Markets under the spell of monetary easing[1]

Risk assets extended their rally as further monetary easing helped market participants tune out signs of a global growth slowdown. The spate of negative economic news between mid-March and mid-April did little to interrupt the rise of equity prices in advanced economies. The growth jitters left more of a dent on commodity prices while emerging market equities continued to underperform (Graph 1, left-hand panel). Further policy easing, followed promptly by an improved US outlook in early May, boosted market sentiment and lifted the main equity indices to new highs.

Major central banks further eased their monetary stance from already accommodative levels that had pushed nominal yields to record lows (Graph 1, centre panel). In early May, the ECB cut its policy rate, and the Federal Reserve provided forward guidance while reaffirming its commitment to further asset purchases. The previous month, the Bank of Japan had surprised markets with its ambitious new monetary easing framework. The announcement triggered sharp price movements in the Japanese government bond (JGB) market as investors weighed the yield implications of official purchases against future inflation expectations.

This new phase of monetary policy accommodation in the major currency areas spilled over to financial markets around the world. The prospect of low yields in core bond markets contributed to investors searching for yield in lower-rated European bonds and emerging market paper as well as in corporate debt. This drove spreads even lower while issuance in riskier credit market segments strengthened (Graph 1, right-hand panel). Abundant liquidity and low volatility fostered an environment favouring risk-taking and carry trade activity.

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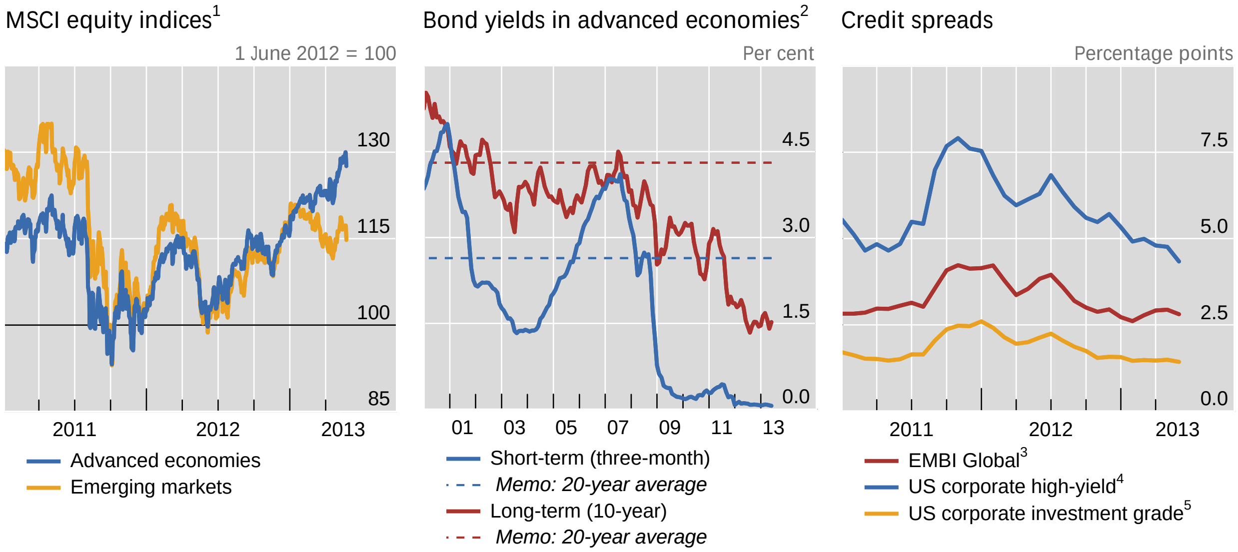
Equity prices, bond yields and credit spreads Graph 1



[1] Aggregates are calculated by MSCI. [2] Based on monthly averages of daily nominal rates; weighted average of euro area, Japan, the United Kingdom and the United States, based on 2005 GDP and PPP exchange rates. [3] JPMorgan Chase EMBI Global composite index stripped spreads. [4] Bank of America Merrill Lynch US High Yield Master II index option-adjusted spreads. [5] Bank of America Merrill Lynch US Corporate Master index option-adjusted spreads.

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

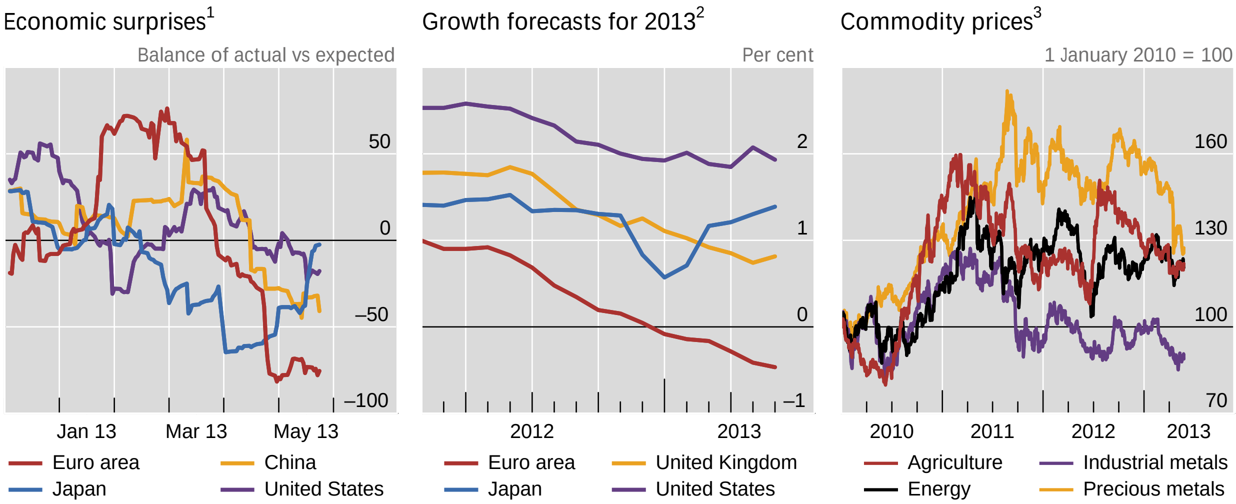
Equity markets rally amidst uncertainty over global growth

