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# Overview: risk appetite rebounds on stabilisation hopes

Glimmers of hope that the worst of the financial crisis and economic downturn had passed sparked a rebound in risk appetite among investors in the period between end-February and end-May. As a result, equity prices gained sharply, credit spreads narrowed and implied volatilities fell. This budding optimism emerged even as key economic indicators remained at depressed levels. Investors focused instead on incipient signs that economic conditions were deteriorating less rapidly than before, while intensified policy actions to counter the crisis and better than expected earnings announcements helped bolster confidence.

A number of policy measures contributed importantly to the improvement in investor sentiment. The publication of details on US and UK bank rescue plans reduced uncertainty, as did the results of the bank stress tests administered by the US Federal Reserve. The latter led, in particular, to a narrowing of US bank credit spreads. Moreover, investors initially took heart from further fiscal stimulus packages and from the coordinated action announced following the April G20 summit.

In addition, central banks took further steps to ease monetary conditions. Apart from rate cuts – where still possible – a number of central banks announced new and unconventional measures, including expanded credit easing actions and purchases of large quantities of government bonds. While such measures initially led to a drop in treasury yields, long-term interest rates displayed a general upward trend during the period as rebounding risk appetite reduced the flight to safe government bonds. Growing concerns about mounting government debt added to the upward pressure on yields, in particular towards the end of the period under review. In parallel, long-horizon forward break-even inflation rates rose, possibly reflecting investors' worries about the long-term inflationary implications of the ongoing expansion of public sector commitments.

Despite the turnaround in markets, by end-May conditions in many market segments remained some way off the levels seen before the bankruptcy of Lehman Brothers in September 2008. This was the case in equity markets, where, even after the recent sharp rallies, most indices were still 20–30% below where they had stood in mid-September. In credit markets, where spreads narrowed considerably from the peaks reached in early 2009, they had

in general not fully returned to where they had been in mid-September. Sub-investment grade and sovereign CDS spreads, in particular, were still significantly higher. However, in interbank markets, where the most extreme dysfunctions were seen in the aftermath of the Lehman collapse, conditions continued to gradually improve, and by end-May key money market spreads had returned to pre-Lehman levels.

## Bond yields rise as flight to quality abates

Long-term government bond yields in advanced economies rose considerably during the period under review, reflecting a combination of hopes that the pace of deterioration in the global economy was slowing and concerns about accelerating fiscal deficits. Between end-February and end-May 2009, the 10-year US bond yield rose by almost 45 basis points to around 3.45%, while corresponding euro area and Japanese yields increased by about 45 and 20 basis points, to around 3.60% and 1.50%, respectively (Graph 1, left-hand panel). Meanwhile, short-term yields were little changed, reflecting expectations of relatively stable policy rates in the near term (Graph 1, centre panel). As a result, yield curves steepened considerably.

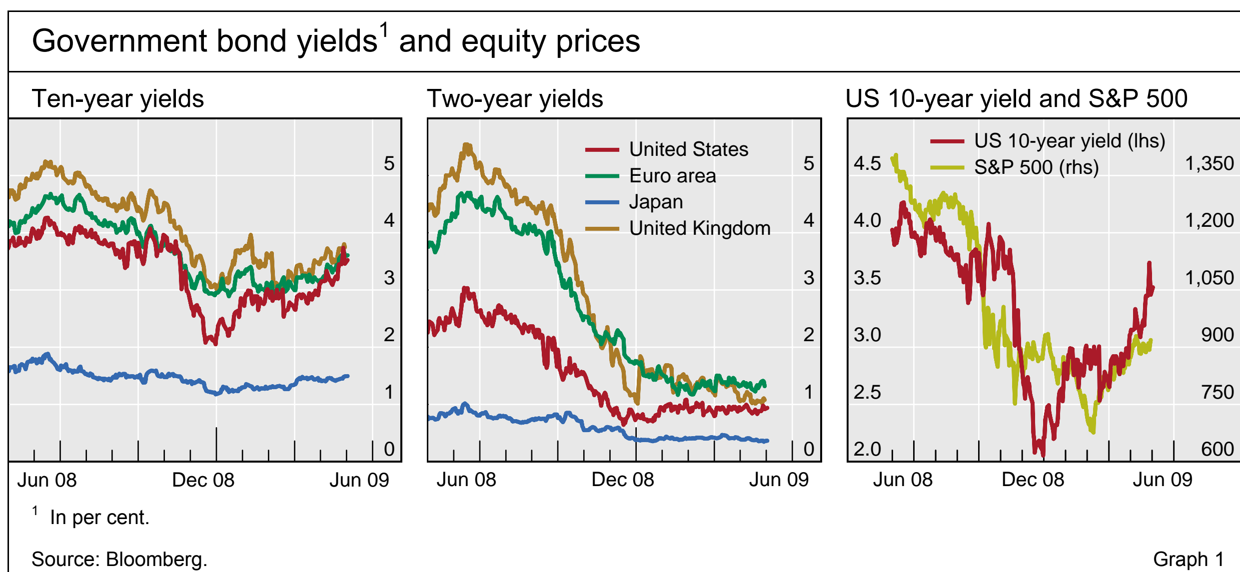
Yields rise on recovery hopes …

Much of the rise in long-term bond yields was driven by growing perceptions among investors that the worst of the financial crisis and the economic slump might have passed. As was evident from other markets – in particular equity markets – such hopes sparked a rebound in risk appetite. As the demand for risky assets increased, pressures in government bond markets due to a flight to safety and liquidity began to ease, thereby pushing yields higher. Accordingly, the pickup in bond yields accelerated in March as the rise in equity prices gathered pace (Graph 1, right-hand panel).

… fuelled by government actions …

Investors' nascent optimism drew on a combination of confidence-building measures announced by various authorities and macroeconomic data that were less bad than had been anticipated. Actions by official authorities that appeared particularly important in bolstering market confidence included the publication of details on the UK Asset Protection Scheme and on the US

Government bond yields[1] and equity prices




[1] In per cent.

Source: Bloomberg.

Graph 1

| Selected events over the period under review | |
|---|---|
| 26 February | The UK authorities inject another £13 billion into RBS and insure £325 billion of the bank's assets under the Asset Protection Scheme. |
| 3 March | The Federal Reserve announces the launch of the Term Asset-Backed Securities Loan Facility (TALF) to lend up to $200 billion. |
| 5 March | The Bank of England cuts its policy rate by 50 basis points to 0.5% and announces the £75 billion Asset Purchase Facility. The ECB cuts the main refinancing rate by 50 basis points to 1.5%. |
| 7 March | Lloyds Banking Group participates in the Asset Protection Scheme to insure £260 billion of assets. |
| 10 March | A Citigroup internal memo suggests that the bank sees the best profit performance in over a year. |
| 12 March | The Swiss National Bank intervenes in currency markets. General Electric is downgraded by S&P. |
| 18 March | The US Federal Reserve announces plans to purchase up to $300 billion of long-term US Treasuries and to increase its purchases of agency debt and agency MBS. The Bank of Japan increases JGB purchases from ¥16.8 trillion per year to ¥21.6 trillion. Unicredit applies to both the Austrian and Italian authorities for aid. |
| 23 March | The US Secretary of the Treasury unveils details for the Public-Private Investment Program. |
| 2 April | G20 summit. The ECB cuts the main refinancing rate by 25 basis points to 1.25%. |
| 6 April | HSBC completes a record £12.5 billion rights issue. |
| 7 April | Ireland announces plans to establish a National Asset Management Agency to take over bad loans. |
| 9 April | Wells Fargo preannounces record first quarter profits. Japan unveils a ¥15.4 trillion fiscal stimulus package. |
| 15 April | UBS preannounces large first quarter losses of about CHF 2 billion. |
| 20 April | Bank of America reports $4.2 billion earnings in the first quarter but also an increase in provisions. |
| 22 April | Morgan Stanley reports a $578 million loss in the first quarter. |
| 28 April | BBVA reports a 14.2% year-on-year decline in net profits in the first quarter. |
| 30 April | Chrysler LLC files for Chapter 11 protection under the US Bankruptcy Code. |
| 7 May | The US authorities release bank stress test results. The Bank of England increases the size of the Asset Purchase Facility by £50 billion to £125 billion. The ECB cuts the main refinancing rate by 25 basis points to 1% and announces its intention to purchase around €60 billion of covered bonds. |
| 21 May | S&P revises the outlook on the United Kingdom's AAA credit rating from stable to negative. |

Sources: Bloomberg; *Financial Times*; *The Wall Street Journal*. Table 1

Public-Private Investment Program, the G20 London summit at the beginning of April and the outcome of the US bank stress tests (Table 1).

… and less gloomy data

Incoming macroeconomic data turned out to be less gloomy than expected, particularly for the United States – despite a 6.1% annualised first quarter fall in GDP. Data on US non-farm payrolls suggested that the loss of jobs had stopped accelerating, and while the April release was still bleak at –539,000 jobs, it nevertheless beat expectations, in part due to a large one-time increase in government employment. More forward-looking indicators, such as business and consumer confidence surveys, rebounded from depressed levels. The euro area also saw some signs of stabilisation, with improving consumer confidence and a rebound in the German Ifo index. By contrast, positive news remained scarce in Japan. Survey data on growth expectations reflected the overall picture: although the three largest economies were expected to shrink in 2009, recent revisions generally showed some signs of stabilisation (Graph 2, left-hand panel).

