonds in the largest world economies had been on a downward trend since 2007. And investment grade spreads in the United States, the euro area and the United Kingdom declined respectively by 75, 110 and 190 basis points between May 2012 and early September 2013, falling past their earlier troughs in 2010 and reaching levels last seen at end-2007. The evolution of the corresponding high-yield bond indices was similar, with spreads declining by 230 to 470 basis points over the same period.

Credit markets: in a persistent search for yield

The recent sell-off did little to undermine the relative appeal of riskier securities, which asserted itself in the second half of 2012 and persisted through the third quarter of 2013. Historically low yields in core bond markets were an important underlying factor drawing investors towards the higher returns of riskier assets. In principle, however, two additional factors are likely to have played a role as well. As uncertainty about the monetary stance made it more difficult to price interest rate risk, market-wide demand would shift towards securities less sensitive to such risk. This would include securities carrying a credit risk premium, which reduces duration, all else the same. In addition, to the extent that monetary conditions tighten only

when economic recovery gains momentum, securities exposed to both interest rate and credit risk would carry diversification benefits.

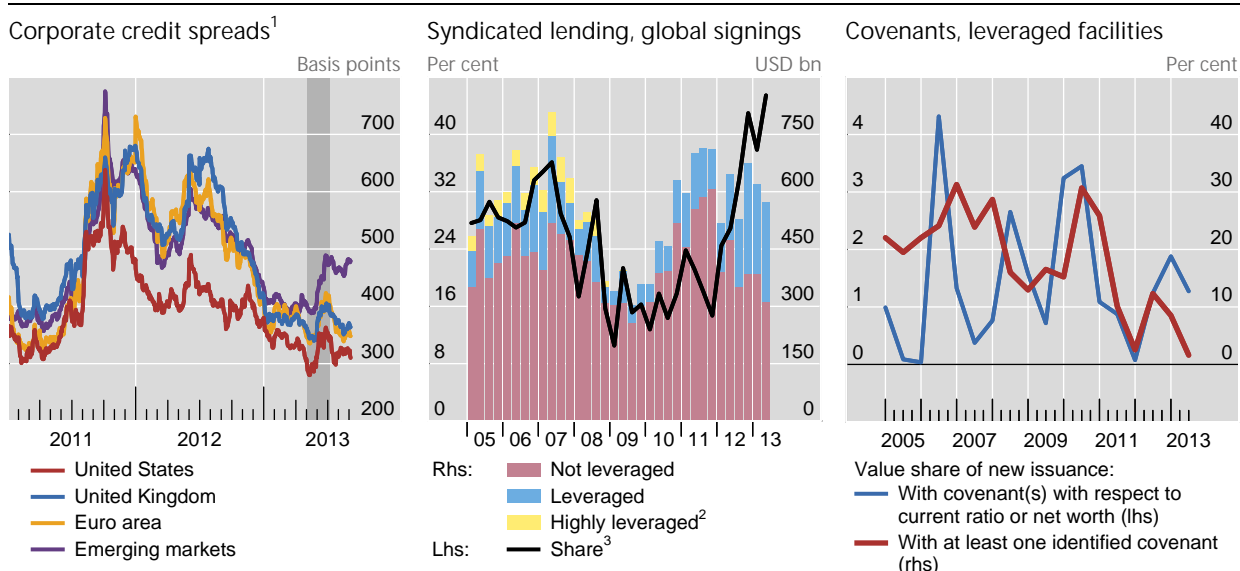
The attractiveness of riskier securities surfaced as a persistent squeeze of credit spreads (Graph 5, left-hand panel). The bond market sell-off in May and June reversed this process, but only temporarily in advanced economies. After their peak at mid-2012, credit spreads in these economies plummeted by more than 30% to reach roughly 350 basis points by early September 2013. Thus, while still well above their pre-crisis trough in 2006, they reached levels last seen at end-2007.