Following months of positive sentiment, a series of negative surprises in March led market participants to reassess the prospects for the global economy (Graph 2, left-hand panel). US non-farm payroll data and other indicators suggested a broad deceleration in the world's largest economy. A similar pattern in US data over the past few years had made markets sensitive to even the smallest hint of a slowdown. Weaker purchasing managers' indices (PMIs) led market participants to expect continued contraction in Europe (Graph 2, centre panel). Evidence of a slowdown in the Chinese economy, compounded by a rating downgrade, further added to growth concerns. By early May, these fears were superseded by US data revisions and a string of positive news followed by more mixed signals on global growth later in May.

During this period, uncertainty about global growth prospects weighed more on emerging market equities and commodity markets. Commodity prices fell as macroeconomic data mostly surprised on the downside (Graph 2, right-hand panel). The all-commodities index lost 7% in April and oil prices fell below $100 a barrel for the first time in a year. Copper led the price decline in industrial metals, while among precious metals gold took its sharpest two-day plunge in 30 years. Renewed growth concerns also led to a short-lived correction in some equity market segments. From mid-March to mid-April, equities of cyclical industries, whose earnings tend to be more sensitive to the business cycle, underperformed those of non-cyclical sectors (Graph 3, left-hand panel). Non-cyclical stocks typically deliver a stable dividend stream that many investors value highly in an environment of low yields and uncertain growth.

Macroeconomic backdrop

Graph 2



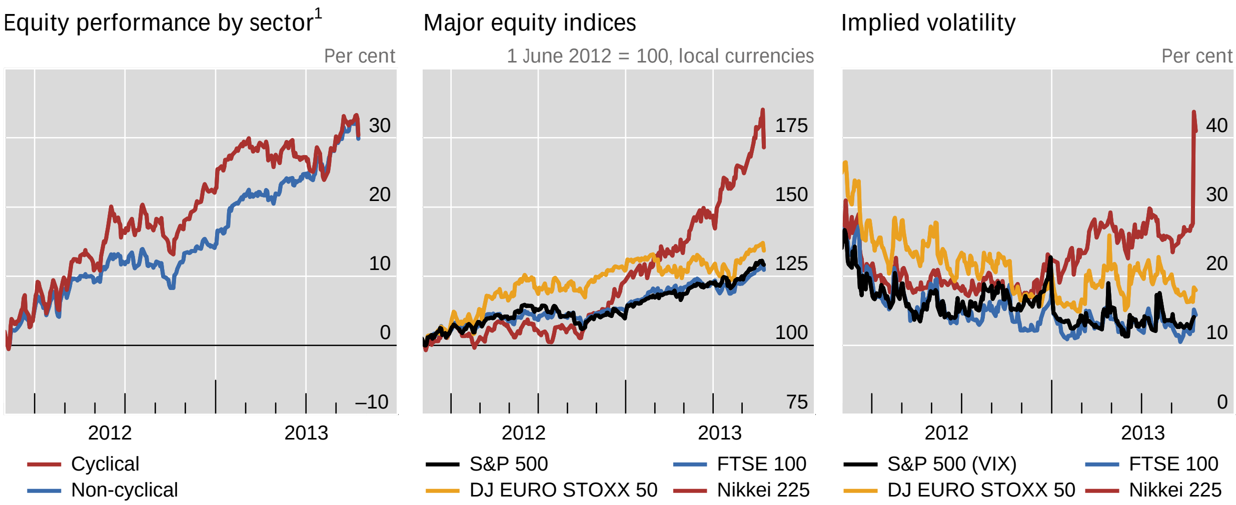
[1] The Citigroup Economic Surprise Indices are defined as the weighted sum of data surprises (actual releases versus Bloomberg survey median). A positive reading suggests that economic releases have on balance beaten consensus. The indices are calculated daily in a rolling three-month window. [2] Consensus forecasts of real GDP growth in 2013, polled on different dates in the years shown on the horizontal axis. [3] S&P Goldman Sachs Commodity Indices (GSCI).

Sources: Bloomberg; Citigroup; Consensus Economics; Datastream.