In addition to the actions taken by governments around the world to stimulate their economies, central banks continued to ease monetary policy. Where rate cuts were still possible, official policy rates were reduced further.

The ECB cut the main refinancing rate by a total of 100 basis points in March, April and May, to a record low 1%, and reduced the interest rate on the deposit facility to 0.25%. The Bank of England cut the Bank rate by a further 50 basis points to 0.5% in March, which also represented a historical low. In the United States and Japan, where key interest rates were already close to zero, official rates remained unchanged. The pricing of forward money market contracts indicated that these decisions were well anticipated, and, moreover, that no major changes were expected in the months ahead (Graph 3).

Central banks introduce unconventional policy measures …

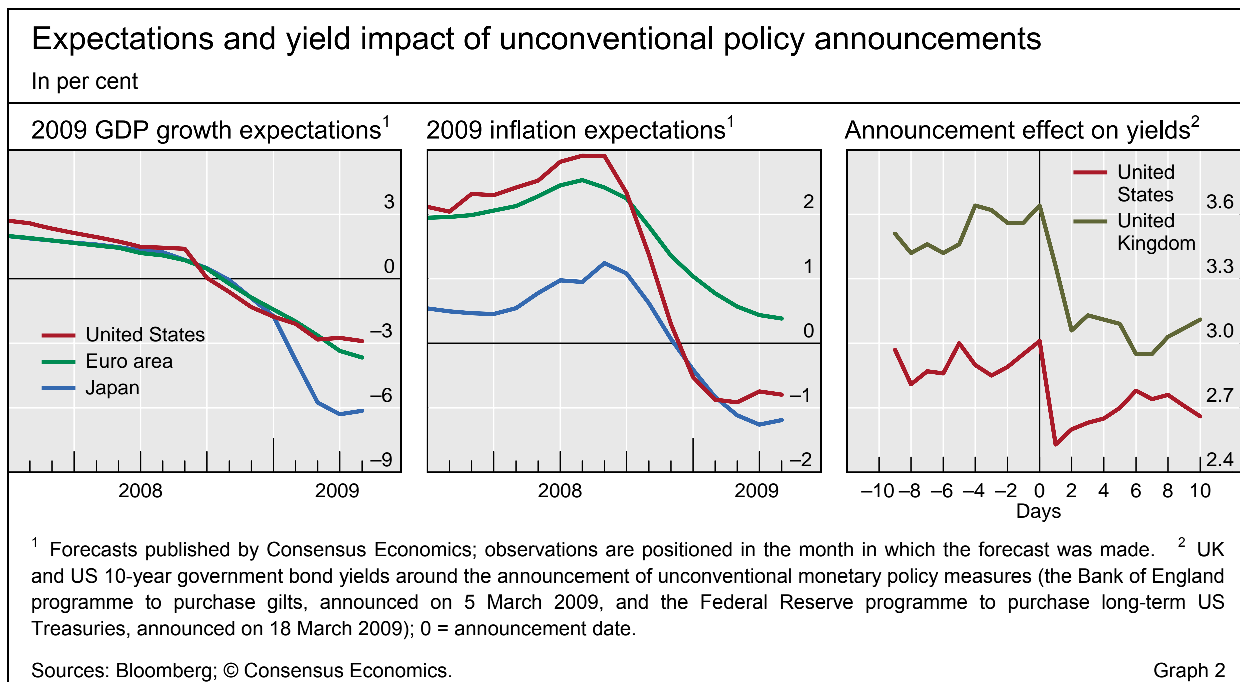
With official interest rates close to zero in many economies, major central banks announced and began to implement unconventional policy measures to further ease monetary conditions (see box and Table 1). The Bank of England announced on 5 March that it would start injecting money directly into the economy in order to meet its inflation target, by undertaking £75 billion worth of direct purchases of gilts and private sector assets (subsequently increased to £125 billion in early May). Expanding its existing programme to improve conditions in credit markets, the US Federal Reserve announced on 18 March that it would purchase up to $300 billion of longer-term Treasury securities over the next six months. The Bank of Japan expanded its programme for purchases of Japanese government bonds by ¥4.8 trillion per year (see also the special feature by McCauley and Ueda in this issue). Finally, on 7 May, the ECB announced its intention to purchase around €60 billion of euro-denominated covered bonds issued in the euro area.[1]

… that push down yields …

In immediate response to announcements of treasury purchases, government bond yields fell substantially, in particular in the United Kingdom and United States (Graph 2, right-hand panel). US 10-year Treasury yields

**Expectations and yield impact of unconventional policy announcements**

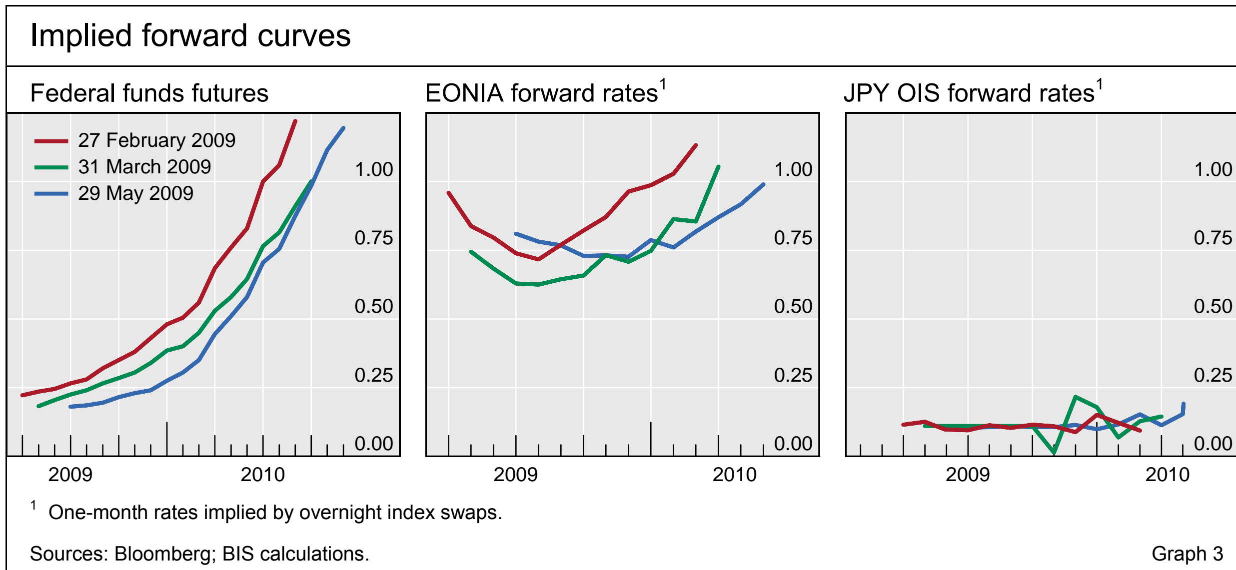
In per cent




[1] Forecasts published by Consensus Economics; observations are positioned in the month in which the forecast was made. [2] UK and US 10-year government bond yields around the announcement of unconventional monetary policy measures (the Bank of England programme to purchase gilts, announced on 5 March 2009, and the Federal Reserve programme to purchase long-term US Treasuries, announced on 18 March 2009); 0 = announcement date.

Sources: Bloomberg; © Consensus Economics. Graph 2

[1] See the special feature by Packer et al in the September 2007 *Quarterly Review* for a discussion of covered bond markets.




**Implied forward curves**

[1] One-month rates implied by overnight index swaps.

Sources: Bloomberg; BIS calculations. Graph 3

dropped by almost 50 basis points following the Federal Reserve's announcement, while UK 10-year gilt yields plummeted by almost 60 basis points after that by the Bank of England. Yields in the euro area also fell following these announcements, as speculation intensified that the ECB would unveil similar measures. Nonetheless, the dampening effect on yields did not last and long-term yields soon began to rise. While this could largely have been due to other factors, as discussed above, the adoption of unconventional monetary policy measures may, paradoxically, have contributed as well. Specifically, it could have added to the strengthening of investor confidence and the rise in risk appetite, thereby reducing flight to safety pressures in government bond markets.

… for a while

Concerns about rising deficits place upward pressure on yields

A further factor that exerted upward pressure on yields was persistent concerns about the supply of government debt. The combination of large-scale fiscal stimulus plans, financial rescue packages and rapidly falling tax revenues led to accelerating fiscal deficits across the globe, and, consequently, greatly increased issuance of government bonds. As markets appeared to grow increasingly concerned about the readiness of investors to absorb vastly larger volumes, bond yields rose. Moreover, sharply rising deficits have led to concerns about the sustainability of public finances and the ability of some governments to fulfil their enlarged obligations. The resulting increases in real or perceived sovereign credit risk may in some cases have induced investors to require higher compensation to hold government debt, thereby pushing bond yields higher.

The prominence of these factors was highlighted by Standard & Poor's decision on 21 May to place the AAA credit rating of UK sovereign debt on negative outlook over the medium term. The decision was based on the agency's view that the UK government debt burden could reach 100% of GDP in the medium term. Immediately following the announcement, yields on 10-year gilts rose by around 10 basis points. Meanwhile, the five-year UK credit default swap (CDS) spread rose by 8 basis points on the day of the announcement. The decision also appeared to contribute to rising yields

## Unconventional monetary policy in the current crisis

*Piti Disyatat*

In response to the global financial turmoil and the subsequent sharp downturn in economic activity, major central banks have cut policy rates aggressively and initiated several measures that have been loosely referred to as unconventional monetary policy. This box provides an overview of such measures and highlights how they can be viewed within the overall context of monetary policy implementation.

