Christian Upper
+41 61 280 8416
christian.upper@bis.org

Philip D Wooldridge
+41 61 280 8819
philip.wooldridge@bis.org

1. Overview: retreat from risky assets

Yields on government bonds rose substantially up to the middle of May, reflecting expectations of robust growth as much as concerns about inflation. Initially, the rise in yields had little effect on the prices of risky assets or on investor risk appetite as strong fundamentals outweighed the impact of higher discount rates. Equity and commodity markets continued to rally into May, and spreads on lower-rated corporate and emerging market debt tightened further. The dollar depreciated significantly against other major currencies in late April and early May, with little apparent effect on other markets.

Concerns about the pace of recent gains in a broad range of markets culminated in an abrupt end to the rally in mid-May. Thereafter markets around the world fell. Emerging equity markets were the hardest hit, but losses were also recorded in other markets. Rather than a reassessment of fundamentals, the drop in the price of higher-risk assets seemed to represent a weakening of investors' appetite for risk. This resulted in a reallocation of portfolios in favour of highly rated instruments such as government bonds.

Support from fundamentals

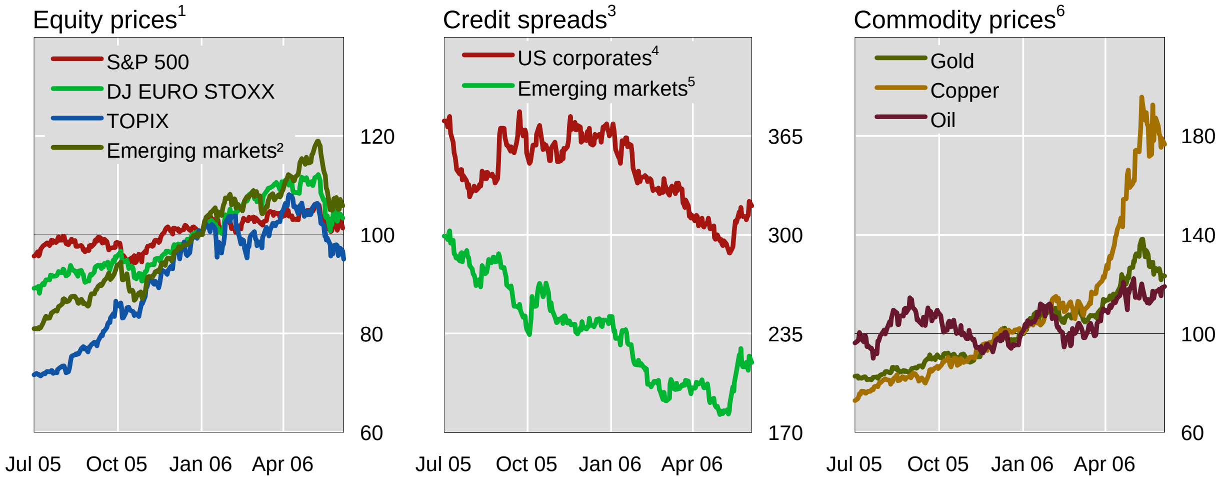
Prices of higher-risk assets soar in early 2006 …

The first four months of 2006 saw a continuation of the shift by investors towards higher-risk asset classes. Equity, commodity and high-yield debt prices all soared, extending the already impressive gains recorded in 2005. For example, emerging equity markets rose by 19% between end-2005 and mid-May 2006, and euro area equities by 12% (Graph 1.1). Copper prices almost doubled over the same period, and gold prices climbed by nearly 40%. Spreads on high-yield corporate bonds and dollar-denominated emerging market bonds tightened by more than 60 basis points, to levels close to, or in some cases below, their earlier lows.

… and government bond yields rise

During this period, government bond yields in the major markets also rose substantially. Yields on 10-year US Treasury notes finally broke out of the range in which they had traded since mid-2004. They peaked at 5.2% on 12 May, 80 basis points higher than at end-2005 and about 30 basis points above their 2004 high (Graph 1.2, right-hand panel). In the euro market, yields on 10-year German bunds also rose by about 80 basis points between end-2005 and mid-May 2006, to 4.1%. Japanese yields increased by 50 basis points to around 2%, a level last observed in the late 1990s.

