Markets grow confident on continued support[1]

Extensive policy support has infused financial markets with a renewed sense of optimism over the last few months. Continued weakness in economic fundamentals led to extended accommodation in the form of monetary easing and a moderation in the pace of near-term fiscal consolidation. The resulting fall in perceived downside risk buoyed financial markets and drove investors into riskier asset classes. Safe haven flows ebbed as funds poured into equity and higher-yielding debt instruments, including those in emerging markets and the euro area periphery. These developments supported a renewed sense of optimism in financial markets with which macroeconomic performance has yet to catch up.

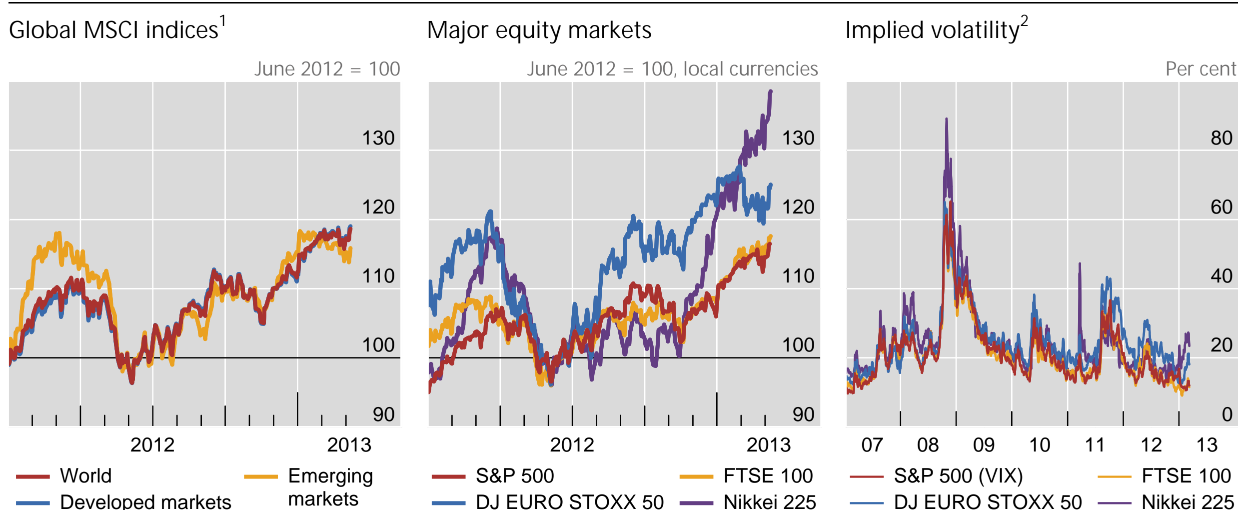
Financial markets rally ahead of economic fundamentals

As the new year started, the asset valuation gains of the previous months continued. The global equity index has gained 5% since early January, and 23% since the low reached in June 2012 when the euro area crisis was still in full swing and global growth appeared to be faltering (Graph 1, left-hand panel). The trend in the major equity markets had gathered momentum in November, triggering a rally in January (Graph 1, centre panel). Throughout this time, volatility in most major equity markets gradually declined, eventually reaching its lowest level since May 2007 (Graph 1, right-hand panel) in a sign that market participants regarded sharp market movements as less likely going forward.

By limiting perceived downside risks, policy accommodation played a central role in these developments. Risk reversals, an option-based measure of tail risk, declined substantially in response to central bank announcements (see box). And the cost of insurance protection against an equity market drop fell most sharply in July and September 2012 in response to key ECB announcements, and again in early January following the US "fiscal cliff" deal (Graph 2, left-hand panel). Mitigation of downside risks was also reflected in debt and currency markets. Yields on US Treasuries and German government bonds, often viewed as safe havens in times of elevated uncertainty, rose in January with no commensurate rise in inflation

[1] This article was prepared by the BIS Monetary and Economic Department. Questions about the article can be addressed to Masazumi Hattori (masazumi.hattori@bis.org) and Goetz von Peter (goetz.von.peter@bis.org). Questions about data and graphs should be addressed to Agne Subelyte (agne.subelyte@bis.org).

Global equity prices and volatility Graph 1



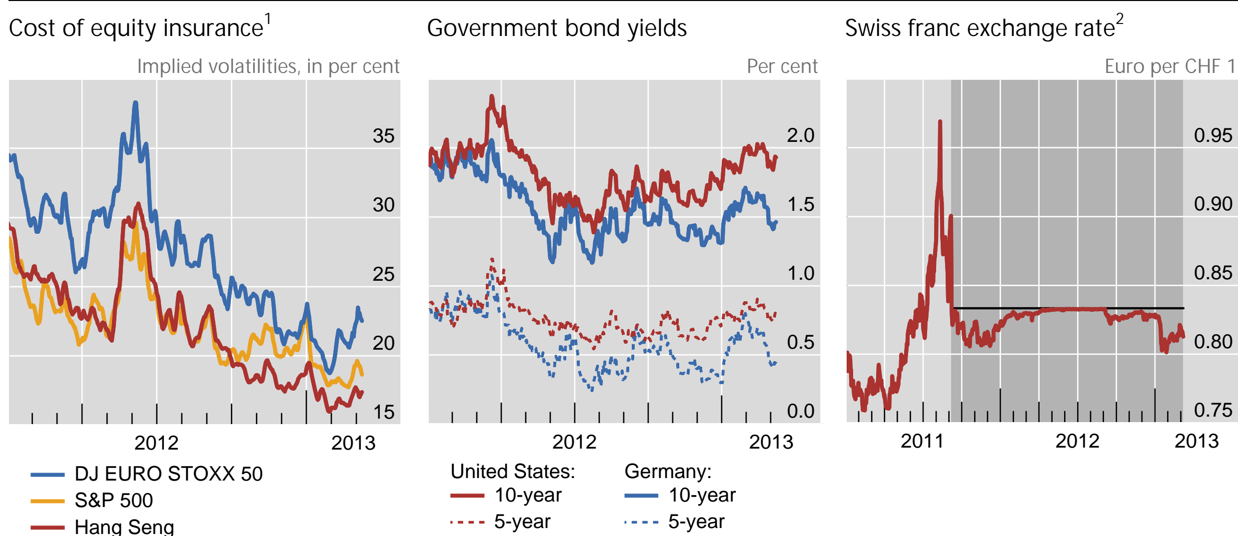
[1] Free float-weighted equity indices, in US dollars. [2] Five-day moving averages.

