

## VI. Financial markets

### Highlights

Global financial markets in 2003 saw investors regain their appetite for risk. In equity markets, this new appetite set off a strong rally even before favourable news began to emerge about company earnings and the global economy. In both corporate and sovereign debt markets, credit spreads tightened to near historical lows as investors continued to seek yields higher than the extraordinarily low yields available in safer government bond markets. While the improvement in economic fundamentals justified some rise in asset prices, market valuations near the end of the period also seemed to be supported by relatively thin risk premia. Investors appeared to increasingly discount the possibility of adverse events.

For much of the period under review, bond investors found it difficult to maintain firm views about the implications of macroeconomic conditions for monetary policy. This uncertainty had a strong impact on long-term yields, normally the most reliable of forward-looking indicators about aggregate economic prospects. Bond yields swung widely on a number of occasions, reflecting shifts in expectations rather than adjustments in the term premia demanded by investors. Yield movements were particularly pronounced in the United States and Japan, while those in the euro area were more subdued.

Investors in equity and credit markets were for most of 2003 unperturbed by shifts in the perceived course of monetary policy. In the early part of 2004, however, perceptions of the Federal Reserve's exit policy seemed to become an important factor in shaping risk appetite. In April and May, surprisingly strong numbers from the US labour market and a change in the Federal Reserve's language on policy accommodation heightened the prospect of a rise in policy rates. This time, the resulting backup in government bond yields led to declines in equity markets and emerging markets, highlighting the vulnerability of current valuations to a loss of risk appetite.

### Yield curves and monetary policy

For most of 2003 and the early part of 2004, government bond markets followed a course independent of other financial markets. While investors in equity and credit markets found reason to be optimistic about the macroeconomic outlook, yield curve movements did not support such an assessment as consistently. In the early part of the period, market participants seemed to overestimate the US Federal Reserve's concerns about deflation and its willingness to use unconventional policy tools. A sharp global sell-off during

Yield curves sent mixed signals about economic prospects

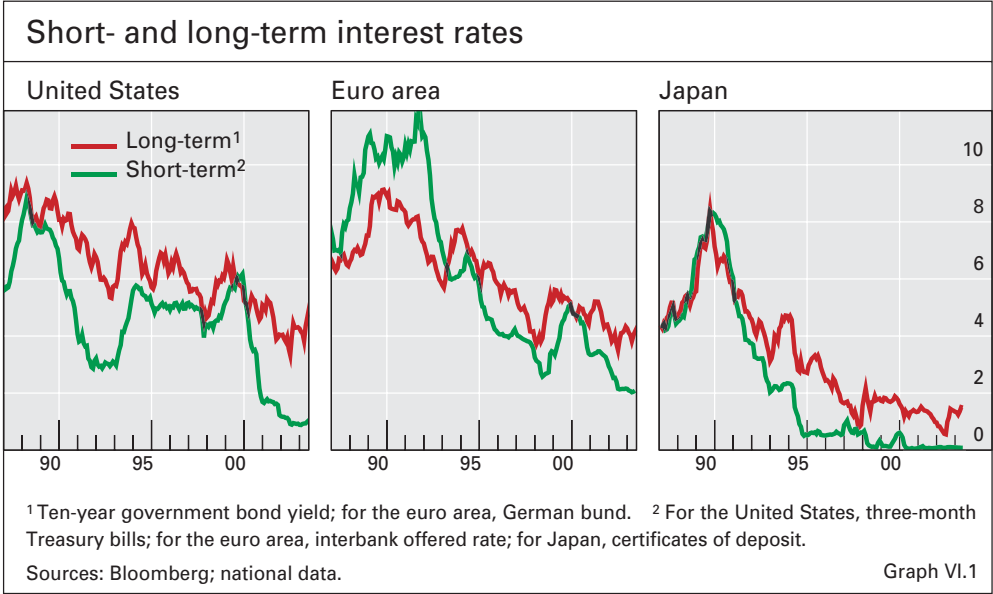
the summer appears to have mainly reflected a sharp revision in such market expectations rather than a sudden improvement in the economic outlook itself. Technical factors related to the hedging of mortgage-backed securities and other quantitative risk management techniques amplified the volatility. Yields subsequently eased in late 2003 and early 2004 despite upward revisions in growth forecasts, as the uncertain pace of job creation in the United States dominated the formation of expectations about future policy rates. Yields then rose sharply in April and May 2004 when sudden strength in US labour market data and signals from the Federal Reserve led market participants to expect US policy rates to start rising much sooner than they had thought.

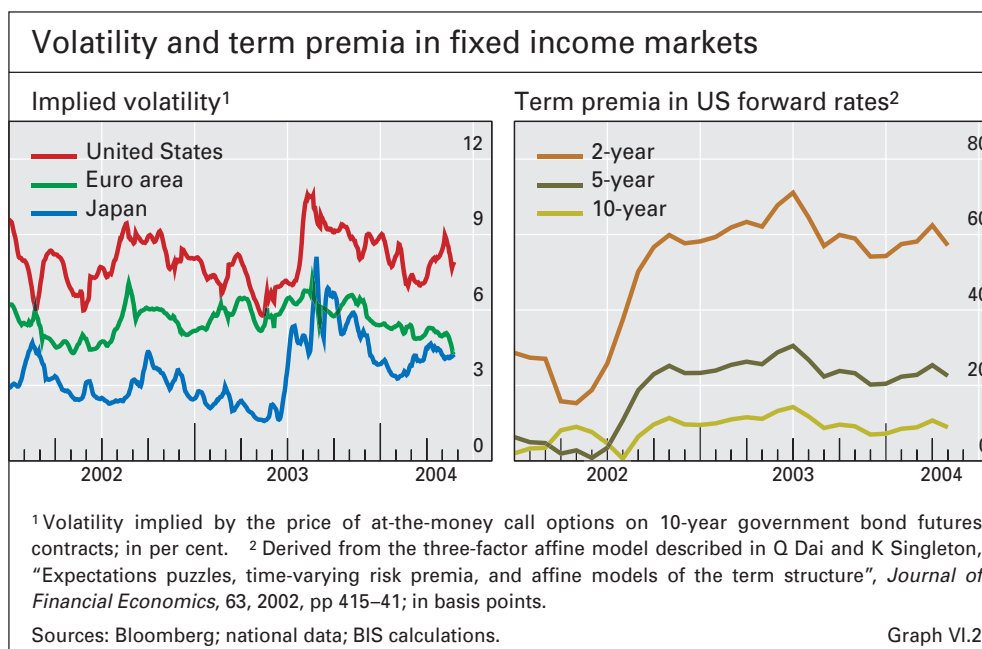
*Yield curves and expectations*

Yield curves in the euro area, Japan and the United States were characterised by low levels of interest rates, steep slopes between short and long maturities and high volatility at the longer maturities (Graph VI.1). The low levels of the overall curves were in large part accounted for by the pull of policy rates at the short end and expectations that these rates would remain fairly low for some time. Similarly, the steep slopes reflected the fact that rates so low would eventually have to rise significantly just to return to normal levels. The most remarkable feature of the yield curves was the volatility of longer-term yields given the relative stability of policy rates, especially after the most recent rate cuts by the ECB and Federal Reserve in June 2003 (see Chapter II). The fact that policy rates were extraordinarily low seemed to generate unusual uncertainty about their economic consequences and thus about the path of future interest rates.

Longer-term rates were unusually volatile ...

In markets where the central bank controls the short-term interest rate, yields on government securities through the intermediate maturities tend to be driven primarily by market participants' views about the course of monetary policy. Participants form these views by assessing the underlying macroeconomic conditions and considering the likely reaction of monetary





authorities. These views in turn give rise to expectations about the path of short-term interest rates and to term premia associated with the uncertainty surrounding these expectations. Yield curves at a given point in time imply forward curves that trace a notional path of short rates across time, with term premia driving a wedge between that notional path and the actual path of short rates expected by market participants.

... even as term premia remained stable

While US term premia during the period were elevated relative to the experience of recent years, they tended to be stable (Graph VI.2). As estimated by a three-factor yield curve model, such premia were highest near the two-year maturity. This suggests that the primary risks seen by market participants had to do not just with policy rates in the next few months but with these rates over at least a two-year horizon. The estimated term premium for the two-year forward rate remained stable at around 60 basis points, about three times the average during 1988–2002.

Yield swings reflected changes in expectations

Despite the stability in estimated term premia, forward curves shifted considerably during the period under review. The shifts tended to be most pronounced for the US and Japanese curves, with the euro area curve tending to follow that of the United States but in a restrained manner (Graph VI.3). These movements and the associated volatility seemed to largely reflect changes in expected future rates. In early June 2003, when the curves were at their flattest, the US three-month forward rate for the two-year horizon was about 2%. After adjusting for the estimated term premium, this indicated an expected rise in policy rates over two years of less than 25 basis points. By May 2004, the two-year forward rate had risen to about 4.6%, indicating an expected rise in policy rates of over 250 basis points. At the 10-year horizon, the shifts in US rates suggested significant volatility in participants' views about the Federal Reserve's target rate of inflation. Similarly, the sharp rise in Japanese forward rates seemed to indicate increased optimism about an eventual recovery from deflation.

### The summer sell-off

During the summer of 2003, global bond markets experienced one of the most pronounced sell-offs in recent history. From a low of 3.1% in mid-June, 10-year US Treasury yields jumped above 4.4% by the end of July. The movement, the sharpest over a short period since 1994, was to a large extent synchronised across the major markets; over the same period, 10-year Japanese government bond (JGB) yields increased by 50 basis points to over 0.9%, and German bund yields by 70 basis points to 4.2%. Swap rates also rose significantly in the largest economies, peaking in early September (Graph VI.3). With money market rates anchored at low levels in the three major economies, yield curves steepened dramatically.