Risky asset markets



[1] In local currency; 31 December 2005 = 100. [2] Morgan Stanley Capital International index. [3] Spreads over government bond yields, in basis points. [4] Merrill Lynch US High Yield Master II index. [5] JPMorgan Chase EMBI Global Diversified. [6] Spot prices; 31 December 2005 = 100.

Sources: Bloomberg; JPMorgan Chase; Merrill Lynch. Graph 1.1

Support for the initial rally from robust growth …

The initial rise in government bond yields and rally in the prices of risky assets were to some extent underpinned by stronger fundamentals. Data releases boosted confidence in the strength of the global economy. The consensus forecast for economic growth in Japan increased sharply in the first quarter and continued to improve thereafter (Graph 1.3, left-hand panel). In the euro area, very strong survey data led analysts to upgrade their growth forecasts, even though actual data releases turned out to be considerably weaker than forward-looking indicators. The German Ifo index for April posted the highest reading since the post-unification boom in the early 1990s, triggering a 5 basis point jump in bund yields on 25 April. In the United States, economists foresaw a moderate slowing of the economy, but expected growth to remain close to potential.

… strong earnings …

The announcement of better than expected corporate profits for the first quarter of 2006 provided additional support for the rally in equity and credit markets. In the euro area in April, analysts revised their earnings forecasts upwards at the fastest pace for some time (Graph 1.3, right-hand panel). In the United States, earnings forecasts were raised for the largest number of companies since early 2005. Only in Japan had the improved outlook already been anticipated by equity investors, and so the TOPIX struggled to surpass its end-2005 level.

… low default rates …

Further attesting to the strength of corporate finances, default rates for corporate borrowers fell to their lowest level in years, although they were expected to increase going forward. In the United States, less than 1% of rated issuers defaulted in the year to April 2006, down slightly from 1.1% a year earlier and the lowest rate since 1997. Outside the United States, over the same period no rated issuers defaulted on their outstanding bonds. That said, signs that corporate credit quality had peaked had already begun to emerge last year. For example, in the year to April 2006, downgrades accounted for

57% of all rating actions by Moody's concerning US companies and 54% of those concerning European companies, up from 54% and 43%, respectively, in the year to April 2005.

… and unchanged outlook for policy rates

Risky asset markets were also bolstered by the limited impact that the apparent strength of underlying economic conditions had on the outlook for policy rates. After edging up in March, short-term interest rate futures were more or less unchanged in April and May, indicating that market participants did not materially revise their expectations regarding the pace of monetary policy tightening (Graph 1.2, left-hand panel). The Bank of Japan announced the end of its quantitative easing policy in March 2006 and a move towards the use of more conventional policy instruments. Yet the announcement had no immediate market impact because it had been widely anticipated and the central bank emphasised its intention to keep the policy rate target at zero for a sustained period of time.

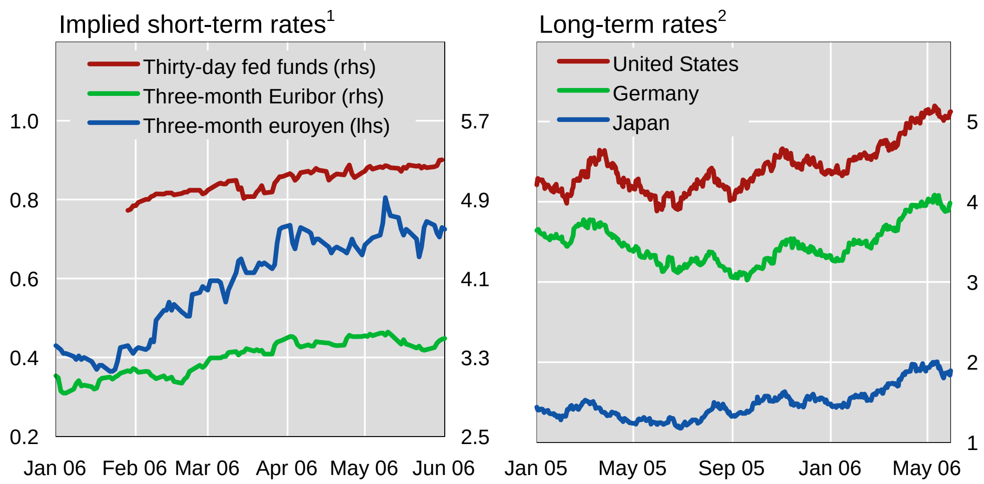
In the United States, federal funds futures and equity prices reacted strongly to news about inflation, but the impact usually did not last for long. For example, on 7 April strong labour market data were perceived to increase the likelihood of further rate hikes by the US Federal Reserve, thus contributing to a 1% drop in the S&P 500 Index. Then on 18 April, the released minutes from the March meeting of the US Federal Reserve were interpreted as suggesting that the tightening cycle might be nearing its end, leading to a 1.8% rebound in the S&P 500.