Source: Bloomberg.

expectations (Graph 2, centre panel). Similarly, the preference for the Swiss franc as an alternative to the euro waned for the first time since 2011. The exchange rate between these two neighbouring currencies moved away from the ceiling of CHF 1.20 to the euro set by the Swiss National Bank (Graph 2, right-hand panel).

Financial markets rallied even as growth data were signalling continued macroeconomic weakness in the advanced economies. The United Kingdom and the euro area suffered a contraction in 2012, while the United States experienced

Equity insurance and safe havens Graph 2



[1] Premiums for insurance against a decline in the equity index of 10% or more, relative to three-month forward prices, quoted as the implied volatilities that map to these premiums via the Black-Scholes option pricing formula. Higher implied volatilities correspond to higher premiums. [2] The horizontal line represents the ceiling on the Swiss franc's value in euro terms (1/1.2 = 0.83) that the Swiss National Bank has enforced since 6 September 2011 (represented by the shaded area) by means of foreign exchange intervention.

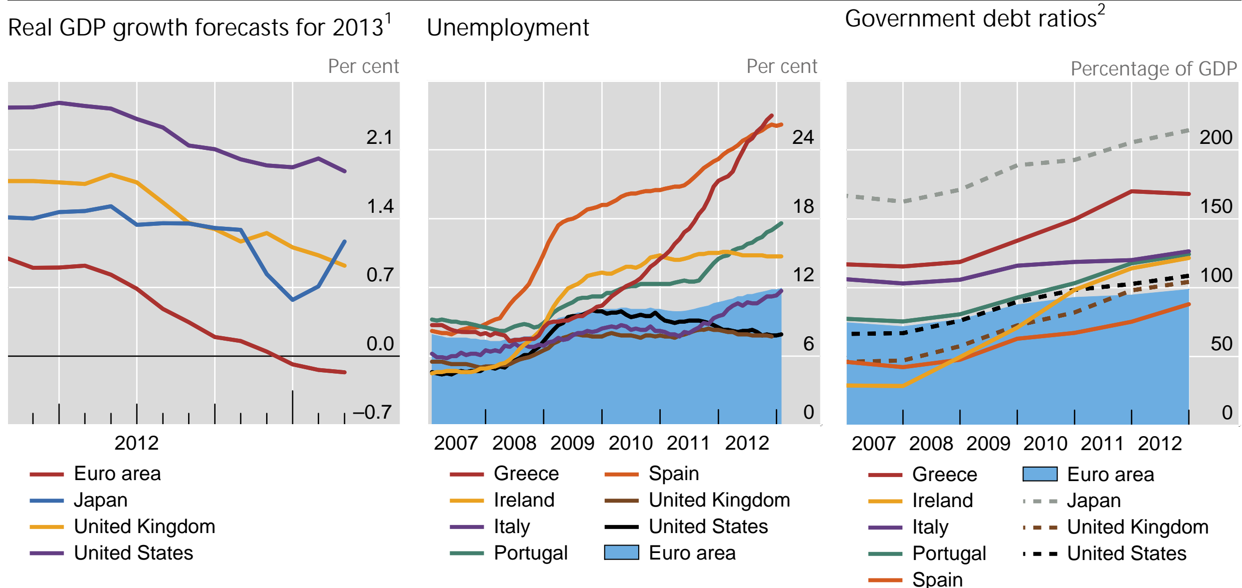
Sources: Bloomberg; Datastream.

subdued growth. Indeed, in the OECD as a whole, GDP shrank in the fourth quarter as Germany and France ended the year with a dip. Southern Europe, entering the fourth year in or close to recession, was expected to contract further in 2013. In contrast to improving financial market conditions since mid-2012, quarterly growth rates in many countries were gradually falling and so were growth forecasts for 2013 (Graph 3, left-hand panel). An exception to this trend was Japan recently, where the anticipation of expansionary policies fuelled growth expectations. The evolution of expected corporate profits conveys a similar impression. In the course of 2012, forecasts of earnings per share saw successive downward revisions in the United States and weak upward revisions in the euro area.[2] This suggests that improved fundamentals were not the main factor underpinning the recent equity market rally.

Renewed optimism in financial markets over the last few months mainly hinged on continued policy accommodation, reinforced by a few upside data surprises. The Citigroup Economic Surprise Index showed that news releases began to outperform expectations in September on average, but in Europe only as from January. Hopes for global growth also ticked up following trade and purchasing managers' index (PMI) releases that surprised on the upside. Even so, PMI data in many advanced economies reflected a contractionary environment with readings below the neutral level of 50, with the exception of the US PMI pointing to a modest expansion. By comparison, emerging markets showed more robust growth, boasting consensus forecasts of 3.5% for Latin America, 2.7% for eastern Europe and 4.8% for Asia, with China avoiding a much feared slowdown.

Fundamentals and government debt

Graph 3



[1] Consensus forecasts from survey of each month. [2] General government gross financial liabilities.

Sources: IMF, *World Economic Outlook*; OECD; © Consensus Economics; Eurostat; national data.

[2] These observations were based on earnings per share forecasts for firms included in the MSCI EMU Index and S&P 500 Composite Index, available at I/B/E/S.

Tail risk perceptions around unconventional monetary policy announcements

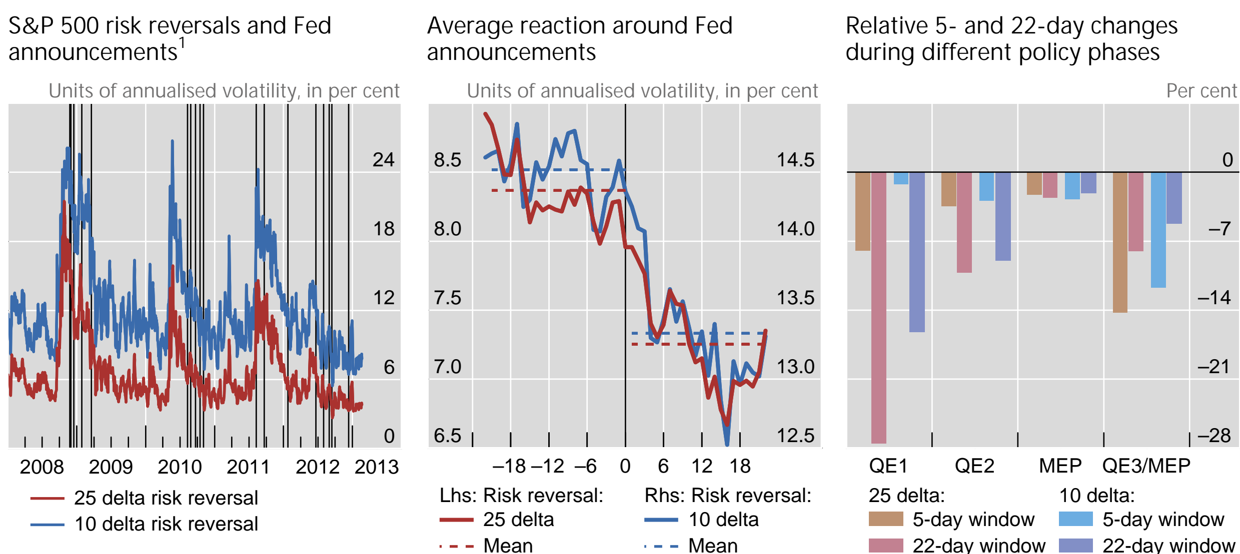
Masazumi Hattori, Andreas Schrimpf and Vladyslav Sushko