Recent debt issuance also reflected investors' interest in the riskier part of the credit spectrum. For instance, the high-yield share of aggregate bond issuance by European firms exceeded 15% in the first quarter of 2013, up from roughly 12.5% in 2012. In addition, banks increasingly funded themselves with subordinated debt, much of which was expected to be of sufficient loss absorbency to count towards regulatory capital. Compared with the 12 months to mid-2012, the issuance of subordinated debt increased almost tenfold in the United States and 3.5 times in Europe to reach roughly \$22 billion and \$52 billion respectively over the 12 months to mid-2013. Likewise, the market for contingent convertible capital instruments (CoCos) has been growing since 2011 (see the special feature in this issue).

A trend favouring riskier lending was also evident in the syndicated loans market. A concrete manifestation was the growing popularity of "leveraged" loans, which are extended to low-rated, highly leveraged borrowers paying spreads above a certain threshold (Graph 5, centre panel). The share of these loans in total new signings reached 45% by mid-2013, 30 percentage points above the trough during the crisis and 10 percentage points above the pre-crisis peak. Market commentary attributed part of this increase to renewed investor demand for collateral loan obligations, which furthered a shift of negotiating power to borrowers. Thus, just as

Search for yield

Graph 5



The shaded area in the left-hand panel indicates the bond market sell-off period, 3 May to 5 July 2013.

¹ High-yield minus investment grade option-adjusted spreads on corporate bond indices. ² Dealogic Loan Analytics does not distinguish between highly leveraged and leveraged for loans signed after 2008. ³ Of leveraged and highly leveraged loans in total syndicated loan signings.

Sources: Bank of America Merrill Lynch; Dealogic Loan Analytics; BIS calculations.

leveraged loans were gaining in importance, a declining portion of the new issuance volume featured creditor protection in the form of covenants (Graph 5, right-hand panel).

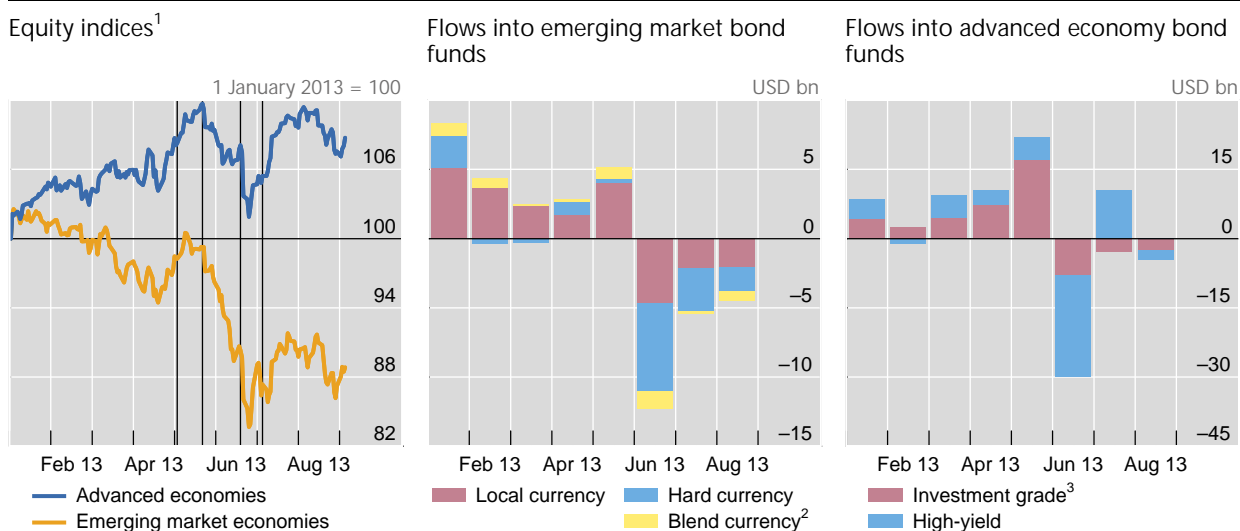
Sell-off sparks exodus from emerging markets

The summer months of 2013 confirmed a reduction of the brisk growth in key emerging market economies and a clear deterioration in their outlooks (Graph 3). For some of these economies, the slowdown had deepened with the decline in the prices of certain commodities – notably, industrial and precious metals – after mid-2012. In addition, part of the slowdown was engineered by policymakers, which had been leaning against financial imbalances. For instance, a number of Latin American countries had implemented policies to limit the inflow of foreign capital, including taxes on foreigners investing in certain financial instruments. Meanwhile, Chinese authorities had taken steps to rein in credit expansion. Combined with a reduction in US dollar inflows, this policy initiative culminated in a liquidity squeeze in the local interbank market in June (see box). Even though August data releases surprised on the upside, previous below-expectation figures on China's growth had negative repercussions on other emerging markets. For instance, this translated into a substantial drop in the foreign demand faced by commodity exporters, such as Brazil and Russia.

