

## VI. Financial markets

### Highlights

The most significant feature of global financial markets in 2002 was a further loss of investor confidence. In markets already weakened by disclosures of corporate accounting irregularities and a degree of pessimism about the economic recovery, the most prominent of a series of disturbing events was a financial restatement by WorldCom, a large US telecommunications firm. By heightening risk premia in equity markets, these blows to confidence not only contributed to extending the global market slump for a third year but also inflicted losses that were deeper than in the two previous years. However, investors recouped some of their losses as equity markets rallied in the spring of 2003.

The corporate bond market for a time joined the equity market in succumbing to the loss of confidence. In mid-2002, credit spreads soared to levels not seen for over a decade. The unfavourable borrowing conditions contributed to a marked drop in corporate fund-raising in the latter half of the year. Issuance was further depressed by corporations' efforts to strengthen their balance sheets and unwind excesses that had built up during the equity market boom. Such efforts helped to restore confidence in credit markets at a time when investors were seeking higher yields than those available in government bond markets. As a result, the corporate bond market saw a strong rally in late 2002, which continued well into the first half of 2003.

Volatility in the major financial markets spilled over into emerging markets during the period under review. While local political events also figured prominently, global investors' changing appetite for risk seemed at times to dominate developments. Highly indebted countries lost access to international debt markets in mid-2002, and even better-quality credits faced wider spreads. The shift by investors out of lower-quality assets abated appreciably in the early part of 2003 as investors sought higher-yielding assets. Even so, borrowing conditions remained susceptible to setbacks in the implementation of announced policies.

Housing markets seemed insulated from these global developments. Prices in many cases showed surprising strength three years after the peak in equity market prices. In the past, housing prices had tended to turn down around two years after an equity market peak. During those earlier episodes, however, monetary authorities had often raised interest rates in an effort to restrain inflation. By contrast, with inflation less of a concern recently, central banks have cut policy rates sharply, thus supporting housing prices.

## Yield curves and the macroeconomic picture

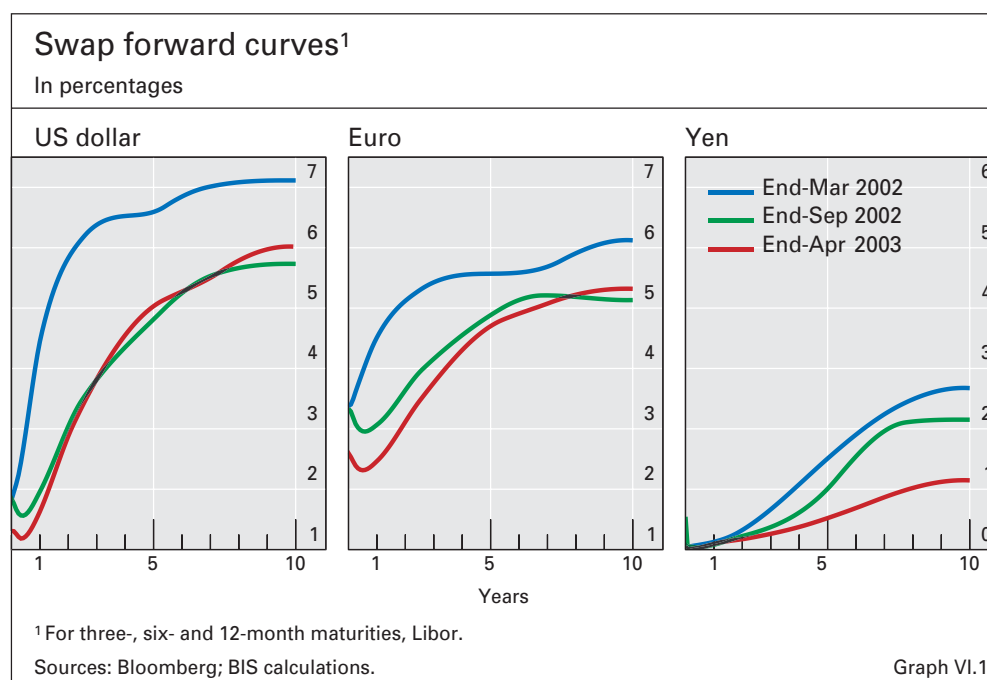
Investors in fixed income markets tend to pay closer attention to macroeconomic data than do their counterparts in equity markets. With each major data announcement, investors re-evaluate their views, not only about the state of the global economy, but also about how central banks might react. Since investors will at some times be optimistic and at others pessimistic relative to imperfectly observable fundamentals, market moves could in this way exert a certain independent influence on the economy. In the fixed income markets, these changing perceptions are most discernible in yields and forward curves in the swap markets, which have increasingly become the markets for benchmark interest rates in the largest economies.

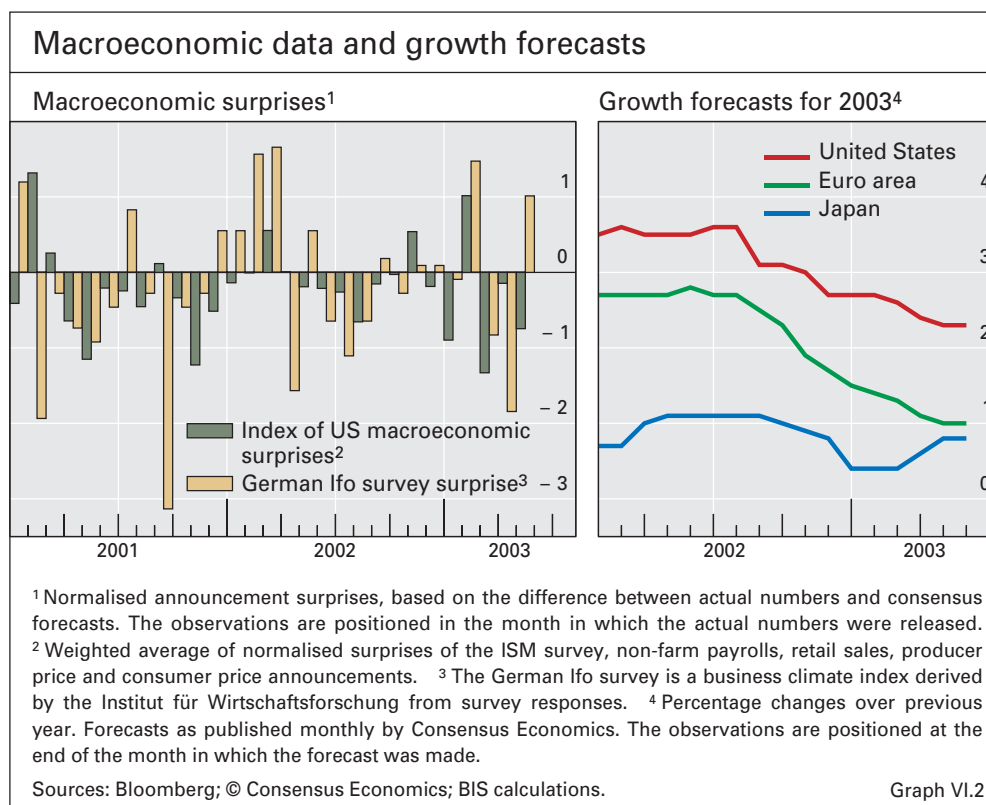
Swap curves reflect sentiment about the economy

### *Shifts in sentiment*

The period under review saw fixed income markets price in sharp downward revisions in expectations of economic growth. Throughout 2001 and in early 2002, the slopes of swap forward curves had continued to rise, indicating optimism that a global recovery was imminent. In April 2002, however, these curves started to flatten in the US dollar and euro markets, marking a turning point in investors' sentiment about the recovery. The slopes of these curves proceeded to fall for the next six months (Graph VI.1), reflecting a steady erosion of optimism about the prospects for the global economy. Coming at a time when the economy was showing more strength than before, the shift in sentiment was striking. The curves for the US and European markets then stayed within a narrow range between October 2002 and February 2003. In contrast, the swap forward curve for Japan shifted down significantly over the period, in part because delays in financial reforms seemed to reduce the likelihood of a near-term economic recovery. In March, the plunge of oil prices

The first half of the period saw an erosion of optimism





with the onset of war in Iraq seemed to restore some optimism in fixed income markets, leading to a steepening in forward curves.

The above episode illustrates how easily investor sentiment can change, even in a market that is as grounded in data as the fixed income market. In the US market, a disappointing durable goods figure released on 24 April 2002 seemed to trigger the initial turnaround in sentiment. While this statistic is ordinarily not such a major announcement in fixed income markets, investors at that time were looking for signs of a pickup in business investment spending as a factor critical for an economic recovery. In the responses to subsequent macroeconomic announcements, market participants seemed to give positive surprises less weight than negative ones. While investors in the euro markets tended to follow US announcements almost as closely as did their US counterparts, a strike in early May by Germany's IG Metall labour union was evidently an additional significant factor in European market sentiment. In June and July, the most closely watched macroeconomic data confirmed a weakening global economy. Only then did economists start to scale back their growth forecasts (Graph VI.2). While most of the shift in investor expectations had taken place by September 2002, growth forecasts for the US and European economies continued to be revised downwards until March 2003.