Unconventional policy actions by various central banks over the past few years are perceived to have helped (at least partly) alleviate some of the most immediate downside risks to financial markets and the global economy.[1] Any evidence on what may be labelled the "tail risk impact" of unconventional monetary policy has, however, largely been anecdotal. In this box, we present quantitative evidence which suggests that announcements related to unconventional monetary policy measures substantially reduced market perceptions of tail risks. Hence, the impact of these policies may in fact have been broader than suggested by existing studies, which focused on the effects of quantitative easing (QE) on the shape of the yield curve, asset prices more broadly and portfolio flows.

We gauge downside risk perceptions using information gleaned from option prices. Specifically, we rely on the difference between the option-implied volatilities of out-of-the-money (OTM) puts and OTM calls of the same maturity and "moneyness" (or so-called delta), often referred to as "risk reversal".[2] An OTM option has a strike price distant from the current market price and thus will only be exercised if the price movement over the option's lifetime is sufficiently large. Since equity returns are typically negatively skewed, ie steep price falls are more likely than steep rises, OTM puts are more likely to be exercised than OTM calls. As a result, the price of OTM puts (or, equivalently, their implied volatility) is higher. This is further compounded when investors may expect large losses, consequently demanding high risk premia to compensate them for such tail events. The difference in the two implied volatilities is thus magnified in stress episodes when hedging costs against downside risk are particularly elevated (Graph A, left-hand panel). Therefore, risk reversals can be an informative indicator of how market participants perceive the risk of a severe stock market crash. This differs from the VIX, a commonly used "fear gauge", which does not specifically capture downside risks, as it is a symmetrical measure of expected volatility.[3]

To capture the impact of unconventional monetary policy on risk reversals, we compare their levels over an event window of several trading days before and after key announcements. The tail risk measures dropped by 10% on average around 18 unconventional monetary policy announcements by the US Federal Reserve (Graph A, centre

Fed unconventional monetary policy announcements and pricing of tail risks — Graph A



[1] The vertical lines indicate Fed asset purchase and "forward guidance" announcements and related speeches. First two phases of Large-Scale Asset Purchases by the Fed (QE1 in 2008–09 and QE2 in 2010): 25 November 2008, 1 December 2008, 16 December 2008, 28 January 2009, 18 March 2009, 10 August 2010, 27 August 2010, 21 September 2010, 15 October 2010 and 3 November 2010; Maturity Extension Program (MEP, since September 2011): 9 August 2011, 21 September 2011, 25 January 2012, 20 June 2012 and 1 August 2012; and the ongoing open-ended monthly purchases of Treasuries and agency mortgage-backed securities (QE3/MEP, since September 2012): 31 August 2012, 13 September 2012 and 12 December 2012.

Sources: Federal Reserve; Bloomberg; authors' calculations.

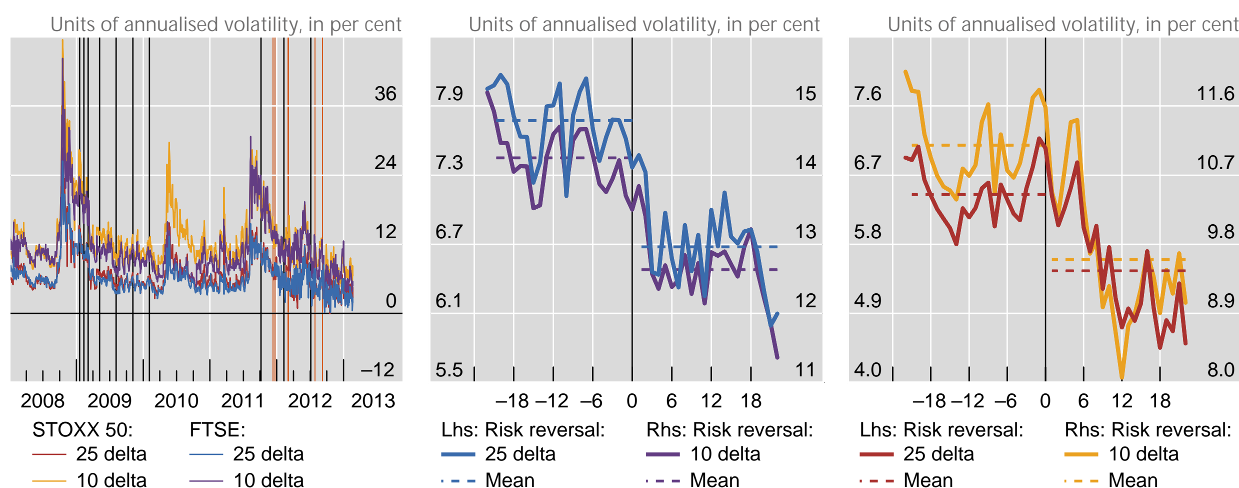
BoE and ECB announcements and pricing of tail risks

Graph B

FTSE 100 and DJ EURO STOXX 50 risk reversals and BoE and ECB announcements[1]

Average reaction around BoE announcements

Average reaction around ECB announcements



[1] The black vertical lines indicate BoE asset purchase announcements and related speeches: 19 January 2009, 11 February 2009, 5 March 2009, 7 May 2009, 6 August 2009, 5 November 2009, 4 February 2010, 6 October 2011, 9 February 2012 and 5 July 2012; the red vertical lines indicate ECB announcements and speeches related to three-year LTROs and OMTs: 8 December 2011, 21 December 2011, 29 February 2012, 26 July 2012 (first trading day after previous evening's announcement) and 6 September 2012 (first trading day after previous evening's announcement).