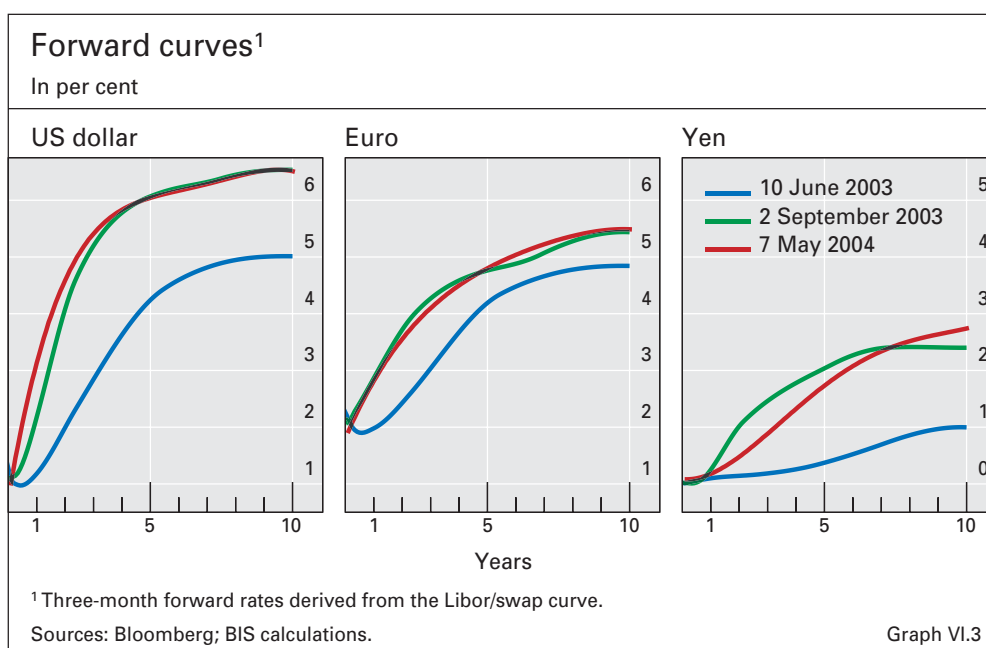
The Japanese market appears to have led the move in the first few weeks of the sell-off. A poorly received JGB auction in mid-June reportedly led to profit-taking by Japanese banks and selling by hedge funds. The resulting rise in volatility (Graph VI.2) caused domestic investors relying somewhat mechanically on quantitative risk management techniques, such as value-at-risk models, to make active efforts to reduce their interest rate exposure. This unwinding of positions further exacerbated price dynamics in both the JGB and yen swap markets.

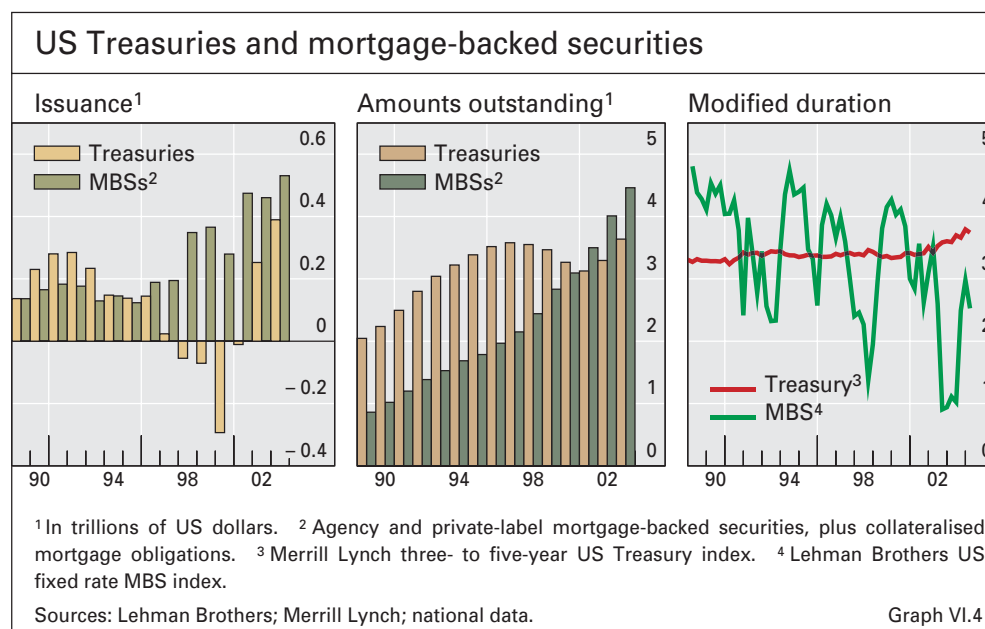
News related to US monetary policy was the key factor contributing to the continuation and momentum of the summer sell-off. Both the Federal Reserve's decision in late June to cut its target rate by less than expected and the Federal Reserve Chairman's monetary policy report to Congress in mid-July were followed by outside increases in long-term rates. These events altered market expectations that the US central bank would resort to unconventional tools to guard against the risk of deflation. In particular, it was considered less likely that the Federal Reserve would purchase US Treasury securities to hold long-term rates down; perceptions of the likelihood of such a move had buoyed the US Treasury market after the central bank's policy meeting in May.

The summer sell-off was a global event ...

... exacerbated by risk management ...

... and driven by shifting expectations





MBS hedging amplified the sell-off

Hedging of mortgage-backed securities (MBSs) amplified the rise in US Treasury bond yields. Owing to the prepayment option embedded in MBSs, movements in interest rates result in swings in duration that are much greater than for most other fixed rate instruments. Indeed, the duration measures of the MBS index rose dramatically during the summer of 2003, similar to earlier movements in 1994 and 1999 (Graph VI.4). Investors hedging the risks of MBSs thus needed to sell or take short positions in other long-term interest rate instruments, placing additional upward pressure on market interest rates.

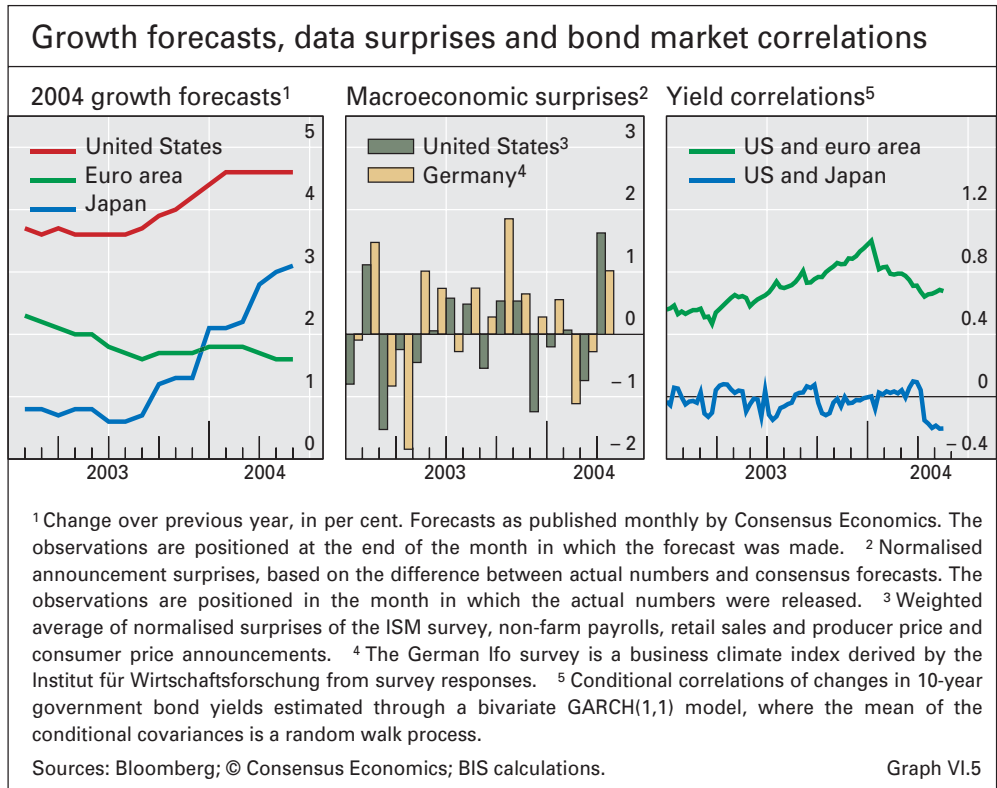
Hedging activity appears to have had a deeper and broader impact on cash market yields during the period under review than in previous episodes. One reason is that the US MBS market has grown considerably in both relative and absolute terms. It has doubled in size since 1995 and is now the largest fixed income market in the world: at end-December 2003, the outstanding stock of MBSs totalled no less than \$4.5 trillion, compared to \$3.6 trillion in outstanding Treasury securities (Graph VI.4).

#### *Changing correlations between bond markets*

US and euro area yields moved in lockstep in 2003 ...

Yields in all three major economic areas stabilised together at somewhat lower levels for most of the period from October 2003 to March 2004. Despite the divergence between euro area and US growth prospects and in the pattern of surprises in economic indicators, long-term yields in the two economies moved in lockstep for much of the period. Correlations in yield changes rose to exceptionally high levels into the spring of 2004 (Graph VI.5). By contrast, though broad trends in JGB yields matched those in the US market, the correlations of daily and weekly changes in JGB yields with changes in either euro area or US yields were consistently quite low.

