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Overview: markets adjust to cyclical downturn

During the period from end-May to late August 2008, global financial markets adjusted to growing signs of a broad-based cyclical deterioration. While markets continued to display signs of fragility, worries about the economic outlook and related uncertainties gained prominence, weighing on valuations across asset classes.

Credit markets came under renewed pressure over the period, as spreads widened to reflect the implications of the ongoing cyclical adjustment for loss expectations and financial sector balance sheets. This was despite retreating oil and commodity prices, government action in support of the US housing market and continued recapitalisation efforts by banks and other financial firms. Equity markets reflected similar concerns, as valuations adjusted to reflect disappointing earnings data, including in the financial and other cyclical sectors. Against this background, pressures in interbank money markets persisted, prompting further central bank action to enhance the effectiveness of their liquidity facilities.

As market expectations regarding price levels and monetary policy shifted against the backdrop of changing oil and commodity prices, government bond yields moved to price lower short-term growth prospects and the possibility of higher inflation in the longer run. Worries about inflationary pressures and deteriorating external financing conditions also weighed on emerging market assets, before declining oil and commodity prices seemed to provide temporary relief. With weaker macroeconomic conditions thus moving more clearly into focus, equity prices declined and emerging market spreads increased, although to varying degrees across countries and regions.

Credit markets price cyclical deterioration

Following a period of broadly improving conditions in credit markets after the government-facilitated takeover of Bear Stearns in mid-March, credit spreads came under renewed upward pressure from end-May. With markets trying to assess the implications of cyclical developments for credit quality, attention increasingly turned from a near-exclusive focus on financial sector health to the broader macroeconomic outlook. The emerging environment of higher inflation and lower growth, in particular, suggested that corporate earnings and credit quality were likely to be eroded from the input cost as well as from the demand side. Credit markets were thus seen as anticipating gradually rising default rates and higher related financial sector losses, though without the environment of disorderly deleveraging witnessed earlier in the year.

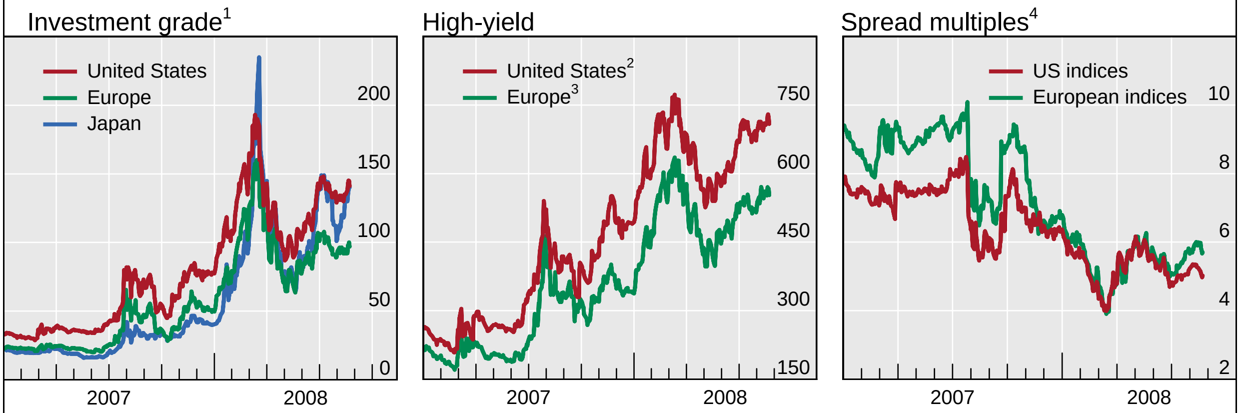
Credit spreads widen once again …

Against this background, benchmark credit default swap (CDS) indices witnessed broadly increasing spreads between end-May and 22 August, while easing somewhat from mid-July. Widening spreads came on the back of revived concerns about financial sector writedowns and weak equity markets, with market sentiment improving in response to easing oil prices and backstop measures by the US authorities targeted at two government-sponsored housing finance agencies. Overall, by the end of the period under review in late August, the US five-year CDX high-yield index spread widened by almost 136 basis points to near 709, while corresponding investment grade spreads rose by 39 basis points to around 141. European and Japanese CDS indices broadly mirrored the performance of their US counterparts, with investment grade spreads rising by some 19 and 58 basis points, respectively. The European five-year iTraxx Crossover credit index, in turn, increased by 106 basis points to 553 (Graph 1).

… following monoline downgrades …

Earlier concerns regarding financial sector balance sheets resurfaced in early June, following negative rating actions on major monoline insurers and deteriorating earnings prospects for financial firms. Moody's decided to place the ratings of MBIA and Ambac on review for downgrade on 4 June, and Standard & Poor's lowered its ratings of the same companies from AAA to AA the next day. Further downgrades of monoline and mortgage insurers followed later in the month, reigniting fears about valuation losses on the securities insured by these companies and related asset disposals. Weak earnings announcements by major investment banks in mid-June added to the negative news, reminding market participants that the cyclical adjustment associated with the financial crisis had not yet run its course. As a result, credit markets repriced on a broad basis, with widening financial sector spreads contributing