Sources: ECB; Bank of England; Bloomberg; authors' calculations.

panel). As the graph shows, there is an immediate drop of risk perceptions following the announcements and the effect is sustained for some time, with risk reversals on average lower at five-day and longer horizons.④

Risk perceptions were affected more strongly during the first round of unconventional policies, especially around QE1 announcements (Graph A, right-hand panel). The impact of subsequent announcements associated with QE2 and early phases of the Maturity Extension Program (MEP) was more subdued. Fed announcements appear to have been curbing tail risk perceptions once again during the ongoing phase of QE3. The resumption of a stronger impact of Fed announcements may be best understood by appealing to a framework whereby central bank purchases can provide insurance against tail events, if accompanied by clear communication and a commitment to condition policy actions on future states of the economy.⑤ Hence, the Fed's use of "forward guidance" and the communication of employment targets for asset purchases may have enhanced the effect of MEP and of QE3.⑥

Announcements by other central banks may have reduced tail risk perceptions as well. Asset purchase announcements by the Bank of England (BoE) had qualitatively similar effects (Graph B, centre panel). The more sluggish reaction to the recent ECB announcement suggests differences in the transmission of ECB policies, namely three-year longer-term refinancing operations (LTROs) and outright monetary transactions (OMTs), as compared with outright asset purchase announcements by the Fed and the BoE (Graph B, right-hand panel).

① See eg Olivier Blanchard, "(Nearly) nothing to fear but fear itself", *The Economist*, 29 January 2009; speech by Fed Chairman Ben Bernanke at the Jackson Hole Symposium, 31 August 2012; and BIS, *82nd Annual Report*, June 2012. ② The delta of an option measures the sensitivity of its price to changes in the price of the underlying. Lower delta options (eg 10 delta) have a strike more distant from the current price and are thus deeper OTM options. ③ We report absolute values of risk reversals, such that a higher value corresponds to a higher price of crash risk insurance. ④ In M Hattori, A Schrimpf and V Sushko, "The response of tail risk perceptions to quantitative easing", 2013, mimeo, we conduct some more detailed analysis. Based on a bootstrap approach, we find that changes in risk reversals around Fed announcement dates are statistically significant, with effects stronger relative to simple volatility measures. We also control for other factors driving risk perceptions using event study regressions and examine the effects of actual asset purchases in structural vector autoregression frameworks. ⑤ See M Brunnermeier and Y Sannikov, "Redistributive monetary policy", paper prepared for the 2012 Jackson Hole Symposium. ⑥ The mechanism may operate by improving the capital position of value-at-risk (VaR)-constrained financial institutions, as Fed purchases affect the market value of their fixed income and possibly other asset holdings. A lower likelihood of hitting the VaR constraint may lead to repricing of risks and raise risk appetite, as in H S Shin, *Risk and liquidity*, Oxford University Press, 2010. See also C Borio and H Zhou, "Capital regulation, risk-taking and monetary policy: a missing link in the transmission mechanism", *BIS Working Papers*, no 268, December 2008, for a discussion of monetary policy transmission via financial intermediary balance sheets and risk spreads.

The underlying economic weakness in the advanced economies added to fiscal strains and triggered further ratings downgrades. UK government debt lost its AAA rating from one agency on the view that the sluggish growth environment posed an increasing challenge to the government's fiscal consolidation efforts. This left only Canada and Germany with the top rating from all three main rating agencies among the G8 countries. As with France's downgrade in November, the ratings action was anticipated and the market response subdued. At the same time, economic conditions continued to exert pressure on public finances from both the revenue and expenditure sides. While official unemployment in the United States, the United Kingdom and Ireland had turned, the jobless rate continued to rise in many other advanced economies (Graph 3, centre panel). In Greece and Spain, unemployment breached 25% (50% for youth up to 24 years of age), illustrating the depth of their recessions. Since GDP was growing more slowly than government debt in many countries, their public debt burdens continued to rise in spite of fiscal consolidation efforts (Graph 3, right-hand panel). That said, the Greek debt burden benefited from earlier cuts and a debt buyback programme in December, resulting in a rare ratings upgrade.

Macroeconomic weakness leads to broader easing

Market participants reacted with growing optimism to a range of policy measures taken to support the fragile economic recovery. On the fiscal side, a number of short-term consolidation measures were postponed or eased. US lawmakers averted the fiscal cliff in late December that had threatened to induce a recession in 2013. The combined tax hikes and spending cuts equivalent to 5% of GDP gave way to a more moderate deficit reduction by automatic "sequester" budget cuts, resulting in $42 billion less spending up to September 2013 by Congressional Budget Office estimates. This boosted equity markets in early January, as did the temporary suspension of the statutory debt limit later that month. Also in January, Japan's new government turned its campaign promise into a stimulus package of ¥10 trillion to boost growth and overcome deflation, and the markets rallied with little concern over Japan's debt burden. The administration's ¥13 trillion supplementary budget containing the stimulus package was largely debt-financed, with 51% of the additional spending not being matched by planned tax revenue.

In Europe, the gradual relaxation in financial markets made fiscal consolidation less urgent. Assurances in July 2012 that "the ECB is ready to do whatever it takes to preserve the euro" had been followed by the announcement of a backstop (OMT) allowing for unlimited sovereign bond purchases when a member country submits to a macroeconomic adjustment programme. As investors moved back into euro area assets and unwound short positions, asset prices increasingly reflected the view that the ECB's commitment had removed the risk of a possible member country exit and currency redenomination. In addition, the poor euro area growth outlook led the authorities to allow several countries additional time to meet deficit targets. The pacing of fiscal tightening, both in the euro area and in the United States and Japan, helped lift equity markets. Other important parts of the global economy also saw policy support growth; to avert the risk of a hard landing in China, the authorities expanded infrastructure investment while promoting bank lending and non-bank financing.