Yet equity markets were quick to shrug off the uncertainty and extended their gains as investors expected poor fundamentals to be followed by further policy easing. The S&P 500 posted several all-time highs in rapid succession, first on 11 April and again throughout May. Similarly, European bourses held up well in the face of negative economic news and political uncertainty (Graph 3, centre panel). Throughout this period, the Japanese equity market continued its relentless ascent, fuelled by the prospect of massive monetary stimulus. The rapid gains left equity valuations vulnerable to changes in market sentiment. The 7% drop on 23 May was

Global equity prices and volatility

Graph 3



[1] Cumulative changes in market capitalisation since 1 June 2012. Cyclical sectors include oil and gas, basic materials, industrials and finance. Non-cyclical sectors include consumer goods, consumer services, telecoms and utilities.

Source: Bloomberg.

one such instance, triggered by a weak Chinese manufacturing PMI and a possible slowdown in Federal Reserve asset purchases. European stock indices lost 2–3% on the same day. Against this background, volatility in many markets remained subdued, given the wide range of possible outcomes for policy and fundamentals in different parts of the world (Graph 3, right-hand panel).

Monetary policy takes centre stage

Central banks stepped up their expansionary monetary policies from an already accommodative stance. In April, the Bank of Japan (BOJ) outlined its new monetary easing policy framework, and in May the ECB lowered its policy rate to 0.5% while the Federal Reserve reassured markets of continued asset purchases and a low federal funds rate going forward. The United Kingdom and Switzerland left their policy stances unchanged. Partly in response to monetary easing in the major currency areas, a number of central banks subsequently lowered their policy rates, including in Australia, Denmark, India, Israel, Korea, Mexico, Poland and Turkey.

The shift in Japan's monetary policy dominated financial markets during this period. On 4 April, the BOJ announced a new operational framework designed to lift inflation to 2% over about two years (see Box 1). Immediately after the announcement, equity prices rose and the yen depreciated. Meanwhile, the price of JGBs turned extremely volatile, as investors needed to digest the implications of the unexpected scale of future JGB purchases across different portions of the yield curve. On 5 April, the yield on the 10-year benchmark bond dropped to a low of 32 basis points, before rebounding to twice this level in a single trading day. The sharp increase in the volatility of JGBs reflected considerable uncertainty about the future market impact of the policy shift, exacerbated by a drop in market liquidity. In response, the BOJ undertook one-year funding operations to provide a stable funding source for market participants' risk-taking, enhanced communication with market participants and revised its way of conducting JGB purchase operations. This helped ease volatility in the JGB market, at least temporarily (Graph 4, left-hand panel).

The policy shift boosted Japanese equity prices and led to a jump in the volatility of the Nikkei 225 index (Graph 4, centre panel). The stock price increases following the announcement reflected mostly buying pressure from overseas, according to data released by the Tokyo Stock Exchange. The same data indicated that local investors were net sellers, with profit-taking and loss-cutting reported as motives. In the past, net capital inflows into the Japanese equity market had also coincided with episodes of yen depreciation. The effect of inflows on the yen's value was probably more than offset by investors hedging their foreign currency exposure or taking directional bets in derivatives markets.

Starting in mid-May, JGB markets experienced another bout of intense volatility. Yields increased sharply when renewed selling pressure by private investors met with thin trading volume (Graph 4, left-hand panel). After the policy shift, expected inflation derived from bond prices, calculated as the difference between nominal yields and yields on inflation-linked JGBs of similar remaining maturities, started to rise (Graph 4, right-hand panel). Investor caution over potential inflation risk and volatility had reduced trading activity in JGB markets. In

Box 1

Monetary policy easing in Japan

On 4 April, the Bank of Japan (BOJ) unveiled a new policy framework aimed at ending deflation, known as Quantitative and Qualitative Monetary Easing (QQE).

The framework changes the central bank's operational target from the overnight rate to the monetary base, and stresses the importance of communication. To enhance clarity and simplicity it gives prominence to the number 2. It sets a 2% price stability target to be reached as soon as possible, with a horizon of about two years. It also calls for doubling the monetary base and the central bank's holdings of JGBs and exchange-traded funds (ETFs) in two years, as well as more than doubling the average maturity of the JGB portfolio.