The sell-off in the second quarter of 2004 was accompanied by a noticeable decoupling between the US and euro area bond markets. In this episode, the rise in yields was driven not by a change in views about the use of



unconventional tools by the Federal Reserve but by positive macroeconomic data that brought forward expectations of monetary tightening. While US yields rose sharply, however, euro area yields rose only modestly in what seemed to be a belated acknowledgment by market participants that growth in Europe lagged behind that in the United States.

... but decoupled during the sell-off in 2004

#### *Official sector reserve accumulation*

Many market participants thought that the efforts of Asian governments to resist appreciation of their currencies against the dollar exerted downward pressure on yields on US government securities during this period. What is certain is that the pace of reserve accumulation by Asian central banks accelerated in the latter half of 2003 and continued through the first quarter of 2004 (see Chapter V). Since a large portion of Asian reserves are held in US dollar assets, a common inference was that Asian central bank purchases represented a new and significant factor on the demand side for US Treasuries.

However, the size of the direct price effect from this new source of demand has not been easy to document. A simple regression of weekly changes in Treasury yields on the weekly change in official reserves held in custody at the Federal Reserve Bank of New York suggests a statistically significant relationship only over limited periods in the year to the first quarter of 2004, despite continued reserve accumulation by Asian central banks during this period. The results of more precise tests on the announcement effect on yields of news related to Asian purchases are also mixed. The weekly Thursday announcement of custody holdings does not appear to have affected Treasury yields.

Uncertain impact on yields of Asian reserve build-up

## US non-farm payrolls and bond yields

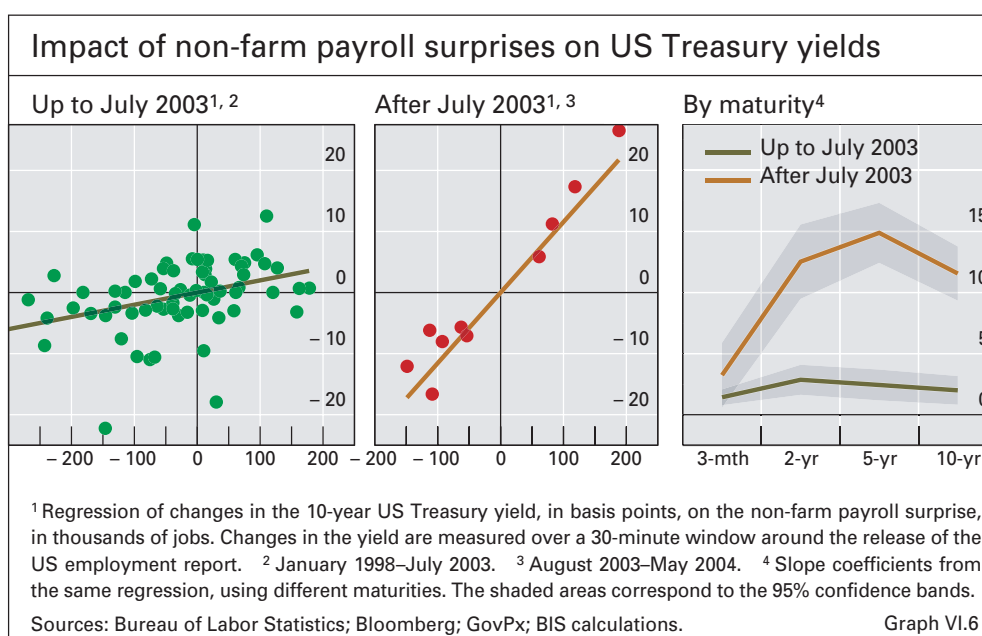
The Fed was seen to be focused on jobs ...

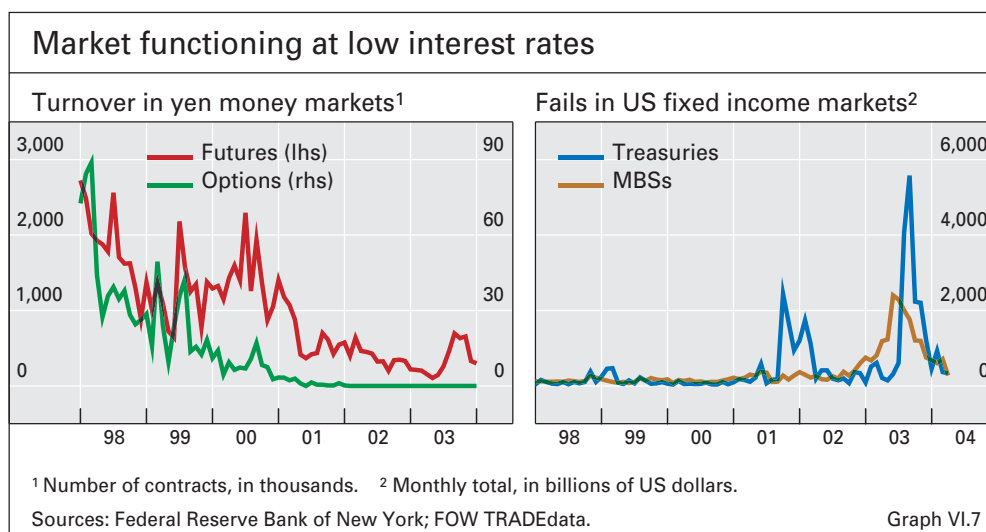
A surprisingly sluggish job market in the United States was the primary reason for the subdued interest rate levels in the early part of 2004. During this period, market participants seemed to be fixated on the lack of job creation in the United States during what was otherwise a strong economic recovery. The perception took hold that the Federal Reserve would not raise rates until the recovery spilled over into the labour market. In the first three months of 2004, each report in which gains in US non-farm payrolls were less than expected generated sharp declines in Treasury yields. Conversely, the announcement of an unexpectedly strong gain in non-farm payrolls of more than 300,000 jobs in April 2004 immediately lifted the US 10-year yield by more than 20 basis points, and another robust job report in May led to a further outside increase in yields to levels beyond their 2003 highs.

... and so bond markets swung with monthly payroll releases

While US Treasury yields have always reacted more strongly to the monthly payrolls report than to any other regular US data release, the reaction appears to have intensified following the backup in bond yields in the summer of last year. From January 1998 to July 2003, a payroll surprise of 100,000 jobs resulted in an average announcement effect of 2 basis points on the five-year Treasury yield. Since that time, however, the impact of such a surprise has risen to an average of 12 basis points (Graph VI.6).

Another anomaly of the recent period is that the largest impact of payroll surprises was on Treasuries at the five-year maturity rather than at the two-year maturity as in the past. One potential explanation is that shifts in rates related to payroll announcements may have triggered more MBS hedging, which tends to be in securities (and swaps) of longer duration. Another possibility, with some anecdotal support, is that the steep slope of the yield curve during the period increased demand at longer maturities by more speculative carry trade oriented investors (see the discussion of fixed income trading strategies in Chapter VII), making long-dated Treasuries more sensitive to changes in expectations about short rates than previously.





### *Market functioning at low interest rates*

At a purely technical level, the low level of nominal policy rates was associated with problems of market functioning during the period under review. For example, in Japan the level of yen short-term rates has been at zero since the Bank of Japan initiated its quantitative easing policy in March 2001. Since that time, there has been greatly diminished turnover in yen money market options and futures, to the point where certain contracts and ancillary markets have virtually disappeared (Graph VI.7). When short-term rates eventually move significantly above zero, the infrastructure to support price discovery in yen money markets may be limited, and illiquid markets could conceivably complicate the adjustment of market participants to the end of the zero rate policy.

Diminished turnover in yen derivatives markets ...

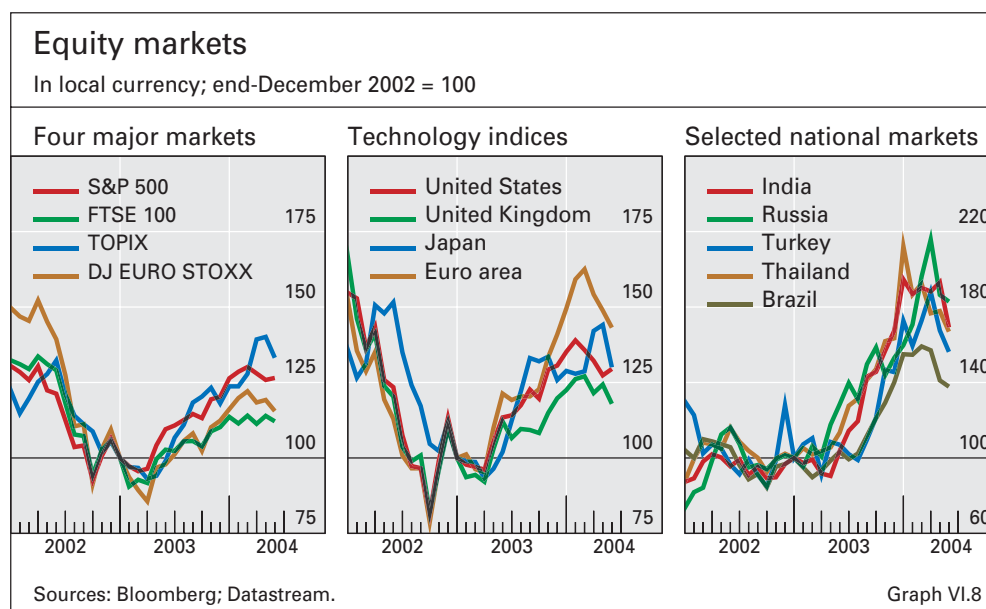
A low level of nominal interest rates also raised market functioning issues in US fixed income markets, where the number of “fails”, or unsettled trades, surged in July and August 2003. Fails can occur because of operational difficulties with the delivery of securities, as happened after the events of 11 September 2001. But fails are also more likely to occur in an environment of low interest rates, because low rates reduce the opportunity cost of forgone interest resulting from failed delivery of collateral for a repo transaction. In combination with market volatility, which increased investor demand for borrowed securities to sell short, low interest rates contributed to a late summer spike in fails. Moreover, in contrast to 2001, there were sharp increases in failures to deliver MBSs as well as Treasuries. However, after the introduction in mid-September of “guaranteed delivery” on certain special repurchase agreements, which were often priced at negative interest rates, market stress and the number of fails fell off considerably.