Inflation concerns push up yields starting in April

In bond markets, however, concerns about inflationary pressures became an important driver of longer-term yields starting in early April, especially in the United States. Whereas the inflation compensation demanded by investors had accounted for only one quarter of the rise in US Treasury yields between mid-January and the end of March, its contribution went up to two thirds between the beginning of April and the middle of May (Graph 1.3, centre panel). In the

Interest rates

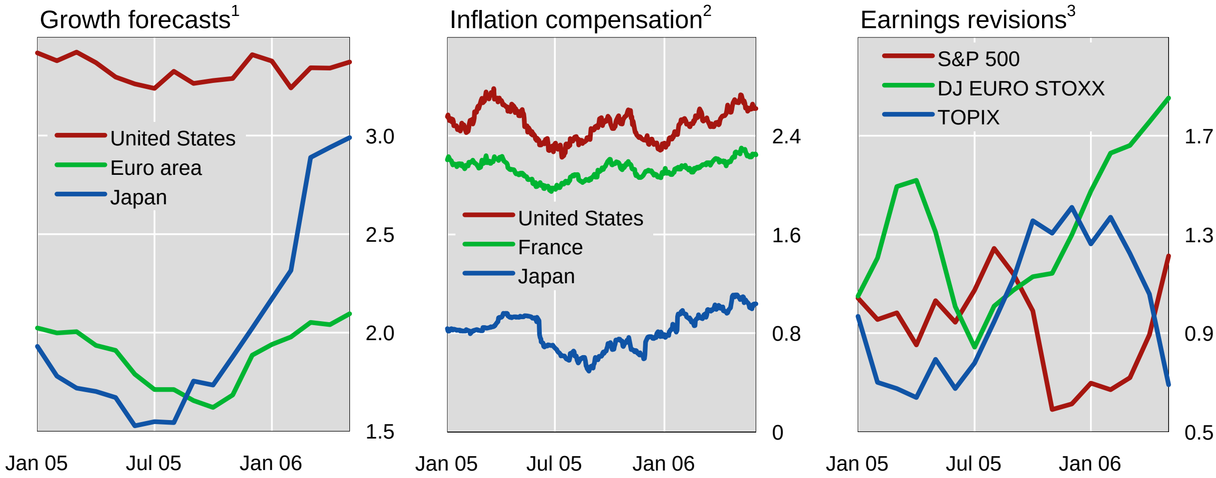
In per cent



[1] Interest rates implied by the prices of futures contracts expiring in December 2006. [2] Ten-year government bond yields.

Source: Bloomberg. Graph 1.2

Macroeconomic outlook



[1] Forecasts for 2006 as published monthly by Consensus Economics; observations are positioned in the month in which the forecast was made; percentage change over the previous year. [2] Nominal minus real 10-year government bond yields, in per cent. [3] 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; to adjust for analysts' systematic overestimation of earnings, the mean of the diffusion index over the 2000–02 period (S&P 500 = 43.8; DJ EURO STOXX = 40.8; TOPIX = 45.9) was subtracted from each monthly observation; three-month moving average.

Sources: Bloomberg; © Consensus Economics; I/B/E/S; BIS calculations. Graph 1.3

euro area and Japan, too, the break-even rate of inflation computed from the yields on nominal and inflation-indexed government bonds increased, albeit by a much smaller amount: less than 10 basis points between mid-April and mid-May, compared to about 20 basis points in the United States. Notwithstanding such increases, inflation compensation in the major markets remained relatively low and within the range observed over the previous year.

Search for yield continues in early 2006

In addition to strong fundamentals, a heightened appetite for risk appeared to contribute to the rally in credit and equity markets over the first four months of 2006. For much of the previous two years, investors had bid up the prices of risky assets in their search for higher yields. This process continued in the early part of 2006 even as the level of nominal bond yields rose and global monetary conditions tightened further.