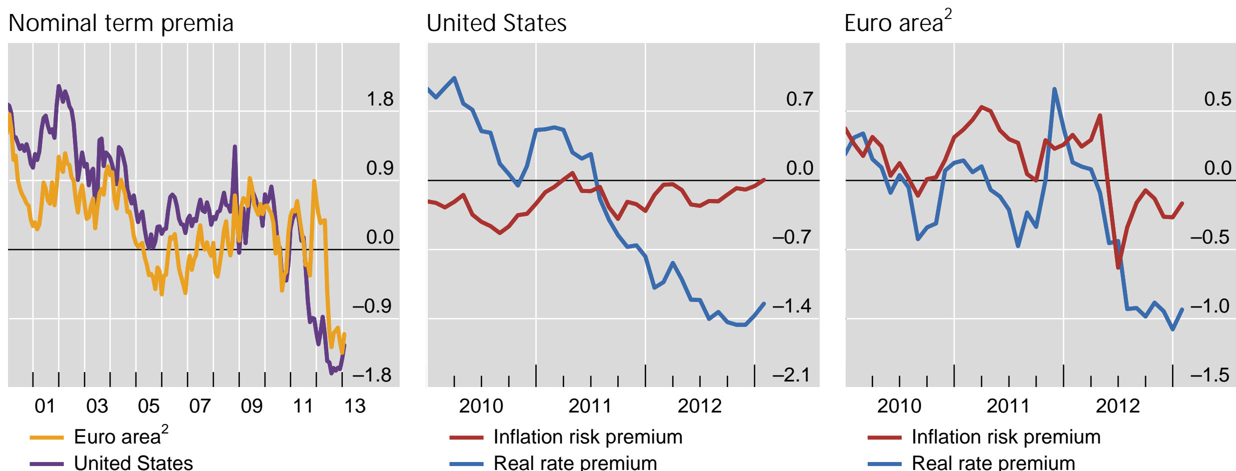
Market participants also reacted positively to recent regulatory developments. On 7 January, the Basel Committee on Banking Supervision issued the revised liquidity coverage ratio (LCR) to be phased in more slowly with more lenient run-off assumptions and a broader definition of liquid assets (now including qualified mortgage-backed securities (MBS), corporate bonds and equity).[3] The market reaction included equity gains and credit default swap (CDS) spread compression, particularly among banks with lower liquidity ratios. In the United Kingdom, the Financial Services Authority provided assurances of regulatory flexibility to help support bank lending. Meanwhile, the UK government proceeded with plans to ring-fence UK banking groups, while turning down some of the stricter recommendations of the Vickers Report. Similarly, a European Commissioner stated that any implementation of the Liikanen proposal to separate trading activities from deposit-taking would have to avoid penalising lenders that were supporting the economy, while two alternative proposals emerged from France and Germany. Market analysts regarded these regulatory changes as helpful in relaxing some of the near-term challenges weighing on banks' earnings prospects.

On the monetary side, central banks maintained expansionary policies across the five major reserve currencies, including by holding nominal policy rates at or near zero. The Bank of England chose to allow inflation to remain above target over the near term. The Federal Reserve in December decided to keep the federal funds rate below 0.25% at least as long as unemployment remains above 6.5%, provided inflation expectations stay well anchored. Japan's resolve to lift growth and end deflation has created expectations that the Bank of Japan will further expand quantitative easing on the way to a higher inflation target of 2%.

Government bond risk premia[1]

In per cent

Graph 4



[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 1.31, 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] For the euro area, zero coupon yields on nominal and euro area HICP-linked bonds issued by the French Treasury have been used.

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

[3] Separately, planned margin requirements for non-centrally cleared derivatives were eased to reduce the liquidity impact on market participants.

In this subdued macroeconomic environment, core government bond markets still benefited from sustained demand for high-quality paper. Continued monetary easing led the market to perceive that monetary tightening remained a remote prospect. An analysis of nominal yields on US Treasuries shows that the term premium, which compensates investors for the risks of inflation and movements in real rates, turned negative in 2011 and continued to decrease through 2012; in the euro area, the premium turned negative in mid-2012. In both markets, the premium decreased to levels representing record lows since at least 2000 (Graph 4, left-hand panel). A further decomposition of the term premium itself identifies the decline of the real (as opposed to inflation) part as the main driver behind the falling term premium (Graph 4, centre and right-hand panels). While monetary policy easing compressed the real rate premium, the flight to quality pushed the overall term premium into negative territory.

The major central banks continued to follow quantitative easing policies. The Federal Reserve continued its purchases of agency MBS and long-term Treasury securities at the rate of $85 billion per month, while the Bank of England complemented its asset purchases with a scheme to encourage bank lending to households and companies.[4] Between July 2007 and February 2013, the Federal Reserve's and the Bank of England's balance sheets grew by 254% and 394%, respectively, compared with 130% for the Eurosystem. Having extended more than €1 trillion in direct funding to euro area banks a year ago, the ECB has overseen the early repayment of €224 billion in LTROs so far. This makes the ECB the only major central bank whose balance sheet has been shrinking, as the OMT backstop has remained unused. The Swiss National Bank's balance sheet also stabilised, after its efforts to curb the Swiss franc's value vis-à-vis the euro had pushed its size above CHF 500 billion or 83% of GDP.

Concerns over the euro area recede

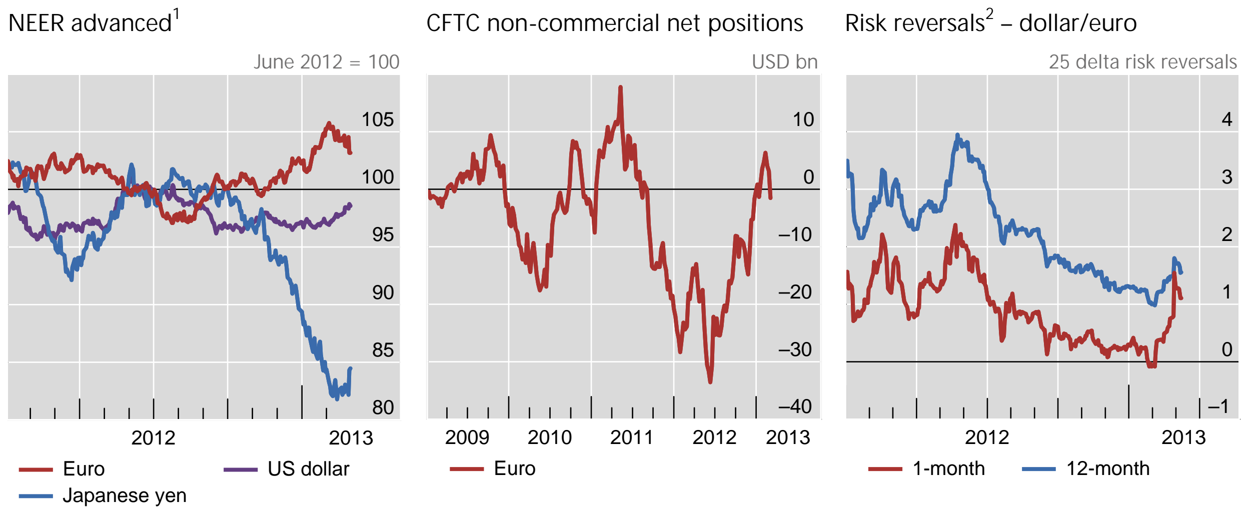
Tail risk concerns gave way to optimism as global financial markets took their cue from policy support. The reduction in downside risk in the euro area drove the euro sharply higher in January (Graph 5, left-hand panel). This appreciation went hand in hand with the unwinding of short positions in the euro (Graph 5, centre panel). Following these movements, investors regarded any further depreciation as less likely, in both the near and medium term. The one-month risk reversal, however, spiked up again following the recent Italian election results (Graph 5, right-hand panel).