... and unsettled trades in US fixed income markets

### Equity markets and risk appetite

The global rally in equity markets marked the end of a three-year bear market. During the downturn from April 2000, equity markets worldwide had lost





The long bear market ended ...

\$13 trillion in capitalisation. The rally took hold in March 2003 and continued largely unabated for a year. In the 12 months to March 2004, the markets recovered \$10 trillion of that loss. Among the major economies, the European market increased the most, the DJ EURO STOXX soaring by 52% in local currency terms (Graph VI.8). The New York and Tokyo markets also posted impressive gains: the S&P 500 Index surged by 37% and the TOPIX Index by 43%. The best performing national markets included Brazil, India, Russia, Thailand and Turkey, each of which recorded price increases exceeding 100% in local currency terms. Just as the technology sector had led the broad market on the way down, it led the market on the way up. The rally ended only in April 2004, with investors worldwide suddenly becoming concerned about the prospect of US policy rate increases.

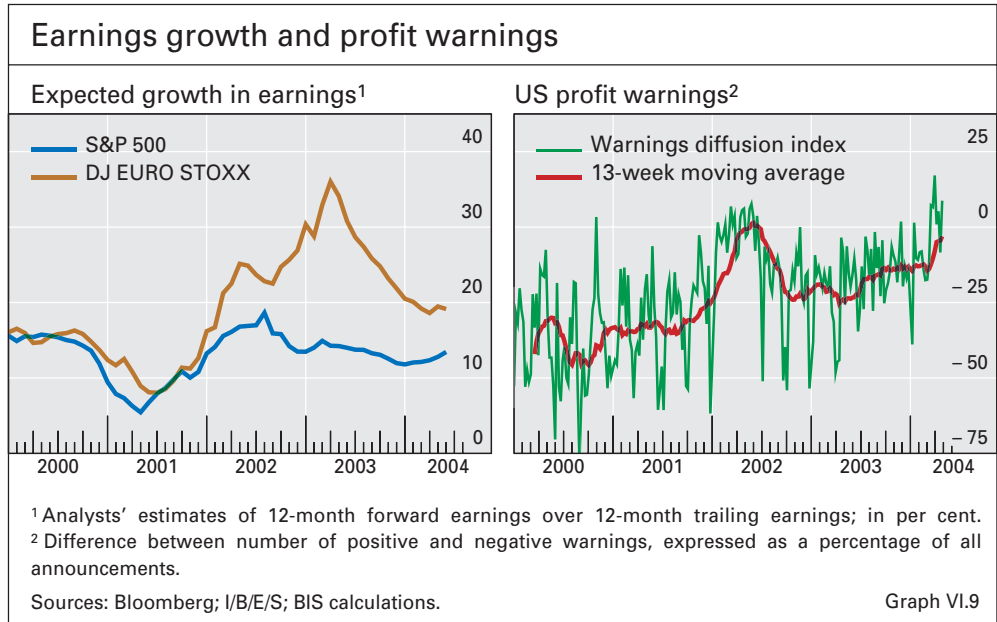
... with a surge in risk appetite ...

The global rally seemed to start with a surge in investors' risk appetite. This changed appetite reduced the risk premia investors demanded for assuming equity market risk. The rally was then sustained by improved expectations about corporate earnings prospects, and these expectations were increasingly supported by the arrival of information about individual companies and the global economy as a whole. The rally seemed to end as abruptly as it had started. Risk appetite ceased growing, and what would normally have been favourable news from the US labour market seemed to have the opposite effect. Markets fell apparently because the news was primarily associated with the more imminent approach of monetary tightening, a reminder of the importance of the Federal Reserve's exit policy (see Chapter IV).

#### *The role of fundamentals*

... and without economic news to explain the turning point

Just as there had been no identifiable important new information about economic fundamentals that could explain the timing of the collapse in global equity markets in April 2000, neither was there specific information to justify that of the upturn nearly three years later. The rally began on 12 March



2003, a full week before the start of the war in Iraq. Investors in equity markets initially seemed to be driven not so much by an assessment of the economic consequences of the war as by the expectation that market developments would echo those of January 1991, when stock prices jumped at the start of the Gulf war. Anticipating a similar surge, investors began buying in March 2003 without waiting for hostilities to break out. The rally continued in early April as the war seemed to be drawing to a quick end and investors perceived a decline in geopolitical risk. Only in late April, when a number of corporations delivered strong earnings reports, did markets resume their focus on economic developments.

The expansionary monetary policy stances of the major central banks no doubt contributed to the stock market rally, but their impact was felt only after a long delay. The most recent easing cycle in both the euro area and the US economy started in early 2001. In Japan, the “quantitative easing” period with a return to zero interest rates started in March 2001. Thus, it took about two years for low interest rates to exert their usual effect on the equity markets. By contrast, in 1991 an equity market rally in the United States had occurred roughly three months after the Federal Reserve had moved towards a cycle of easing interest rates, and in 1995 the market had rallied within a month of a move towards lower rates. In 2004, the mere anticipation of higher policy rates seemed to bring the most recent rally to an end.

The role of information about fundamentals in 2003 was largely to ratify an optimistic sentiment that equity markets seemed to have already priced in. Similar bouts of optimism in the previous two years had not been borne out by subsequent good news. During the long bear market, such optimism had generated a number of false starts, notably in April and May 2001 and again in October and November 2002, when strong rallies had been cut short by the lack of confirming evidence about corporate earnings and economic growth. In 2003, by contrast, the good news did arrive, and the rally was sustained.

Low policy rates had a delayed effect

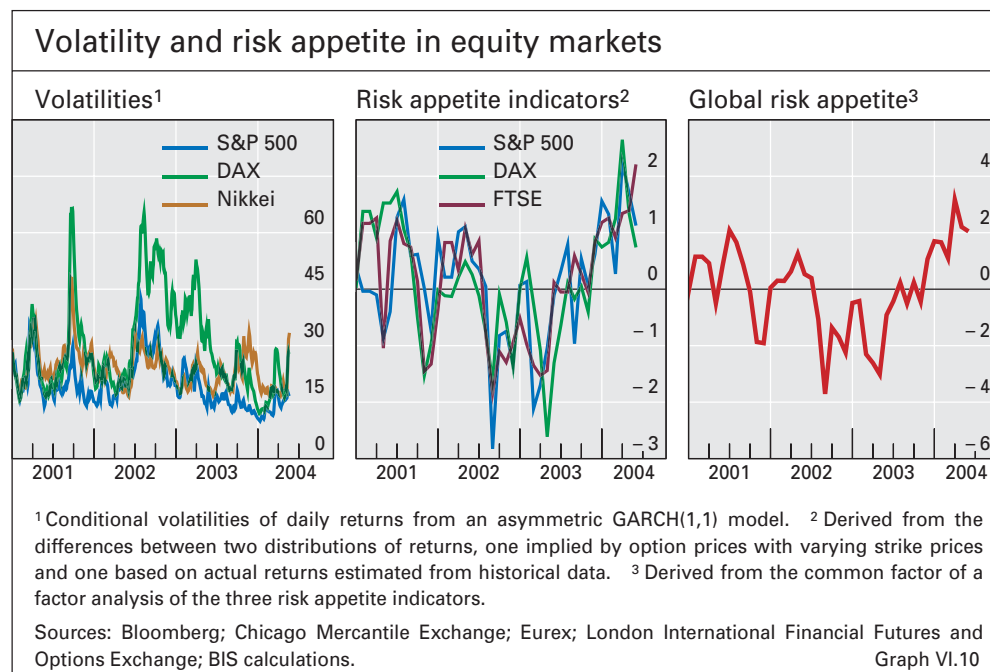
After a number of false starts ...

... investors responded to upbeat reports

The data that confirmed investors' optimism first came in the form of encouraging earnings reports from US and European companies and data about aggregate real activity in Japan. In the United States, profits reported by bellwether companies began in April 2003 to consistently exceed expectations. In Europe, while analysts were lowering their estimates of earnings growth for the corporate sector as a whole (Graph VI.9), investors seemed to focus on positive reports from technology firms, banks and insurance companies. Both in the United States and in Europe, companies themselves remained cautious about the strength of the recovery. In reporting their earnings, companies also provided profit warnings, and those issuing negative warnings continued to outnumber those issuing positive ones. Nonetheless, investors seemed to place more weight on upbeat reports from such firms as AOL, Cisco and Microsoft in the United States and Nokia, Philips and Siemens in Europe. In Japan, unexpectedly strong macroeconomic news contributed to a nearly 20% increase in the TOPIX from June until August. Price jumps followed the release of the *Tankan* on 4 July and the GDP report for the second quarter on 12 August. By the end of August, economists were raising their growth forecasts for both the Japanese and US economies.

*The role of investor risk appetite*

A sustained decline in equity risk premia played an important role in the global market upturn. Such risk premia reflect both the *underlying risks* as perceived by investors and the *prices* attached to those risks. During the period under review, perceived risk tended to decrease. As measured by the volatility of returns, equity market risk had spiked in the wake of the 11 September 2001 terrorist attacks (Graph VI.10, left-hand panel). Volatility rose again at the time of the revelations about WorldCom's restatement of earnings in late June 2002



and again during the run-up to the war in Iraq in early 2003. Since then, volatility has been relatively subdued.