Search for yield helps credit spreads to tighten …

Investors' search for yield was most readily evident in emerging markets. Emerging market issuers raised record amounts in international debt securities markets in the early part of 2006 on very favourable terms, including substantial amounts in local currencies (see "The international debt securities market" on page 27). Spreads tightened even for those countries where fundamentals were relatively weak. For example, credit default swap (CDS) spreads for the Philippines tightened by 100 basis points between the end of 2005 and early May 2006, to about 150 basis points, despite the slow progress of fiscal consolidation.

… even as issuance accelerates

In corporate debt markets, too, investors accepted narrower spreads even as issuance surged. In the United States, gross issuance of corporate bonds was about 40% higher over the first five months of 2006 than in the same period a year earlier. Bank lending also increased rapidly. This increase was driven in large part by financing for mergers and acquisitions (M&As). The announced volume of M&As was about 50% higher over the first five months of 2006 compared to the same period a year earlier (Graph 1.4, left-hand panel). Whereas during the previous M&A boom, in 1999–2000, about 70% of all deals had been paid for with equity, since 2005 only 30% have been. The majority of recent deals have been paid for in cash, often raised in debt markets.

Record lending for LBOs

Demand for higher-yielding corporate debt was especially strong. While spreads on investment grade corporate bonds were little changed over the first five months of 2006, spreads on high-yield bonds tightened significantly, to within a few basis points of their March 2005 low. Furthermore, spreads on new leveraged loans – loans to speculative grade borrowers – narrowed to record lows in the early part of 2006, even as the volume of such loans soared. For example, loans to finance leveraged buyouts (LBOs) averaged $10 billion per month during the first four months of 2006, up from $7 billion on average in 2005 (Graph 1.4, right-hand panel). Volumes were similar to those at the peak of the previous LBO wave in 1989.

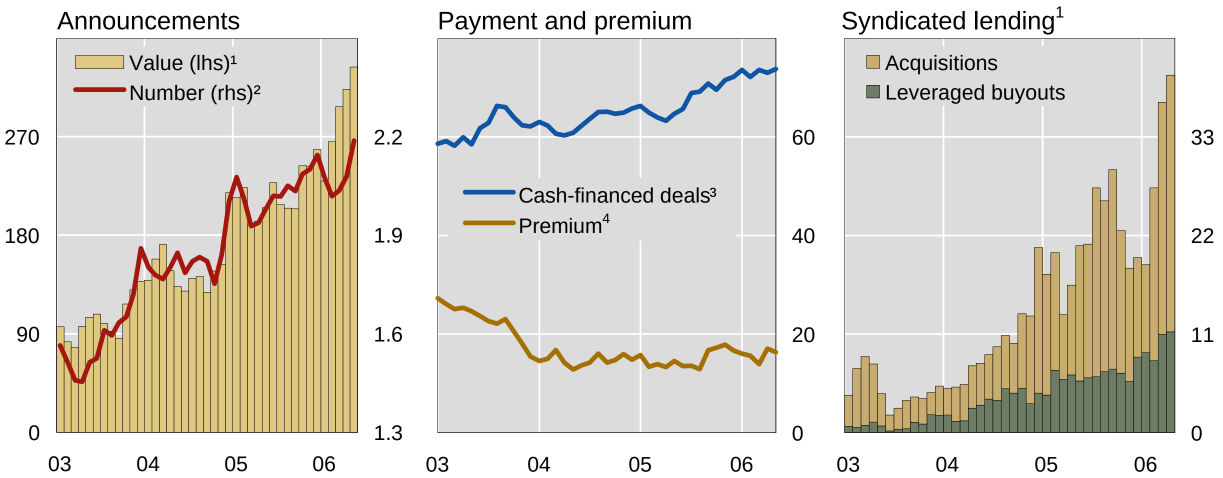
This demand reflected in part the strength of investor interest in structured credit products. A large proportion of new leveraged loans was purchased by managers of collateralised debt obligations (CDOs), who repackaged them into higher-rated, often AAA-rated, securities. CDOs typically trade at much wider spreads than similarly rated corporate bonds and so are popular among investors seeking to maximise yield for a given credit rating.