Credit spread indices

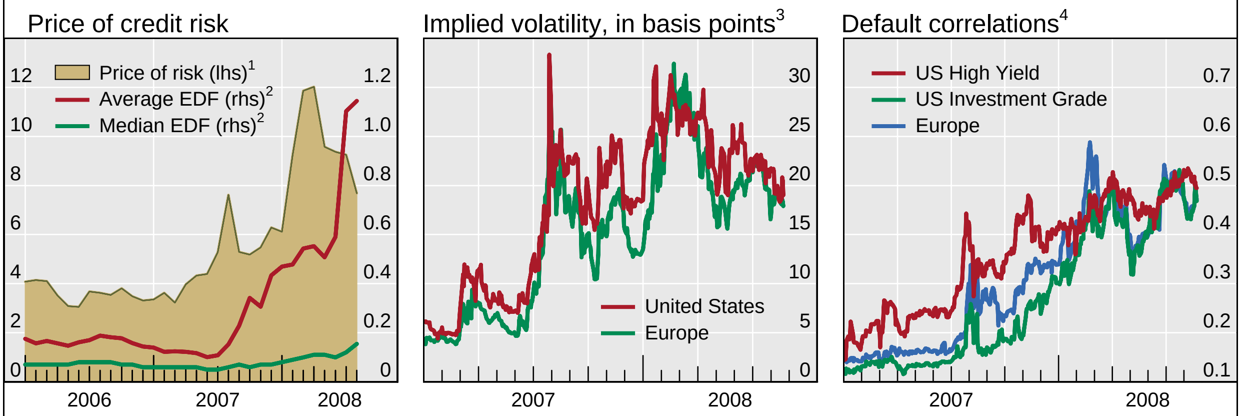


[1] Five-year on-the-run CDS mid-spread on index contracts of investment grade quality (DJ CDX IG, iTraxx Europe and iTraxx Japan), in basis points. [2] Five-year on-the-run CDS mid-spread on the DJ CDX HY index, in basis points. [3] Five-year on-the-run CDS mid-spread on the iTraxx Crossover, in basis points. [4] Ratio of the DJ CDX HY over the DJ CDX IG and the iTraxx Crossover over the iTraxx Europe investment grade index, respectively.

Sources: JPMorgan Chase; Markit; BIS calculations.

Graph 1

Price of risk, implied volatilities and default correlations



[1] Ratio of risk neutral to empirical probabilities of default. 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 value for the median name in a large sample of BBB-rated and non-investment grade entities. [2] In per cent. [3] 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. [4] Implied default correlations based on prices for the most junior loss tranches of the DJ CDX HY, DJ CDX IG and iTraxx IG indices.

Sources: JPMorgan Chase; Markit; Moody's KMV; BIS calculations. Graph 2

to an underperformance of investment grade relative to lower-quality debt in June (Graph 1, right-hand panel).

... and expectations of a cyclical increase in default rates

Despite these movements, all five major credit indices remained well below the record highs of March 2008, a sign that concerns about systemic risk had not returned to previous levels. Similar signs emerged from recovering volumes in the international debt securities markets, where gross issuance by financial sector and other investment grade entities surged by some $370 billion in the second quarter (see the highlights section on page 13 for more detail). Risk tolerance also recovered from the depressed levels observed earlier in the year, as suggested by the price of credit risk extracted from credit spread-implied and empirical default probabilities of lower-quality borrowers (Graph 2, left-hand panel). That said, risk premia were still elevated, consistent with implied volatilities from CDS index options, which continued to exceed the levels before the start of the financial crisis in mid-2007 (Graph 2, centre panel). At the same time, default correlations implied by tranched index products remained elevated in both the United States and Europe, indicating that investors were attaching a relatively high weight to cyclical as opposed to firm-specific risk factors (Graph 2, right-hand panel). Observed pricing patterns thus continued to be consistent with expectations of a cyclical increase in default rates.

Negative cyclical expectations were fuelled by further weakness in housing markets. Mortgage delinquencies and foreclosures in the United States rose further, with house price depreciation projected to extend well into the future (Graph 3, left-hand panel). Signs of softening house prices also emerged in key European economies, while bankruptcies in the real estate and construction sectors put pressure on credit spreads in Japan. The broad-based weakness in housing markets, in turn, implied further valuation losses on mortgage-backed securities (MBS). This included the US subprime mortgage segment, where key indices referencing mortgage loans originated in 2006 suffered their first principal writedowns in June and July (Graph 3, centre panel; see the special feature on page 67 for more detail on these instruments). As the mortgage market deteriorated deepened, uncertainty about future losses and associated capital needs triggered fears about banks' ability to add to the $352 billion of new capital raised since the start of the crisis. Despite announcements by their regulator that they remained adequately capitalised, two major US housing agencies were hit by similar concerns. In response, by late June, credit spreads on agency debt (Graph 4, left-hand panel) and on MBS underwritten by these institutions had risen back to levels last seen in March 2008 (Graph 3, right-hand panel).