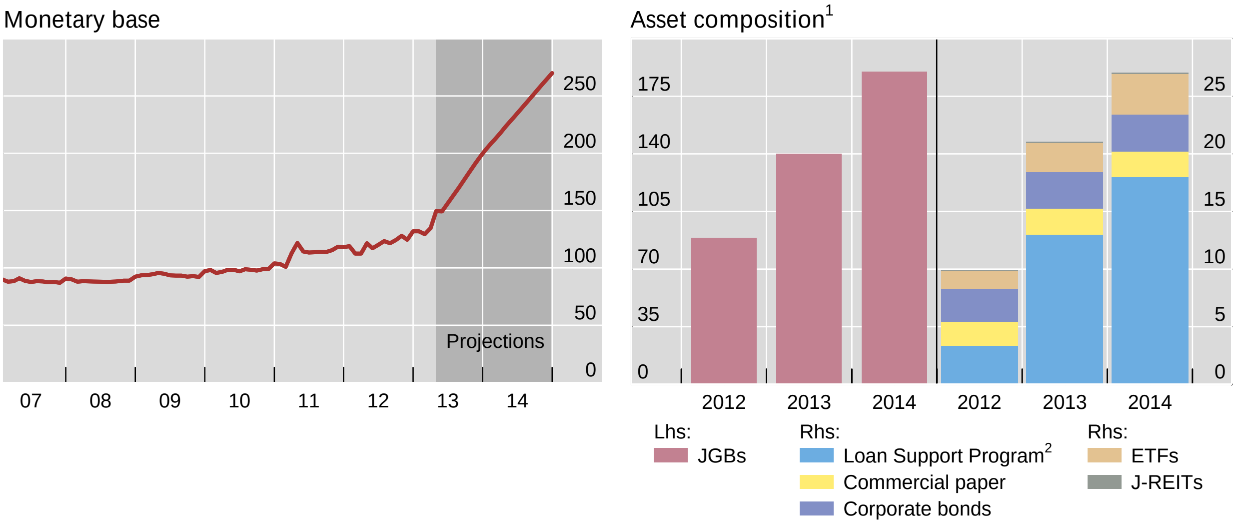
The BOJ intends to increase the monetary base by ¥60–70 trillion per year to ¥270 trillion by the end of 2014, or nearly 60% of nominal GDP. It also aims to compress interest rates across the yield curve by expanding JGB holdings by ¥50 trillion annually and extending the average remaining maturity of its JGB holdings from the current level of slightly less than three years to about seven years. Moreover, it will increase holdings of risky assets by purchasing ¥1 trillion of ETFs and ¥30 billion of real estate investment trusts (J-REITs) annually (Graph A). According to the central bank, the "qualitative" aspects of monetary easing refer to the effects of the maturity extension putting downward pressure on the entire yield curve, and the expected compression of risk premia on risk assets.

The framework is intended to work through three channels. First, the BOJ expects its purchases of financial assets to lower interest rates across the yield curve and to reduce risk premia in asset prices (the interest rate channel). Second, it expects those changes to encourage financial institutions and institutional investors to rebalance their portfolios towards loans and/or risk assets (the portfolio rebalancing effect). Finally, and strongly emphasised by the BOJ, the new framework represents a clear commitment to achieving the price stability target as soon as possible and to continuing the massive asset purchases that underpin it, in order to help shift economic agents' expectations drastically (the expectations channel) and thus raise inflation expectations, leading to a decrease in real interest rates.

Bank of Japan balance sheet

In trillions of yen

Graph A

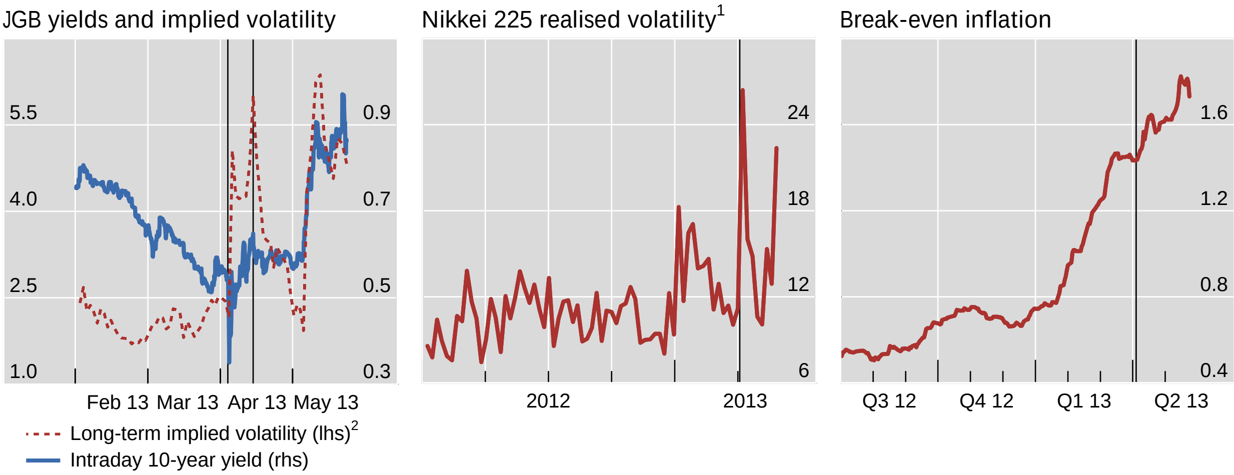


[1] Figures for 2013 and 2014 are projections. [2] A programme established to provide loans made against pooled collateral, with the aim of supporting private financial institutions' efforts to strengthen the foundations for economic growth and stimulating bank lending.

Sources: Bank of Japan; Bloomberg.

Market impact of Bank of Japan announcement

In per cent Graph 4



The vertical lines indicate the BOJ's announcements of the new policy framework (4 April 2013, all panels) and of the revision of the Outline of Outright Purchases of Japanese Government Bonds that reflected discussions in meetings with market participants (18 April 2013, left-hand panel).

[1] Weekly averages; realised volatility (pa) estimated from high-frequency returns over five-minute intervals. [2] Implied volatility for option contracts on long-term JGB futures.