Although the global equity market rally that started in March 2003 took place during a time of generally low and declining underlying risk, the rally seems to have been largely driven by a dramatic increase in investors' appetite for risk and thus a corresponding drop in the price assigned to that risk. An indicator of this changing risk appetite can be derived for different markets from the pricing of equity index options. This indicator is based on the idea that investors would be willing to pay more for an option that protects them against an adverse equity price change than for an option that allows them to gain from an equally likely favourable price change. The willingness to pay for such protection varies over time with changes in investors' appetite for risk. Risk appetite as measured in this way tends to move in parallel in different markets (Graph VI.10, centre panel). A measure of global risk appetite can thus be extracted from the common movements in the different indicators. Estimates based on index options on the S&P 500, DAX and FTSE show that global risk appetite started to rise in March 2003 before the onset of the war in Iraq and continued to increase for the rest of the period under review (Graph VI.10, right-hand panel). By February 2004, this appetite for risk seemed to have reduced equity risk premia to the point where markets would be relatively vulnerable to adverse events.

Equity index options reveal a rise in risk appetite ...

The types of events that affect risk appetite are difficult to anticipate. The single most important such event since 2001 was evidently the WorldCom earnings restatement in mid-2002. The build-up to the war in Iraq in early 2003 was also important, and the terrorist bombings in Madrid in March 2004 seem to have conditioned market reactions to subsequent news. However, the problems of Parmalat in late 2003 seem to have had little effect. Macroeconomic information events, such as the release of US non-farm payroll numbers, have been important in government bond markets but have had no discernible effect on the appetite for equity risk.

... which is affected by unusual events

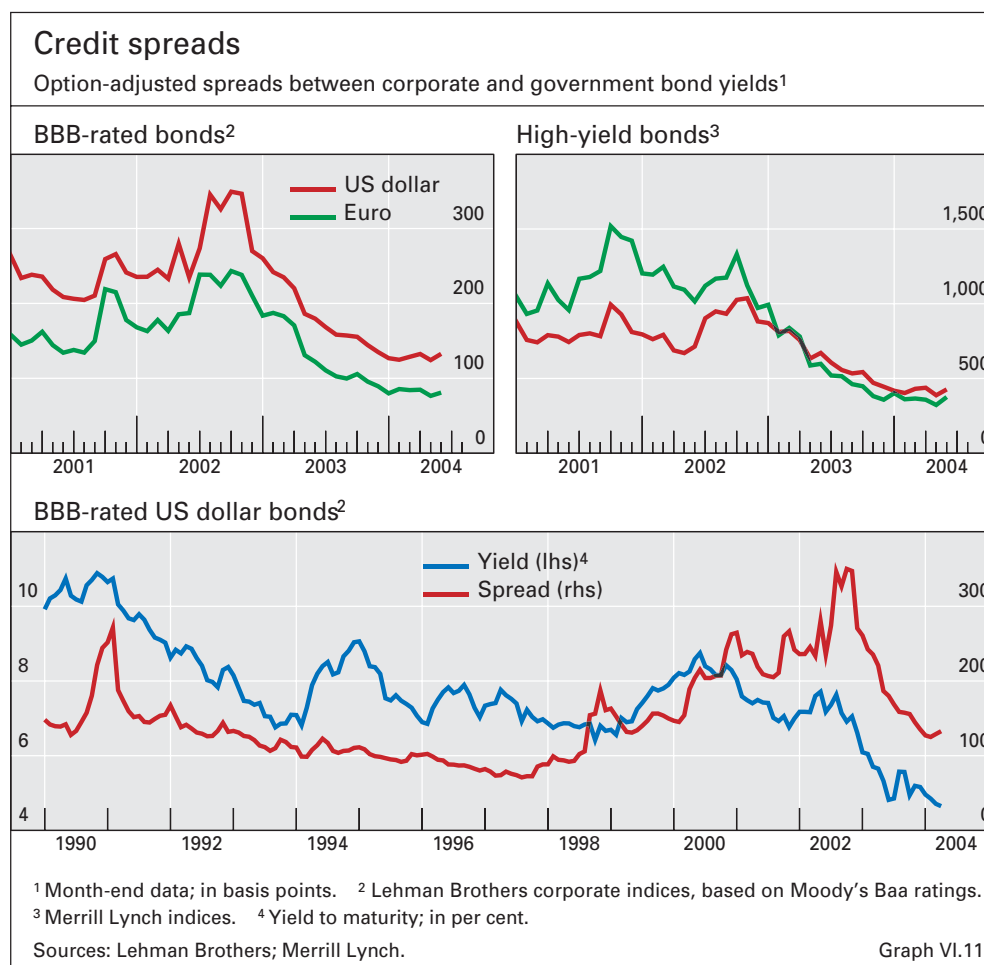
## Corporate bond markets and credit risk

In credit markets as in equity markets, both an improvement in fundamentals and a rebound in investors' appetite for risk contributed to a dramatic turnaround in confidence starting in October 2002. In the year and a half to May 2004, spreads between BBB-rated corporate bonds and government securities tightened by over 200 basis points in the US dollar market to 130 basis points – only 50 basis points above the low reached towards the end of the previous credit cycle in July 1997 (Graph VI.11). At the same time, corporate bond issuance surged, especially issuance of lower-rated securities (Graph VI.12).

### *Improvement in fundamentals*

The rally in credit markets was supported by signs of an improvement in the credit quality of the corporate sector. The incidence of defaults and credit rating downgrades, which had risen steadily between 1998 and 2001, fell noticeably

Signs of an improvement in credit quality ...



in 2003. The worldwide number of defaults by non-financial corporations declined from a peak of 184 in 2001 to 77 in 2003. While downgrades of US corporations by Standard & Poor's still exceeded upgrades in 2003, the share of downgrades fell to 74% from 82% in 2002. In Japan upgrades exceeded downgrades by a small margin in 2003.

... especially in the United States ...

In the United States, a rebound in corporate profitability contributed to a marked decline in the burden of interest payments on cash flows – a commonly referenced predictor of corporate distress (Graph VI.13). Whereas during the previous period of deleveraging in the early 1990s lower interest rates had been responsible for much of the decline in the ratio of interest payments to cash flow, in 2001–03 higher cash flows from operations made the largest contribution; the contribution of lower interest rates was relatively insignificant. Savings from lower interest rates were largely offset by the impact of the shift to longer-term debt. For the third consecutive year, corporations in 2003 refinanced short-term bank debt and commercial paper in bond markets, thereby reducing their vulnerability to changes in interest rates. Some firms also took advantage of the rally in equity markets to reduce their debt/equity ratios by raising new equity capital (Graph VI.12). The outstanding stock of corporate debt relative to cash flows declined to a level close to its 1990s average, although corporate debt continued to rise in absolute terms.

In contrast to the United States, debt repayments by non-financial corporations in Japan exceeded new borrowings for the eighth consecutive year. As a result, the interest burden on Japanese corporations remained exceptionally low, more than 20 percentage points below its 1991 peak. Lower interest rates had been the most important factor behind the decline in the ratio of interest payments to cash flow during the 1990s but had little impact in 2003.