A single number seemed to turn sentiment around

A further important factor affecting investors' expectations was the reaction of monetary authorities. The major central banks had cut policy rates sharply in 2001 (see Chapter IV), and a perception that the monetary stance would be sufficiently stimulative had apparently been the main reason for the optimism among investors. As reflected in relatively steep forward curves near the short end, expectations as of early 2002 were for monetary authorities to start raising rates later in the year. As the optimism dissipated,

The Fed sent a strong signal in November

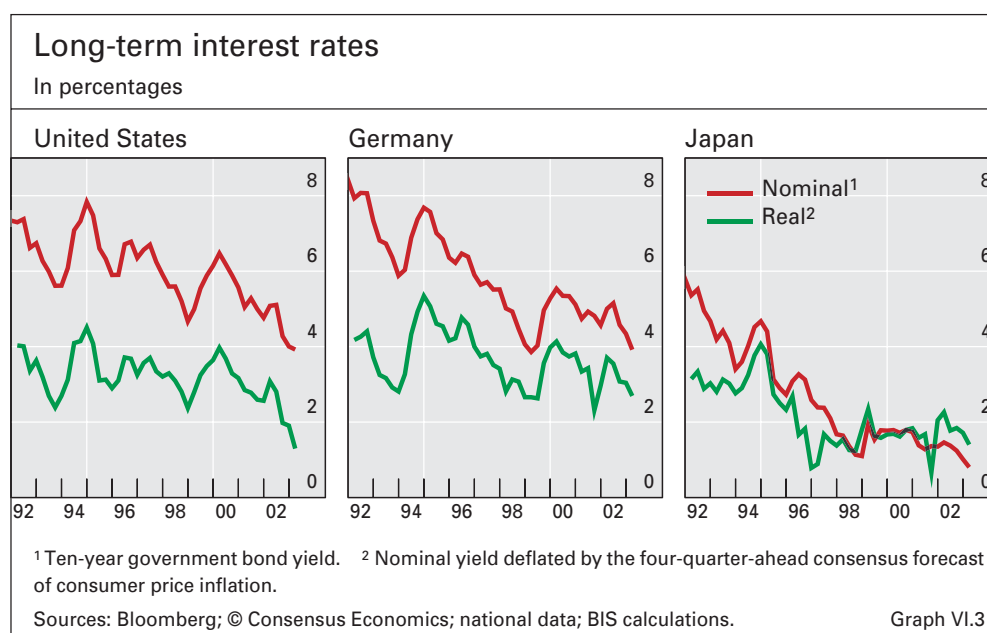
however, forward curves showed increasingly flat slopes near the short end, indicating a building-up of expectations of further monetary easing. However, it was not until November, December and January, respectively, that the Federal Reserve, ECB and Bank of England cut their policy rates by turns. The surprisingly aggressive move by the Federal Reserve in November was a particularly strong signal that the central bank was willing to take further action to achieve its goals even with a target rate already at 1.75%.

### Concerns about low yields

The resulting decline in bond yields to historically low levels gave rise to an unusual sentiment among investors. When long-term yields reached a 40-year low in early October, some investors suddenly began to worry about a bond market bubble. At that time, the yield on the 10-year US Treasury note stood at 3.56% and yields on the corresponding Japanese government bonds were lower still (Graph VI.3). Yet relative to short rates, which were anchored to policy rates, long-term yields were not unreasonable in that they still seemed to price in likely increases in short rates. The forward curve implied by US yields, for example, was consistent with a rise in short rates of about 100 basis points over two years. Nonetheless, a brief period of selling by nervous bond investors contributed to an increase in yields in October that was unrelated to macroeconomic fundamentals.

Low interest rates led to a global hunt for yield

The low yields also induced unprecedented behaviour among ordinarily conservative investors. These investors increasingly developed an appetite for riskier bonds as a way to obtain higher yields. Positions in highly rated government and agency securities, at a time of declining interest rates, had provided these investors with exceptionally high returns. However, bond yields had fallen so far in both nominal and real terms that it seemed unlikely that they could decrease further. The inference drawn was that similarly high returns could no longer be achieved in highly rated instruments. Especially towards the end of the period under review, these conditions made riskier and



higher-yielding debt attractive to investors. As discussed later in this chapter, the increased appetite for risk helped spreads in credit markets to narrow further, providing corporate and emerging market borrowers with more favourable terms for fund-raising.

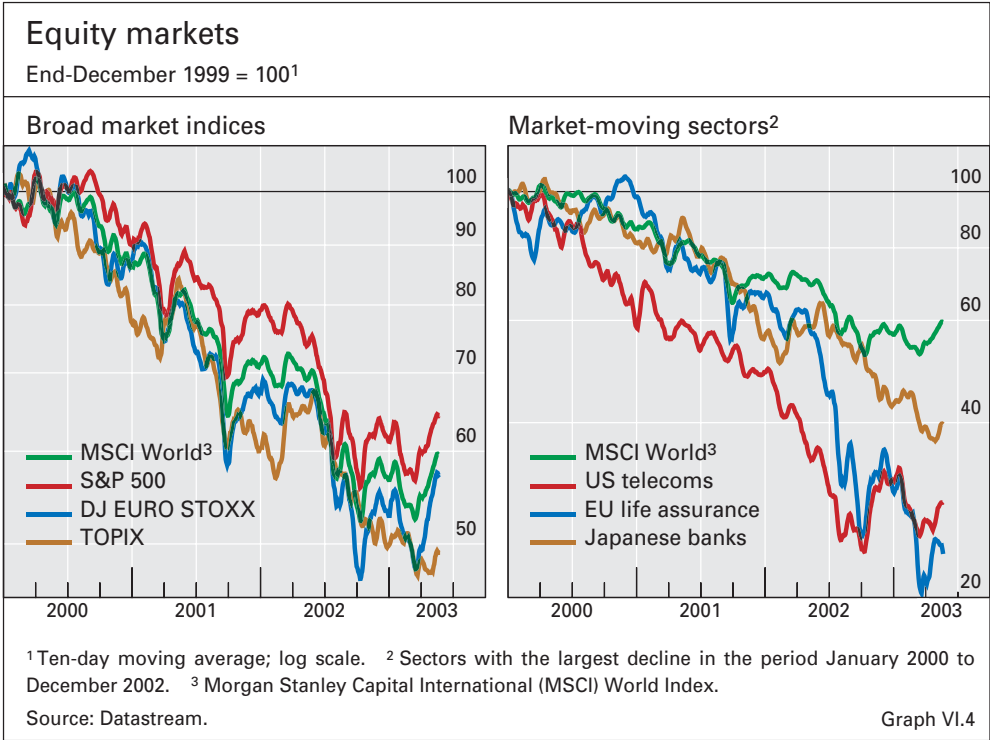
Through such channels, leading to lower long-term interest rates than otherwise, pessimism in fixed income markets may actually have contributed to economic growth in 2002. This effect worked in part through a hunt for yield that helped corporate and emerging market borrowers, and in part through the influence of interest rates on housing prices, as discussed later in this chapter.

**Equity markets**

During the period under review, investors in equity markets found themselves still trying to come to grips with the after-effects of the excesses that had built up in the previous decade. Reassessments of valuations seemed to be driven not so much by news about the earnings of individual companies as by events that affected investors’ confidence in the prospects of the corporate sector as a whole. Especially telling on the markets were events that called into question the corporate information that investors were receiving. At no other time in recent years had the integrity of accounting and reporting procedures been thrown into so much doubt. Other developments contributed to uncertainty about the underlying economy. The resulting global loss of confidence during the period was extraordinary, and this was reflected in a sharp rise in equity risk premia and a concomitant collapse in stock prices.

The global loss of confidence was extraordinary

The stock price declines inflicted heavy losses on investors for the third year in a row. Between April 2002 and March 2003, the MSCI World Index tumbled by 23%, having already slid by 31% over the preceding two years



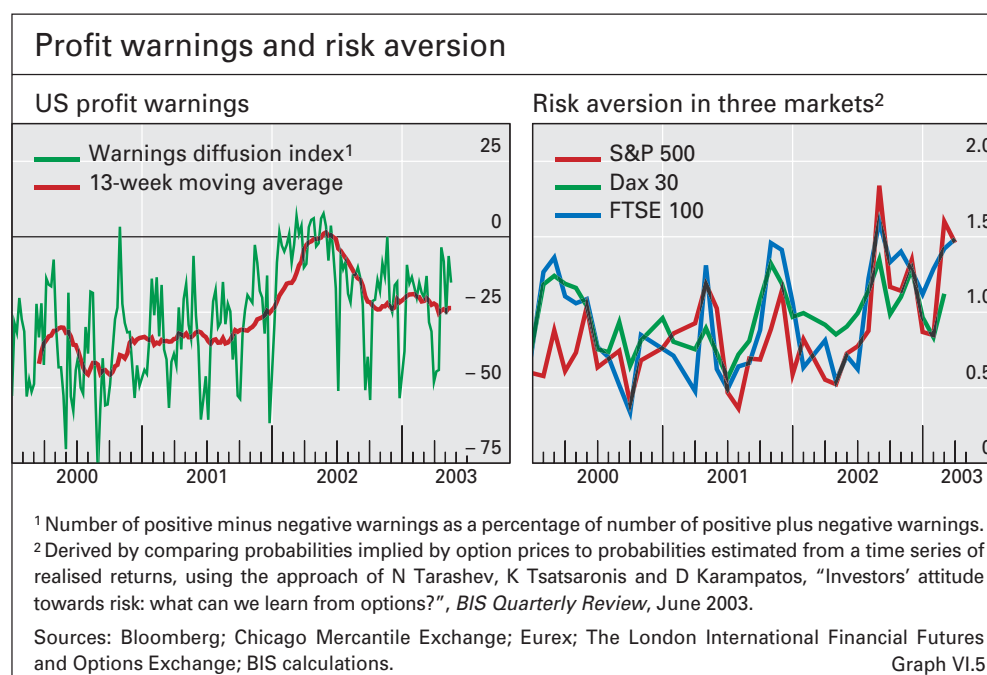
(Graph VI.4). The losses since March 2000 have wiped out about \$13 trillion in market capitalisation worldwide. During the same three-year period, the S&P 500 Index declined by 45%, reducing shareholder wealth by an amount equivalent to half of US GNP in 2000. European and Japanese stock prices fell by even more, with the Dow Jones EURO STOXX index losing 52% and the TOPIX 50%. However, the anticipation of a short war in Iraq boosted global equity prices in March 2003 and favourable corporate earnings reports extended the rally into April and May, allowing investors to recover some of their losses.