Sources: Bloomberg; Oxford-Man Institute; BIS calculations.

this environment, rising domestic equity prices in the wake of the yen's depreciation beyond the psychologically important threshold of 100 yen per US dollar strengthened expectations of further flows from the JGB market to equity markets.

Markets also closely followed US monetary policy, concentrating on asset purchases and on how long the policy rate would remain near zero. Public statements by Federal Reserve officials pondering the timing of a phase-out of securities purchases repeatedly caused market jitters, illustrating the extent to which sentiment depends on monetary accommodation. On 1 May, the Federal Open Market Committee (FOMC) reaffirmed that it was to continue its purchases of Treasury and agency mortgage-backed securities and keep the federal funds rate at 0–0.25% until the outlook for the labour market improved substantially. While household spending, business investment and housing markets had strengthened, the FOMC saw fiscal policy as a factor restraining economic growth. Following the announcement, the US federal funds futures curve flattened further, with derivatives prices indicating that the federal funds rate was expected to move out of the current band by May 2015 (Graph 5, left-hand panel). With the arrival of better labour market data, this movement had reversed by late May.

Forward guidance and Treasuries purchases continued to contribute to unusually low US long-term rates. A decomposition of 10-year nominal yields suggests that the decline in long-term interest rates can be attributed largely to a drop in the term premium, the compensation for the risk of holding long-duration assets (Graph 5, centre panel). Expected inflation and expected real short-term rates over the 10-year horizon remained stable. Driven by unconventional policies and the flight to quality, the term premium has fallen from roughly +60 to –90 basis points since mid-2011. Looking ahead, a negative term premium could compound the impact of rising interest rates on bond prices at a time when public holdings of marketable US Treasury securities are at all-time highs.

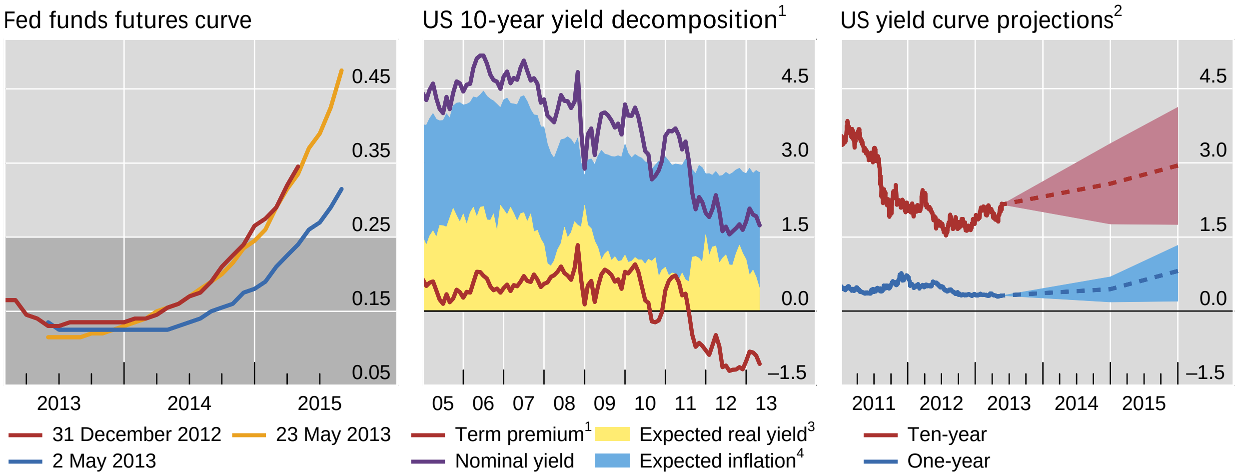
Long-term US Treasuries repriced again on improved US labour market figures in early May. US 10-year yields surged by some 40 basis points from 2 May to 22 May, inducing a mark-to-market loss of about 3.5% for bond holders. Judging by forward rates in mid-May, the 10-year Treasury yield was expected to approach 3% by late 2015, whereas the short end of the curve remained grounded by forward guidance (Graph 5, right-hand panel). Accordingly, the slope of the yield curve was expected to steepen further over the near term.

On 2 May, the day after the Federal Reserve announcement, the ECB reduced its policy rate by 25 basis points to 0.50%, after having kept it on hold for 10 months (Graph 6, left-hand panel). The cut had been almost fully priced in ahead of the central bank's move, given poor growth and subdued inflation. With euro area output in decline for five consecutive quarters, annual consumer price inflation slowed to 1.2% in April. The Governing Council also pledged to continue full-allotment refinancing operations for as long as necessary to ensure that a lack of liquidity would not inhibit credit growth, at least through mid-2014.