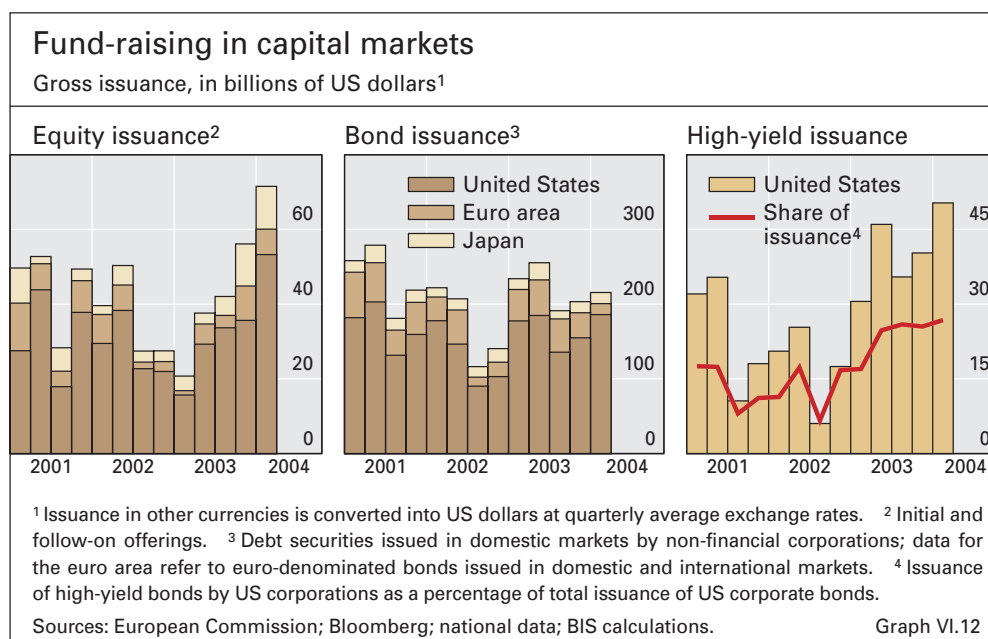
... and Japan

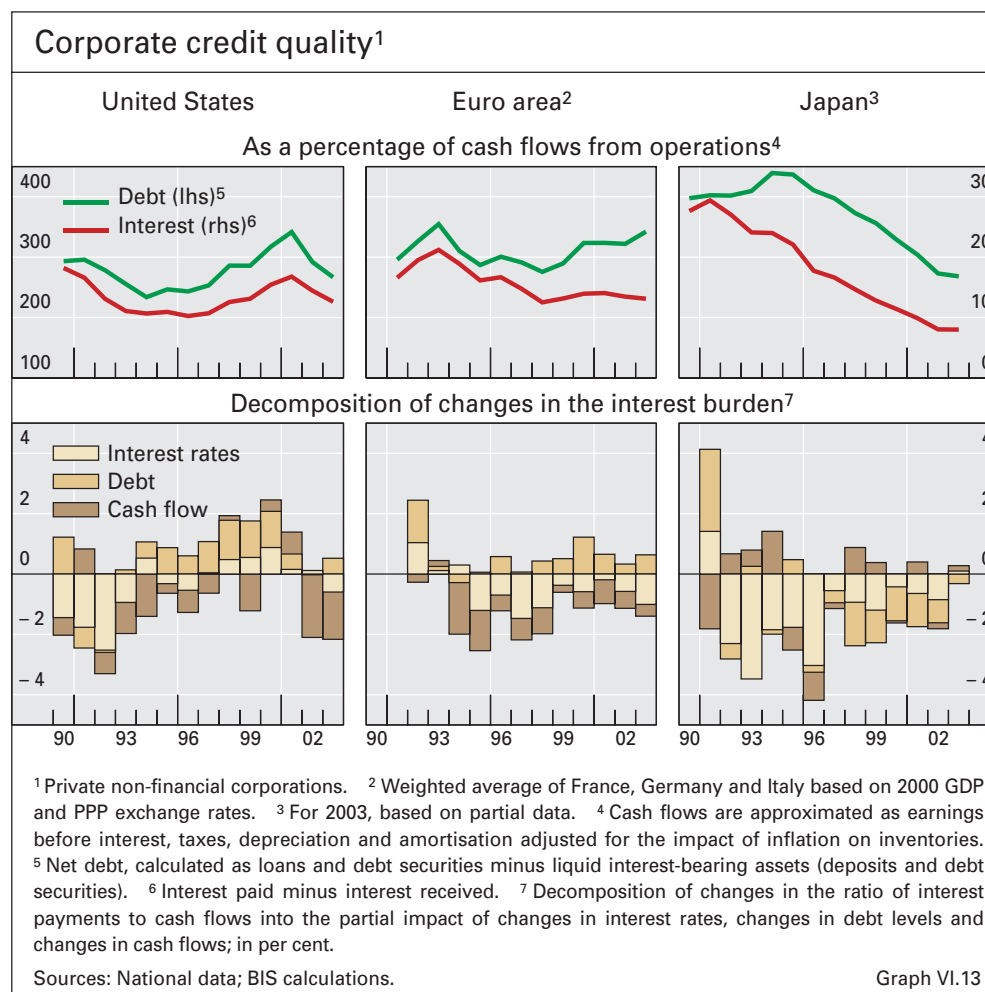
Efforts by European corporations to repair their balance sheets lagged those by corporations in other regions. Notwithstanding progress by some sectors, most notably telecoms, the growth of debt continued to outpace that of cash flows among euro area corporations in 2003, in part because the macroeconomic recovery remained sluggish. In Germany especially, there was little evidence of deleveraging. Lower interest rates offset the impact of higher debt levels, so that interest payments were more or less unchanged relative to cash flows. However, high levels of indebtedness appear to have left euro area corporations more vulnerable than those in other regions to a rise in financing costs. Despite the slower progress of European corporations in repairing their balance sheets, spreads on euro-denominated corporate bonds tracked closely those on dollar bonds, tightening by 160 basis points between October 2002 and May 2004 (Graph VI.11).

Slower pace of deleveraging in Europe

### Rebound in risk appetite

As signs of an improvement in credit quality emerged, the risk premium demanded by investors for holding corporate debt declined from the elevated levels reached in mid-2002. At the time, investors' experience with WorldCom had made them wary of holding debt susceptible to being downgraded and had sensitised them to the prevalence of corporate governance irregularities. Investors' muted reaction to negative credit events in 2003 illustrates the shift in confidence over the period under review. The failure of the Italian food





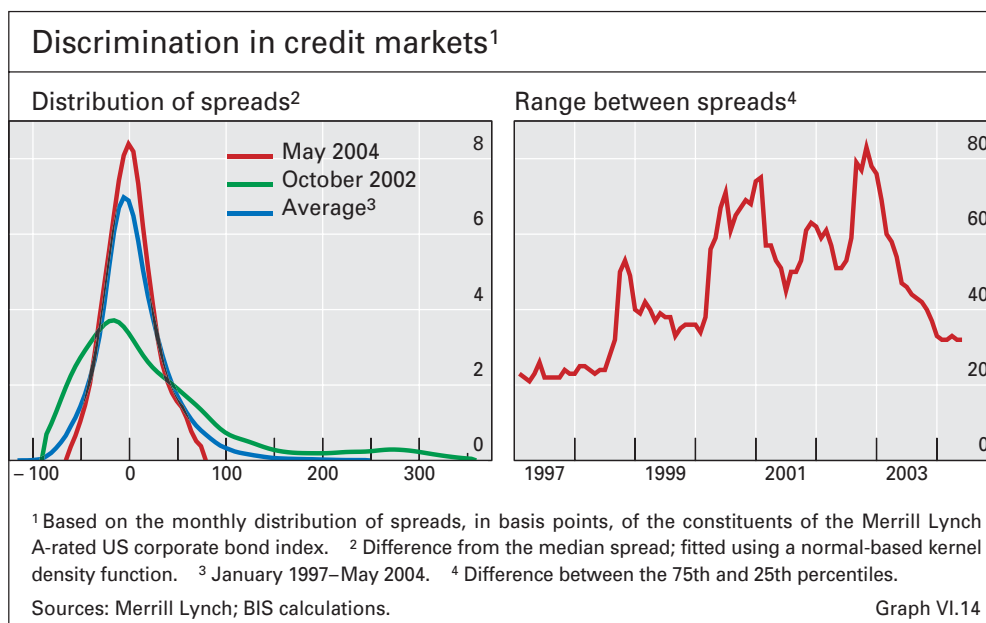
conglomerate Parmalat in December could have triggered a market-wide sell-off; the losses experienced by holders of Parmalat's bonds may have exceeded those suffered by the creditors of Enron or even WorldCom. In the event, contagion from Parmalat was short-lived and limited because the declining incidence of defaults and downgrades helped to reassure investors that Parmalat and other credit events were isolated cases.

By late 2003 investors exhibited a willingness to take on more credit risk seemingly regardless of the underlying risk of default. The low level of nominal yields led ordinarily conservative investors to shift into higher-yielding corporate and emerging market bonds (see below). Investors' search for yield was especially evident in the market for high-yield corporate debt. Investors bid up prices even as issuance soared (Graphs VI.11 and VI.12). In the latter half of 2003 and the early part of 2004, issuance by borrowers rated BB or lower accounted for somewhat more than one quarter of total corporate bond issuance in the United States, double the share of activity in 2001–02.

As a further sign of investors' willingness to discount risks in their search for yield, the distribution of credit spreads for issuers in a given rating class suggests that there was less discrimination in credit markets (Graph VI.14). In contrast to October 2002, when investors had differentiated carefully between those firms in a given rating class likely to be downgraded and those

Search for yield  
drove spreads  
down ...

... with less  
discrimination  
between firms



perceived to be more creditworthy, by early 2004 spreads clustered together far more closely. Among A-rated borrowers, for example, the tails of the distribution were significantly shorter in early 2004 than in October 2002 or even than the longer-term average. Moreover, the diffusion of spreads for A-rated issuers (as measured by the distribution between the 75th and 25th percentile spreads) was at its narrowest since mid-1998. However, this indicator remained above the levels seen in 1997 and the first half of 1998, when aggressively leveraged strategies attempting to profit from perceived anomalies in credit spreads had been especially popular among fixed income investors.

### External debt financing for emerging markets

Emerging markets were among the biggest beneficiaries of the combination of an improved global macroeconomic picture with an increase in investors' risk appetite. Spreads on dollar-denominated emerging market bonds tightened by more than 500 basis points between October 2002 and January 2004. They sold off abruptly in April 2004, but as of May spreads were still not far above the lows reached in mid-1997 (Graph VI.15). At the same time, emerging market bond issuance increased to its highest level since 1997. The lowest-rated borrowers were especially active: issuance by borrowers rated B or lower, including Brazil and Turkey, rose from 18% of all issuance by emerging market borrowers in 2002 to 33% in 2003. Even sovereigns recently in default on part of their external debt, specifically Indonesia and Pakistan, found ready buyers for their new international offerings.