### *A framework for reviewing unconventional monetary policy*

The conduct of monetary policy comprises two core elements: i) signalling the desired policy stance, nowadays generally done through announced targets for very short-term interest rates; and ii) liquidity management operations, defined broadly to encompass various aspects of the operating framework – related to the terms and conditions under which central bank liquidity is provided – that supports the desired stance by keeping the relevant market rate consistent with the policy rate. Typically, liquidity management operations are designed and implemented carefully to ensure that they influence only the specific market rate targeted by policy. As such, they play a supportive role, neither impinging upon nor containing any information relevant to the overall stance of policy.

In certain situations, however, liquidity management operations are accorded an elevated role and used deliberately to influence specific elements of the monetary transmission mechanism. The basic thrust of this complementary approach involves the active utilisation of liquidity operations to influence certain asset prices, yields and funding conditions *over and above* the impact of the policy rate. In this case, liquidity operations no longer simply play a passive role but become an integral part of the overall monetary policy stance. Since on these occasions such operations generally result in substantial changes in central banks' balance sheets – in terms of size, composition and risk profile – they can be referred to as *balance sheet policy*.①

The various forms of balance sheet policy can be distinguished by the particular market that is targeted. The most common, familiar form is foreign exchange intervention. Here, purchases or sales of foreign currency seek to influence the exchange rate separately from the policy rate. In the current crisis, balance sheet policy has also been employed to target term money market rates, long-term government bond yields and various risk spreads. While the justification, underlying mechanics, channels of influence and balance sheet implications are analogous to the case of foreign exchange intervention, the choice of market is atypical and in some cases unprecedented. It is the latter that renders recent central bank actions "unconventional", not the overall approach of seeking to influence specific elements of the transmission mechanism over and above the policy rate. From this perspective, "quantitative easing" and "credit easing", as used, respectively, to describe operations by the Bank of Japan during 2001–06 and the Federal Reserve in the current episode, can be viewed as simply references to a particular kind of balance sheet policy.②

An important feature of balance sheet policy is that it can be implemented regardless of the prevailing level of the policy interest rate. Foreign exchange interventions, for example, are routinely carried out in this manner. So long as central banks possess the capacity to carry out offsetting operations on reserve balances, neither the expansion of asset holdings nor their composition will necessarily impinge on central banks' ability to maintain interest rates close to target.③ This separation also holds in reverse. Unwinding balance sheet policy and shrinking the central bank's balance sheet are not preconditions for raising interest rates. For example, central banks that pay interest on excess reserves simply have to raise this rate along with the policy rate to effect a tightening of monetary conditions. As such, discussions of exit strategies can also be delineated along the two separate dimensions of the appropriate level of interest rates on the one hand and the desired central bank balance sheet structure on the other.

### *Overview of central bank responses*

In the current crisis, there have been two broad categories of balance sheet policy (see table). The first group of measures, prominent early on in the crisis, centred on alleviating strains in wholesale interbank markets. In particular, to reduce term spreads, the provision of term funding was increased considerably and a number of initiatives introduced to address potential impediments to the smooth distribution of reserves. These included the broadening of eligible collateral and

## Balance sheet policy introduced so far

| Objective | Measures adopted | Fed | ECB | BoE | BoJ | BoC | RBA | SNB |
|---|---|---|---|---|---|---|---|---|
| Influence wholesale interbank market conditions | Modification of discount window facility | ✓[1] | | ✓ | | | | |
| | Exceptional long-term operations | ✓ | ✓[2] | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Broadening of eligible collateral | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Broadening of counterparties | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| | Inter-central bank FX swap lines | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Introducing or easing conditions for securities lending | ✓ | | ✓ | ✓ | ✓ | | |
| Influence credit market and broader financial conditions | CP funding/purchase/collateral eligibility | ✓[3] | | ✓[4] | ✓[5] | ✓[6] | ✓[7] | |
| | ABS funding/purchase/collateral eligibility | ✓[8] | ✓[9] | ✓[4] | | | ✓[7] | |
| | Corporate bond funding/purchase/ collateral eligibility | | | ✓[4] | ✓[10] | ✓[6] | | ✓ |
| | Purchase of public sector securities | ✓[11] | | ✓[4] | ✓[12] | | | |
| | Purchase of other non-public sector securities | | | | ✓[13] | | | ✓[14] |

✓ = yes; blank space = no.

[1] Reduce rate and expand term on discount facility; allow participation of primary dealers (Primary Dealer Credit Facility). [2] Including fixed rate full allotment operations. [3] Finance purchase of short-term certificates of deposit, commercial paper (CP) and asset-backed CP (ABCP) (Money Market Investor Funding Facility, Asset Backed Commercial Paper Money Market Mutual Fund Liquidity Facility and Commercial Paper Funding Facility). [4] Asset Purchase Facility. [5] Increase frequency and size of CP repo operations and introduce outright CP purchases. [6] Term Purchase and Resale Agreement Facility for Private Sector Instruments. [7] Acceptance of residential mortgage-backed securities (MBS) and ABCP as collateral in repo operations. [8] Finance purchase of asset-backed securities (ABS) collateralised by student, auto, credit card and other guaranteed loans (Term Asset-Backed Securities Loan Facility). [9] Purchase of covered bonds. [10] Expand range of corporate debt as eligible collateral and introduce loan facility against corporate debt collateral. [11] Purchase Treasury debt as well as direct obligations of and MBS backed by housing-related government-sponsored enterprises. [12] Purchase of Japanese government bonds to facilitate smooth money market operations; not intended to influence bond prices. [13] Purchase equity held by financial institutions. [14] Purchase foreign currency securities.

Source: National data. Table A

counterparty coverage, the lengthening of the maturity of refinancing operations, and the establishment of inter-central bank swap lines to alleviate funding pressures in offshore markets (mostly with respect to dollar funding). In addition, many central banks introduced or eased conditions for lending out highly liquid securities, typically sovereign bonds, against less liquid market securities in order to improve funding conditions in the money market.

The second group of policy responses, which received more emphasis as the turmoil in financial markets deepened, focused on directly alleviating tightening credit conditions in the non-bank sector and easing broader financial conditions. Prominent measures included the provision of funds to non-banks to improve liquidity and reduce risk spreads in specific markets – such as commercial paper, asset-backed securities and corporate bonds – as well as direct purchases of public sector securities to influence benchmark yields more generally.

On the whole, such interventions by central banks have helped to ease severe liquidity strains and have been associated with tangible improvements in a number of key markets (as noted in this Overview). Ultimately, however, the effectiveness of central bank actions in attenuating the impact of the crisis and restoring the functioning of markets depends on the extent to which they have a catalytic effect on private sector intermediation. Thus the ultimate success of central bank interventions depends on the appropriate design and forceful implementation of policies that address directly the fundamental weaknesses in bank balance sheets.

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① See Chapter VI in the BIS's *79th Annual Report*, June 2009 (forthcoming). ② Quantitative easing aims to ease overall monetary conditions through the expansion of bank reserves, leaving the corresponding asset to be acquired unspecified. Credit easing, on the other hand, focuses on influencing specific market segments through interventions in the relevant asset class, with no particular reference to how such operations are funded on central bank balance sheets. ③ Indeed, many Asian central banks that intervened actively in foreign exchange markets in recent years have been able to attain their official interest rate targets despite sizeable expansions in their balance sheets.

elsewhere, in particular in the United States, as investors reassessed the risk that sovereign debt ratings of other major economies could be downgraded.