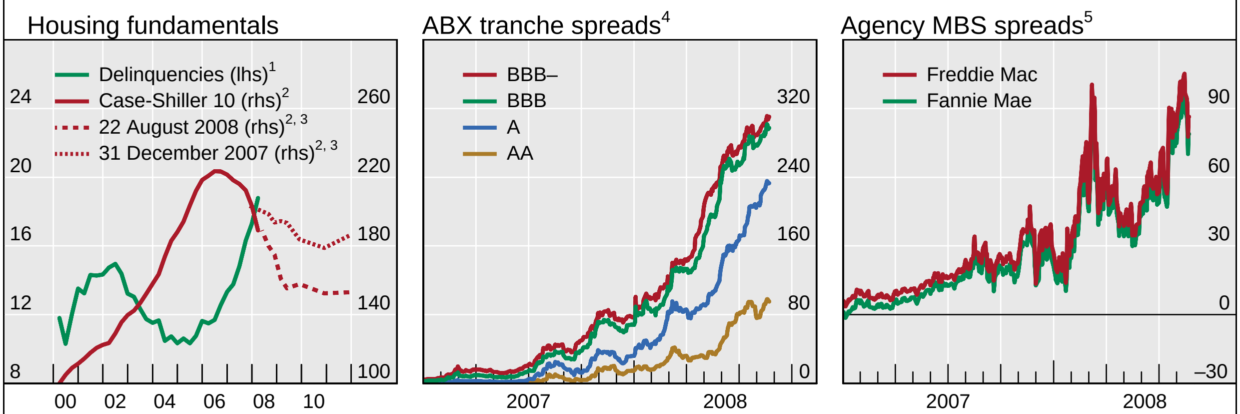
Sentiment improves in July …

Sentiment improved somewhat in July, and credit spreads, particularly in the investment grade segment, reversed part of their previous widening. The proximate trigger of the spread adjustment was an easing in oil prices from a record high on 3 July, combined with better than expected results for a number of US companies at the beginning of the earnings season and government action in support of the US housing market. Agency spreads had risen further in early July and their equity prices plummeted after the 4 July weekend (see the equity market section below). With sentiment regarding the continued viability of the US housing agencies deteriorating and much of the remaining mortgage origination activity dependent on agency securitisation, the authorities stepped in on Sunday 13 July and announced plans for backstop measures. Under the proposed initiative, which was quickly enacted, the US Treasury gained authority to increase its existing line of credit to the housing agencies and to purchase agency stock. In support, the Federal Reserve Board provided temporary authority for the Federal Reserve Bank of New York to lend to the agencies, if necessary.

… aided by backstop measures aimed at US housing agencies

Credit spreads rose during the following days, reflecting in part the takeover by the US Federal Deposit Insurance Corporation of a large California-based mortgage lender, but then tightened for the rest of the month

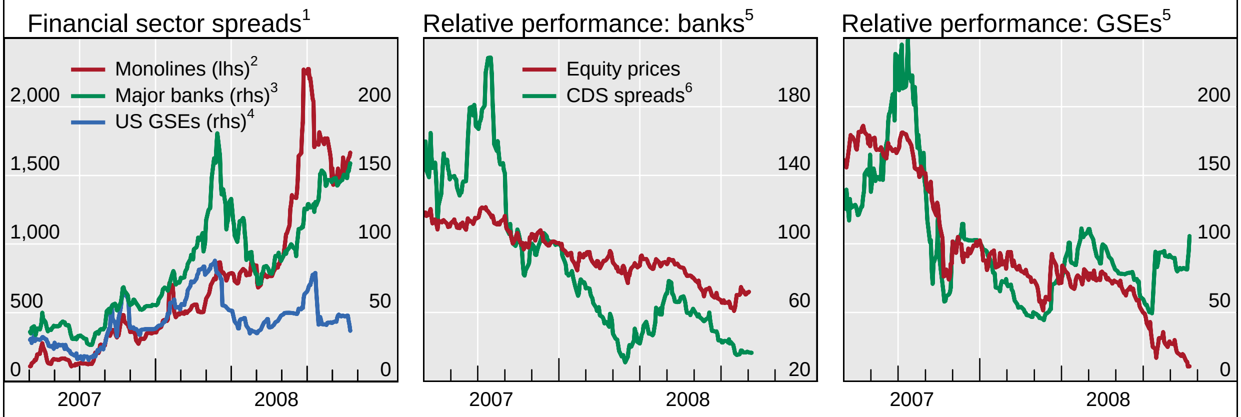
US mortgage markets



[1] Subprime loan delinquencies as a percentage of total subprime loans; seasonally adjusted. [2] House price index; 2000 Q1 = 100. [3] Implied by prices on futures contracts on the Case-Shiller 10 index. [4] Implied index spreads from CDS contracts on subprime mortgage bonds (index series ABX HE 06-2), in per cent. [5] JPMorgan index; option-adjusted spreads over Libor of mortgage-backed securities (MBS), in basis points.

Sources: Bloomberg; JPMorgan Chase; Markit; BIS calculations. Graph 3

Financial sector spreads: relative performance



[1] Equally weighted average spreads, in basis points. [2] Seven monoline financial guarantors. [3] The sample consists of 14 investment and commercial banks headquartered in North America and 11 universal banks headquartered in Europe. [4] US government-sponsored enterprises (GSEs): Fannie Mae and Freddie Mac. [5] Equally weighted average spreads and equity prices; 1 January 2008 = 100. [6] Inverted series.

Sources: Bloomberg; Markit; BIS calculations. Graph 4

(Graph 1). The change in momentum came on the back of the successful completion on 17 July of a $3 billion debt issue by one of the agencies. Agency debt valuations also recovered from their mid-July lows and outperformed corresponding equity prices in the process, as markets seemed to judge that the proposed backstop measures were aimed largely at supporting debt investors. This contrasted with the underperformance of credit spreads relative to equity prices for other major financial institutions (Graph 4, centre and right-hand panels). Spreads on agency MBS, in turn, did not tighten to the same degree as those on the agencies themselves and only with a substantial delay, suggesting a continued lack of institutional and foreign investor demand for US mortgage products (Graph 3, right-hand panel).