The fragmentation in credit markets across euro area countries was an important factor behind the ECB's policy action. While the dispersion in funding conditions across euro area banks had decreased since 2012, the central bank considered that the transmission of policy rates to bank lending rates remained impaired in some markets. The costs of household mortgages and loans to non-financial firms in Italy, Spain and smaller peripheral countries remained well above those charged by banks in Germany and France (Graph 6, centre panel). The latest lending survey also indicated that credit standards in the euro area periphery continued to tighten, albeit at a slower rate, and the survey of small and medium-

Monetary policy expectations and bond yields

In per cent | Graph 5

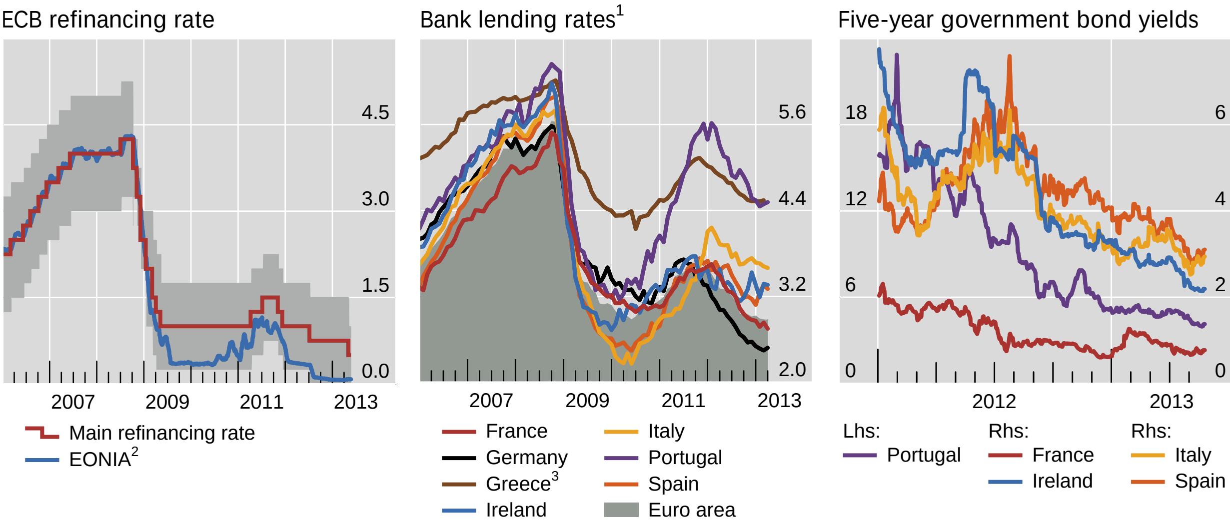


[1] Decomposition based on a joint macroeconomic and term structure model. See P Hördahl, O Tristani and D Vestin, "A joint econometric model of macroeconomic and term structure dynamics", *Journal of Econometrics*, vol 131, 2006, pp 405–44; and P Hördahl and O Tristani, "Inflation risk premia in the term structure of interest rates", *BIS Working Papers*, no 228, May 2007. [2] Central projections are based on forward rates, while upper and lower projections are derived from swaption-implied volatilities. [3] Average expected real yield over the maturity of the bond. [4] Average expected inflation over the maturity of the bond.

Sources: Bloomberg; Datastream; BIS calculations.

Financial conditions in Europe

In per cent | Graph 6



[1] Composite rates on new loans of all maturities and sizes to households for house purchases and to non-financial corporations; non-weighted averages. [2] Thirty-day moving average. [3] For Greece, composite rate on amounts outstanding of loans of all maturities and sizes to households for house purchases and to non-financial corporations; non-weighted average.

Sources: ECB; Markit; BIS calculations.

sized enterprises pointed to a high rejection rate of loan applications. These developments prompted the ECB to consult with the European Investment Bank on possible avenues for promoting a market for asset-backed securities collateralised by loans to non-financial corporations.

Spillovers to global bond and currency markets

The new phase of monetary policy accommodation in the major currency areas moved financial markets around the world.

Central bank support bolstered financial markets throughout the euro area. Asset prices held up against the flow of negative news that seemed to push the economic recovery further out of reach. Euro area equity prices recovered to their January peak, the highest level since August 2011. Sovereign bond yields continued to drift downward, with Spanish and Italian five-year yields falling below 3% amidst successful bond auctions (Graph 6, right-hand panel). CDS spreads on European corporate debt also declined even as the macroeconomic data surprised on the downside. In this benign environment, the financial crisis in Cyprus produced remarkably little contagion across markets (see Box 2).

European bond markets also benefited from monetary easing abroad. The prospect of depressed yields under Japan's new monetary regime fuelled market expectations that Japanese funds in search for yield would eventually flow into close foreign substitutes for JGBs. Highly rated European sovereign bonds offering a yield pickup against German bunds repriced the most. In particular, 10-year French and Belgian government bonds rallied, with yield spreads tightening by some 20 basis points within days of the BOJ announcement.

Box 2

Market reactions to the banking crisis in Cyprus

The insolvency of the two largest banks in Cyprus intensified negotiations between Cypriot and European authorities over official financial assistance in March. The banks had incurred large losses on Greek government debt holdings and on commercial property and mortgage loans extended to borrowers in Greece and Cyprus, while relying to a large extent on offshore deposits. Combined deposits at Bank of Cyprus and Cyprus Popular Bank (Laiki) amounted to €45.5 billion, alongside €0.1 billion in senior debt and €0.5 billion in subordinated convertible debt. The final rescue package prescribed the restructuring of Bank of Cyprus and the resolution of Laiki with 100% losses for shareholders and bondholders, with uninsured deposits above €100,000 also sharing in the burden. The measures were accompanied by a 10-day bank closure of Cypriot banks followed by withdrawal restrictions and capital controls.