Break-even rates rebound from depressed levels …

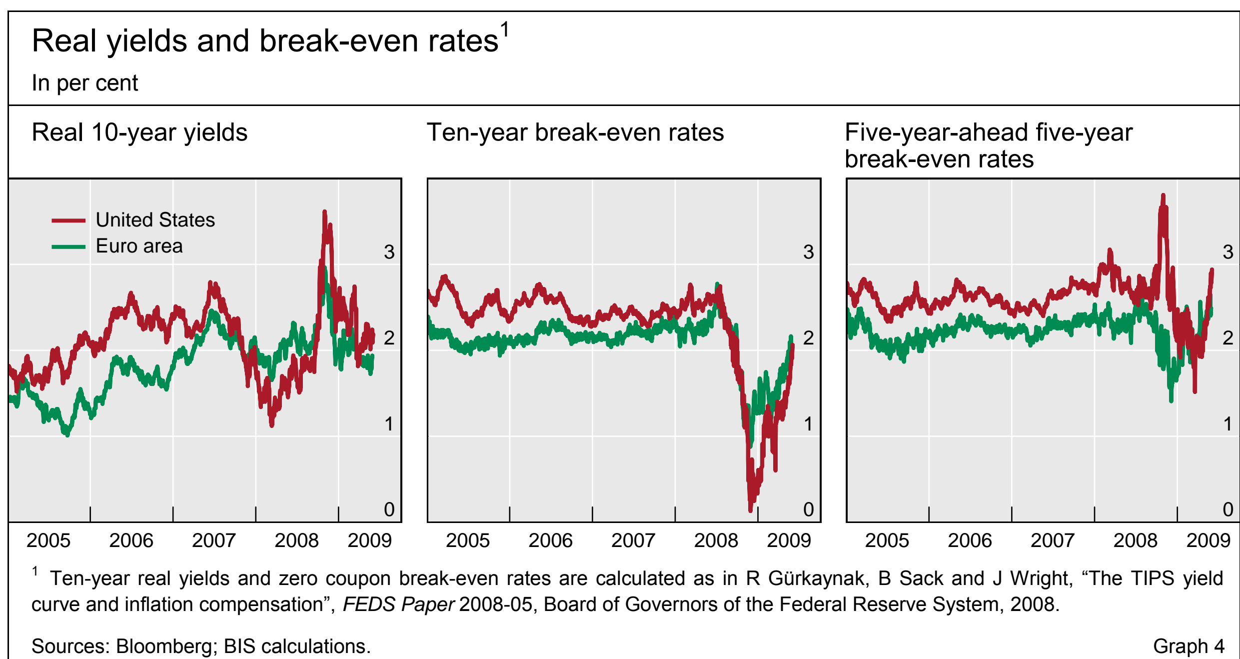
With a sense of cautious optimism emerging about economic conditions, break-even inflation rates continued to rise from the exceptionally low levels reached at the end of 2008 (Graph 4, centre panel). In part, this may have reflected expectations of decelerating or easing downward pressures on consumer prices in the near term, consistent with the picture emerging from survey forecasts for 2009 inflation rates (Graph 2, centre panel) and with rebounding energy prices. However, as when break-even rates fell sharply in late 2008, much of the recent rise is likely to have reflected other factors (see the box in the March 2009 Overview), not least a reversal of safe haven demand for the liquidity of nominal treasury bonds. A drop in real yields, probably due to falling liquidity premia in index-linked bonds, added to this (Graph 4, left-hand panel). With such factors typically being less important for forward rates, implied five-year forward break-even rates five years ahead consequently rose somewhat less than 10-year rates (Graph 4, right-hand panel). However, the fact that long-horizon forward break-even rates did rise significantly could reflect growing concerns among investors that the ongoing build-up of public sector commitments might result in rising inflation in the future.

… while other markets continue to normalise

Other market segments also showed signs of gradual improvement. For example, spreads between yields on German bunds and on government bonds of other euro area countries, which had been widening almost continuously since mid-2008, began to narrow somewhat (Graph 5, left-hand panel). In the absence of any factors suggesting converging sovereign credit risk among euro area countries, the narrowing of yield spreads seemed clearly to reflect improving market liquidity and recovering risk appetite. Developments in interbank markets were in line with this. For example, Libor-OIS spreads and foreign exchange swap spreads continued to narrow gradually. By end-May, in

## Real yields and break-even rates[1]

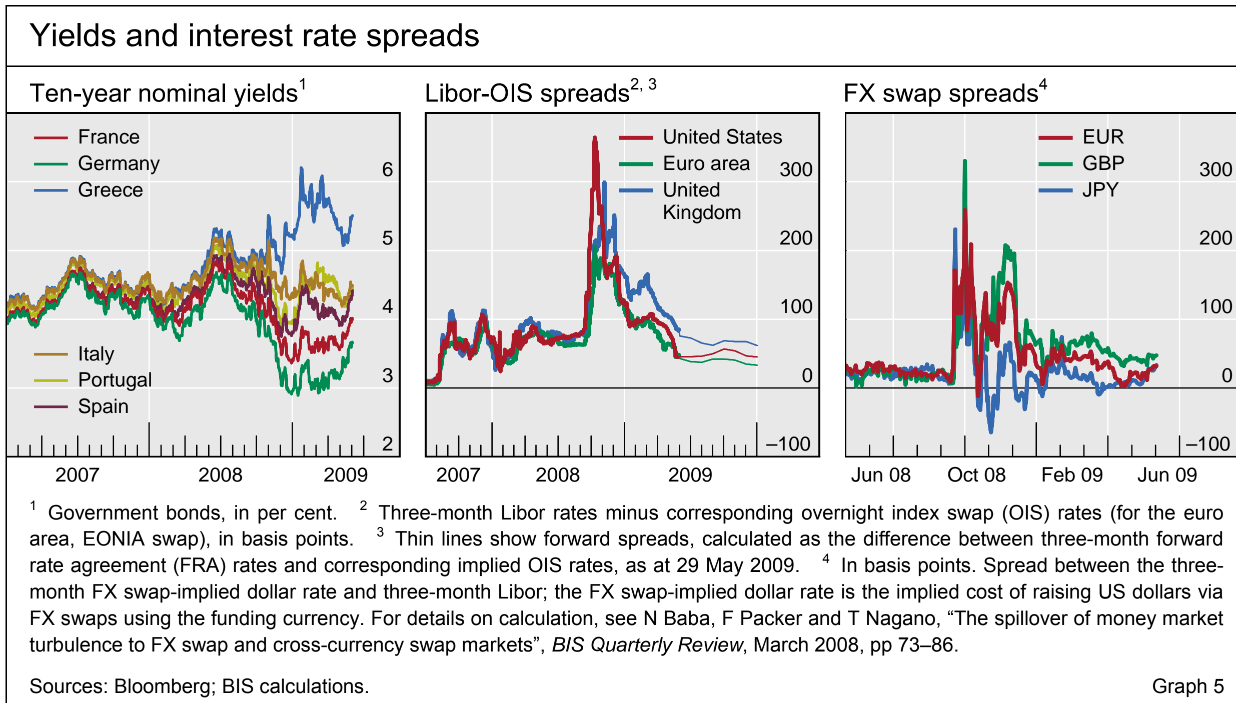
In per cent




[1] Ten-year real yields and zero coupon break-even rates are calculated as in R Gürkaynak, B Sack and J Wright, "The TIPS yield curve and inflation compensation", *FEDS Paper* 2008-05, Board of Governors of the Federal Reserve System, 2008.

Sources: Bloomberg; BIS calculations.

Graph 4




[1] Government bonds, in per cent. [2] Three-month Libor rates minus corresponding overnight index swap (OIS) rates (for the euro area, EONIA swap), in basis points. [3] Thin lines show forward spreads, calculated as the difference between three-month forward rate agreement (FRA) rates and corresponding implied OIS rates, as at 29 May 2009. [4] In basis points. Spread between the three-month FX swap-implied dollar rate and three-month Libor; the FX swap-implied dollar rate is the implied cost of raising US dollars via FX swaps using the funding currency. For details on calculation, see N Baba, F Packer and T Nagano, "The spillover of money market turbulence to FX swap and cross-currency swap markets", *BIS Quarterly Review*, March 2008, pp 73–86.

Sources: Bloomberg; BIS calculations. Graph 5

many cases, they had returned to levels below those seen immediately before the Lehman bankruptcy (Graph 5, centre and right-hand panels). However, the pricing of forward rate agreements and OIS contracts suggested that further improvements in interbank markets were expected to be limited for the remainder of the year.

## Equity markets rally on hopes of financial sector stabilisation

Equity markets turn around in early March

Major equity markets turned around during the period under review. The rally began in early March and continued into late May, punctuated only occasionally by brief spells of doubt or specific negative news. Although economic data releases mostly continued to reflect weak real activity, market participants seemed to focus on signs that economic conditions were deteriorating less rapidly than before or even stabilising in some cases. Even concerns emerging in late April over the prospect of an influenza pandemic did not leave a lasting dent in confidence. Between end-February and end-May 2009, the S&P 500 index rose by 25%, retracing all of the losses incurred since the start of the year. Major bourses in the euro area and Japan also recovered to similar degrees, while in the United Kingdom the FTSE 100 rose by 15% during the same period (Graph 6, left-hand panel).

Better earnings, especially in the financial sector, fuel the rally

Corporate earnings expectations, which rebounded in March, underpinned the recovery in equity markets (Graph 7, left-hand panel). In particular, financial sector shares, which had led the equity market sell-off earlier in the year, spearheaded the rally. Better than expected first quarter results from a number of major financial firms on both sides of the Atlantic provided some tangible evidence that the financial sector may have stabilised (Table 1). Interest income was supported by steepening yield curves and wider market spreads, while a revival in investment banking activity also contributed

significantly to bank revenues, especially given the surge in debt issuance in the first few months of this year. Against this backdrop, the S&P 500 financial sector sub-index rebounded from its lowest levels in 17 years and surged by 96% between early March and end-May (Graph 6, centre panel). Financial sector shares in the United Kingdom and on other European bourses rose by around 90% during the same period. Japanese financial shares also recovered, albeit to a smaller degree.