Demand for structured credit products remains strong

In the first quarter of 2006, CDO issuance was exceptionally high, especially the issuance of CDOs backed by CDSs, so-called synthetic CDOs (Graph 1.5). Indeed, demand for structured credit products was so strong that it caused investment grade bond and CDS spreads to decouple temporarily. After

Global mergers and acquisitions

Three-month moving averages

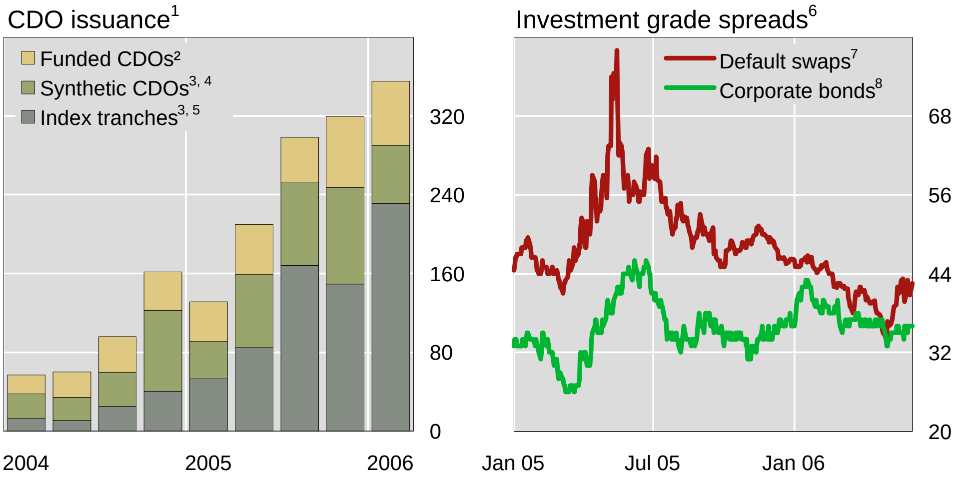


[1] In billions of US dollars. [2] In thousands. [3] As a percentage of the total value of announced deals. [4] Premium over the equity price on the day the deal was announced, in per cent.

Sources: Bloomberg; Loanware; national data.

Graph 1.4

Structured credit bid



[1] In billions of US dollars. [2] Cash flow CDOs. [3] Notional amount, not adjusted for the riskiness of different tranches. [4] Portfolio CDSs referenced to corporations, sovereigns and asset-backed securities. [5] Portfolio CDSs referenced to CDS indices. [6] In basis points. [7] On-the-run five-year DJ.CDX.NA index. [8] Merrill Lynch US corporate bond index; asset swap spreads.

Sources: Bond Market Association; Credit*flux*; JPMorgan Chase; Merrill Lynch. Graph 1.5

the turmoil in credit markets in the second quarter of 2005, CDS spreads tightened almost continuously even as bond spreads showed no signs of revisiting their previous lows. CDO managers tend to prefer CDSs over cash instruments as the underlying asset in CDOs because CDS-based products are quicker to launch, easier to customise and easier to hedge. All of this structuring activity apparently put greater downward pressure on CDS spreads than on bond spreads in the early part of 2006.

Hints of trouble ahead

Worries about valuations emerge in early 2006 concerning …

Even while credit and equity markets were rallying between January and early May 2006, there were hints of possible trouble ahead. In some markets, the optimism that had driven up the prices of higher-risk assets waned as the rally pushed valuations ever higher. The consequent increase in uncertainty about future returns tended to amplify investors' response to any negative market developments.

… high-yielding currencies …

The potential for negative developments in one market to spill over to other markets was starkly illustrated in late February 2006, during an unwinding of carry trades involving the Icelandic króna. In the two days following Fitch's announcement of a negative outlook on Iceland's sovereign rating, the króna depreciated by 7% (Graph 1.6). Such an event would not normally influence other foreign exchange markets. Yet within hours the unwinding of positions involving the króna led to sharp, albeit brief, falls in other high-yielding currencies like those of Australia, Brazil, Hungary, New Zealand and South Africa.

… Middle East equities …

While in the above episode there was a clear trigger, this was not always the case. The Saudi Arabian equity market began to fall in late February, and soon afterwards almost all markets in the Middle East plummeted. By mid-May, the Saudi Arabian market was 50% below its peak. Despite the severity of the correction, it is difficult to identify a precipitating event. The fall seemed unrelated to any change in fundamentals. Indeed, the sell-off coincided with a further rise in oil prices, which would normally boost the outlook for Saudi Arabia and other oil-exporting countries. Rather, just as a mutually reinforcing process of investor optimism and herding had led to a doubling of Middle East equity prices in 2005, a similar process worked in reverse in the early part of 2006. Despite favourable underlying economic conditions, the growth of earnings in Middle East markets had lagged the rise in prices; local investors flush with oil revenues had driven price/earnings multiples well above levels justified by fundamentals. Such high valuations eventually undermined the optimism that had earlier supported the rally.