The convoluted process of setting the terms led market participants to perceive that euro area bank resolutions could involve greater burden-sharing than had been the case in the past. The initial package of 16 March, and the willingness of political leaders to impose a "one-off stability levy" of 6.75% on *insured* deposits, caused considerable tensions that later subsided when a modified package sparing small deposits was agreed on 25 March. Between these dates, the Stoxx Europe 600 bank index fell by 7.6%, and the bank closure arrested the flight of deposits from Cypriot banks running at €3.9 billion (8%) since January.

Broader contagion from the Cypriot bank bail-in remained limited, however, and liquidity conditions stayed stable across markets. Banks in all euro area countries bar Cyprus recorded deposit inflows in March, totalling €85 billion. The episode led to a modest repricing of bank debt, with yields of euro area bank bond indices edging up for both junior and senior bonds. CDS spreads for senior and subordinated bank debt widened more noticeably, suggesting that participants in derivatives markets may have been more risk-sensitive to recent developments. Even as traders seeking out potentially vulnerable sovereigns pushed Slovenian 10-year bond yields near 7%, other peripheral euro area countries experienced little market pressure.

Several factors may have contributed to this somewhat muted market reaction. The first was a possible perception among market participants that the crisis in Cyprus, and the nature of its bank bail-in, was unique and small in scale. At the same time, perceived tail risk remained contained by continued monetary accommodation and backstop measures, such as the ECB's longer-term refinancing operations and its readiness to purchase sovereign bonds, if needed, through the Outright Monetary Transactions facility. The resilience of bank debt in the cash market also reflected that a significant share of these securities was being held by institutional investors whose asset allocations tend to be adjusted more gradually. Combined with the fact that net issuance volumes of bank debt in many euro area countries were negative over the last two quarters, this difference in the composition and behaviour of market participants may have contributed to the muted price action observed in the cash market relative to CDS markets.

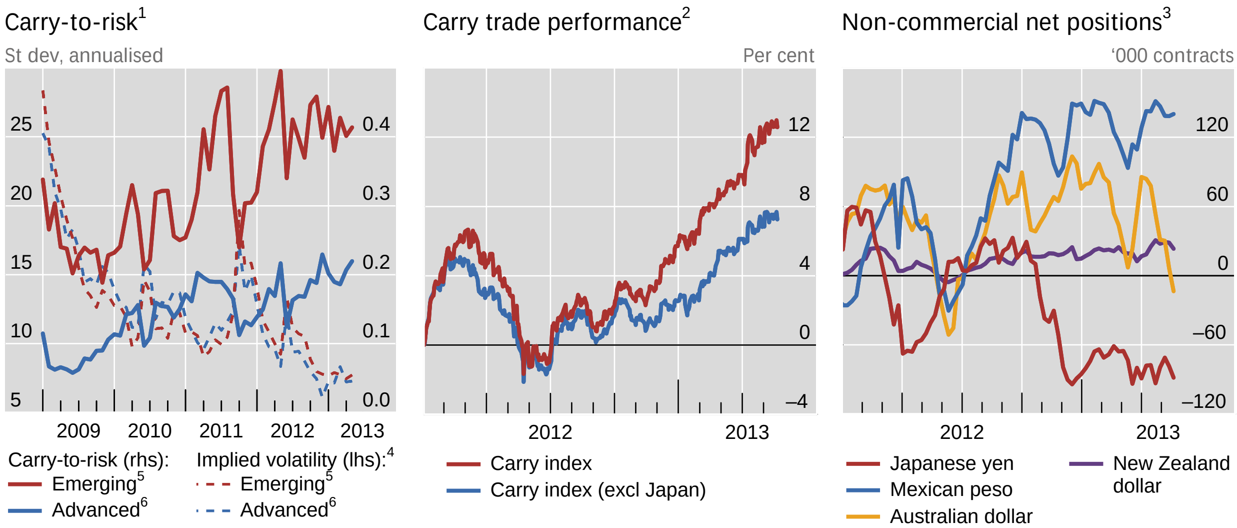
Renewed monetary stimulus and ample liquidity in the reserve currency areas also helped boost speculative activity in currency markets. A popular trading strategy was the carry trade, in which positions in higher-yielding currencies are funded via positions in lower-yielding ones. Carry-to-risk, a gauge of risk-adjusted ex ante returns on foreign currency-denominated investments, was elevated in recent months, in particular for several emerging market currencies (Graph 7, left-hand panel). While global interest rate differentials (carry) have narrowed compared to the 2003–07 episode, they remain relatively high. This environment of persistent interest rate differentials coupled with low foreign exchange volatility fostered the attractiveness of carry trades since mid-2012, especially for leveraged investors (Graph 7, centre panel).