Doubts remain regarding bank profitability …

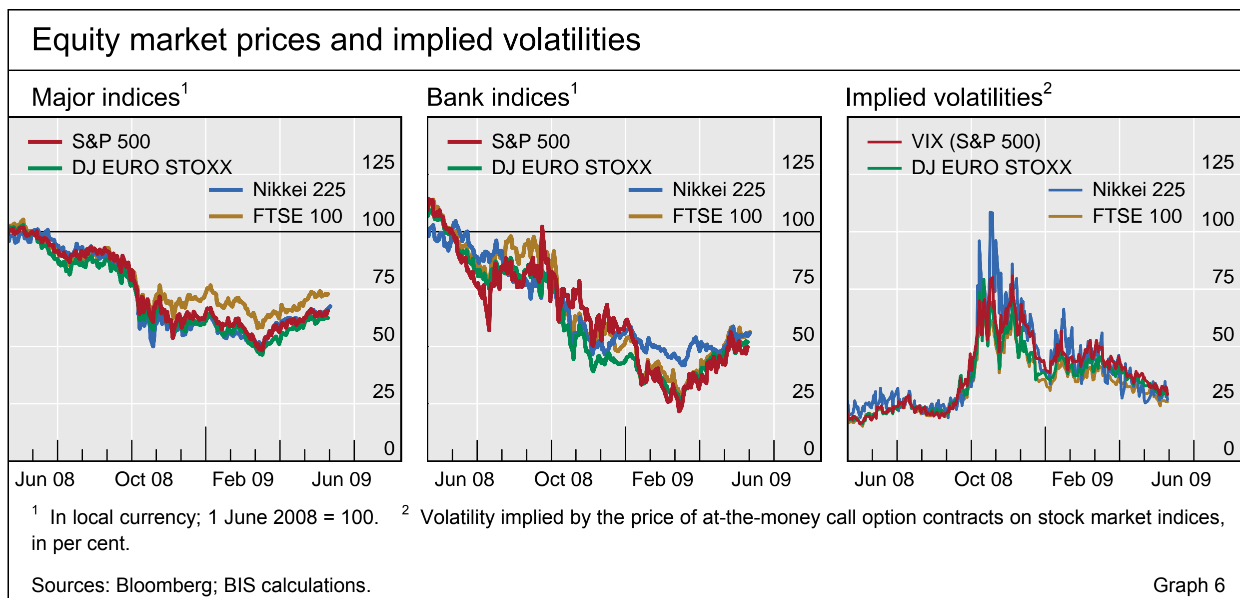
Nonetheless, there were questions regarding the quality and sustainability of banks' profitability. First, the new US guidelines on mark to market accounting, introduced in early April (but applicable retroactively to reporting periods ending 15 March 2009), may have given US banks a temporary boost in their first quarter figures by giving them more flexibility in determining fair values of assets when there is no active market or when prices reflect distressed sales. Second, the choice of some banks in the United States and Europe to reclassify certain assets from "trading" to "hold to maturity" in the second half of 2008 allowed them to avoid fully recognising valuation losses in their 2009 first quarter statements. Third, the surge in fee revenue associated with bond underwriting could prove to be transitory should issuance activity tail off in subsequent months. Most fundamentally, expectations of further credit losses in coming quarters remained a cause for concern.

Reflecting these doubts, there were cases in which positive headline results met with negative market reactions. For instance, Bank of America's share price fell sharply on 20 April, underperforming its peers, even as the bank reported first quarter net income of $4.2 billion and diluted earnings per share of $0.44, up from $1.2 billion and $0.23, respectively, in the same quarter in 2008. Moreover, a number of major financial institutions continued to announce sizeable losses (eg UBS on 15 April, Morgan Stanley on 22 April; see Table 1).

… but uncertainty over financial sector stability seems to have receded

That said, further efforts by the authorities to address financial sector problems did ease uncertainty to some extent. The implementation in late February of the UK Asset Protection Scheme limited the downside risks borne

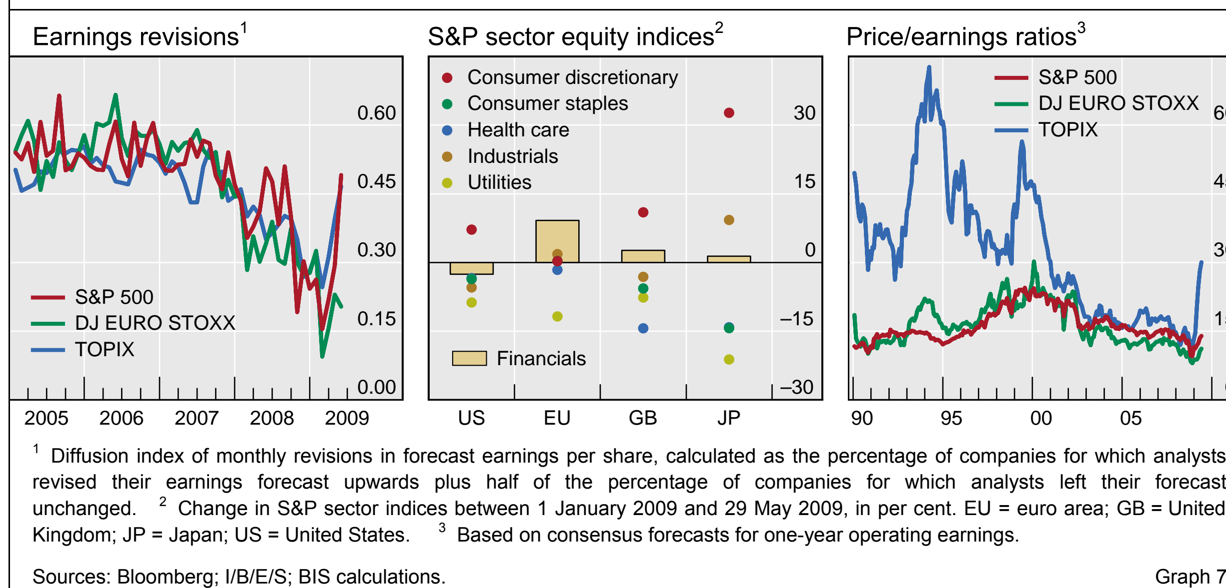
## Equity market prices and implied volatilities




[1] In local currency; 1 June 2008 = 100. [2] Volatility implied by the price of at-the-money call option contracts on stock market indices, in per cent.

Sources: Bloomberg; BIS calculations. Graph 6

**Earnings, equity prices and price/earnings ratios**




[1] Diffusion index of monthly revisions in forecast earnings per share, calculated as the percentage of companies for which analysts revised their earnings forecast upwards plus half of the percentage of companies for which analysts left their forecast unchanged. [2] Change in S&P sector indices between 1 January 2009 and 29 May 2009, in per cent. EU = euro area; GB = United Kingdom; JP = Japan; US = United States. [3] Based on consensus forecasts for one-year operating earnings.

Sources: Bloomberg; I/B/E/S; BIS calculations. Graph 7

by shareholders. Under this scheme, the Treasury provided protection to each participating institution against credit losses (in excess of an agreed first loss amount) in one or more defined asset portfolios. The eagerly awaited announcement on 23 March of details of the new US Public-Private Investment Program met with very positive market reactions, while the release of the US stress test results on 7 May also provided relief. Ten out of the 19 participating institutions were found to need to raise a total of $74.6 billion in capital to cushion themselves again potential losses up to end-2010 under the "more adverse" scenario. As the shortfall was seen as manageable, financial sector shares rallied (see also the credit market section below). Improved equity market conditions also made it easier for banks to raise capital – Morgan Stanley and Wells Fargo raised over $12 billion in common equity in the market immediately on 8 May. In the following days, several other banks, including some that were deemed to have adequate capital by the stress test, also announced plans to offer common shares (or to convert preferred shares to common shares) and to repay previously received government funds.

Implied volatilities retreat towards pre-Lehman levels

The reduction in uncertainty in the financial sector was reflected in the decline in volatility measures implied by equity options (Graph 6, right-hand panel). The VIX index, for instance, which had breached 40 by 8 April, dipped below 30 on 19 May for the first time since the collapse of Lehman Brothers. However, the index did not decline further in late May.

Beyond the financial sector, equity prices in other cyclical sectors such as industrials and consumer discretionary also rebounded during the period under review. By contrast, equity prices in non-cyclical sectors such as consumer staples, health care and utilities continued to show year-to-date losses, most notably in Japan (Graph 7, centre panel). Overall, price/earnings ratios rose but remained at low levels by the standards of the past two decades (Graph 7, right-hand panel).

## Credit markets in search of stabilisation

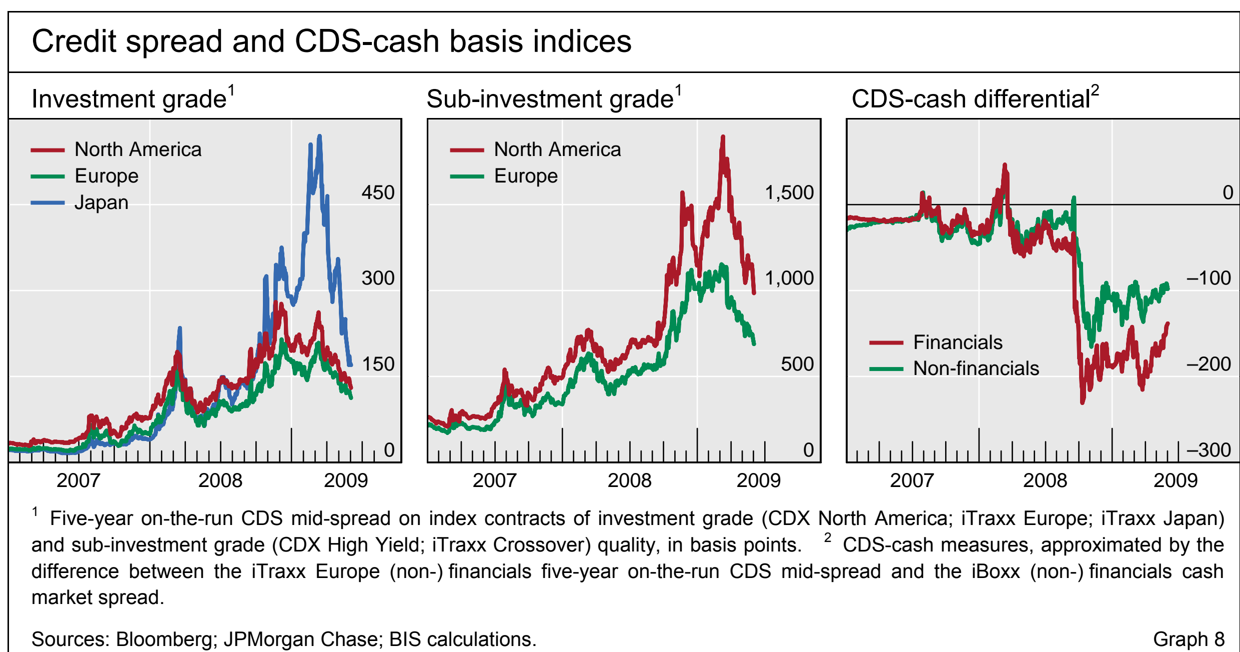
*Credit markets rally following equity markets*