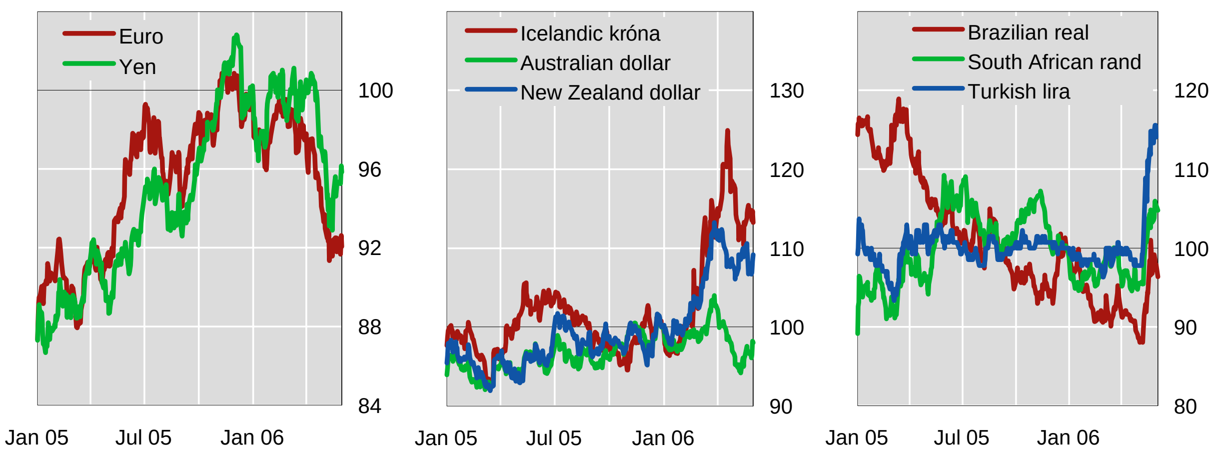
... commodities ...

Unease with valuations was also evident in commodity markets. Implied volatility in copper and gold markets began to rise sharply in mid-April (Graph 1.7). Unusually, prices were rising quickly at the same time; rallies are typically associated with declines in volatility. The positive relationship between implied volatility and prices suggests that uncertainty about valuations increased as the rally in commodity markets progressed. Notably, implied volatility in the oil market remained unchanged even as that in other commodity markets rose. This could indicate that underlying supply and demand conditions were perceived to be more supportive of oil prices than of other commodity prices.

... and the US dollar

In foreign exchange markets, too, uncertainty increased in late April. The US dollar depreciated by about 6% against both the euro and the yen between mid-April and mid-May, around the same time that inflation concerns emerged in dollar bond markets (Graph 1.6). As the US dollar fell, implied volatility in foreign exchange markets soared to its highest level since early 2005 (Graph 1.7).

Exchange rates against the US dollar[1]

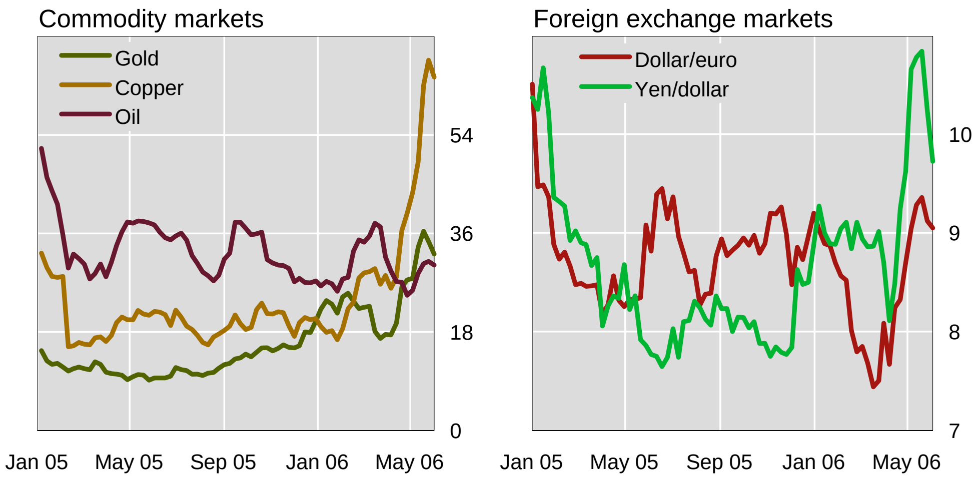


[1] Spot rates; 31 December 2005 = 100; a decline indicates a depreciation of the US dollar.