### Information and risk aversion

Academic research in finance has established that stock prices tend to be driven by changes in investors' aversion to risk. This was especially true during the period under review, as investors reacted more to events that heightened risk aversion than to information about corporate earnings. Global equity prices resumed their slide in late May 2002 even as closely watched profit signals suggested an improving picture (Graph VI.5, left-hand panel). This configuration is explained by the fact that at this time investor risk aversion, as implied by prices of equity index options (Graph VI.5, right-hand panel), started to rise again. In general, as shown by comparing Graphs VI.4 and VI.5, the periods in which equity prices fell sharply tended to be matched by spikes in this measure of investor risk aversion.

The period under review was particularly eventful in terms of developments that affected investor risk aversion. Just when market participants seemed to be getting over the revelations surrounding the failure of Enron in December 2001, they suffered a series of further blows to their confidence. In late May and early June 2002, warnings about further terrorist attacks and rising political tensions between India and Pakistan led to a

Equity prices fell even as profit signals improved



sell-off in the stock markets. The defining event for the period, however, was the \$3.8 billion financial restatement on 25 June by WorldCom, a large US telecommunications firm. While the immediate market reaction was not particularly dramatic, it seemed to condition the reactions to subsequent events. Within days, the US copier maker Xerox also restated its financial reports, while a French newspaper alleged that the media company Vivendi Universal had inflated profits. These developments set global equity markets on their steepest two-month slide since September 2001. Between 21 May and 23 July 2002, the MSCI World Index fell by 26%, returning to a level last seen in 1997. In mid-January 2003, events related to Iraq also began to weigh heavily on the markets, with the US market losing 12% of its value and the European market 14% in the five ensuing weeks.

The defining event was the WorldCom restatement

### *Insurers and banks*

In European stock markets, investors were most shaken by the losses suffered by insurance companies. These losses appear to be the main reason why broad equity market indices for Europe fell further than US indices. Unlike their US counterparts, European insurers had allocated large portions of their assets to equity investments, in effect taking leveraged bets on the stock market. Hence, general market declines during the period were magnified in the share prices of these insurance companies. Moreover, as losses on the equity positions mounted, regulatory rules often required the insurers to sell off their holdings. The uncertainty about the amounts to be sold and about the timing of the sales tended to precipitate price declines in the market as a whole. Trades fundamentally based on the simple need for liquidity – ie trades not based on information – led to disproportionate price reactions in the face of uncertain selling flows. This was similar to the phenomenon seen in the October 1987 stock market break and the 1998 episode in fixed income markets involving the hedge fund Long-Term Capital Management.

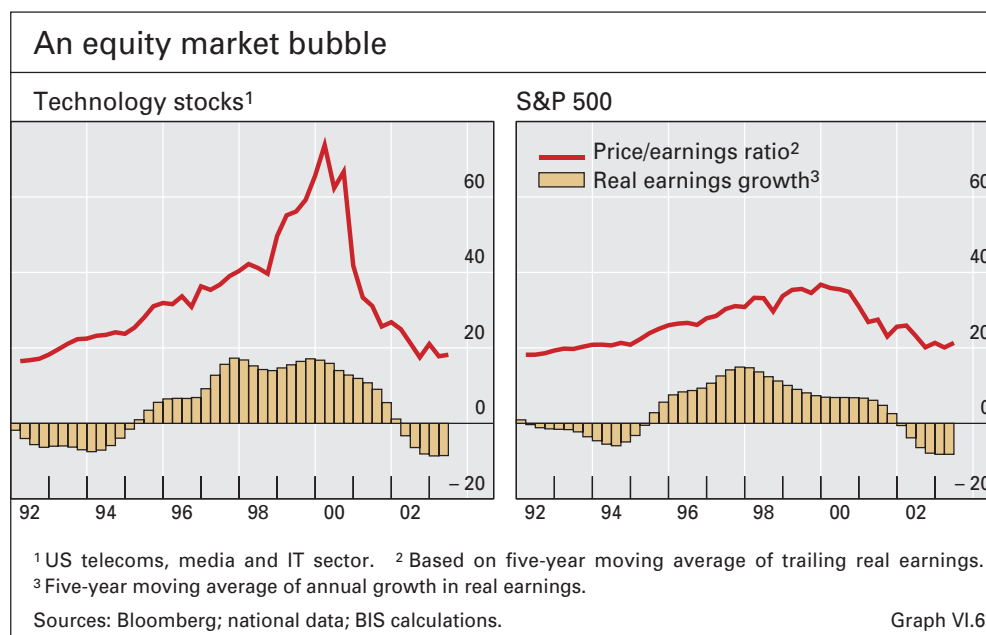
Uncertain selling flows caused disproportionate price drops

The Tokyo stock market saw confidence affected by shifting expectations about long-awaited financial reforms. Most notably, in September and October 2002, investors vacillated between two possible scenarios having quite different implications for share prices. In the scenario favoured by existing investors, the government would inject capital into ailing banks by buying shares held by these banks. In the alternative “hard landing” scenario, more stringent measures would force a capital injection that would ultimately lead to a government takeover of the management of the banks. The former scenario seemed more likely on 18 September, when the Bank of Japan announced its intention to purchase corporate equities held by the banks. The Nikkei 225 jumped by 2% that day. On 30 September, however, the other scenario became the dominant expectation when an advocate of bold reforms was appointed financial services minister. Accordingly, the Nikkei 225 sank by 11% over the next 10 days.

The Bank of Japan announced a plan to buy shares

### *Valuations and the drawn-out collapse of a bubble*

The persistent decline in equity prices over the past three years may be characterised as the drawn-out collapse of an equity market bubble. The



A lack of information led to drawn-out collapse

slowness of the collapse suggests that investors have had little information about fundamentals on which they might have acted more decisively. As already discussed, the role of investor confidence in such a market loomed large. Losses of confidence came at different times in different sectors, with the timing often dictated by unexpected events. At first, investors lost confidence in the ability of the technology sector to sustain high growth rates of earnings (Graph VI.6), causing share prices to fall. In mid-2002, the financial restatement by WorldCom had a similar effect on the telecommunications sector, which depressed prices in the broader market. Because investors tended to reassess their assumptions one sector at a time, the whole market did not slump at once.

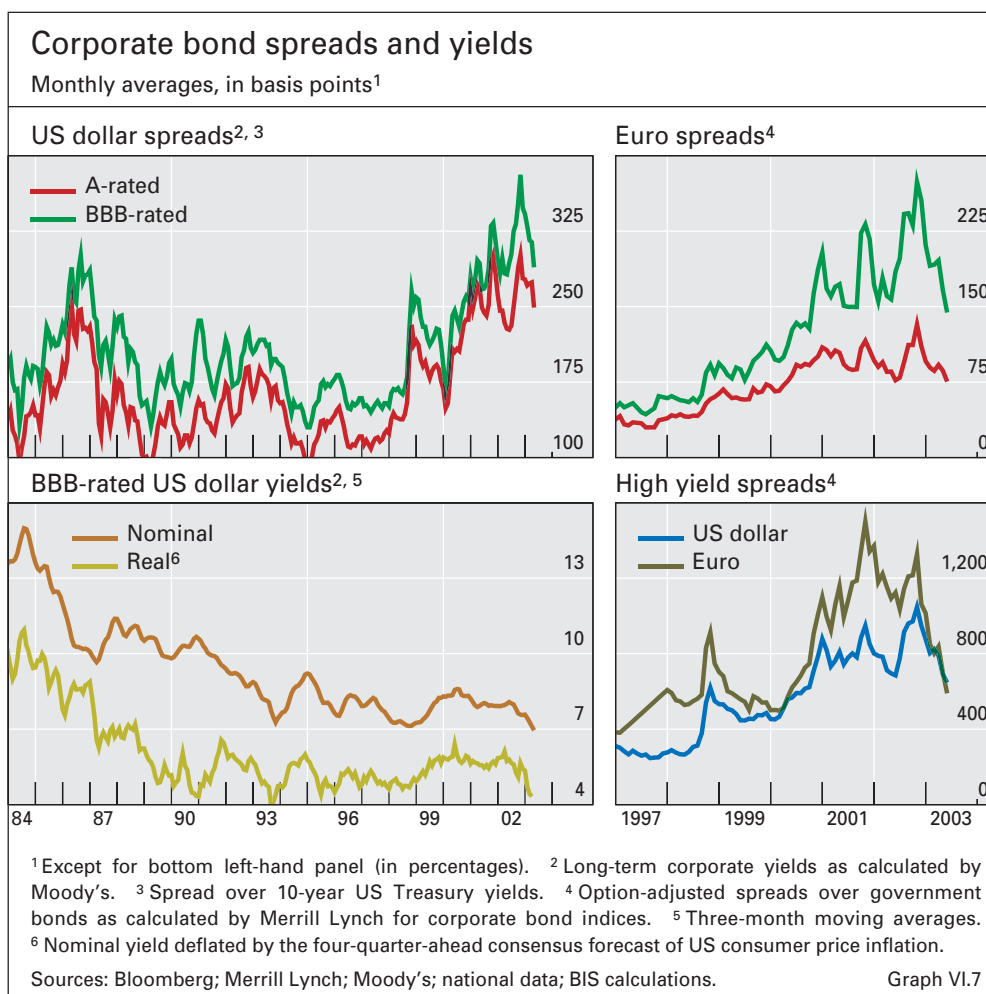
Price/earnings ratios provide a clue as to how long the declines might continue. The global market rally in March 2003 lifted equity valuations further above historical norms. Based on a five-year moving average of earnings, the price/earnings ratio for the S&P 500 reached almost 22 in March, significantly above the 1961–95 average of 17. Since this calculation assumes that earnings will revert to the five-year average, it would overstate current valuations if earnings were to rise more strongly in an economy recovering from a recession. Indeed, analysts are forecasting robust earnings growth, and a calculation based on this forecast would bring the price/earnings ratio down to 16. However, such earnings forecasts have in the past consistently proved to be overly optimistic.