Concerns about asset quality are likely to persist

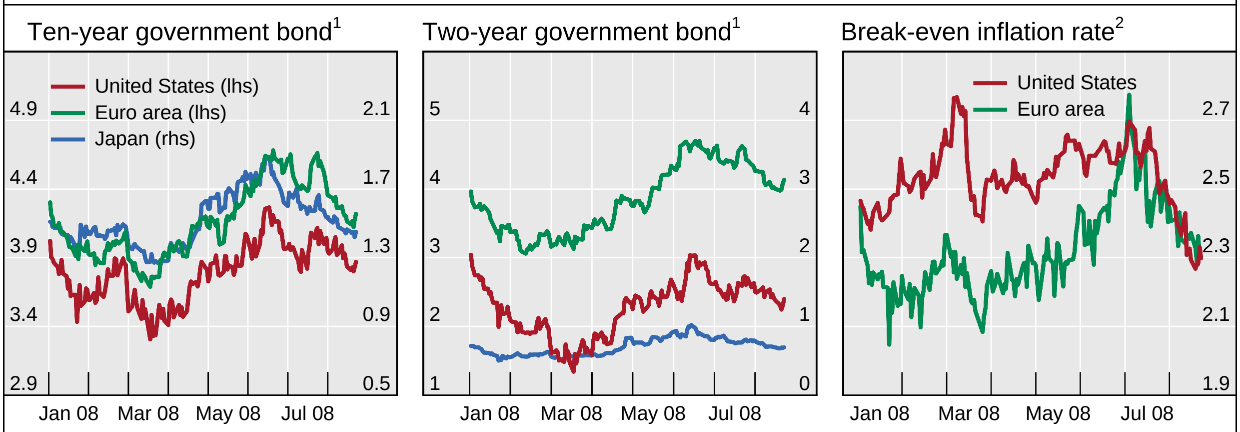
By the end of the period under review in late August, credit spreads had drifted upwards once again. The announcement by a major US bank late on 28 July of an additional writedown of $4.4 billion from the disposal of collateralised debt obligations, and news of larger than expected quarterly losses at both of the large US housing agencies and at major insurance companies in August, served as reminders that concerns about asset quality were likely to persist. Despite an aggregate $503 billion of assets written down by banks and brokerages since the start of the credit crisis in 2007, further writedowns and outright asset disposals were thus seen as continuing over the coming months, adding to existing capital constraints and related funding needs. These developments, in turn, suggested that the combined impact of tighter funding conditions and lower corporate earnings would continue to weigh on credit quality and relative valuations across market segments.

Bond markets reflect changing outlook for growth and inflation

Government bond yields decline …

Government bond yields in the major advanced economies declined over the period under review, reflecting worsening growth expectations, together with an improving near-term inflation outlook. By 22 August 2008, the 10-year US

Government bond yields and break-even inflation rates



[1] In per cent. [2] Nominal minus real 10-year zero coupon bond yields.

Source: Bloomberg. Graph 5

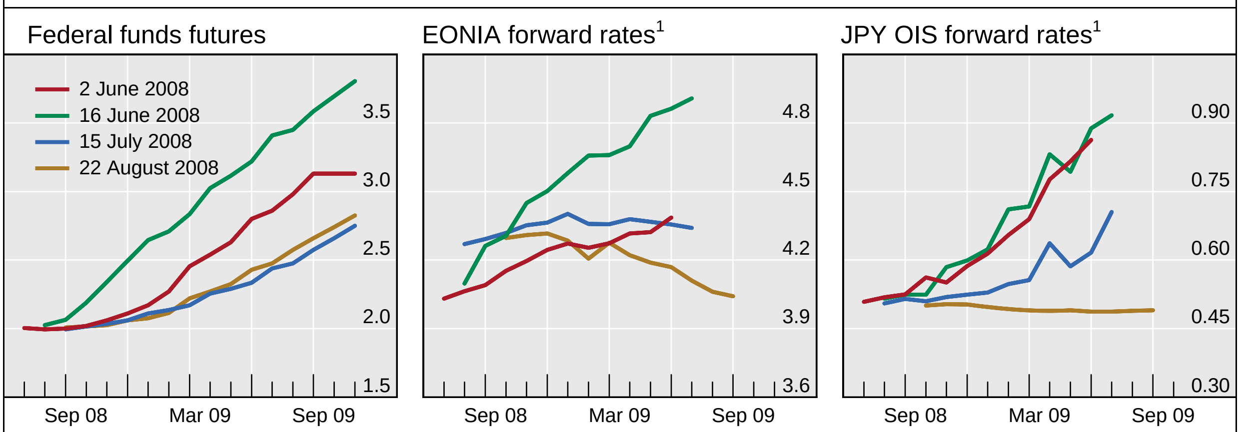
Treasury bond yield was 3.87%, around 20 basis points down from its level in late May. Over the same period, 10-year yields in the euro area and Japan fell by about 20 and 30 basis points, to 4.22% and 1.45%, respectively (Graph 5, left-hand panel). Two-year yields dropped as well, reaching 2.40% in the United States, 4.13% in the euro area and 0.69% in Japan, all lower than their end-May levels by some 20 basis points (Graph 5, centre panel).

… reflecting lower expected growth …

The fall in nominal yields partly reflected changes in growth expectations. All three major markets experienced declining long-term yields between mid-June and mid-July against the background of concerns about the US housing agencies. While there was a modest rebound in yields from mid-July that coincided with measures taken by the US authorities to support the agencies, declines were renewed in late July and into August, reflecting in large part downward revisions of previously released economic indicators as well as surprisingly poor new releases.

Forward curves

In per cent



[1] Implied one-month rates from overnight index swaps.