Sources: Bloomberg; national data. Graph 1.6

Implied volatility[1]

Weekly averages, in per cent



[1] Derived from one-month at-the-money call options.

Source: Bloomberg. Graph 1.7

Market-wide repricing of risk

Equities hardest hit …

Against this background of rising uncertainty about valuations in some markets, in mid-May many markets reversed direction. Starting around 10 May, the prices of highly rated government bonds rose, while those of riskier assets fell. The scope of the shift in market sentiment was in some ways surprising; almost all markets were caught up in the sell-off, even those where investors had previously seemed comfortable with valuations. Equities in industrial countries, for instance, did not appear to be obviously overvalued. In fact, price/earnings multiples in the major markets had declined in the early part of 2006 (Graph 1.8). Yet equity markets were the hardest hit during the sell-off. The DJ EURO STOXX fell by 10% between 10 and 22 May, the TOPIX by 6% and the S&P 500 by 5% (Graph 1.1).

Corporate debt markets were arguably more vulnerable to a repricing than equity markets, considering that spreads remained close to their cyclical lows despite rising LBO activity. Nevertheless, the widening of spreads was relatively modest. US high-yield corporate bond spreads widened by 25 basis points, far less than during the turmoil in credit markets in April and May 2005. Similarly, while commodities dropped from their highs, they stayed well above their end-2005 levels.

… especially in emerging markets

The mid-May correction was especially severe in emerging markets, although again debt prices held up better than equity prices. The MSCI emerging markets equity index declined by 11% in local currency terms between 10 and 22 May (Graph 1.1). Some individual markets fell by even more, for example Russia by 24% and India by 17%. Many currencies depreciated substantially against the US dollar, with the Turkish lira falling by 14% and the Brazilian real by 12% (Graph 1.6). At the same time, in several countries yields on local government bonds jumped noticeably. While spreads on dollar-denominated external debt widened by about 30 basis points, they remained below their end-2005 level (Graph 1.8).

Unchanged fundamentals …

It is difficult to identify a specific precipitating event for the sharp correction that began in mid-May. The sell-off was neither synchronous across markets nor sudden: some markets peaked on 9 May, and others a few days later; some markets experienced unusually large daily falls, and others modest declines. This suggests that new information was not the primary cause of the correction. Indeed, fundamentals did not change in any significant way in mid-May. To be sure, there were concerns about inflation. For example, on 15 May the announcement of a larger than expected increase in US consumer prices led to a 1.7% drop in the S&P 500 and even larger declines in European and Latin American equity markets. Yet these concerns had emerged well before mid-May. In addition, concerns about inflation were greatest in the United States, but US markets fell by less than most others.

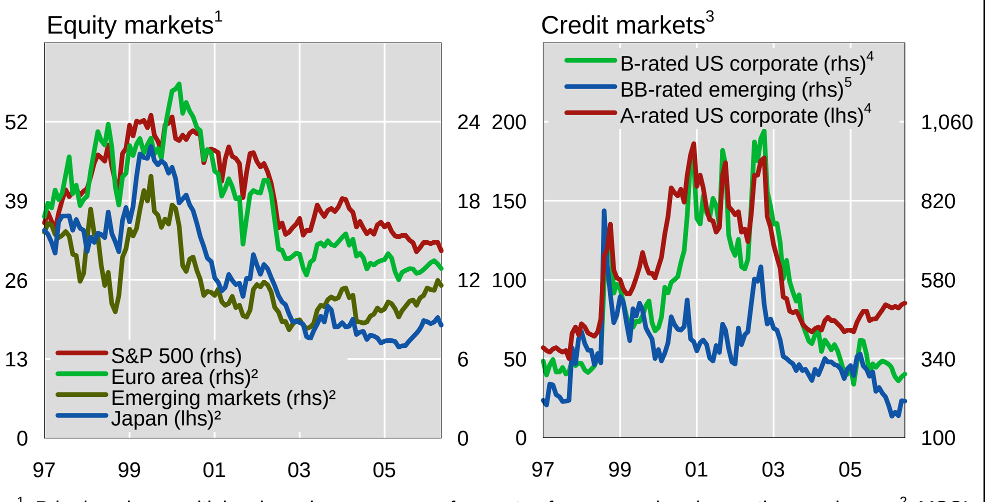
… suggest decline in risk appetite as main driver …