Market participants regarded the ECB's OMT facility as the single most important measure taken to mitigate downside risk. As market sentiment turned in September and improved further in early 2013, the euro area debt crisis weighed less on financial markets than at any time since 2010. During this time, the bond yields of stressed euro area sovereigns declined across maturities (Graph 6, left-hand panel). Spreads over German bunds fell by half from their June 2012 levels (and by nearly two thirds in Ireland and Portugal), settling in a range of 2.2 to 4.3%

[4] The special feature by Hofmann and Zhu in this issue examines the impact of US and UK asset purchase programmes on inflation expectations.

Euro

Graph 5



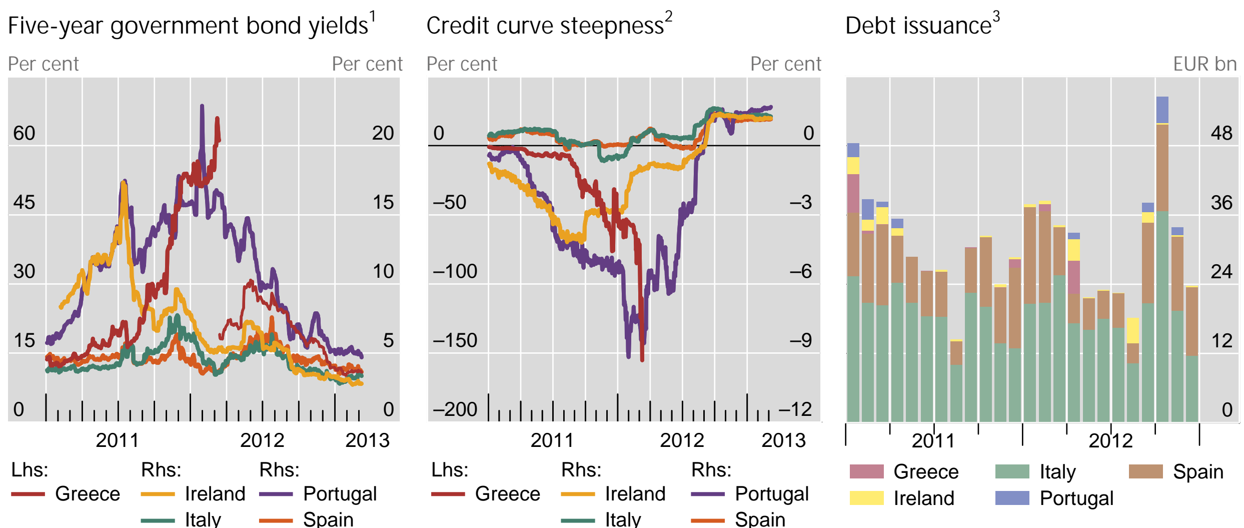
[1] Geometric weighted average of 60 bilateral nominal exchange rates, with weights based on trade in 2008–10. [2] Risk reversal is a measure of the skew in the demand for out-of-the-money options at high strikes compared with low strikes and can be interpreted as the market view of the most likely direction of the spot movement over the next maturity date. It is defined as the implied volatility for call options minus the implied volatility for put options on the base currency with the same delta. An increase indicates that market participants are willing to pay more to hedge against an appreciation of the US dollar.

Sources: Bloomberg; US Commodity Futures Trading Commission (CFTC); BIS calculations.

for the five-year maturity. As risk premia declined, the credit curve became upward-sloping once again (Graph 6, centre panel). During much of 2011–12, CDS spreads had been abnormally high at the short end of the maturity spectrum, indicating that market participants had viewed a credit event as imminent.

Euro area sovereigns

Graph 6



[1] For Greece, the panel switches to the 10-year bond from 13 March 2012. [2] Difference between 10-year and two-year CDS spreads. Credit events specified by CDS contract clauses include default on scheduled payments and involuntary debt restructurings. Quotes on CDS referencing Greek debt ceased with the debt restructuring in March 2012. [3] Gross debt issuance of euro-denominated securities with original maturity of one year or more by central government.

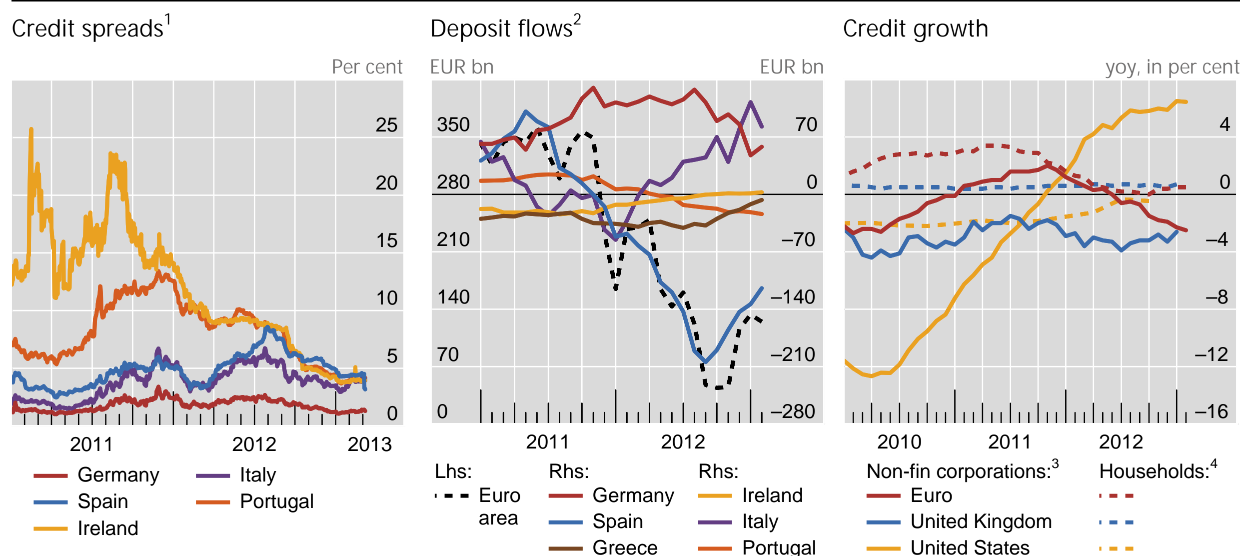
Sources: ECB; Bloomberg; Markit.