Sources: Bloomberg; BIS calculations. Graph 6

... and anticipated monetary policy responses

Coinciding with these developments, expectations about the path of near-term policy rates were revised downwards. In the case of the United States, federal funds futures prices in late August signalled expectations of a significantly slower pace of rate increases than that indicated a few months earlier (Graph 6, left-hand panel). In the euro area, while mid-June EONIA swap prices had pointed to expectations of policy rate increases by the ECB over the next 12 months, markets in August anticipated a path of lower policy rates (Graph 6, centre panel). In Japan, expectations for 2009 shifted from policy rate increases to unchanged rates (Graph 6, right-hand panel).

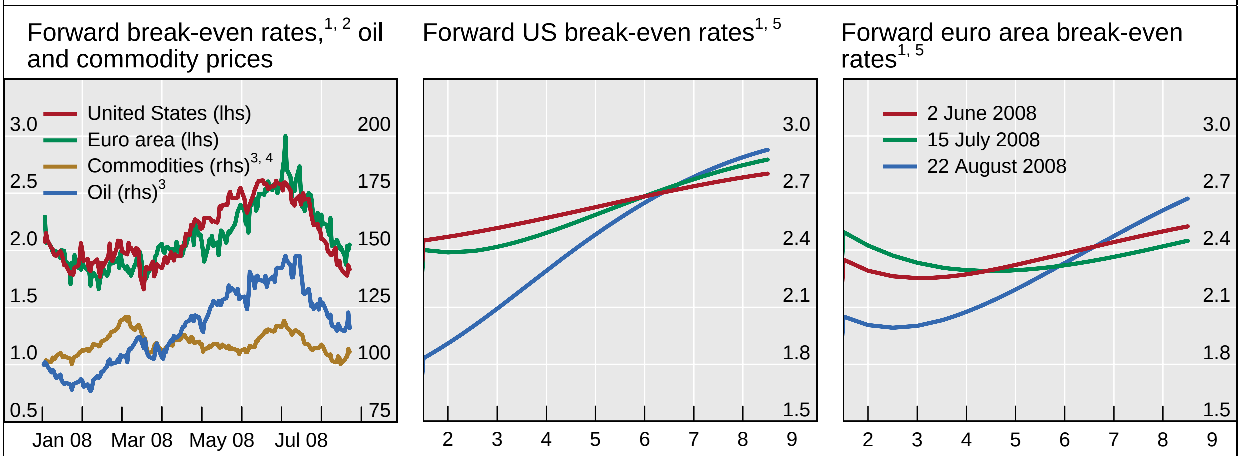
Break-even inflation rates also decline ...

Market expectations of inflation moderated in the period under review, at least as proxied by break-even inflation rates, ie the differences in the yields of nominal and inflation-indexed securities.[1] By 22 August, the break-even inflation rates derived from the yields of 10-year securities were 2.30% for both the euro area and the United States, a decline of around 15 and 35 basis points, respectively, since end-May (Graph 5, right-hand panel). The moderation was more marked at shorter ends of the yield curve: for instance, the one-year forward break-even rate at the two-year horizon declined by nearly 70 basis points over the period from end-May for the United States; the corresponding break-even rate in the euro area declined by 35 basis points (Graph 7, left-hand panel). This decline coincided with the fall in oil and other commodity prices from the very high levels observed in early July, which appears to have alleviated concerns about short-term inflationary pressures (Graph 7, right-hand panel).

... even as longer-term inflation concerns persist

At the same time, forward break-even rates painted a very different picture at longer horizons. Between early June and late August, forward break-even inflation rates beyond the six-year horizon rose for both the United States and

Forward break-even inflation rates and commodity prices



[1] In per cent. [2] One-year forward break-even inflation rate two years ahead. [3] 1 January 2008 = 100. [4] Non-Energy CRB Index. [5] One-year forward break-even inflation rate two to nine years ahead (horizontal axis), calculated from US and euro area real and nominal zero coupon yield curves, respectively.

Sources: Federal Reserve; Bloomberg; BIS calculations. Graph 7

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[1] Break-even rates reflect not only expectations of inflation, but also risk premia that compensate investors for inflation risk; see the special feature on page 23 for a more detailed discussion.

euro area (Graph 7, centre and right-hand panels). Continued worries about inflation over the longer term were consistent with investors pricing the possibility that key central banks might need to maintain a more accommodative policy stance than normal to contain the risks to economic growth in an environment of stressed financial markets.

Continued funding pressures in interbank money markets

Pressures continue in money markets …

While bond markets over the period as a whole largely reflected expectations regarding growth and inflation, money markets were more directly affected by financial sector concerns. Spreads between Libor and corresponding OIS rates, which reflect a combination of counterparty credit risk and liquidity factors, remained elevated (Graph 8, left-hand panel). At the same time, bids for US dollar funds at auctions conducted by the ECB and the Swiss National Bank (SNB) continued to be high.