### Credit markets

The loss of confidence spread to the corporate bond market ...

The once resilient corporate bond market joined the equity market in succumbing to a loss of confidence in mid-2002. For most of 2001 and early 2002, the credit market had been the bright spot in the global financial system.



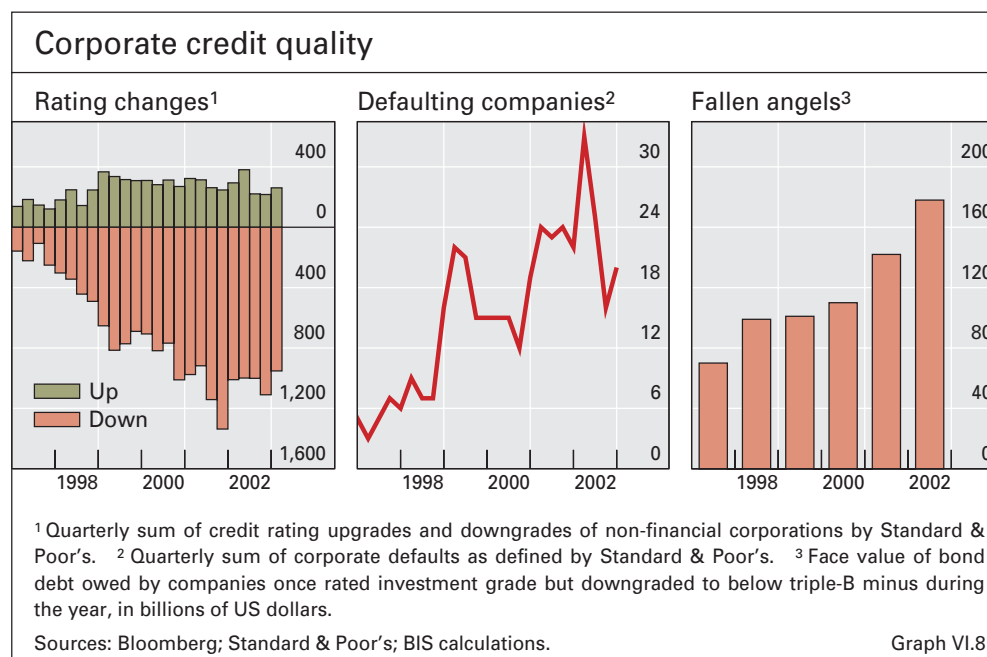


Spreads on investment grade corporate bonds, while wide, had remained within a narrow range even as equity markets tumbled. Between late June and mid-October 2002, however, corporate bond markets in the United States and Europe experienced a severe episode of dislocation. Lower-quality borrowers all but lost access to bond markets. The weighted average spread of seven- to 10-year triple-B US corporate bonds over corresponding Treasury securities widened by 130 basis points during this period, to a peak of about 400 basis points. In Europe, corporate bond spreads followed a similar pattern (Graph VI.7). Not since the global financial market crisis of 1998 had credit spreads widened by so much so quickly, and never over the past 50 years had triple-B spreads risen so high. The subsequent rally in credit markets was equally dramatic.

#### *A summer of dislocation*

Ironically, the sell-off in the corporate bond market occurred at a time when the credit quality of non-financial corporations showed signs of stabilising, or even improving. The incidence of credit rating downgrades had peaked in late 2001 and started to decline in 2002 (Graph VI.8). So too did the incidence of defaults by rated issuers. Profit margins rose modestly in the United States and the United Kingdom, and to a lesser extent in the euro area and Japan

... despite signs of improvement in fundamentals



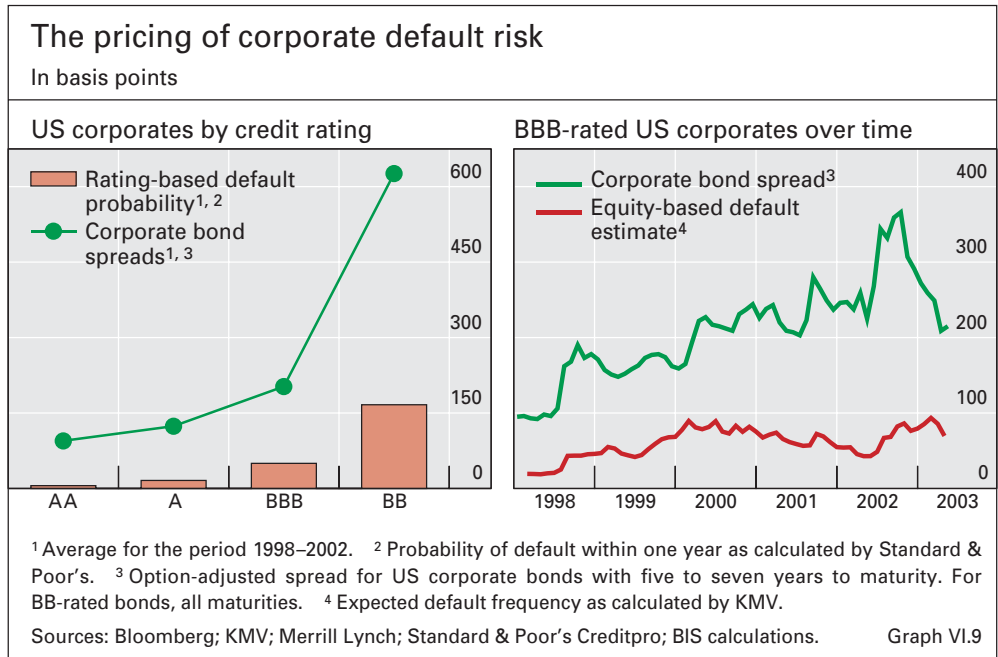
(see Chapter II). Moreover, corporations started to rebuild their balance sheets (see below). Fundamentals alone, therefore, do not seem to explain the widening of credit spreads in mid-2002.

Indeed, the link between credit spreads and fundamentals – in particular, expected default losses – is always rather tenuous. In general, spreads are several times wider than what would be implied by expected default losses (Graph VI.9). At low frequencies, such as annual observations, credit spreads do tend to move in the same direction as the underlying probabilities of default. However, at higher frequencies, credit spreads are much more volatile than estimated default probabilities, regardless of whether the estimates are derived from credit ratings, which are not volatile, or from equity prices, which are volatile. Furthermore, across firms, these spreads move together to a greater extent than do default probabilities.

An important factor in explaining the greater variability and correlation of credit spreads is shifts in investors' attitudes towards risk. Investors evidently demand a premium over and above expected default losses, perhaps as compensation for the difficulty of diversifying risk involving small probabilities of heavy losses, in practice resulting in uncertainty about the timing of default and about the severity of losses in the event of default. This premium can fluctuate independently of changes in fundamentals. For example, investors' underlying risk preferences might vary over time. Alternatively, changes in the composition of market participants might alter the effective risk aversion of investors. Finally, risk management systems might lead to trading behaviour that is effectively similar to that implied by heightened risk aversion.

As in equity markets, the risk premium demanded by investors in credit markets appeared to surge in mid-2002. The repricing of credit risk affected especially "fallen angels" such as WorldCom and French telecoms manufacturer Alcatel – firms whose debt had once been rated investment grade but was subsequently downgraded to below triple-B minus. Large

Weak link between credit spreads and default probabilities



borrowers at risk of becoming fallen angels, such as Ford and the Bermuda-based conglomerate Tyco, were also among those most adversely affected. These firms at times saw their spreads spiral upwards as investors shifted into securities perceived to be less susceptible to being downgraded.

This repricing of risk was driven by unexpectedly large losses on holdings of downgraded debt. In particular, investors' experience with WorldCom made them wary of holding large positions in actual or prospective fallen angels. High-yield investors who had purchased WorldCom debt following its downgrade to double-B in May, only to incur large losses when the company restated its accounts in June, became hesitant to step in and buy the debt of other fallen angels. At the same time, institutional investors, many of whom are restricted by mandate from holding debt securities rated below investment grade, scaled back their holdings of credits at risk of becoming fallen angels.

Large losses on fallen angels led to a repricing of risk

The sheer volume of debt downgraded in 2002 added to the imbalance of supply and demand for lower-quality credits. Several actual and prospective fallen angels were among the largest corporate issuers in US and European bond markets. WorldCom alone owed \$30 billion. In total, nearly \$180 billion of debt previously rated investment grade was downgraded to high-yield or default status in 2002, representing as much as one quarter of speculative grade debt outstanding at the end of 2002 (Graph VI.8).