#### *Vulnerability to changes in financing conditions*

While the search for yield clearly played a role in these developments, the narrowing of spreads was also supported by an improvement in fundamentals

Fundamentals in many emerging markets improved

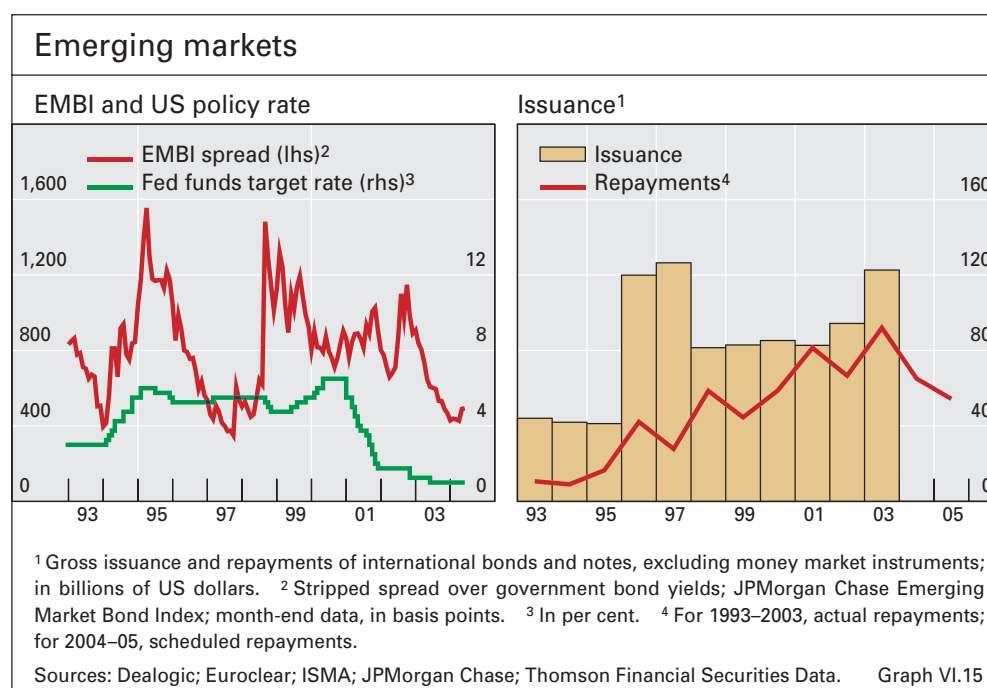


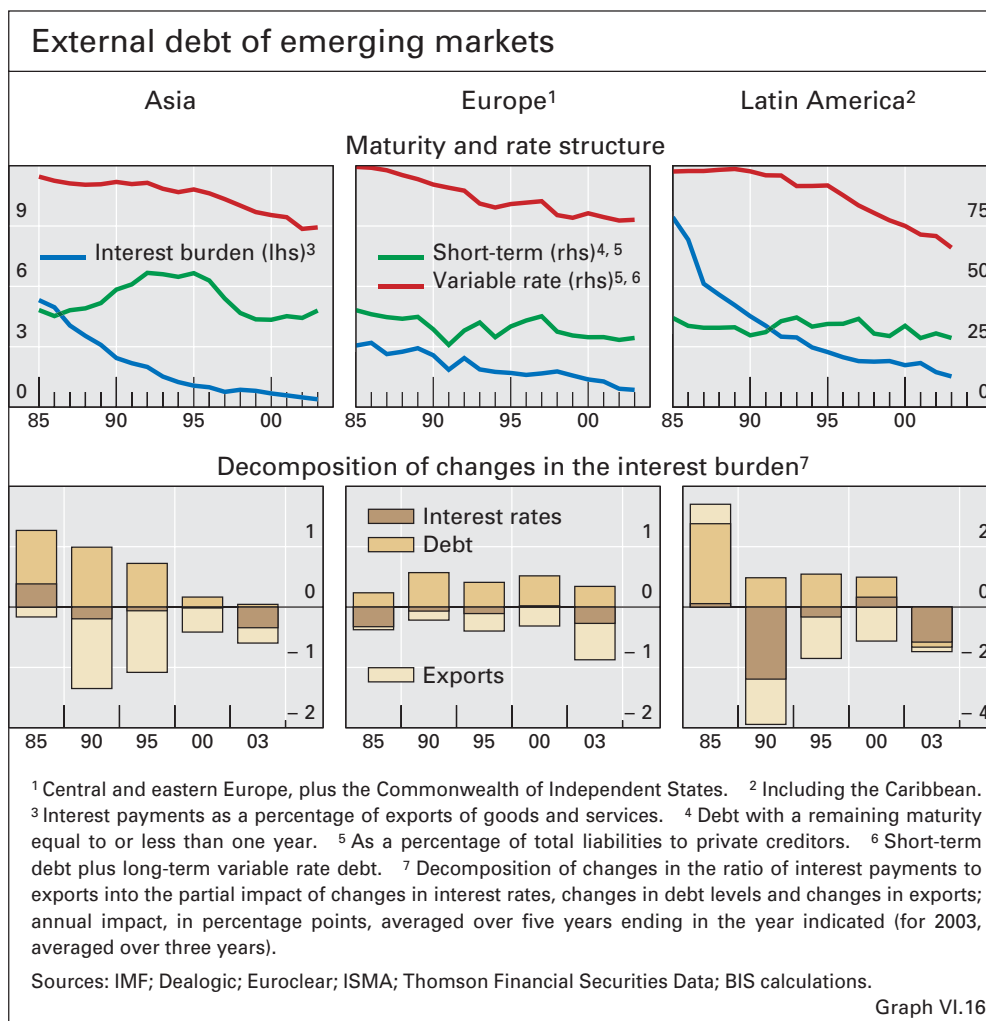
in many countries. Upgrades of emerging market borrowers by Standard & Poor's in 2003 exceeded downgrades for the first time since 1996. The most spectacular upgrade was the promotion of Russia to investment grade by Moody's in October 2003, a little more than five years after Russia had defaulted on the bulk of its bonds. Spreads on Russia's dollar debt had narrowed to investment grade levels over a year before the upgrade and by late 2003 were comparable to those of many A-rated sovereigns.

Many emerging markets are today less vulnerable to changes in financing conditions in international markets than they once were. In contrast to the early 1980s, when many heavily indebted countries defaulted, or 1994, when Mexico experienced severe financial difficulties, higher policy rates in the major economies seem unlikely to trigger a crisis in emerging markets. Nevertheless, emerging market borrowers remain exposed to interest rate risk. In 2001–03 the sharp decline in US policy rates did more to reduce the burden of interest payments than did changes in debt levels or export growth, especially in Latin America (Graph VI.16). However, external imbalances are now smaller and foreign exchange reserves higher than during previous periods when global liquidity conditions tightened (see Chapters III and V).

Furthermore, emerging market borrowers are less dependent on short-term variable rate debt. Short-term debt, including amortisations, fell from 40% of debt owed to private creditors in the early 1990s to less than 30% by the end of 2003. Variable rate debt, including short-term debt, fell from almost 100% of outstanding debt to less than 70% over the same period, owing to the shift from bank borrowing to bond issuance following the Brady bond exchanges of the early to mid-1990s. (If debt owed to public creditors is included, the proportion of variable rate debt is higher.) Borrowers in Asia are more dependent on short-term debt than those in other regions, but this

Emerging markets  
rely less on short-  
term variable rate  
debt ...





reflects Asia's lower level of external indebtedness and greater share of trade finance in external financing. In 2003, Asia was the only region to see an increase in short-term (mainly bank) debt; many countries outside Asia took advantage of the favourable conditions in international markets to pay down their short-term liabilities.

While the shift from (variable rate) bank debt to (fixed rate) bond debt reduces borrowers' exposure to interest rate risk, it does not eliminate funding risk. Spreads on emerging market bonds are more volatile than the underlying yields and at times can widen so much that they effectively shut borrowers out of the market – as was the case for Brazil in mid-2002. This can create severe liquidity problems for countries with large financing requirements. Repayments of long-term debt by emerging market borrowers are scheduled to decline slightly in 2004 and 2005, which will help ease liquidity problems in the event of a widening of spreads (Graph VI.15). However, several heavily indebted countries, notably Brazil and Turkey, continue to face substantial amortisations.

The climate for emerging market finance deteriorated in the early part of 2004 following indications that the Federal Reserve might shift to a less accommodative policy stance sooner than market participants had been

... but remain exposed to changes in spreads

Prospect of higher US policy rates triggered a sell-off in early 2004

expecting. In April and May 2004, emerging market debt saw its most severe sell-off since mid-2002, with the EMBI spread widening by about 100 basis points in just four weeks. Notably, the US corporate high-yield market did not experience nearly the same rise in spreads. Hedge funds and other leveraged investors apparently played an important part in the sell-off, in that they suddenly unwound their positions in emerging markets on a larger scale than those in corporate high-yield debt. To the extent that these investors have retreated from emerging markets, the positive correlation evident during the sell-off between changes in spreads and changes in expectations about US policy rates could weaken. Even so, financing conditions could come under renewed pressure in the near term from changes in risk appetite in the major markets or policy setbacks in emerging markets.

### *Debt restructurings*

To complement their efforts to reduce their vulnerability to crises, some borrowers also took steps to improve the process for resolving payment difficulties in the event of a crisis. In February 2003, Mexico became the first large emerging market issuer to include collective action clauses (CACs) in bonds issued under New York law. It was followed soon afterwards by Brazil and some other large borrowers. Consequently, whereas in 2002 no sovereign issues governed by New York law contained CACs, in 2003 approximately half of such issues included them. The clauses are intended to facilitate sovereign debt workouts by hindering the ability of small bondholders to obstruct restructurings supported by the majority of bondholders. Their incorporation in international issues had first been advocated following the Mexican debt crisis of 1994 and had been encouraged by the willingness of a number of G10 countries to include such clauses in their international bonds.

Even as emerging market borrowers enjoyed favourable financing conditions, the Argentine default loomed over international investors as a reminder of the risks of investing in emerging market debt. Difficulties in reaching an agreement on who could speak for creditors – exacerbated by the absence of CACs in many of the defaulted bonds and the large share of defaulted debt held by Argentine residents – delayed negotiations. Disagreement about the capacity of the Argentine government to pay is likely to prolong them. On the one hand, the government emphasised the fragility of the economic recovery and the magnitude of social problems in Argentina in support of its proposed 75% haircut on the nominal value of the defaulted debt and partial payment of interest arrears. On the other hand, creditors pointed to the strength of the economic recovery and improvement in the government's fiscal position in support of their demands for a higher recovery rate.