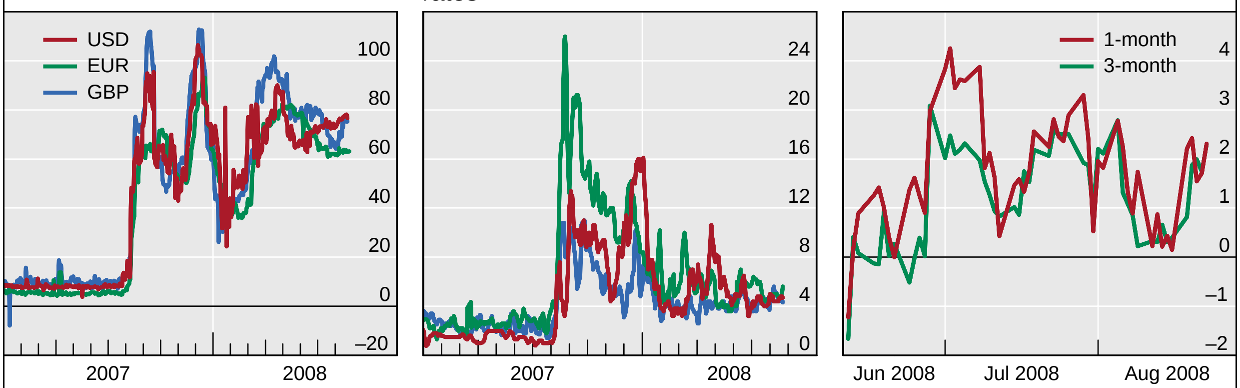
… despite new central bank initiatives

Continued pressures in US dollar interbank money markets were also illustrated by the fact that US dollar Libor-OIS spreads did not show any notable reaction to the Federal Reserve's announcement on 30 July of new measures to enhance the effectiveness of existing liquidity facilities. These included an extension of the Primary Dealer Credit and Term Securities Lending Facilities (PDCF and TSLF) until end-January 2009, along with the introduction of an auction mechanism for options on $50 billion worth of TSLF funds to help markets deal with periods of added uncertainty, such as quarter-ends. In addition, to complement the provision of 28-day loans under the existing Term Auction Facility (TAF), new 84-day TAF loans were introduced. Corresponding changes to the maturity profile of available funds were announced by both the ECB and the SNB with regard to their own US dollar funding auctions.

Dispersion in money market rates

In basis points

Libor-OIS spread[1] | Dispersion in contributor banks' rates[2] | Dispersion in funding rate[3]

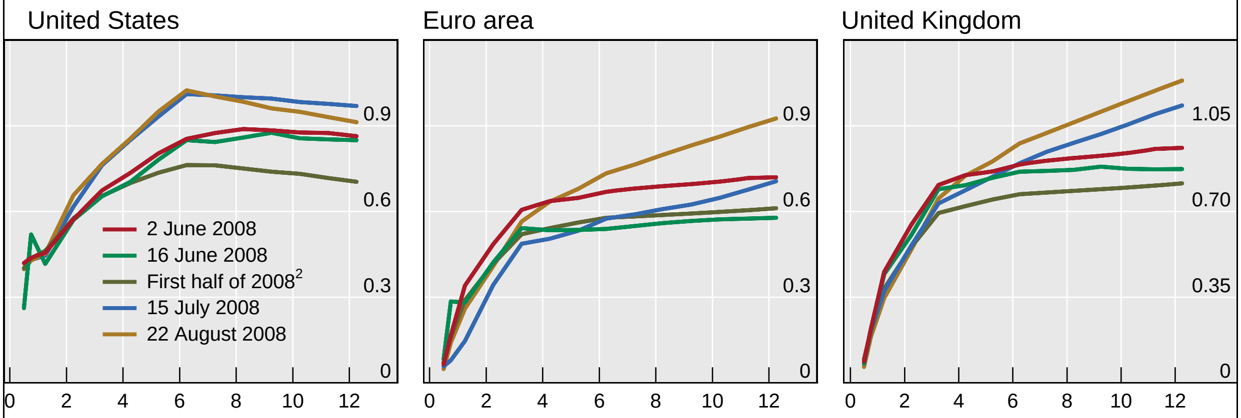


[1] Libor panel, three-month rates. [2] Maximum minus minimum, five-day moving average range. [3] New York funding rate minus Libor.

Sources: Bloomberg; BIS calculations. Graph 8

Term structure of Libor-OIS spreads[1]

In per cent



[1] The horizontal axis measures the maturity in months. For the OIS rates: for the euro area, EONIA; for the United Kingdom, SONIA.
[2] Average spread.

Sources: Bloomberg; BIS calculations.

Graph 9

Concerns about the stability and reliability of the Libor interbank rate fixing, however, were less pronounced than before. Variation in Libor panel contributor rates in all three major Libor markets stabilised over the period (Graph 8, centre panel), which may indicate somewhat reduced uncertainty about banks' short-term funding needs. Earlier concerns that Libor panel banks had been reporting rates lower than their actual borrowing costs also appeared to abate. One development that may have helped lessen these concerns was the introduction by a large US brokerage firm of the survey-based New York funding rate (NYFR) on 11 June. Spreads between this measure and Libor remained mostly within a relatively tight band of 2–3 basis points, which seemed to indicate that Libor rates were not skewed downwards during this period (Graph 8, right-hand panel). Nevertheless, the term structure of Libor-OIS spreads suggested that interbank market pressures were expected to continue for some time (Graph 9).