Another source of dislocation in credit markets in mid-2002 was concern about underfunded pension liabilities. The decline of stock prices starting in 2000 inflicted heavy losses on defined benefit pension plans that had allocated large portions of their portfolios to equity investments (see Chapter VII). In October 2002, Standard & Poor's downgraded the credit ratings of a number of US companies, in part because of the size of the shortfall in their pension plans. In early 2003, the same rating agency downgraded a few European firms that faced similar shortfalls.

### *Corporate borrowers began to repair their balance sheets*

Strong rally in credit markets starting in October 2002 ...

Starting in mid-October 2002, there was a general improvement in credit conditions. Even as equity prices tumbled in the first few months of 2003, investment grade and high-yield bond prices continued to rally. Spreads on triple-B US corporate bonds narrowed by 130 basis points between early October and end-2002 and by a further 70 basis points in the four months to end-April 2003.

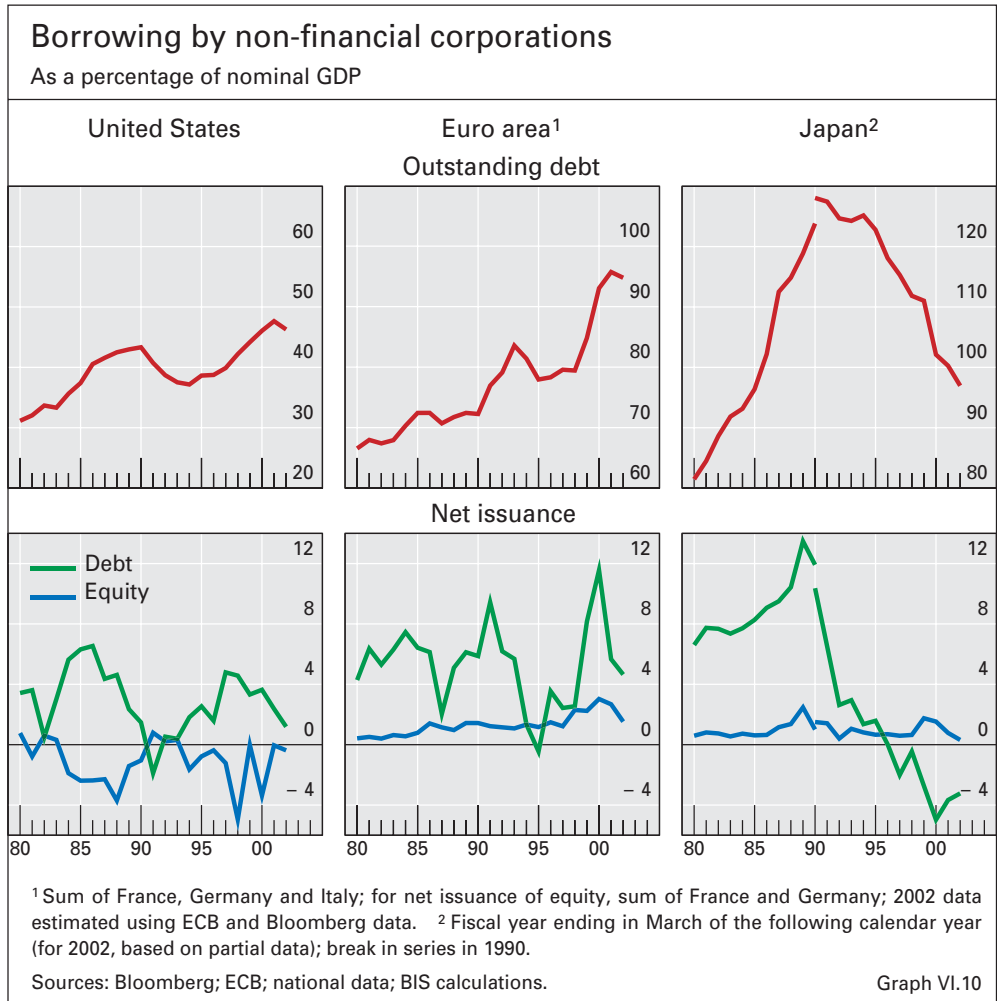
Just as an increase in the risk premium demanded by investors in credit markets explained much of the widening of spreads, a decline in the risk premium drove much of the initial narrowing. The rally in credit markets was led by the same fallen angels whose spreads had previously soared. Attracted by low prices, investors bought the debt of companies with saleable assets or promising restructuring plans. HSBC's bid in November for Household International, a large US consumer finance company which had at the time faced a deterioration in access to capital markets, helped to bolster investors' confidence in the prospects for other firms facing difficult financing conditions.

Recognition of firms' progress in repairing their balance sheets extended the rally in credit markets into 2003. In 2001, corporations had already begun to strengthen their balance sheets. However, for the most part this had been characterised by a reprofiling rather than a reduction of liabilities. Companies had lengthened the maturity of their debt so as to reduce their exposure to liquidity risk. Furthermore, cutbacks in capital investment had helped to stabilise corporate debt levels in the United States and Europe following several years of large increases in borrowings (Graph VI.10). In the United States, firms had also reduced their repurchases of shares, which had surged in the late 1990s.

... as firms repaired their balance sheets

In 2002, corporate restructuring showed signs of accelerating. Firms that had stepped up their borrowing during the boom years, either to buy assets now worth considerably less or to repurchase shares at inflated prices, intensified their efforts to strengthen their balance sheets. The larger fallen angels advanced furthest in the restructuring process, owing to the difficulties they experienced in refinancing their maturing obligations in the face of a much reduced investor demand for their debt. As a result of weaker demand for funding and the virtual closure of the corporate bond market in mid-2002, net issuance of debt by US corporations in 2002 fell to its lowest level in nearly a decade, although it remained positive. Borrowing by European corporations also slowed. Japanese corporations again paid down their debt, continuing a process that had begun a decade earlier.

While companies needing to rebuild their balance sheets would normally raise equity capital, the long slide in stock prices made this avenue unattractive. Therefore, in contrast to the previous period of deleveraging in the early 1990s, net issuance of equity remained weak in 2002 (Graph VI.10). Even so, some companies did turn to equity markets. A number of European insurance companies issued warrants giving existing shareholders the right to buy new shares at a deeply discounted price. Japanese banks issued new common and preferred shares in early 2003, in part to related parties

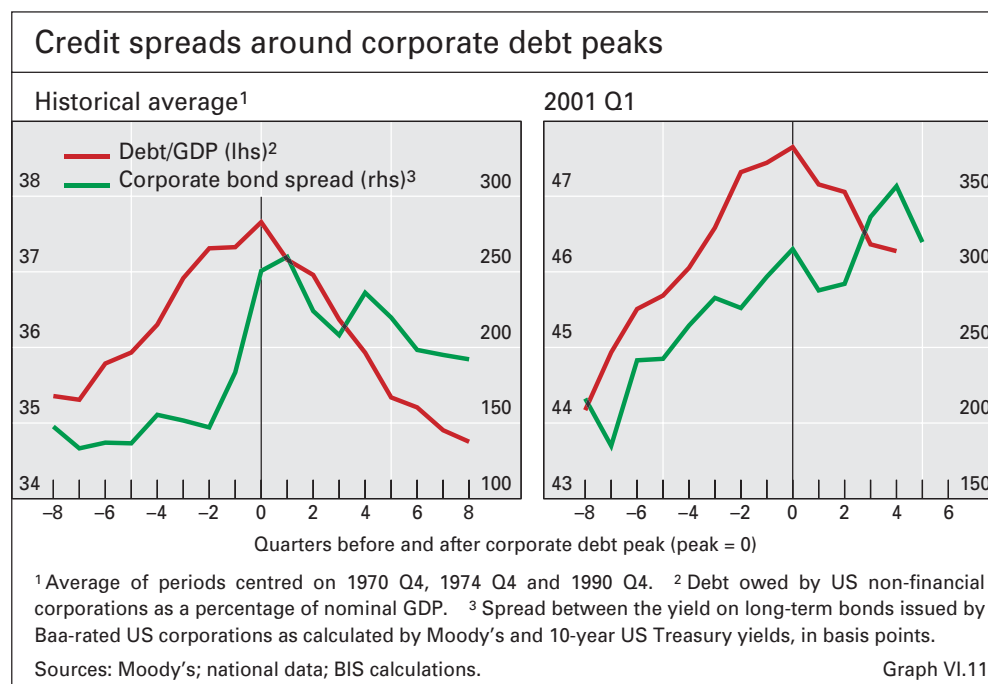


(see Chapter VII). These included the largest ever offering of common equity by a private firm in Japan and the first by a Japanese bank since the 1980s. Still other firms sold convertible bonds redeemable only in stock.

Investors were initially slow to reward corporations for their efforts to deleverage. In stark contrast to past episodes of corporate restructuring, credit spreads continued to widen in 2002 even after the upward trend in the debt ratio had been reversed (Graph VI.11). It was not until almost one year after the corporate debt/GDP ratio in the United States peaked that investors began to reprice default risk and lower their expectations of default losses.