As market participants gradually moved back into euro area assets, sovereigns in the periphery were able to issue debt on better terms. Italian and Spanish bond auctions elicited robust demand in spite of deepening recessions and political uncertainty. In a sign that fiscal consolidation ultimately improved bond market access, Ireland and Portugal returned to the international debt market with major bond issues (Graph 6, right-hand panel). This was seen as an important step towards securing financing outside their official programmes. Likewise, some of the largest financial institutions headquartered in the euro area periphery regained access to wholesale funding markets.

These market dynamics briefly came to a halt in late February on concerns that the Italian election results might derail the reform agenda. On 26 February, euro area equities fell by 3%, led by the Milan index losing 5%. Italian government bond yields increased by more than 40 basis points, and CDS spreads jumped by 50 basis points. By 6 March, only half of the widening in spreads remained in place after markets had calmed down on reassurances from ECB and Federal Reserve officials that the central banks remained committed to accommodative policy.[5] The rebound was also helped by the Dow Jones reaching an all-time high on 5 March as US markets shrugged off fiscal concerns to focus on new signs of a US recovery.

The developments since last July boosted financial markets more broadly and also improved the condition of euro area banks. The interplay between the

Indicators of bank funding and credit growth — Graph 7



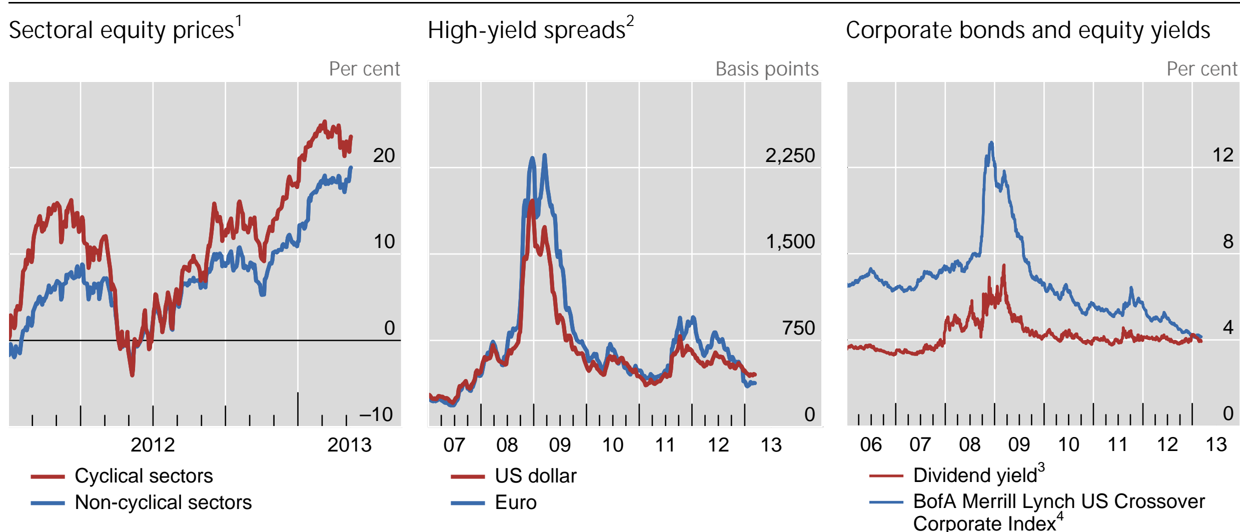
[1] Five-year on-the-run CDS spreads; simple average over a sample of domestic financial institutions. [2] Cumulated inflows of deposits from households and private non-financial companies over the preceding 12 months. [3] For the euro area, monetary financial institution (MFI) loans to non-financial corporations. For the United Kingdom, sterling loans to private non-financial corporations by UK-resident MFIs and related specialist mortgage lenders excluding the effects of securitisations and loans transfers. For the United States, commercial and industrial loans and commercial real estate loans by commercial banks in the United States. [4] For the euro area, MFI loans to households. For the United Kingdom, sterling loans to individuals by UK-resident MFIs and related specialist mortgage lenders excluding the effects of securitisations and loans transfers. For the United States, loans and debt securities excluding trade credit by all creditors.

Sources: ECB; Bank of England; Federal Reserve; national data.

[5] Markets showed the opposite reaction, with the S&P 500 losing nearly 1.5%, when Federal Open Market Committee minutes released on 20 February hinted at a possible rethinking of the pace of asset purchases.

Asset prices

Graph 8



[1] Cumulative changes in market capitalisation relative to the average of June 2012. Cyclical sectors are oil and gas, basic materials, industrials and finance. Non-cyclical sectors are consumer goods, consumer services, telecoms and utilities. [2] Bank of America Merrill Lynch index yields for a basket of non-investment grade corporate bonds. [3] Dow Jones US selected equity dividend index, 12-month dividend yield. [4] Yield to maturity.

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

sovereign debt crisis and banking distress began to run in reverse, with stronger sovereigns leading to stronger banks. In addition, important measures were taken to strengthen banks, notably the €40 billion recapitalisation of Spanish banks financed out of the European Stability Mechanism. As a result, CDS spreads referencing euro area banks have declined substantially over the past six months in parallel to falling sovereign spreads (Graph 7, left-hand panel). Bank equity has consistently outperformed the general index in the past several months: since June 2012, the European bank sub-index has gained 46%, twice the percentage increase of the European index. During this period, deposit funding has also improved and earlier outflows from banks in Greece and Spain began to reverse (Graph 7, centre panel). These developments were mirrored in falling spreads on euro/dollar swaps and Libor-OIS in the main currencies. The improvement in bank funding conditions allowed hundreds of euro area banks to repay a higher than expected €137 billion in LTRO funding to the ECB in January. The €61 billion repayment in February, while this time only half of the market's median forecast, elicited no significant market reaction. The cumulative repayments reduced the ECB's net lending to banks to €596 billion.