Against this background, the improved growth prospects in advanced economies and the tightening of global financial conditions contributed to investors' retrenchment from emerging market economies. This resulted in sustained declines in the value of local assets. For example, while equities in advanced economies had largely recovered their June losses by end-August, a broad emerging market equity index continued to linger around 12% lower than in early May (Graph 6, left-hand panel), close to levels last seen at mid-2012. A similar pattern was also visible in flows into and out of bond market funds (Graph 6, centre and right-hand panels). Investors were quick to retreat from such funds worldwide in June, but while the flows promptly reversed and stabilised for advanced economies, investors continued to pull money out of emerging market funds. And the resulting cumulative outflows from June to August amounted to the cumulative inflows over the previous five months.

The investor retrenchment occurred on the back of mixed indicators of financial vulnerability in emerging market economies. Indeed, these economies' external debt and capital inflows were most recently lower as a share of GDP than before 2008. That said, many emerging economies had built up financial imbalances in the wake of rapidly expanding private borrowing. For instance, issuance of emerging market corporate bonds had gathered speed, as yields on such bonds had fallen to unusually low levels. And the negative side effects of rising indebtedness included growing signs of deteriorating lending standards in the banking sector, as indicated by rising volumes of non-performing loans (Graph 7, left-hand panel). Thus, given perceptions that the valuation of emerging market assets had been inflated by ample liquidity conditions in past years, investors rapidly shifted out of these assets as rising yields in advanced economies signalled the beginning of the end of easy credit.

Following a broad-based depreciation of emerging market currencies vis-à-vis the US dollar, investors refocused on the fundamentals of individual countries. As a



The black vertical lines indicate 3 May, 22 May, 19 June and 5 July 2013 respectively.

¹ Aggregates, calculated by MSCI. ² Funds investing in both local currency and hard currency bonds. ³ Investment grade bond funds consist of short, intermediate and long-term bond and corporate funds, and total return funds.

Sources: Datastream; EPFR.

sign of the transition, the co-movement of depreciation rates, which had been quite strong in June and July, declined to levels seen earlier in the year (Graph 7, centre panel). In particular, investors zeroed in on countries with large current account deficits that are especially vulnerable to sudden capital outflows. Indeed, countries with high deficits, such as Brazil, India, Indonesia, South Africa and Turkey, experienced the sharpest currency depreciations (Graph 7, right-hand panel). As the negative outlook for India was reinforced by reports of rising bad loans at local banks, the rupee fell to an all-time low vis-à-vis the US dollar in late August. In Brazil, reports that the current account deficit was widening faster than expected – to \$9 billion in July – added to downward pressures on the real stemming from political uncertainty. Similarly, Indonesia's rupiah fell on new data showing that the country's current account deficit had widened from 2.6% of GDP in the first quarter of the year to 4.4% in the second. Meanwhile, a number of central and eastern European countries benefited, as investors perceived them to be relative safe havens among emerging market economies. This was due to these countries' better current account balances, as well as their greater reliance on exports to the euro area, which had shown signs of recovery.

In a number of countries with high current account deficits, high domestic inflation exacerbated the situation. At end-August, year-on-year WPI inflation in India was close to 6% and CPI inflation in Indonesia and Turkey was above 8%, partly because of significant currency depreciations that had raised import costs. And high rates of inflation may in turn lead to additional nominal depreciation, thereby fuelling a vicious circle.