Equity markets decline on growth concerns

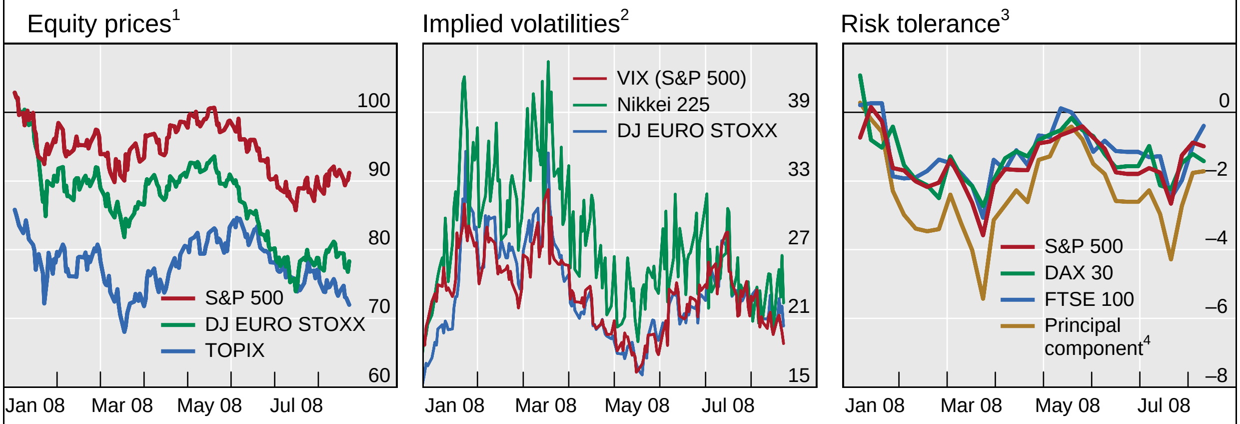
Equity markets decline on negative financial sector news …

Weighed down by concerns about growth and news of further financial sector losses, equity prices declined to lows not seen since the last quarter of 2005 by mid-July, before recovering somewhat (Graph 10, left-hand panel). By late August, the S&P 500 index had lost almost 8% compared to end-May levels, while markets in Europe and Japan retreated by around 14% over the same period. These declines were consistent with indications of rising risk premia, as apparent from higher implied option volatilities and reduced investor risk tolerance (Graph 10, centre and right-hand panels).

… and growth concerns

The decline in equity markets between end-May and mid-July came on the back of negative news about the health of major financial institutions, rising oil prices and deteriorating earnings. Concerns about the financial sector had been revived in early June, following downgrades of US monoline insurers and signs of continued pressures on bank balance sheets (see the credit market

Equity markets



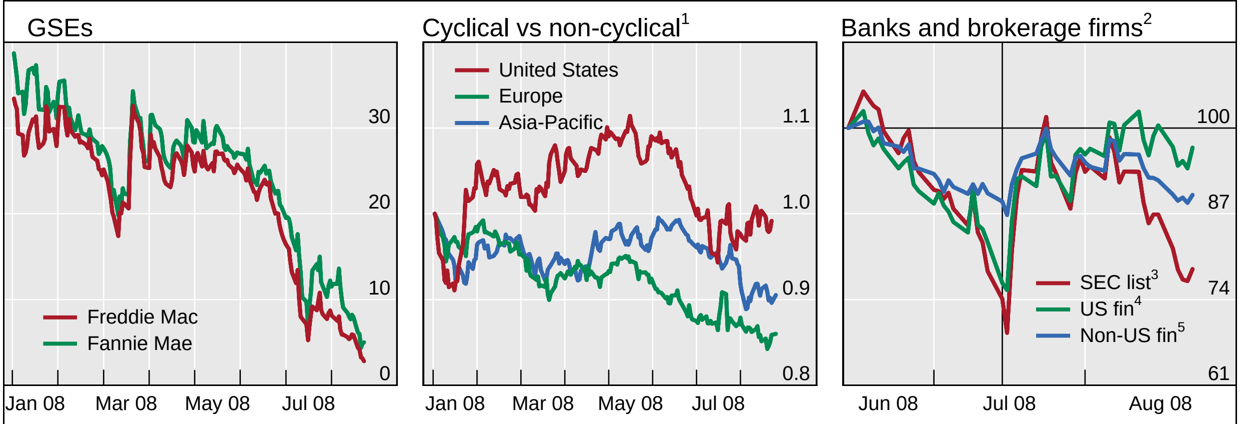
[1] In local currency; 2 January 2007 = 100. [2] Volatility implied by the price of at-the-money call option contracts on stock market indices, in per cent. [3] Derived from the differences between two distributions of returns, one implied by option prices, the other based on actual returns estimated from historical data; weekly averages of daily data. [4] First principal component of risk tolerance indicators estimated for the S&P 500, DAX 30 and FTSE 100.

Sources: Bloomberg; BIS calculations. Graph 10

section above). Sentiment deteriorated further into July, following fears about the capital adequacy of the US housing agencies and weak earnings releases by several financial institutions. Share prices for the US housing agencies plummeted, with Fannie Mae and Freddie Mac declining by about 74% and 79% between end-May and mid-July, respectively. Concerns about weakness in the financial sector were also reflected in commercial bank and brokerage equity prices, which tended to underperform those of other sectors over the same period.

Equity prices recovered part of their earlier losses from mid-July, helped by a combination of supporting factors. These included the announcement of the US housing agency support package, declines in oil and commodity prices and the introduction of new US Securities and Exchange Commission (SEC) emergency measures curbing short selling of stocks in the largest banks and

GSEs and cyclical vs non-cyclical equity prices



[1] Consumer cyclical divided by consumer non-cyclical equity indices. [2] 13 June 2008 = 100. The vertical line marks 15 July (date of the imposition of short selling restrictions by the SEC). [3] A total of 19 banks in the United States. [4] Includes S&P 500 financial firms excluding the 19 banks above. [5] A total of 34 international financial firms excluding the 19 banks above.