Following the rebound of equity prices, credit markets rallied from mid-March to end-May, as further policy actions and signs of financial system stabilisation raised confidence also among credit market investors (see the government bond and equity markets sections above). US bank credit spreads tightened markedly when the general tone of the US stress test results became apparent ahead of the official release in early May. Indicators of investor risk tolerance showed a notable recovery over the period, in tandem with forecasts of lower future default rates. However, spreads were still broadly higher than those observed before the collapse of Lehman Brothers. Weakness was also evident in issuance activity, particularly in the markets for asset-backed securities (ABS) and commercial paper (CP).

Sub-investment grade spreads, which had reached a historical high in early March, tightened more than investment grade spreads over the period (Graph 8, left-hand and centre panels). This reflected in part an improving outlook for defaults. While actual default rates continued to rise from the very low levels observed in early 2008, market forecasts of future default rates began to decline in early 2009, supported by incoming economic and earnings data that were less gloomy than expected (Graph 9, left-hand panel). Tightening spreads also coincided with a recovery in indicators of investor risk tolerance. Implied volatilities from CDS index options, particularly European ones, fell sharply into the second quarter, indicating less uncertainty about short-run credit spread movements (Graph 9, right-hand panel). Moreover, an estimate of investor risk tolerance in credit markets, calculated as the ratio of credit spread-implied (risk neutral) to empirical default probabilities of investment grade issuers, improved substantially in early 2009 (Graph 9, centre panel).

*Risk tolerance recovers …*

By end-May, the US five-year CDX high-yield index spread had tightened substantially, by about 820 basis points from its record high of around

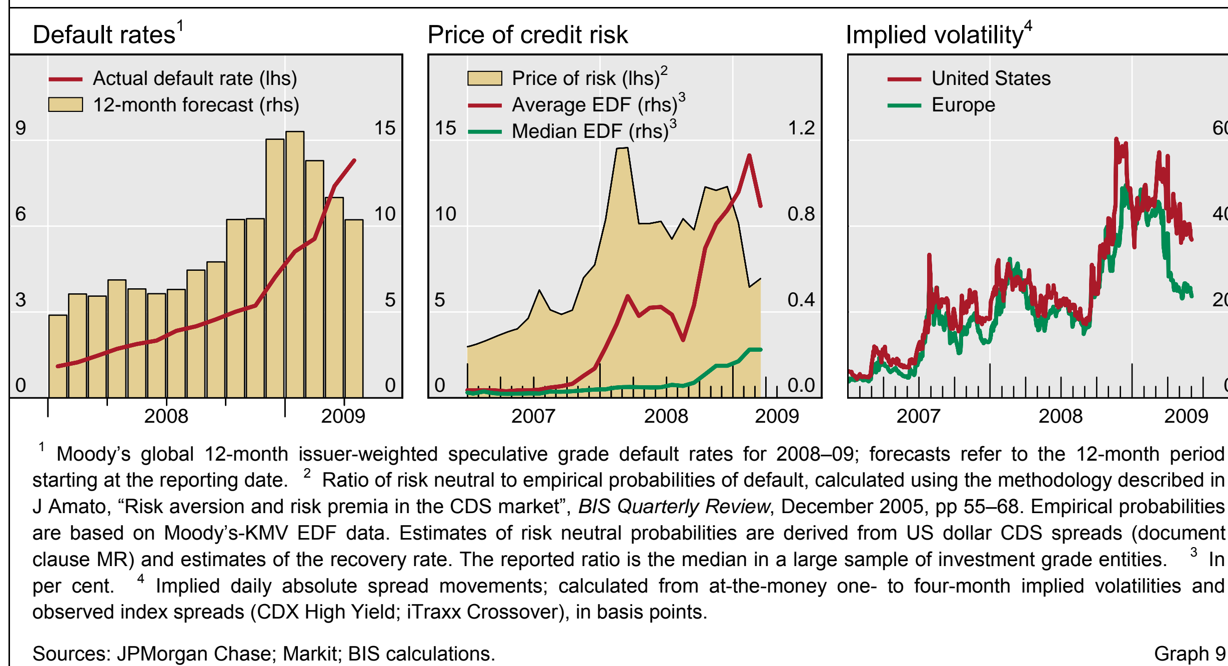



**Credit spread and CDS-cash basis indices**

[1] Five-year on-the-run CDS mid-spread on index contracts of investment grade (CDX North America; iTraxx Europe; iTraxx Japan) and sub-investment grade (CDX High Yield; iTraxx Crossover) quality, in basis points. [2] CDS-cash measures, approximated by the difference between the iTraxx Europe (non-) financials five-year on-the-run CDS mid-spread and the iBoxx (non-) financials cash market spread.

Sources: Bloomberg; JPMorgan Chase; BIS calculations. Graph 8

**Default rates, price of risk and credit volatility**




[1] Moody's global 12-month issuer-weighted speculative grade default rates for 2008–09; forecasts refer to the 12-month period starting at the reporting date. [2] Ratio of risk neutral to empirical probabilities of default, calculated using the methodology described in J Amato, "Risk aversion and risk premia in the CDS market", *BIS Quarterly Review*, December 2005, pp 55–68. Empirical probabilities are based on Moody's-KMV EDF data. Estimates of risk neutral probabilities are derived from US dollar CDS spreads (document clause MR) and estimates of the recovery rate. The reported ratio is the median in a large sample of investment grade entities. [3] In per cent. [4] Implied daily absolute spread movements; calculated from at-the-money one- to four-month implied volatilities and observed index spreads (CDX High Yield; iTraxx Crossover), in basis points.

Sources: JPMorgan Chase; Markit; BIS calculations. Graph 9

1,900 basis points in early March (Graph 8, centre panel). Despite this narrowing, it was still well above the pre-Lehman failure level. Corresponding investment grade spreads narrowed by about 125 basis points to 138 basis points, almost equivalent to the pre-Lehman level (Graph 8, left-hand panel). European CDS indices also saw a significant tightening, with sub-investment grade spreads again outperforming those of higher-quality issuers. Japanese investment grade spreads, which had widened substantially through early March due partly to rapidly weakening economic data, narrowed by 395 basis points from their peak in early March to 175 basis points.

*… but market dysfunction remains*

Despite general improvements in credit market conditions, the so-called CDS-cash basis for major indices, ie the pricing differential between CDS contracts and corresponding cash market bonds, improved only modestly from early March and remained deep in negative territory (Graph 8, right-hand panel). This suggests that potentially large arbitrage opportunities were left unexploited due to market dysfunction.

Financial sector spreads, particularly subordinated spreads of major banks, tightened sharply from mid-March, in line with the rebound of equity prices (Graph 10, right-hand panel). That said, deep-rooted concerns about the quality and sustainability of banks' profitability continued to affect the credit spreads of US banks more than their equity prices, despite the combined capital injections of more than $900 billion since the third quarter of 2007 (see the equity markets section above). US bank spreads stayed wide until early May, chiefly reflecting uncertainty about the possible outcome of the US bank stress tests (Graph 10, left-hand panel). As the general tone of the stress test results became apparent ahead of the official release on 7 May, US bank spreads rallied markedly (Graph 10, left-hand and centre panels). By contrast, European bank spreads narrowed throughout the period.

*US bank spreads tighten on stress test results*

During the period under review, the authorities announced further policy measures in connection with credit and other related markets (Table 1; see also the government bond markets section above). On 3 March, the Federal Reserve launched the Term Asset-Backed Securities Loan Facility (TALF) to lend up to $200 billion to eligible owners of AAA-rated ABS backed by auto and credit card loans, student loans and small business loans. On 18 March, in addition to plans to purchase Treasuries, the Federal Reserve announced its intention to purchase an additional $750 billion of mortgage-backed securities, as well as to increase its purchases of agency debt by up to $100 billion. In Europe, the Bank of England announced purchases of private sector assets on 5 March and the ECB released its plan to purchase covered bonds on 7 May.