If not fundamentals, then risk appetite would seem to have been a key driver of the sell-off. If the sell-off had one defining characteristic, it was that those markets that fell the most tended to be the ones that had risen the farthest in previous months. Price declines in some markets appeared to have a contagious effect, increasing uncertainty about the sustainability of recent gains in other markets and thereby prompting investors to rush for the exits in an attempt to lock in their profits.

… consistent with rising implied volatilities

The marked increases in implied volatility that accompanied the sell-off were consistent with a broad repricing of risk. In most of the major equity markets, implied volatility rose to its highest level since mid-2004, during the global sell-off in bond markets (Graph 1.9). Implied volatility for Japanese equities remained below the levels reached in January, when the TOPIX had peaked, but went up nonetheless. Implied volatility for the S&P 500 Index rose to a peak of 20% during intraday trading on 24 May, after fluctuating around

Valuations

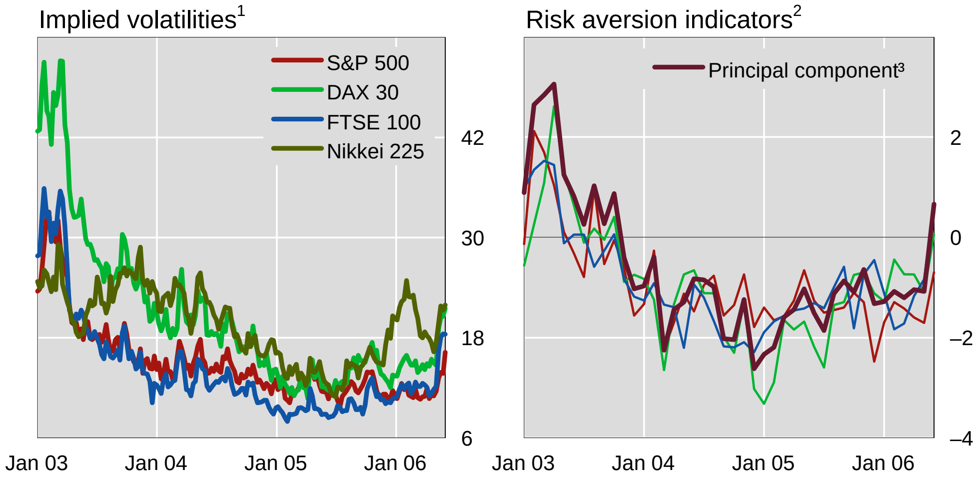


[1] Price/earnings multiples, based on consensus forecasts of one-year-ahead operating earnings. [2] MSCI index. [3] Spreads over government bond yields, in basis points; month-end. [4] Merrill Lynch index. [5] Based on the constituents of the EMBI Global Diversified index.

Sources: JPMorgan Chase; Merrill Lynch; Morgan Stanley Capital International; BIS calculations.

Graph 1.8

Volatility and risk appetite in equity markets



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

Sources: Bloomberg; Chicago Mercantile Exchange; Eurex; London International Financial Futures and Options Exchange; BIS calculations. Graph 1.9

11% over the first four months of 2006. Volatility subsequently declined, but as of 2 June was still noticeably higher than in the early part of the year.

Implied volatility is influenced by both perceptions of future market volatility and investors' aversion to such volatility. These two influences can be disentangled by comparing the distribution of expected returns implied by option prices with the distribution of historical returns. Measures of risk aversion derived in this way show a sharp increase across markets in late May (Graph 1.9). The common component of the various measures rose to its highest level since mid-2003. This suggests that, although inflation concerns might have raised the perceived future volatility of market returns somewhat, the increase in implied volatility was driven by greater aversion to risk. If sustained, it could indicate that the search for yield that has characterised financial markets since 2004 might finally have abated, albeit to an uneven degree across market segments.