The Argentine restructuring is different in nature from many of those in the 1980s. The restructurings of the 1980s had been preceded by several rounds of reschedulings, as banks sought to avoid a writedown of principal by rolling over payments coming due. By contrast, in negotiations with Russia, Ecuador and other sovereigns recently in default, bond investors have demonstrated a greater willingness than had banks in the 1980s to write down

Restructuring of Argentina's defaulted debt progressed slowly ...

... but will hopefully be quicker than those of the 1980s

the face value of their bonds. This difference in behaviour stems in part from differences between the accounting rules applied to banks and those applied to most bond investors. In particular, whereas banks have some discretion over when to record losses on their loans, bond investors frequently value their portfolios at market prices each day and therefore must immediately recognise any loss in the net present value of their holdings. This gives bond investors – who hold most of Argentina’s debt – a greater incentive than banks to agree on a comprehensive restructuring. Indeed, whereas eight years passed between Mexico’s debt moratorium in August 1982 and the finalisation of its Brady plan in March 1990, Russia reached an agreement with its bondholders only two years after it defaulted and Ecuador in less than one.

## Underpinnings and implications of the search for yield

The search for yield that drove spreads down in the markets for corporate and emerging market bonds was largely stimulated by the combined effect of two factors. First, many investors shifted from low-risk government bonds into higher-yielding but also riskier corporate and emerging market bonds in an effort to meet the nominal returns that they had been able to achieve when interest rates were higher. Second, many asset managers sought higher-yielding instruments to use in forming collateralised debt obligations (CDOs) in an effort to take advantage of the fact that credit spreads on such instruments remained wider than was implied by expected losses from default.

### *Nominal target rates of return*

For various reasons, many investors seemed hesitant or unable to adjust their nominal target rates of return to changes in market conditions. Facing historically low nominal yields on highly rated government securities in 2003 and the early part of 2004, these investors sought higher yields in the markets for corporate bonds and emerging market debt in the hope of maintaining the high returns that positions in government bonds had previously provided.

The refusal to adjust nominal targets at a time of lower interest rates may have reflected well known psychological factors. For example, some investors seemed to make certain decisions without considering other, more complicated factors, a phenomenon known in the behavioural finance literature as “narrow framing”. In so doing, they possibly ignored the fact that nominal interest rates were lower in large part because expected rates of inflation had declined. Also, investors sometimes took their existing return targets as their reference point, a phenomenon known as “status quo bias” in which less weight is attached to the disadvantages of the status quo than to the disadvantages of alternative targets.

The adherence to nominal target rates may also have been related to institutional or regulatory constraints. Life insurance companies and pension funds typically manage their assets with reference to their liabilities. In some countries, liabilities are linked to a minimum guaranteed return. This return might be fixed by statute, as in Switzerland, where there is a minimum interest rate to be paid on assets in defined contribution pension plans. Alternatively,

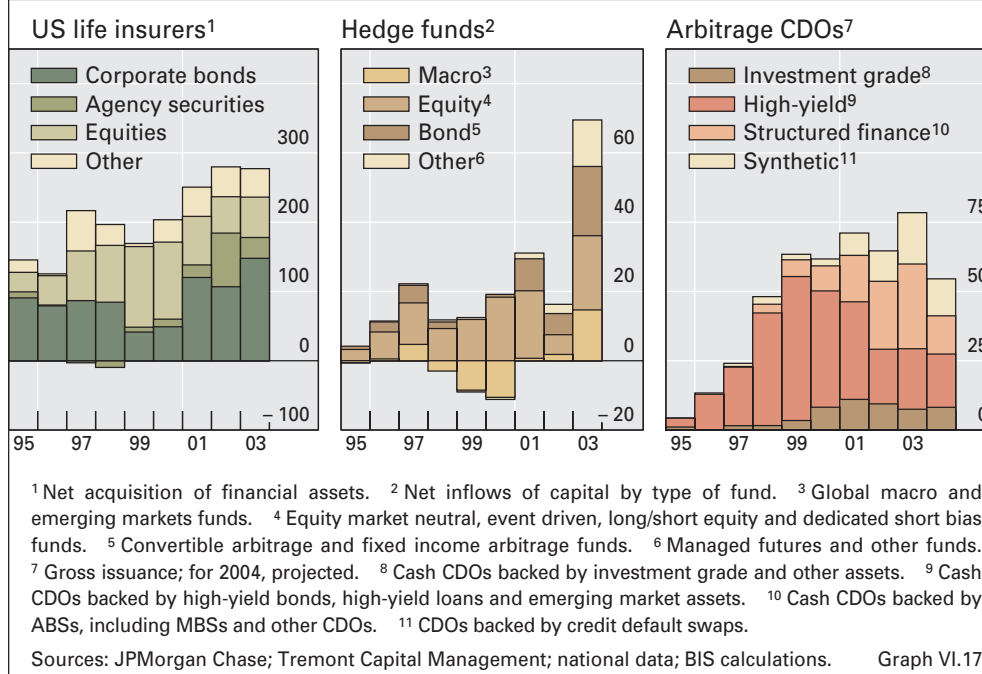
Investors were reluctant to adjust nominal return targets ...

... because of psychological factors ...

... and institutional and regulatory constraints

## The search for yield

Investment flows, in billions of US dollars



it might be fixed contractually, as in Japan and the United Kingdom, where in the 1970s and 1980s life insurance companies offered guaranteed annuity rates. After a period of declining interest rates, the guaranteed rates started to exceed the yields available on highly rated government bonds. The resulting funding gap led such institutions to invest in higher-yielding, higher-risk instruments.

Even in those countries with no guaranteed rates, changes in the value of liabilities tended to lead to risk-seeking behaviour. In the United Kingdom and the United States, the interest rate used to discount the liabilities of defined benefit pension funds is linked to market rates. Therefore, declines in interest rates can result in substantial increases in liabilities. Given the losses incurred on their equity portfolios in 2001–03 and their desire to match their liabilities more closely than before, this may have encouraged insurance companies and pension funds to invest in fixed income instruments yielding a higher expected return. In the United States, corporate and agency securities accounted for the bulk of these purchases because of the yield pickup they offered over Treasuries (Graph VI.17). Institutional investors also invested heavily in hedge funds – contributing to a record flow into this asset class in 2003 – attracted by the high returns realised by many funds in recent years.

### *The role of arbitrage CDOs*

Unlike other investors in search of yield, asset managers of arbitrage CDOs were motivated not by the low level of interest rates but by the wide credit spreads on lower-rated debt. The structure of arbitrage CDOs allows the managers to take advantage of the fact that spreads on individual corporate

bonds tend to be much wider than would be sufficient to cover likely losses from default. A manager gathers lower-rated debt to form a pool of collateral against which several tranches of debt are issued, the bulk of which are triple-A rated debt. The lower-rated tranches are the first to absorb any losses on the collateral pool and thus protect the triple-A tranches. The required amount of protection depends on expected losses, estimates of default correlations and the degree of diversification in the collateral pool.

Even as credit spreads narrowed in 2003, they remained sufficiently wide on various forms of collateral to support a rise in the issuance of arbitrage CDOs. The more CDO managers sought collateral, the more spreads tightened. Not surprisingly, the preferred collateral in earlier years was high-yield debt, including emerging market bonds (Graph VI.17). As the availability of such collateral diminished, however, CDO managers increasingly turned to investment grade debt. By 2003, a large proportion of the new arbitrage CDOs were backed by asset-backed securities (ABSs), including mortgage-backed securities (MBSs) and other CDOs, on which spreads had been slow to tighten. In Europe, the market has been increasingly dominated by synthetic CDOs, which rely on credit default swaps instead of cash collateral. By early 2004, spreads in general seemed to have tightened sufficiently to reduce the issuance of arbitrage CDOs.

Issuance of arbitrage CDOs contributed to spread tightening

#### *Implications of the search for yield*

The search for yield entails the assumption of risk; higher returns are normally accompanied by higher risk. Yet many investors seemed to discount the possible adverse consequences of taking on this additional risk. Some minimised their perceived risk exposure by emphasising the benefits of diversification. In doing so, they sometimes misapplied the tools used for analysing risk in equity markets. The standard deviation of returns, for example, was used by many investors to evaluate gains from diversification in corporate bonds. However, the importance of downside losses from default made such a symmetric measure of risk inappropriate for analysing credit risk. Other investors assumed that they could unwind their investment positions before suffering heavy losses. This was especially true of carry trades intended to profit from the low level of short-term interest rates. Hedge funds and other leveraged investors reportedly made large bets by borrowing at short-term rates and investing the proceeds in higher-yielding longer-term instruments.

The search for yield might result in excessive risk-taking ...

The search for yield is a process that has lowered the risk premia that investors receive for bearing credit risk. To the extent that such premia are greatly exceeded by unexpected losses from default, the process can have damaging consequences for both investors and issuers. Unusually heavy losses might cause financial difficulties for those investors not accustomed to managing such risks. This could also trigger a repricing of risk, resulting in a return of wide credit spreads and higher financing costs for all borrowers, including those whose credit quality is improving. Moreover, borrowers might become unusually highly exposed to a shift in investor risk appetite and so to a sudden loss of market access. Such a shift might occur if risk-free rates were

... which could have adverse consequences

to rise to a point at which lower-risk investments that offer nominal yields close to investors' target rates become available again. Indeed, the widening of emerging market sovereign spreads near the end of the period under review indicated the importance of the general level of nominal yields for such spreads. Finally, a mispricing of risk can damage overall economic efficiency through a misallocation of resources.