It remains to be seen whether banks' improved condition translates into greater credit supply supporting an eventual economic recovery. Even as funding conditions eased, banks reported net tightening in their lending standards. Earnings prospects remain limited by various factors ranging from a weak economy to restructuring and litigation challenges. Moreover, on the demand side, many households still sought to repay debt and firms increasingly tapped the market to reduce their

reliance on banks. These developments accounted for relatively subdued credit growth (Graph 7, right-hand panel).[6]

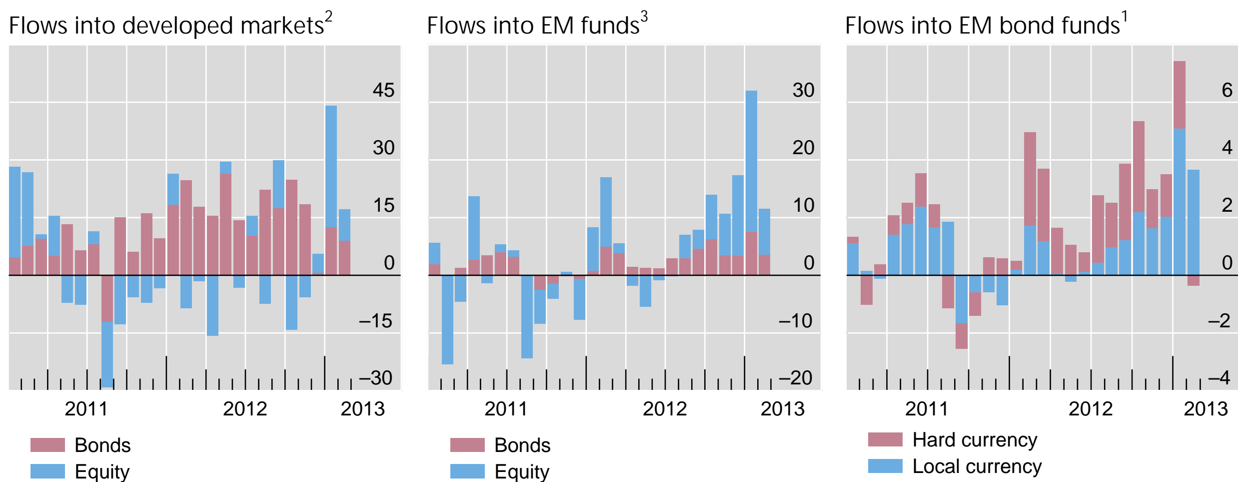
Elevated risk appetite and capital flows across asset classes

As tail risks receded, market participants became more willing to take on risk. This lifted equity prices generally, and the more risk-sensitive cyclical sectors in particular, extending a trend that had started in November 2012 (Graph 8, left-hand panel). In bond markets, high-yield corporate bond spreads narrowed to levels last seen prior to the euro area debt crisis (Graph 8, centre panel). Corporate bond yields declined more broadly, raising the relative attractiveness of investing in equity markets. Yields of lower-rated investment grade bonds (BBB–BB), for instance, became almost comparable to the dividend yield of high-dividend paying shares (Graph 8, right-hand panel).

Against this backdrop, capital flows moved into riskier asset classes. In 2012, funds investing in corporate bonds in the developed markets saw the largest inflows, but investors progressively moved into more risky asset categories. Inflows into equity funds soared in early 2013 (Graph 9, left-hand panel). Capital inflows to emerging market (EM) funds also surged, the largest part going to dedicated equity funds (Graph 9, centre panel). And within the emerging market bond fund category,

Portfolio flows[1]

In billions of US dollars | Graph 9

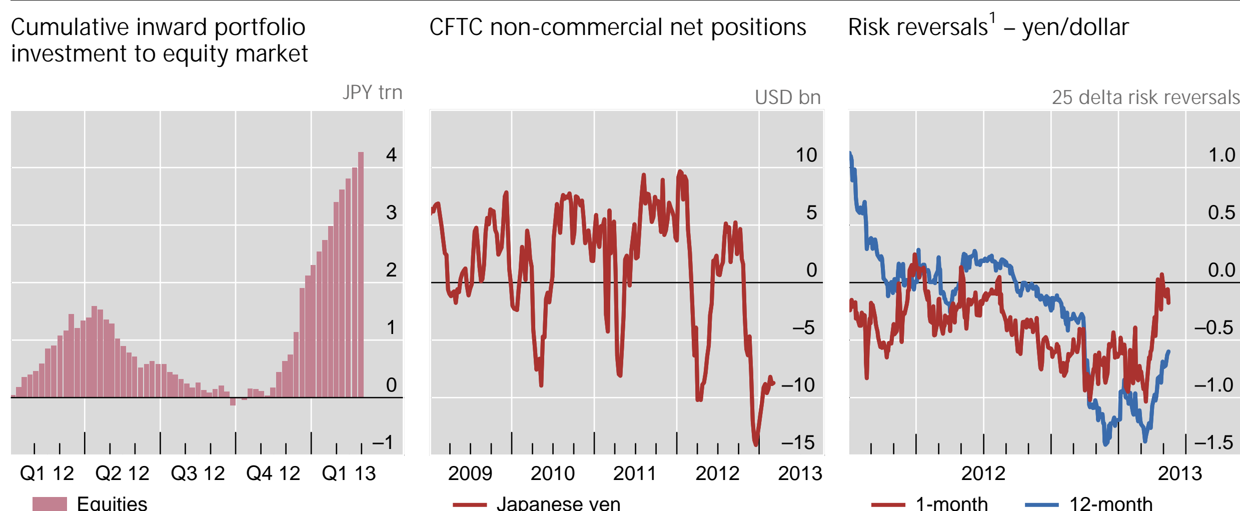


[1] Net portfolio flows (adjusted for exchange rate changes) to dedicated funds for individual countries and to funds for which country or at least regional decomposition is available. [2] Sum across Australia, Canada, the euro area, Japan, New Zealand, Switzerland, the United Kingdom and the United States. [3] Sum across China, Chinese Taipei, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand; Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela; and the Czech Republic, Hungary, Poland, Russia, South Africa and Turkey.

Sources: EPFR; BIS calculations.

[6] For the same reasons, measures designed to encourage bank lending, such as the Bank of England's Funding for Lending Scheme, experienced a slow take-up with mixed results.

Portfolio inflows to the Japanese equity market and the yen Graph 10



[1] Risk reversal is a measure of the skew in the demand for out-of-the-money options at high strikes compared with low strikes and can be interpreted as the market view of the most likely direction of the spot movement over the next maturity date. It is defined as the implied volatility for call options minus the implied volatility for put options on the base currency with the same delta. An increase indicates that market participants are willing to pay more to hedge against an appreciation of the yen.

Sources: Bloomberg; BIS calculations.

investors increasingly sought funds investing in local currency-denominated bonds, exposing themselves to emerging market currency risk (Graph 9, right-hand panel).

Global capital flows were also associated with a substantial depreciation of the yen (Graph 5, left-hand panel). During this period, foreign investors were channelling portfolio flows into the Japanese equity market, expecting higher profits at Japanese firms, especially in the export sector, following the currency's substantial depreciation (Graph 10, left-hand panel). Similar capital inflows into Japanese equity had occurred in past episodes of yen depreciation, as in the first quarter of 2012. This time, the policy shift in Japan coincided with an increase in global risk appetite. Meanwhile, speculative derivatives transactions shorting the yen played a role in its depreciation (Graph 10, centre panel). Judging by option-based indicators, market participants continued to expect a depreciation of the yen in the future (Graph 10, right-hand panel).