Interbank volatility in China

Guonan Ma and Chang Shu

China's interbank market experienced a severe liquidity squeeze in June. The liquidity shortage started in May, with the benchmark overnight and seven-day repo rates gradually moving up towards 5% after staying in the 2–3% range in the first few months of this year (Graph A, left-hand panel). These rates then rose to above 10% in mid-June, soaring to record highs of 25% and 30% on 20 June before settling back into a still high range of 5–8% on 25 June 2013. Meanwhile, the Shanghai interbank offered rate (Shibor) spiked as well. The liquidity squeeze also led to large intraday rate movements. The biggest high-low daily range for the seven-day repo rate was 2,329 basis points on 20 June, compared with an average of 154 basis points in the first five months of 2013.

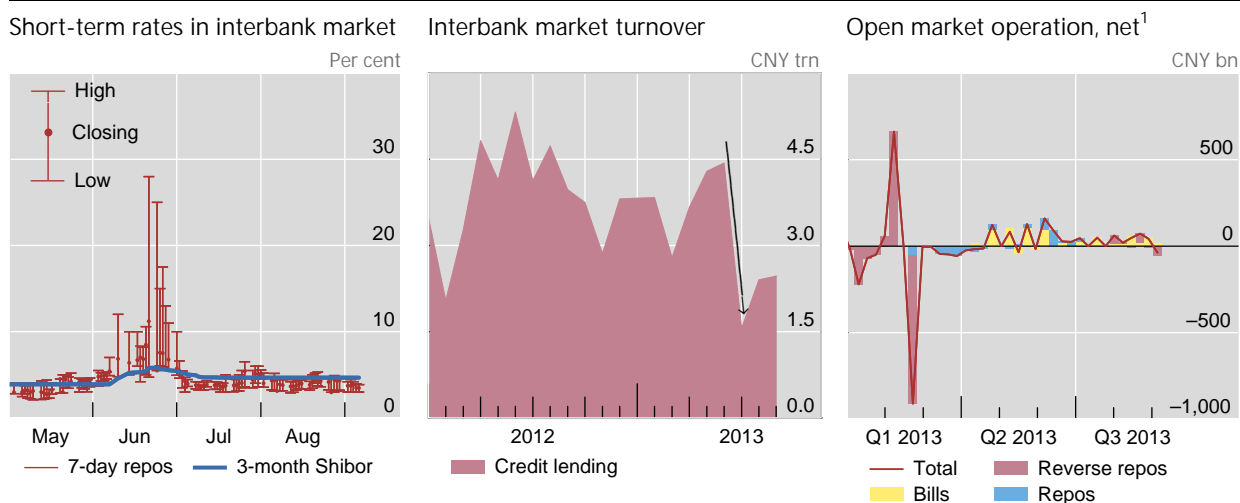
Interbank activity contracted significantly as a result. Interbank loans fell by over 60% from May to June to CNY 1.6 trillion (Graph A, centre panel). In July and August, the interbank lending volume rebounded to around CNY 2.4 trillion, but was still well below the monthly average of CNY 3.8 trillion in the first five months of this year, and the average of CNY 3.9 trillion for 2012.

Both supply and demand factors are likely to have contributed to the tighter funding conditions in the interbank market. On the supply side, a marked slowdown in US dollar inflows began in late May, entailing much less foreign exchange intervention and renminbi conversion. This was attributable to both domestic and global factors, including narrower trade surpluses (partly due to crackdowns on export over-invoicing), tightened rules on onshore US dollar lending, more bearish market sentiment about China's growth prospects, and a rise in global risk aversion upon intensified speculation over the United States' tapering of asset purchases. On the demand side, increased reserve requirements for banks from tighter rules on "wealth management products" and greater funding needs owing to reduced rollovers in these products compounded seasonal demand for liquidity, adding to market stress. The People's Bank of China (PBoC) did not initially meet surging demand in the interbank market, effectively allowing tighter funding conditions. This was interpreted by some market participants as reflecting the PBoC's intent to rein in the growth of lending to the shadow banking sector. There was even some speculation in the market that the PBoC was signalling monetary tightening. All these interpretations contributed to a more cautious lending stance by banks and the resultant liquidity squeeze.

The market calmed when the PBoC subsequently provided more liquidity and forcefully communicated its determination to stabilise markets. On 24 June, the central bank communicated its assessment that the overall liquidity condition was adequate, but acknowledged the challenges banks faced in managing liquidity at this juncture.