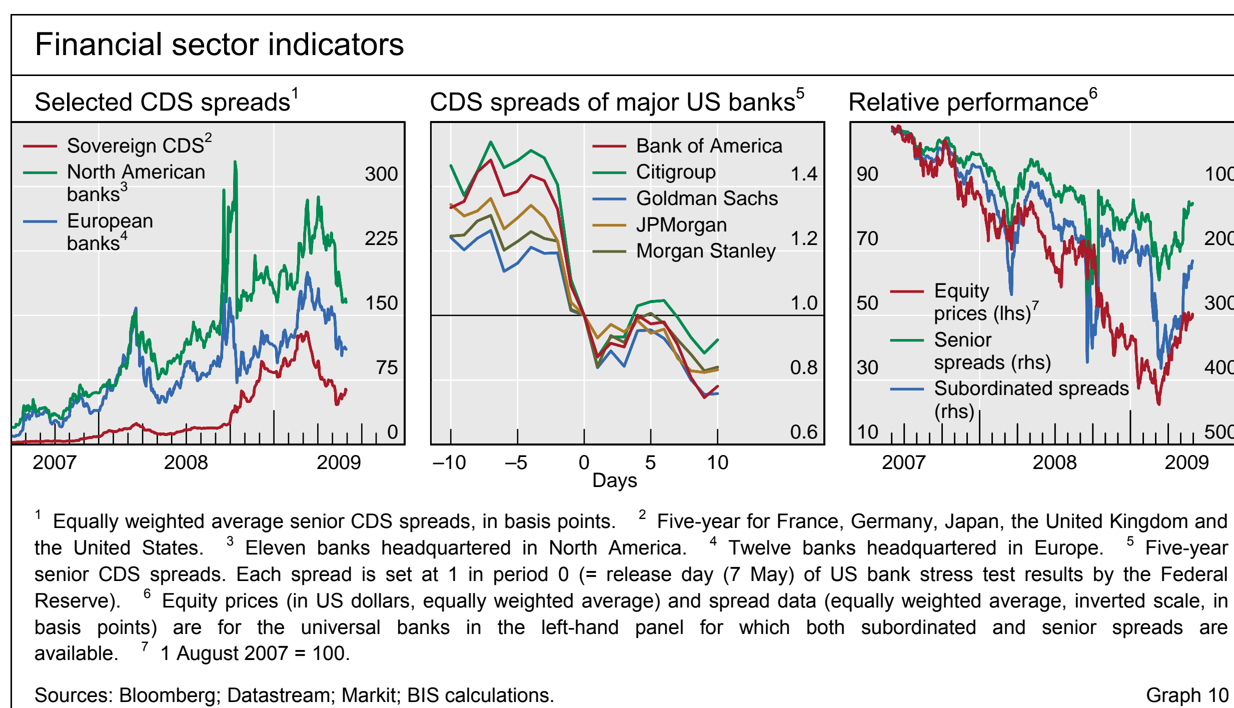
Policy measures drive stabilisation …

The policy-driven nature of financial stabilisation was evident particularly in the pricing of US mortgage and securitisation instruments. Mortgage rates for 30-year conventional mortgages fell further to around 5% (Graph 11, left-hand panel). Against this backdrop, qualifying borrowers increasingly moved to refinance into lower-rate mortgage loans. Mortgage-backed agency spreads, which had been on a downward trend from late November following the Federal Reserve's announcement of outright purchases of agency securities, reached an all-time low in late May (Graph 11, left-hand panel). A similar tendency was observed in ABS markets based on consumer loans. That said, SIFMA data show that total issuance of ABS in the United States dropped by more than 70% on a year-on-year basis to less than $15 billion in the first quarter of 2009, while mortgage-related issuance showed a much more modest decline, of about 6% to $366 billion on the same basis.

… but ABS issuance remains weak

Debt and CP markets also stagnate

Weakness remained evident in other markets as well. In the primary debt markets, gross issuance of non-guaranteed syndicated debt securities by financial companies decreased markedly in April by more than 60% on a year-on-year basis to $156 billion, while issuance by non-financial companies

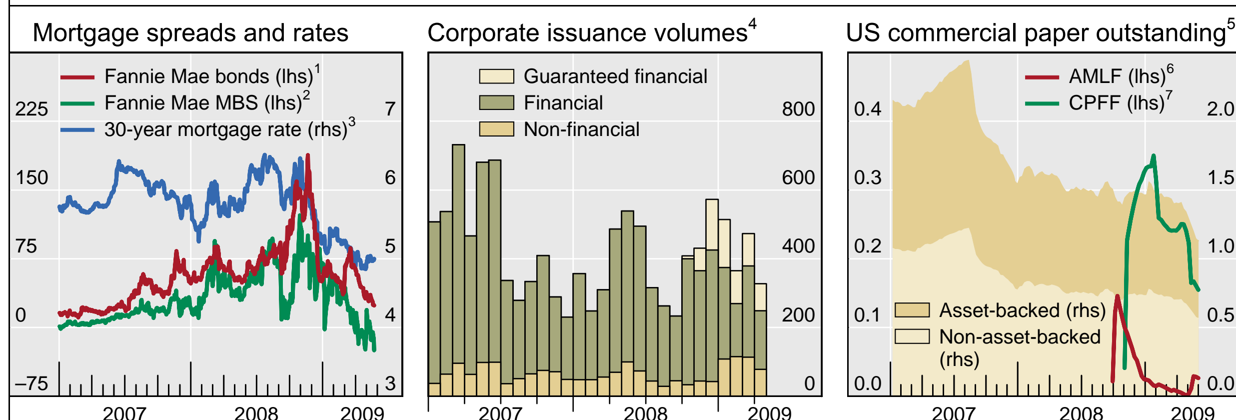



[1] Equally weighted average senior CDS spreads, in basis points. [2] Five-year for France, Germany, Japan, the United Kingdom and the United States. [3] Eleven banks headquartered in North America. [4] Twelve banks headquartered in Europe. [5] Five-year senior CDS spreads. Each spread is set at 1 in period 0 (= release day (7 May) of US bank stress test results by the Federal Reserve). [6] Equity prices (in US dollars, equally weighted average) and spread data (equally weighted average, inverted scale, in basis points) are for the universal banks in the left-hand panel for which both subordinated and senior spreads are available. [7] 1 August 2007 = 100.

Sources: Bloomberg; Datastream; Markit; BIS calculations.

Graph 10

**US mortgage, corporate bond and commercial paper markets**




[1] JPMorgan index; two-year on-the-run spread to Treasuries, in basis points. [2] JPMorgan index; option-adjusted spreads over Libor, in basis points. [3] Fixed rate conventional; national average, in per cent. [4] Syndicated international and domestic debt securities placed by private issuers, in billions of US dollars. Sectoral allocation reflects characteristics of immediate issuer. [5] In trillions of US dollars. [6] Asset backed commercial paper money market mutual fund liquidity facility. [7] Net portfolio holdings of commercial paper funding facility.

Sources: Federal Reserve Bank of New York; Bloomberg; Dealogic; JPMorgan Chase. Graph 11

showed an increase of around 11% on the same basis (Graph 11, centre panel). In addition, activity in the CP market stagnated further, with the total amounts outstanding reaching about $1.3 trillion in late May, a level last seen back in late 2004 (Graph 11, right-hand panel).

Policy measures continued to fill liquidity needs in the CP market, albeit to a lesser degree. CP holdings under the Federal Reserve's Commercial Paper Funding Facility (CPFF) declined further from about $240 billion in late February to about $150 billion in late May, reflecting easing tensions in the overall money market (Graph 11, right-hand panel; see also the government bond markets section above). By contrast, usage of the Federal Reserve's Asset-backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) spiked in early May to $29 billion, a level last seen in December 2008. This followed Standard & Poor's decision to place more than 20 US financial institutions' credit ratings on negative watch in early May, reacting to the change in eligibility criteria by the Federal Reserve in late April to exclude those on negative watch from the eligible pool of ABCP with A1, F1 and P1 ratings.

## Emerging markets bolstered by multilateral commitments

Investor appetite for emerging markets recovers

Investors also regained their appetite for emerging market assets. Between end-February and end-May 2009, the MSCI Emerging Markets equity index rose by 38%, outperforming the World index of mature equity markets by 15 percentage points. Emerging market credit also tended to outperform mature markets. By late May, the sovereign credit spreads for many emerging markets had retreated to levels close to those observed just prior to the failure of Lehman Brothers, though only a very few had narrowed to pre-Lehman levels (eg Malaysia, the Philippines, Thailand and Turkey for five-year sovereign CDS).

Among emerging markets, central and eastern European markets, which had sold off heavily in January and February, recovered the most. The MSCI Emerging Markets Eastern Europe index, which covers Czech, Hungarian, Polish and Russian equities, surged by 58% between end-February and end-May, compared to the 43% and 32% rise in the Asia and Latin America indices, respectively (Graph 12, left-hand panel). Easing market tensions were also evident in the recovery of the region's currencies as well as the significant narrowing of sovereign credit spreads (Graph 12, centre panel). Among the first events that contributed to the improved conditions were the verbal intervention from the three central European central banks and the pledge from the European Union to assist individual member countries in need (Table 2).