As yields on government bonds and other highly rated securities fell to record lows in late 2002 and the early part of 2003, investors appeared willing to take on more credit risk in their search for higher returns. Expectations of further improvements in corporate credit quality underpinned this willingness. Should these expectations prove optimistic, the rally in credit markets could turn out to be temporary. Measures of default risk derived from equity prices remain high for non-financial corporations in the United States and Europe, suggesting that corporate balance sheets remain weak (Graphs VI.9 and VII.2). Also, debt levels for the US and especially European corporate sectors are still high relative to the size of the economy. Exceptionally low nominal yields help to keep debt servicing costs manageable. However, inflation-adjusted

Corporate debt levels are still high



yields are not far below their 1990–2000 average (Graph VI.7), and for those businesses facing declining output prices, such as manufacturing, real yields are even higher. Therefore, current debt levels could create difficulties for some firms in the longer term.

#### *Credit derivatives and market integration*

In addition to the cyclical factors discussed above, developments in credit markets during the period under review were shaped by structural changes. Credit and equity markets are integrated to a greater extent today than in the past, as are segments within credit markets. While integration improves the price discovery process by facilitating the adjustment of prices in different financial markets to new information, it can also create new vulnerabilities.

The growing use of credit risk models is helping to strengthen the link between credit and equity prices. Just as financial institutions use quantitative models to manage their interest rate risk, models are now being developed to do the same for credit risk. The most popular of these models follow the structural approach first proposed by Robert Merton in 1974, in which default occurs when the value of a firm's assets falls below the face value of its debt. In such models, the process leading to default depends explicitly on the level of the firm's liabilities and the market value and volatility of the firm's assets. Market participants typically use equity volatility as the key variable for estimating asset volatility, thereby introducing another channel for feedback from equity to credit markets.

Such feedback effects were especially pronounced in mid-2002 because of the increased presence of hedge funds in credit markets. As institutional investors retrenched to higher-quality credits, the investment strategies and risk management practices of hedge funds came to have a larger influence in the vacated market segments. In contrast to institutional investors, hedge

New models linked credit and equity markets ...

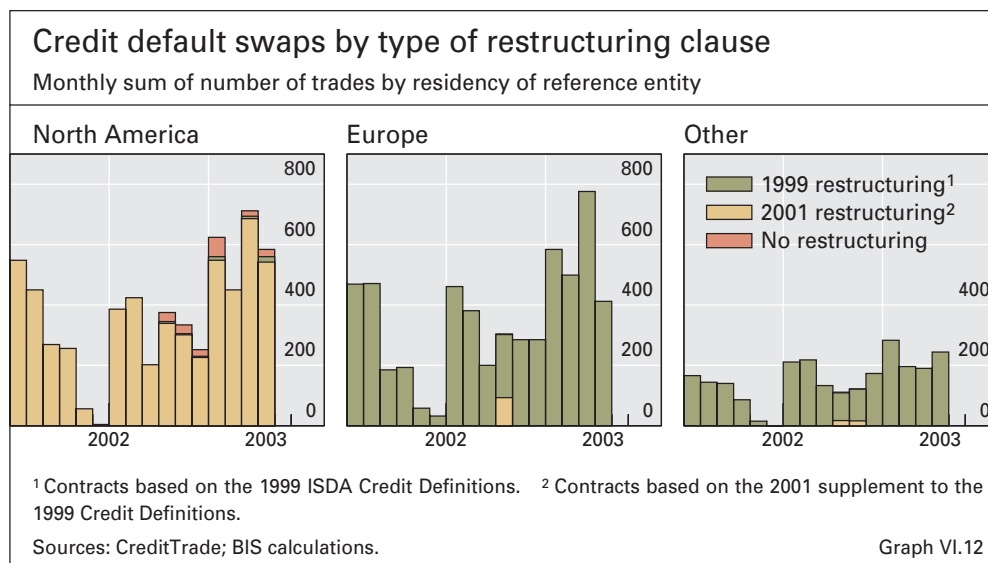
funds rely less on credit ratings as measures of creditworthiness and more on credit risk pricing models.

Linkages between markets were also strengthened by the development of markets for the transfer of credit risk, especially credit derivatives markets. Prior to the introduction of credit derivatives, credit markets were among the least liquid of financial markets. Corporate bond issues are often small in size; many have options or other unique features that make them complicated to price; they are difficult to borrow and so to sell short in expectation of a widening of spreads; and there tends to be very little trading once they have been placed in institutional investors' portfolios. As a result, in the past temporary or idiosyncratic factors frequently drove movements in corporate bond prices. This raised the costs of using corporate bonds for speculation or risk management.

The development of credit derivatives markets, and in particular of the credit default swap market, lowered such costs. Credit default swaps (CDSs) allow credit risk to be unbundled from other risks embedded in a financial instrument and to be traded separately. In a CDS contract, the buyer of credit protection pays to the seller of protection a periodic fee analogous to the spread between the yield on a defaultable security and the risk-free interest rate. In the event that the reference entity defaults, the buyer typically delivers to the seller debt owed by the reference entity in return for a lump sum equal to the face value of the debt. In essence, a CDS is an insurance contract protecting against losses arising from a default.

... while credit derivatives facilitated price discovery

The CDS market has grown tremendously in recent years (Graph VI.12 and Chapter VII). Moreover, market participants have made a concerted effort to promote market liquidity by standardising contractual terms. As a result, many market participants now perceive liquidity in the CDS market to be greater than that in the corporate bond market. In particular, short positions can be taken more easily, by buying protection in the CDS market. This has made it less costly to hedge or speculate in credit markets, or between equity and credit markets.



Controversy about the treatment of restructurings in default swaps ...

Although to date the vast majority of swaps written against defaulting firms have been exercised smoothly, controversy about which events constitute defaults – specifically, about the treatment of debt restructurings – could yet undermine the liquidity of the CDS market. Already the market is fragmented along regional lines. Whereas contracts based on the original 1999 documentation published by the International Swaps and Derivatives Association (ISDA) dominate trading in the European market, contracts based on the more restrictive 2001 revisions to the 1999 ISDA Credit Definitions dominate trading in the United States (Graph VI.12). The market fragmented further in mid-2002, following the exercise of default swaps on Xerox. The experience with Xerox led some of the largest sellers of credit protection, in particular financial guarantors and other insurance companies, to refuse to enter into contracts that included any form of restructuring as a default event. They argued that the loan refinancing that triggered the swaps on Xerox did not stem from a deterioration in the company's financial condition and therefore should not have been considered a default event. Of particular concern to sellers of protection was the possibility that participants in a lending syndicate might deliberately negotiate a restructuring with the intention of triggering a default and exercising a CDS.

... could undermine liquidity

In May 2003, trading in contracts containing yet another modification to the restructuring clause began, but it remains unclear whether the revised definition will lead to convergence. In Europe, buyers of credit protection, especially banks, prefer contracts that include a broad definition of restructuring because in Europe payment difficulties are typically resolved through informal negotiations between creditors and debtors. A formal declaration of bankruptcy tends to be associated with insolvency and so is infrequently sought. By contrast, in the United States, buyers of credit protection are willing to accept more restrictive definitions of restructuring because firms filing for bankruptcy under Chapter 11 are given an opportunity to restructure before being declared insolvent. Furthermore, the proposed New Basel Capital Accord has also influenced the treatment of debt restructurings, because it requires that CDSs intended to lower banks' regulatory capital requirements include as a default event restructurings that result in credit losses, unless the bank has control over the decision whether to restructure.

## External debt financing for emerging markets

Borrowing conditions in the international debt market mirrored those in the credit markets. Highly indebted countries lost market access in mid-2002 and then enjoyed a steady improvement in spreads beginning in mid-October. Political developments were the focus of investor attention in many emerging markets: in Brazil, Turkey and Ecuador, changes of government; in Venezuela and Nigeria, civil unrest; in Colombia and Indonesia, terrorist attacks; in Korea, threats to national security; and in central and eastern Europe, the conclusion of accession negotiations with the European Union. Nevertheless, at times global investors' changing attitude towards risk seemed to outweigh the influence of local events.



### Sources of contagion

Brazil and Turkey experienced the most serious deterioration in access to international debt markets during the period under review. Investors started selling off Brazilian assets in May 2002 as a presidential candidate perceived by investors to be unsupportive of market-oriented policies gained ground in the run-up to national elections (Graph VI.13). Similarly, concern over the health of Turkey's prime minister and the abrupt resignation of several cabinet ministers led to a flight from Turkish assets beginning in June. By late July, the stripped spread on Brazil's sovereign bonds had more than tripled, to 2,400 basis points, and the spread on Turkey's bonds had almost doubled, to 1,000 basis points.

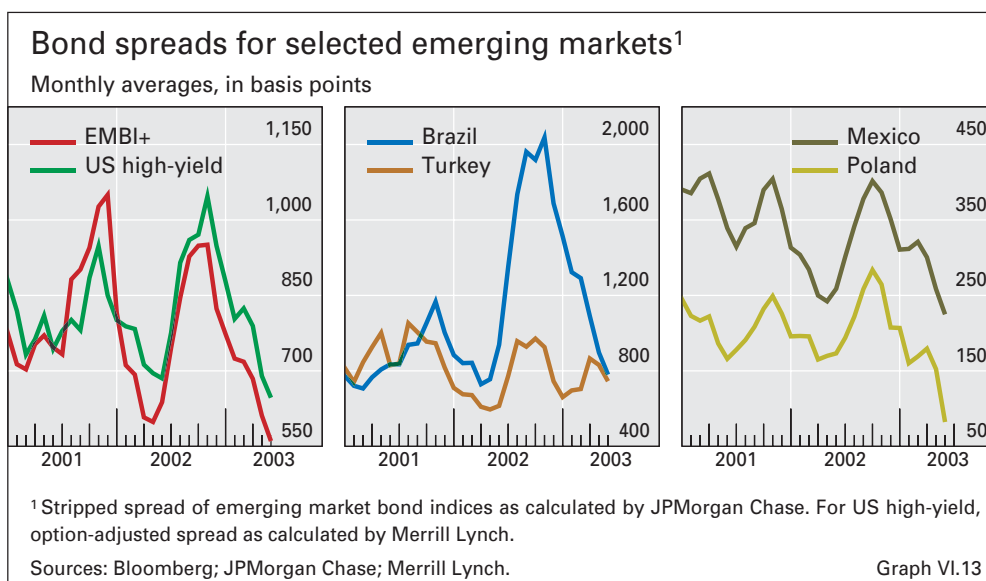
Turmoil in Brazilian and Turkish markets

The intervention of the IMF in early August, in the form of a new \$30 billion agreement with the Brazilian authorities and the disbursement of promised funds to Turkey, helped to stabilise debt and currency markets. Assurances from leading politicians about their commitment to fiscal discipline and structural reform eventually restored a degree of confidence, and Brazilian and Turkish markets rallied strongly in the last few months of 2002 and into 2003.