Sources: Bloomberg; Markit; BIS calculations. Graph 11 brokerage firms. News of the support package for the US housing agencies helped their share prices up from the lows on 15 July. However, investor uncertainty about the health of the agencies and the need for government intervention remained, with prices eventually plummeting to levels not seen since the late 1980s. Commercial bank and brokerage stocks also saw a mid-July rebound, helped by the unwinding of short positions in these stocks following the SEC's temporary measures regarding uncovered short sales (Graph 11, right-hand panel). Overall, growth concerns, combined with negative earnings surprises, meant that stocks such as consumer cyclicals underperformed non-cyclical equities over the period under review (Graph 11, centre panel). Similarly, despite a temporary upward correction in late August, declining oil and other commodity prices had resulted in lower valuations for energy and commodity-related equities.

Emerging markets face more challenging environment

Emerging market assets …

Emerging markets, which had been relatively resilient during most of 2007 and into 2008, witnessed a dramatically changing environment in recent months. With the credit crisis dragging on and signs of economic weakness emerging in key advanced economies, external funding conditions started to tighten, implying rising risks, particularly for countries with negative current account positions. At the same time, reflecting high food and energy prices, inflation rates remained on the rise, posing a threat to real incomes and corporate profitability. As a result, previous views about emerging market decoupling were increasingly challenged, and changes in macroeconomic conditions and associated economic policies gained increased investor attention.

… are weighed down by inflation concerns …

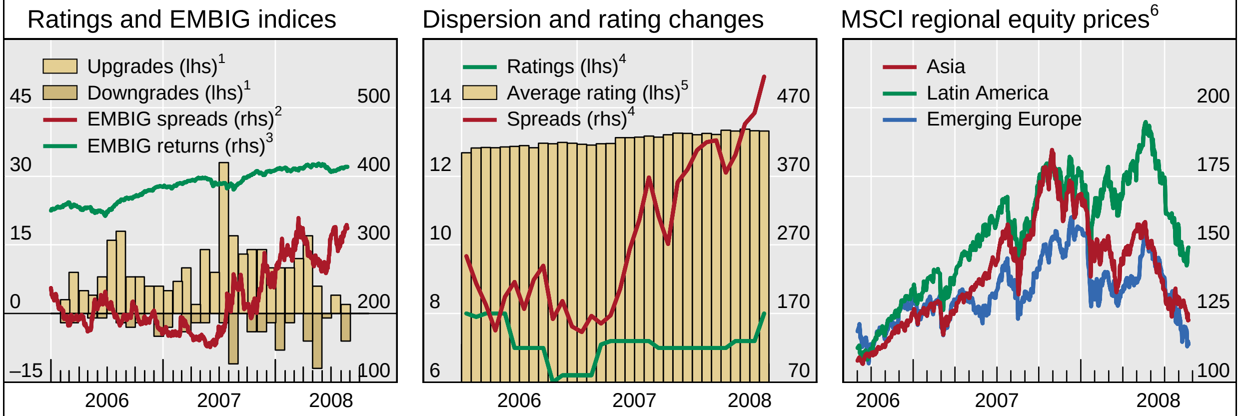
… deteriorating external financing conditions …

Emerging market credit spreads, as measured by the EMBIG index, widened from a low near 260 basis points in mid-June to around 324 at the end of the period, close to the highs seen at the peak of the credit sell-off in March. With spreads wider, but 10-year US Treasury yields down about 19 basis points from their levels at end-May (see the bond market section above), EMBIG returns were only slightly negative, at around –0.5% (Graph 12, left-hand panel). While growth forecasts across the emerging markets remained relatively robust, investor sentiment was dampened by inflation concerns and expectations of slower growth in the advanced economies. This tended to put pressure on credit spreads for countries with large current account financing needs, such as those in eastern Europe, given their dependence on foreign direct and portfolio investment flows from the European Union. As average EMBIG member country ratings remained broadly unchanged, spread dispersion increased further, consistent with greater differentiation by investors across issuers (Graph 12, centre panel).

… and weaker investor sentiment

Emerging equity markets suffered from the same set of negative factors, with investor sentiment further depressed by broadly weakening equity prices in the advanced economies up to mid-July (see the equity market section above). Between end-May and late August, the MSCI emerging market index lost some 20% in local currency terms and was down almost 9% from the earlier lows established in mid-March. With the US dollar appreciating on a

Emerging market assets



[1] Monthly long-term foreign and local currency sovereign rating changes from Fitch, Moody's and Standard & Poor's. [2] EMBI Global index; sovereign spread over government bond yields, in basis points. [3] EMBI Global index; cumulative total returns. [4] Difference between 90th and 10th percentiles; for spreads, in basis points; for ratings, in number of notches. Calculated using identical weights. [5] Average credit rating for all constituents of the JPMorgan Chase EMBI Global index; based on long-term foreign currency ratings from Standard & Poor's. Higher values imply higher ratings. [6] In local currency; 31 December 2005 = 100.

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

broad basis between mid-July and late August, the effective exchange rate of the US currency vis-à-vis key trading partners in the emerging markets retraced its earlier losses to end the period almost unchanged from its end-May levels. As a result, MSCI performance in dollar terms was broadly similar to the return in local currencies, with the index some 13 percentage points weaker than the S&P 500. Latin American and eastern European markets posted the largest declines, retreating by around 22% and 24%, respectively, over the period. While Asia, at –19%, was also down significantly since end-May, Asian markets appeared to benefit temporarily from declining oil and commodity prices as well as easing inflation concerns in late July. This was in contrast to markets such as Brazil and Russia, where large parts of the local MSCI indices are commodity-related (Graph 12, right-hand panel).