China interbank market and open market operation

Graph A



¹ A positive number indicates a net injection into the market.

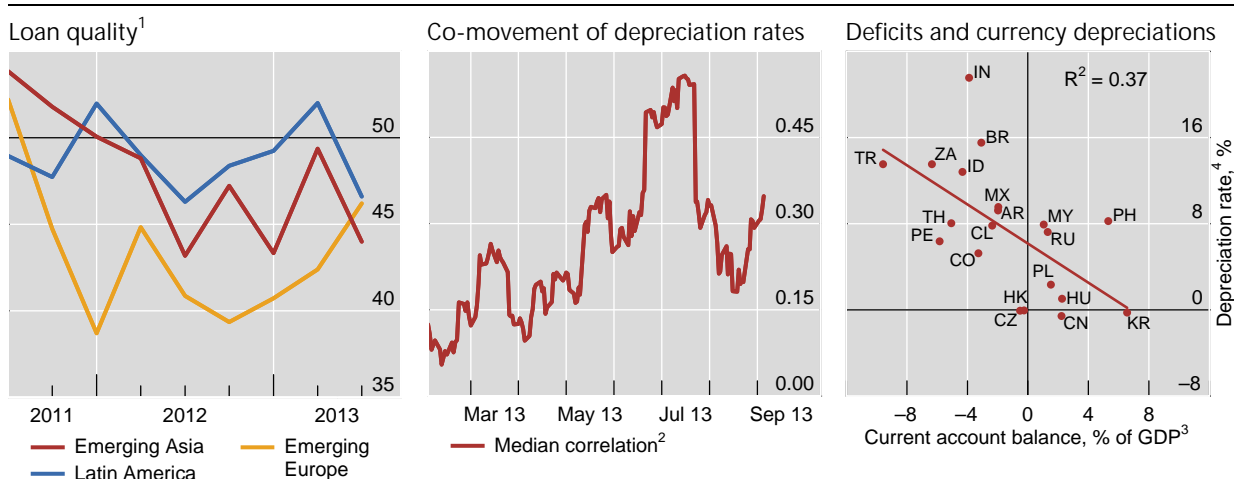
Sources: Bloomberg; CEIC.

On 25 June, the PBoC stated its intention to “actively make use of open market operations, re-financing, short-term liquidity operations and [the] standing facility, to regulate interbank liquidity, limit unusual volatility, stabilise market expectations, and maintain money market stability”. While liquidity provision through open market operations did not increase significantly (Graph A, right-hand panel), the central bank bilaterally provided liquidity to financial institutions that met macroprudential criteria but needed short-term liquidity support. Major commercial banks and policy banks with surplus liquidity were also encouraged to lend into the interbank market.

With emerging market authorities facing challenges on several fronts, their main policy responses aimed at curbing the depreciation of domestic currencies. In the face of rapidly declining investor confidence, the Reserve Bank of India intervened to put upward pressure on money market interest rates and imposed capital controls. By late August, however, there were few signs that this had slowed the pace of the rupee's depreciation. Indian officials also announced longer-term measures to contain the current account deficit, including taxes on silver and gold imports and steps to liberalise iron ore exports and to reduce India's dependence on imported coal. Likewise, the Indonesian, Turkish and Brazilian central banks raised policy rates and intervened in foreign exchange markets in an attempt to reduce the outflow of foreign capital and stabilise the domestic currencies. The sizeable foreign exchange interventions of several central banks contributed to significant reductions in official foreign reserves over the past few months.

Emerging markets: systemic and domestic problems

Graph 7



¹ Diffusion index: values below 50 indicate a rising volume of non-performing loans. ² Based on the US dollar exchange rates of the currencies of the countries appearing in the right-hand panel. Median of all pairwise correlations of the depreciation rates over the preceding month. ³ As of Q2 2013 (latest quarterly observation). ⁴ Against the US dollar, between 3 May and 4 September 2013.

Sources: IMF, *International Financial Statistics* and *World Economic Outlook*; CEIC; Datastream; Institute of International Finance; BIS calculations.