Despite the severity of the market turmoil experienced by Brazil and Turkey, events in those countries had little direct impact on other emerging markets. Discrimination by investors among credits did weaken somewhat during the sell-off in Brazil and Turkey. However, movements in emerging market bond spreads tended to be less correlated during 2002 than during previous financial crises.

The most important channel for contagion during the period under review was changes in the risk aversion of global investors. The repricing of credit risk following the earnings restatement by WorldCom in June 2002 caused credit spreads for many emerging market borrowers to increase. Indeed, in recent years risk premia throughout emerging markets have moved surprisingly closely with spreads on US high-yield debt despite different underlying fundamentals (Graph VI.13).

Global risk aversion overwhelmed local developments



While heavily indebted countries effectively lost access to international debt markets in mid-2002, even investment grade borrowers such as Mexico and Poland saw their sovereign spreads widen. Nevertheless, borrowing conditions remained relatively favourable for these borrowers because wider spreads were offset by lower US dollar and euro yields. Borrowers from emerging markets rated investment grade accounted for 59% of gross borrowing in international bond and loan markets in 2002, compared to 47% in 2001.

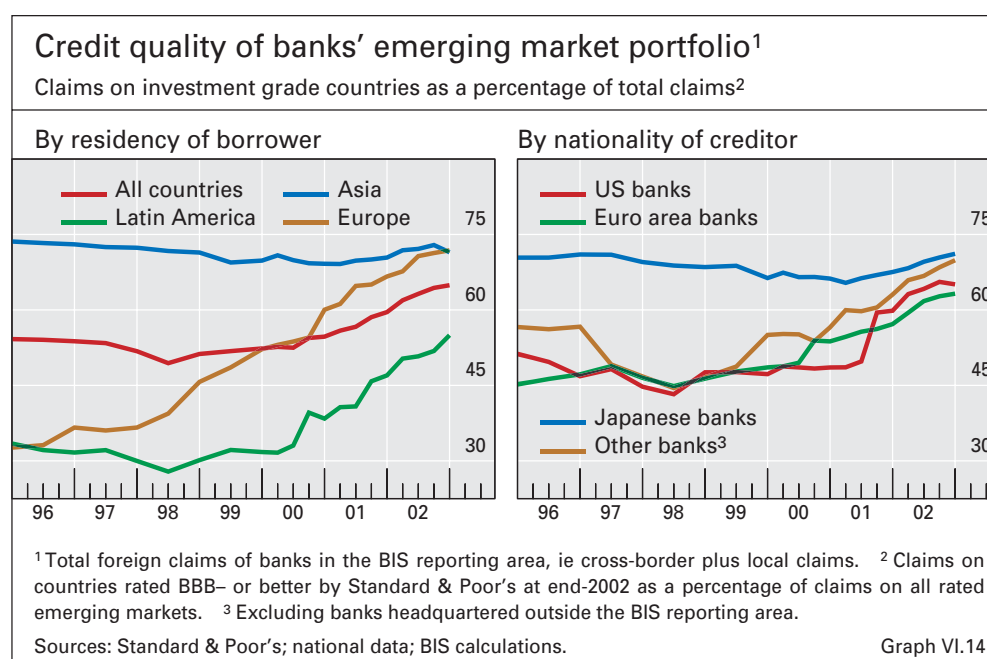
The general improvement in credit conditions in late 2002 and early 2003 enabled lower-rated borrowers to return to the international debt market. Indeed, the low level of yields on safe, liquid US dollar instruments made emerging market debt especially attractive to investors. Mutual funds investing in emerging market debt saw record inflows in the early part of 2003, and several heavily indebted countries saw an influx of investors searching for a pickup in yield. These countries had taken difficult measures to strengthen their external position. Nevertheless, their access to international markets remained fragile. In particular, it was conditional on continued improvements in policies, the maintenance of macroeconomic stability and disbursements of promised funds.

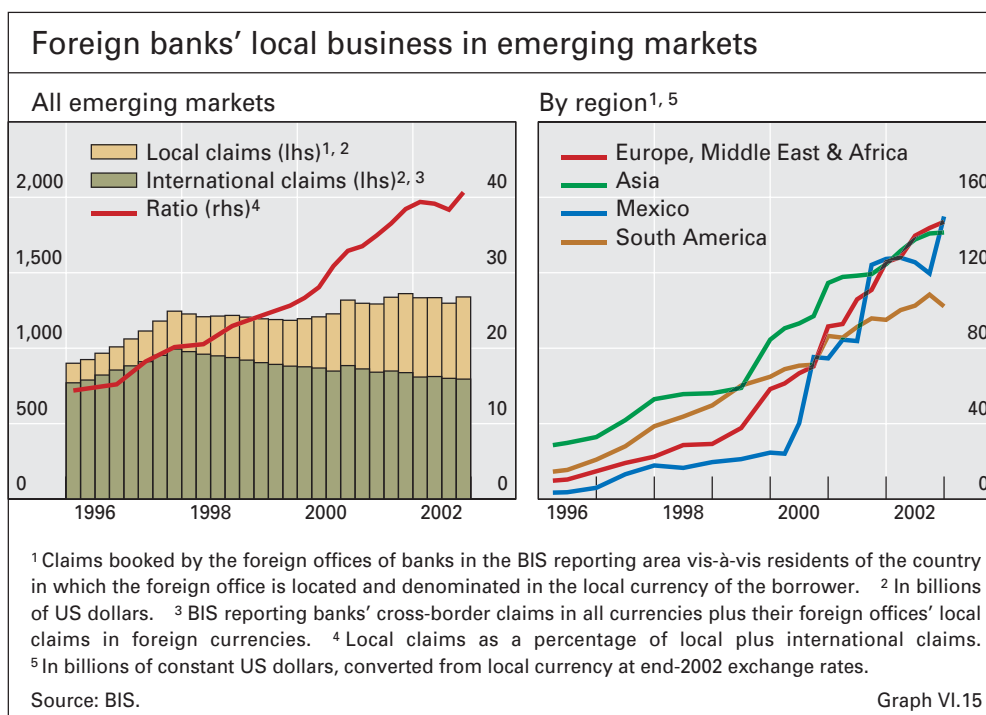
*Banks shifted towards better-rated credits*

Shifts in banks' emerging market portfolio illustrate the extent to which lower-quality credits lost access to international markets in 2002. Claims on countries rated investment grade rose from 60% of banks' total foreign claims on emerging markets at the end of 2001 to 65% at the end of 2002 (Graph VI.14). Cutbacks in credit to Brazil and other countries in South America explain much of the increase. In other regions too there was a shift towards better-rated borrowers. Furthermore, the shift was visible across

Fragile improvement in market access in early 2003

Banks cut back cross-border credit to lower-rated borrowers ...





different banking systems, with Asian, European and North American banks all reducing their exposure to non-investment grade credits.

While cutting back cross-border credit to lower-quality borrowers, banks did not compensate by increasing lending to higher-quality borrowers. Overall, banks' cross-border claims on emerging markets contracted for the fifth consecutive year. However, some regions did benefit from new cross-border credit, with banks stepping up their claims on EU accession countries in particular. In other regions, most notably Asia, demand for external credit remained weak.

At the same time, banks continued to expand their local presence in emerging markets. The experience in Argentina had raised questions about the future activities of foreign banks in emerging markets, including their willingness to engage in locally funded business. Beginning in the mid-1990s, foreign banks had greatly expanded their local activity, and by the end of 2001 local claims in local currencies accounted for 38% of banks' claims on emerging markets (Graph VI.15). Following the crisis in Argentina, some banks did scale back their operations in South America. However, this was more than offset by the growth of local activity in Mexico, central and eastern Europe and East Asia. As a result, local claims continued to rise, equalling 41% of total claims on emerging markets at the end of 2002.

... but continued to expand their local lending activities

## The puzzle of housing prices

Developments in the equity market hold significant clues about the future behaviour of housing prices. Equity holdings and housing are the largest components of household wealth in developed countries, and their values tend to move together over long periods. Indeed, one of the most striking

patterns in many developed countries over the last 30 years is that a price peak in equity markets tends to be followed by a peak in housing markets. However, the lack of inflationary pressures in the current business cycle and the corresponding fall in interest rates following the recent equity price peaks has apparently altered this relationship.

Housing prices continued to rise despite equity market collapse ...