The Japanese yen again became an attractive funding currency, given its recent downward trend. Partly in anticipation of policy action, the falling external value of the yen had already become the central theme in currency markets from the end of last year. After the BOJ unveiled the details of its new monetary policy framework, the yen further depreciated by some 10% against the US dollar until late

May (Graph 8, left-hand panel). Conversely, some emerging market currencies eyed as suitable targets, such as the Mexican peso, experienced significant appreciation pressure vis-à-vis the US dollar (Graph 8, right-hand panel). In line with these incentives, positioning data from futures exchanges showed a sizeable build-up of speculative short positions in the yen, and large long positions in liquid higher-yielding currencies (Graph 7, right-hand panel). There was also a build-up of long positions in the Australian and New Zealand dollars; however, these currencies have not witnessed the same appreciation pressure in recent months, and in Australia's case, these long positions have recently been reversed following the rate cut by the Reserve Bank of Australia in early May.

Monetary authorities outside the US, euro area and Japan cut policy rates in the face of weaker growth and lower inflation, as well as to mitigate appreciation pressures. The main exception was Brazil, where a pickup in inflation prompted the central bank to raise the Selic rate by 25 basis points to 7.5% on 17 April, the first hike in two years. Central banks elsewhere mostly eased their policy stance. On 7 May, the Reserve Bank of Australia lowered its policy rate to 2.75%, a reduction of 25 basis points partly motivated by currency strength. Following the rate cut, the Australian dollar lost ground significantly against the US dollar (Graph 8, centre panel). In response to currency appreciation pressure, the Reserve Bank of New Zealand intervened in the foreign exchange market. In March and April, the central banks of Mexico and Korea cut policy rates by 50 and 25 basis points, respectively. Among other factors, exchange rate developments were explicitly cited as motivations for the policy decisions. In April and May, the Turkish central bank pursued a two-pronged strategy of reducing the policy rate in two steps to 4.5% to

Carry trade returns and investor positioning — Graph 7

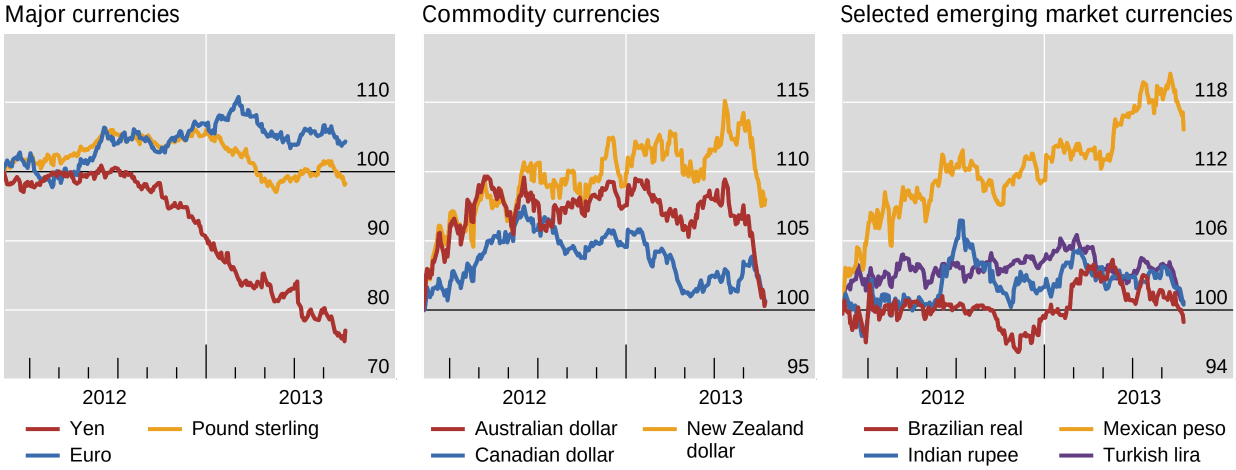


[1] Carry-to-risk is a gauge of the ex ante attractiveness of currency carry trades, and is defined as the interest rate differential (derived from the forward discount) divided by implied FX volatility. The graph shows carry-to-risk averaged across selected advanced economy and emerging market currency pairs. [2] Cumulative changes since 1 January 2012. Performance of a multi-currency carry trade index, where long positions in higher-yielding currencies are funded by short positions in lower-yielding currencies. The index is constructed via a portfolio sorting approach as in J Gyntelberg and A Schrimpf, "FX strategies in periods of distress", *BIS Quarterly Review*, December 2011. The investment universe consists of 30 advanced economy and emerging market currencies (red line), and the same set of currencies excluding the yen (blue line). [3] Positive (negative) indicates net long (short) positions. [4] Implied volatility of one-month FX options. [5] Simple average of carry-to-risk for Brazil, Chile, Israel, Korea, Mexico, the Philippines, Poland, South Africa, Thailand and Turkey. [6] Simple average of carry-to-risk for Australia, Canada, New Zealand, Norway and the United Kingdom.

Sources: Bloomberg; Datastream; US Commodity Futures Trading Commission; BIS calculations.

Nominal bilateral exchange rates vis-à-vis US dollar[1]

US dollars per unit of local currency; 1 June 2012 = 100 — Graph 8



[1] An increase indicates appreciation of the local currency.

Source: Bloomberg.

curb speculative inflows and appreciation pressure, while raising reserve requirements to dampen domestic credit growth. The Reserve Bank of India lowered its policy rate to 7.25%, its third 25 basis point cut in a row, a move motivated by weaker growth dynamics rather than a stronger currency.