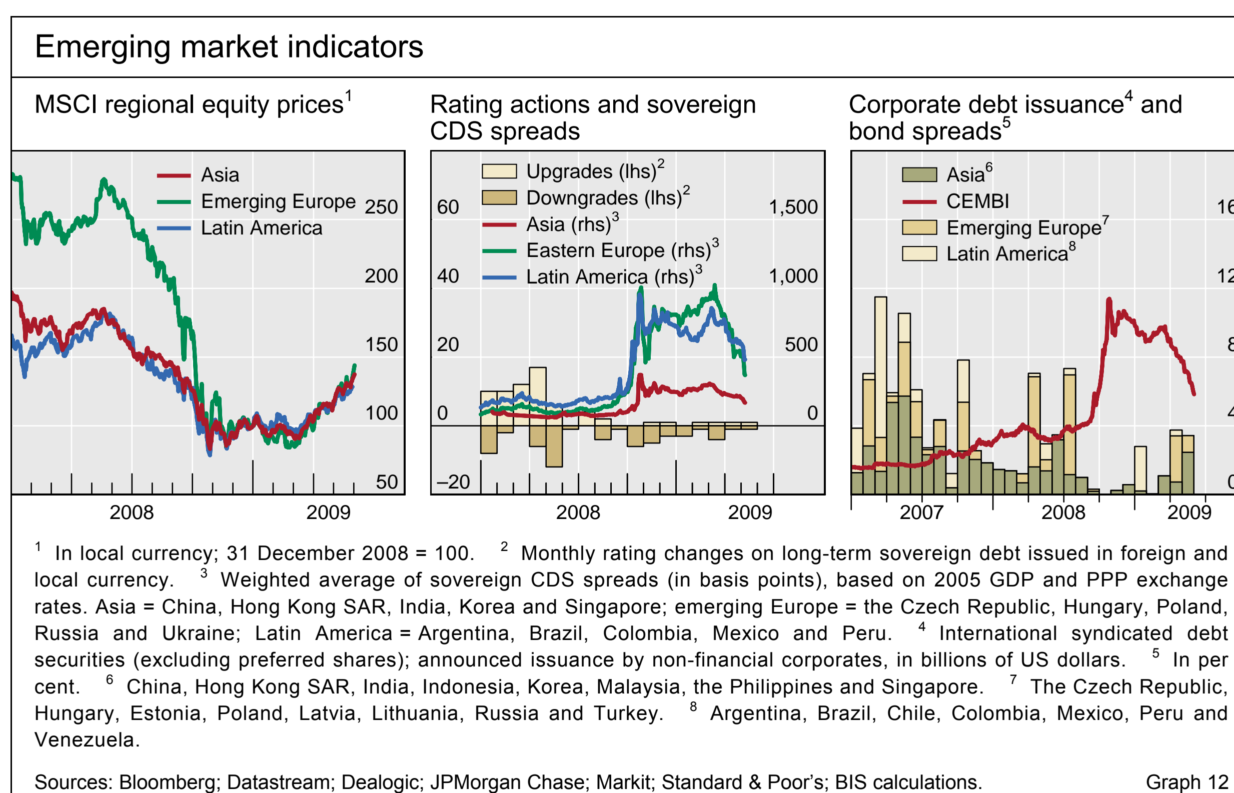
Tensions ease in emerging Europe

Investors' confidence in emerging markets more broadly was also bolstered by the G20 agreement to increase the IMF's resources to help it better cope with the potential needs of emerging and developing economies in the current crisis. Among its various new initiatives, the Fund's new Flexible Credit Line (FCL), which aims at offering timely support free of onerous conditions for economies with sound policies, was welcomed by emerging markets and investors alike. Within a month of the introduction of the FCL, three countries (Colombia, Mexico and Poland) had already signalled interest and had subsequently been granted credit lines worth over $77 billion in total. A number of other multilateral agencies also sought to step up their capacity to provide support to emerging and developing economies (Table 2).

Commitments by multilateral agencies bolster confidence

Apart from the enhanced commitment from multilateral agencies, emerging markets also took actions to fortify other insurance mechanisms. For instance, the Chinese central bank established another three bilateral swap

Emerging markets also strengthen other insurance mechanisms




[1] In local currency; 31 December 2008 = 100. [2] Monthly rating changes on long-term sovereign debt issued in foreign and local currency. [3] Weighted average of sovereign CDS spreads (in basis points), based on 2005 GDP and PPP exchange rates. Asia = China, Hong Kong SAR, India, Korea and Singapore; emerging Europe = the Czech Republic, Hungary, Poland, Russia and Ukraine; Latin America = Argentina, Brazil, Colombia, Mexico and Peru. [4] International syndicated debt securities (excluding preferred shares); announced issuance by non-financial corporates, in billions of US dollars. [5] In per cent. [6] China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines and Singapore. [7] The Czech Republic, Hungary, Estonia, Poland, Latvia, Lithuania, Russia and Turkey. [8] Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela.

Sources: Bloomberg; Datastream; Dealogic; JPMorgan Chase; Markit; Standard & Poor's; BIS calculations. Graph 12

| Selected emerging market events over the period under review | |
|---|---|
| 23 February | The Czech, Hungarian and Polish central banks verbally intervene. |
| 27 February | A group of multilateral investors and lenders pledge to provide up to €24.5 billion to help central and eastern European banking systems. Indonesia sells $3 billion in sovereign bonds in a dual-tranche transaction, the biggest deal from Asia excluding Japan since November 2003. |
| 1 March | EU summit: governments vow to extend help to eastern European states on a country-by-country basis and respect the rules of the single market. |
| 5 March | The Chinese premier says China will meet its goal of 8% economic growth this year but does not announce any new spending beyond the CNY 4 trillion investment plan unveiled in November. |
| 11 March | The central banks of China and Belarus announce the establishment of a three-year bilateral currency swap arrangement of CNY 20 billion/BYR 8,000 billion, the fourth such swap arrangement since December 2008. |
| 12 March | Central European currencies appreciate sharply against the Swiss franc. |
| 23 March | The Chinese and Indonesian central banks announce the establishment of a three-year bilateral currency swap arrangement of CNY 100 billion/IDR 175 trillion. |
| 24 March | The IMF Executive Board approves a major overhaul of the IMF's lending framework, including the introduction of a new Flexible Credit Line (FCL). |
| 25 March | The IMF Executive Board completes the first review of Hungary's performance under the Stand-By Arrangement, enabling the immediate disbursement of SDR 2.11 billion (about €2.35 billion). Romania announces that it expects a €20 billion support package from multilateral agencies. |
| 29 March | The Chinese and Argentine central banks sign an agreement to establish a three-year bilateral currency swap arrangement of CNY 70 billion/ARS 38 billion (formally announced on 2 April). |
| 1 April | Mexico becomes the first country to signal interest in the IMF's new FCL (a one-year arrangement of $47 billion is subsequently approved on 17 April). The Asian Development Bank (ADB) agrees to an expansion of its trade finance programme, to generate up to $15 billion in support until 2013. |
| 2 April | The G20 agrees to make available an additional $850 billion of resources through the IMF and the multilateral development banks to support growth in emerging and developing economies. |
| 3 April | The Bank of Mexico announces that it will activate its $30 billion swap line with the Federal Reserve and conduct an auction of $4 billion in 264-day funds on 21 April. |
| 7 April | South Korea aims to raise about $2 billion in its first sovereign debt sale in three years. |
| 14 April | Poland expresses interest in the FCL (a $20.6 billion one-year arrangement is subsequently approved on 6 May). Russia signals its intent to borrow on international markets for the first time in a decade. |
| 20 April | Colombia expresses interest in the FCL (a $10.5 billion one-year arrangement is subsequently approved on 11 May). |
| 30 April | The ADB plans to pump an extra $3 billion into economies struggling to respond to the financial crisis and to boost its project lending by $10 billion over the next two years, after shareholders approved a trebling of its capital base. |
| 1 May | Mexico begins a five-day shutdown in response to the H1N1 flu outbreak. |
| 3 May | ASEAN Plus Three Finance Ministers announce their agreement on all the main components of the $120 billion Chiang Mai Initiative Multilateralisation (CMIM). |
| 4 May | The IMF Executive Board approves a 24-month SDR 11.4 billion (about €12.9 billion) Stand-By Arrangement for Romania. |
| 8 May | The IMF Executive Board completes the first review of Ukraine's performance under the Stand-By Arrangement and approves the immediate release of SDR 1.9 billion (about $2.8 billion). |

Sources: ASEAN; IMF; *Financial Times*; Reuters; national central bank websites. Table 2

arrangements in March (with Argentina, Belarus and Indonesia) in a bid to reduce reliance on major currencies in settling international trade. The ASEAN Plus Three countries also agreed to multilateralise the Chiang Mai initiative, which had until then been a collection of bilateral swap agreements. The new

multilateral facility will pool together $120 billion and will be governed by a single contractual arrangement.

Resilience of emerging markets …

The resilience of emerging markets during the period under review was also demonstrated by the limited impact of the outbreak and spread of H1N1 influenza in late April. Although Mexico, being the epicentre of the outbreak, saw its main stock market index fall by as much as 5% and the peso weaken by over 4% against the US dollar on 27 April, the negative market response proved only transitory. By 4 May, both the stock market index and the peso exchange rate had recovered to levels observed prior to the escalation of the outbreak.

… is accompanied by a pickup in debt issuance …

Against this more benign background, debt issuance by emerging markets picked up. Several sovereigns returned to the international markets (or announced their intention to do so) during the period under review (Table 2). However, international placements by emerging market corporate issuers apparently still lagged behind (Graph 12, right-hand panel). Syndicated debt securities issuance by non-financial corporates rose significantly in March and April, albeit driven mainly by placements in domestic markets. Issuance by financial firms remained relatively subdued.

… and an easing in net financial outflows

Financial flows into emerging markets also reflected the return of risk appetite. Monthly balance of payments data from Brazil, for example, show that the large net outflows in portfolio and other (mostly bank) investment by non-residents in the final quarter of 2008 abated in the first three months of 2009. Net flows into other investment and equity investment even turned positive in February and March, respectively. An easing in net outflows and recent signs of net inflows were also recorded in some other markets, such as Korea and Poland (see also the feature by Jara et al in this issue).