Three years after the equity market started to collapse, housing prices continued to rise in many countries. In the five years to end-2002, housing prices appreciated by at least 50% in the United Kingdom, Australia, Spain, the Netherlands and Ireland, and by more than 20% in the United States, Belgium and the Nordic countries. By the end of 2002, the year-over-year increase in inflation-adjusted housing prices was 23% in the United Kingdom, 16% in Australia and 5% in the United States. Housing prices in Canada, Denmark, Italy, Sweden and Spain continued to rise as well. In general, this growth was accompanied by a rapid rise in household debt (see Chapter II).

In late 2002 and early 2003, tentative signs began to emerge suggesting that housing markets were losing steam, and might even have peaked in some countries. In Australia, the growth rate in the number of residential units auctioned and sold in Sydney has declined since June 2002. In addition, the quarterly rate of growth in housing prices stabilised at around 3–4% in the last three quarters of 2002, having reached a maximum of 5% in the third quarter of 2001. Housing price growth also slowed in late 2002 in Spain, and actually turned negative in the Netherlands. In the United Kingdom, housing turnover peaked in the third quarter of 2002, and the quarterly growth rate in housing prices dropped from 8.2% in that quarter to just under 2% in the fourth. Moreover, prices at the high end of the UK real estate market came down significantly over the last year. The situation was less clear in the United States. The fourth quarter of 2002 saw the smallest quarterly rise in housing prices since 1997, and new construction permits for privately owned residential units fell by 7% from February to March 2003. However, new home sales picked up in March 2003 after dipping in January and February, and mortgage rates remained near 40-year lows.

... implying a longer than average lag between peaks

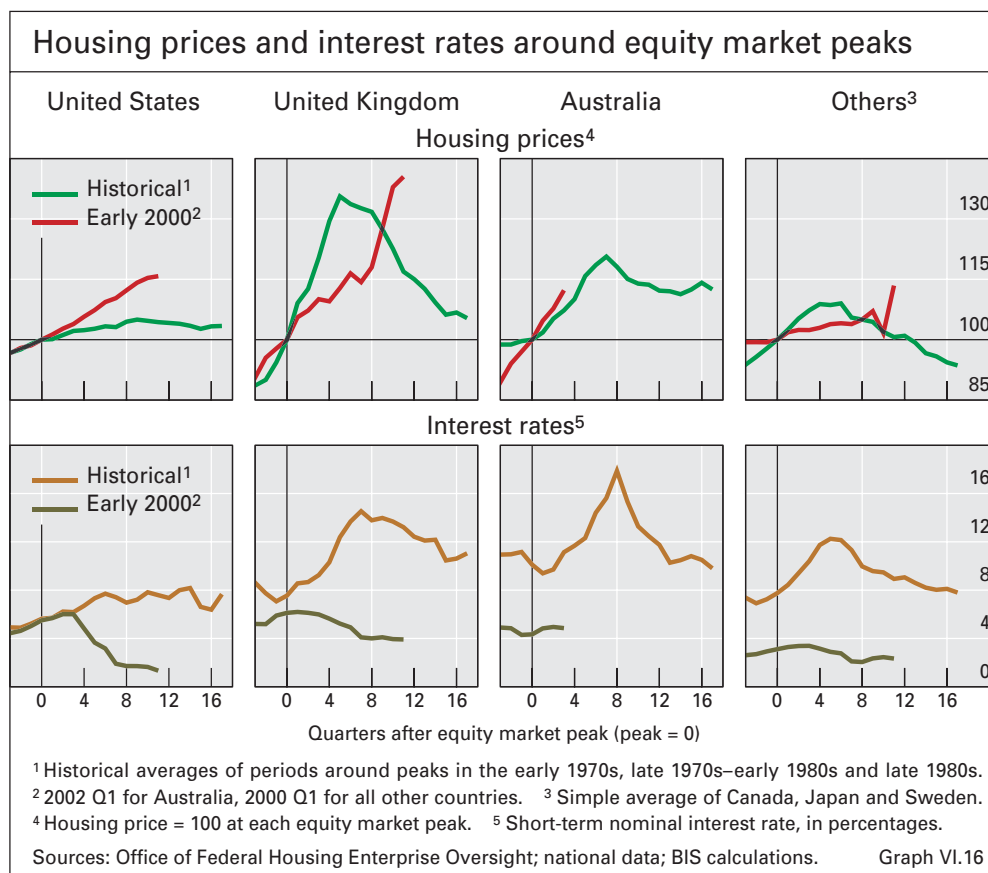
Even if housing prices were to peak in the near future, this would nonetheless imply a longer than average lag between equity and housing market peaks by historical standards. As shown in Graph VI.16, peaks in housing prices have historically followed equity market peaks with a lag of approximately two and a half years. In a sample of 11 developed countries (Australia, Canada, Denmark, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom and the United States), 35 equity market peaks and 28 housing price peaks occurred between 1970 and end-2002. Between 1972 and 1976, all countries in the sample experienced at least one equity price peak, and nine countries also experienced a housing price peak. Again, between 1986 and 1990, equity markets peaked in nine countries, followed shortly by housing price peaks in eight of these. Statistical analysis indicates that there was roughly an 8% probability of experiencing a peak in housing prices in any one year during the sample period. However, this probability increased to 30% in the year following an equity price peak, and to 70% in the following three years.

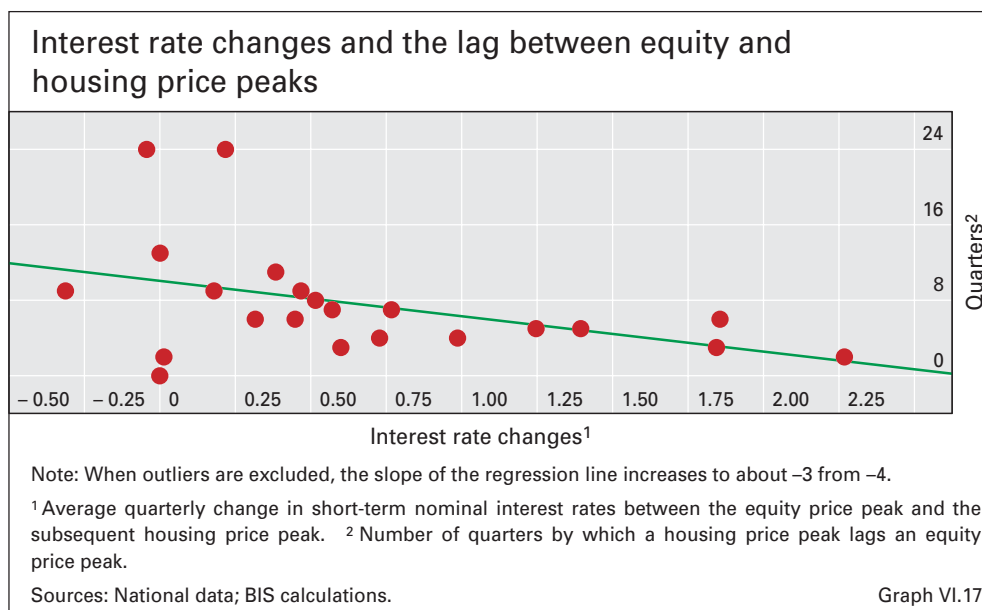
The continuing strength of housing prices seems to be related to the decline in interest rates. In general, inflationary pressures have been less prominent in the most recent cycle than in previous ones. As a result, monetary authorities have been able to use the additional room for manoeuvre to cut policy rates (see Chapter IV). As shown in Graph VI.16, short-term interest rates had generally risen in the two years following equity price peaks in the earlier periods, as monetary authorities responded to inflationary pressures. In the current cycle, however, interest rates in many countries fell considerably following the equity market collapse of 2000. In the United States, for example, nominal short-term rates fell from 5.6% in mid-2000 to 1.7% in mid-2002, while those in the United Kingdom fell from 6.1% to 4.1%, and those in Canada from 5.9% to 2.6% over the same period. Since housing is a long-lived asset, these lower interest rates helped to underpin housing prices, even in the face of a collapse in equity prices.

The longer lag between peaks in the current cycle ...

Evidence from previous periods lends support to the above argument. An econometric analysis of historical experience suggests that changes in interest rates had a significant effect on the lag between equity price and housing price peaks. In a sample of 22 pairs of equity and housing price peaks between 1970 and 1999, the average lag between peaks was roughly nine quarters. However, an average quarterly drop of 25 basis points in the short-term interest rate following an equity price peak would have delayed the housing price peak by approximately one quarter (Graph VI.17). Taken at face value, these results imply that the 475 basis point cut in policy rates in

... has mostly reflected the drop in nominal interest rates





the United States between mid-2000 and mid-2002 would have lengthened the average lag between equity and housing price peaks by just over two quarters.

Institutional factors are likely to have affected the degree to which interest rates have influenced housing prices in different countries. For example, the duration of the interest rate that anchors mortgage rates differs across countries. In particular, mortgages in the United Kingdom and Australia are predominantly based on three-month rates, while those in Canada are based on rates with maturities of one year or less, making housing prices generally more responsive to short-term interest rates in these countries. The majority of mortgage financing is tied to long-term interest rates in Germany, Japan, Sweden, the United States and, in particular, the Netherlands. In addition, mortgages in the United States are notable for the fact that they can be refinanced with little penalty, in effect giving mortgage borrowers a valuable option and making housing prices sensitive to the volatility as well as the level of long-term interest rates; innovations in mortgage processing technology recently introduced by Fannie Mae and Freddie Mac have made refinancing easier and less costly. Other things being equal, the sharp fall in short-term interest rates in 2001 would have had relatively more impact on housing prices in countries with mortgages tied to short rates, while the flattening of the yield curve in 2002 would have had more influence in countries with mortgages tied to long rates.