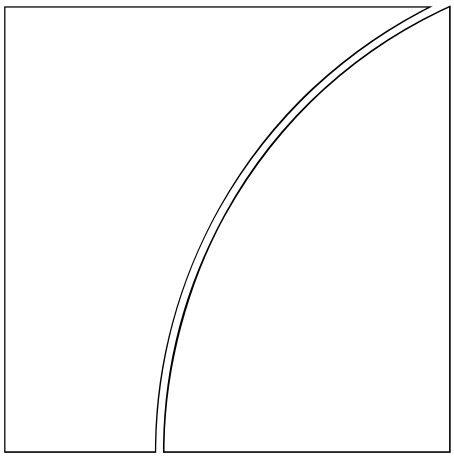
BANK FOR INTERNATIONAL SETTLEMENTS

# BIS Quarterly Review

June 2001



## International banking and financial market developments

BIS Quarterly Review
Monetary and Economic Department



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## Special features

## Notations used in this Review

| | |
|---|---|
| e | estimated |
| lhs, rhs | left-hand scale, right-hand scale |
| billion | thousand million |
| .. | not available |
| . | not applicable |
| – | nil or negligible |
| $ | US dollar unless specified otherwise |

Differences in totals are due to rounding.

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# 1. Overview: are markets looking beyond the slowdown?

Swings in market sentiment were particularly pronounced in the early months of 2001. While it was clear that the US economy had begun to slow substantially, market participants vacillated in their views about the likely length and depth of the slowdown, the extent to which it would spread to Europe and elsewhere, and its ramifications for corporate earnings and credit quality. Inter-meeting policy rate cuts by the US Federal Reserve buoyed the markets in general, while company profit warnings tended to depress the equity markets. By April, investors seemed to be confident of a brief slowdown and to be looking beyond it to a strong recovery in corporate earnings.

Compared to equity investors, participants in fixed income markets seemed less prone to change their views. As short-term interest rates fell against a background of confidence in an imminent recovery, yield curves in both US dollars and euros tended to become progressively steeper and credit spreads narrower. The resulting favourable conditions in the long-term debt market brought low- and medium-rated corporate issuers back in force. A few emerging market borrowers also returned to the market. A large part of the funds raised in the market went to repay bank and commercial paper debt assumed in the fourth quarter of 2000.

International banks tended not to recycle these repayments into new lending. Having reluctantly accommodated the short-term financing needs of low-rated borrowers at the end of 2000, the banks pulled back from credit extension in the first quarter of 2001. Syndicated lending, in particular, fell sharply. Net issuance of commercial paper, which usually requires a backup credit facility from a bank, was weak on the international market and negative in the US market.

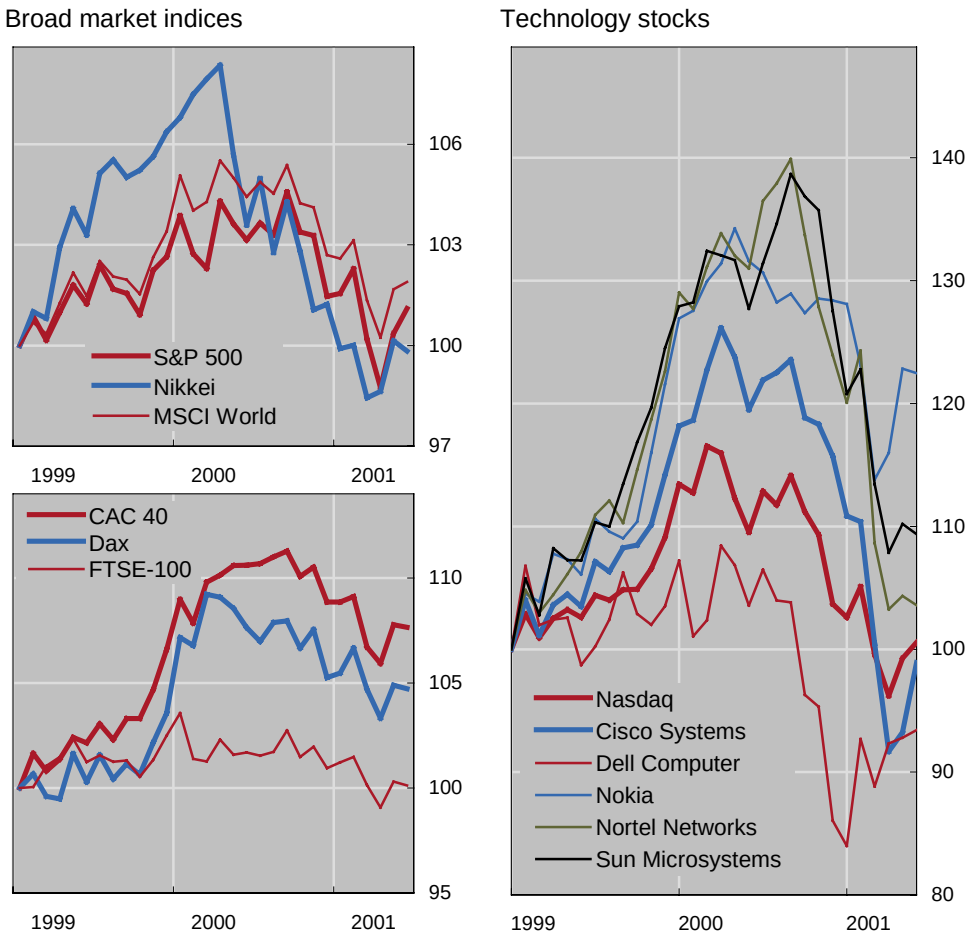
## Swings in sentiment buffet equity markets

Stock price correction continues …

The early months of 2001 extended the global stock price correction that began about a year ago. Having declined by 13% from April to December 2000, the MSCI World Index slid a further 5% from January to May 2001 (Graph 1.1). Technology stocks were the hardest hit, with the Nasdaq

## Stock prices and market indices

Month-end data, December 1998 = 100 (logarithmic scale)[1]




[1] Index calculated as the natural log of total return index divided by the log of 100, and then rebased to 100.

Sources: Bloomberg; Datastream. Graph 1.1

tumbling 15% in the first five months of 2001 for a cumulative decline of 45% since April last year.

While most major equity markets around the world moved together during the first few months of 2001, the Tokyo market stood out by going its own way. A de facto return to zero policy rates in March and a new government in April brought renewed strength to the market. The Nikkei average surged by 15% in March and April, outperforming the other national indices.

... interrupted by bouts of optimism

The global slide in stock prices did not proceed uninterrupted. Price movements were characterised by sharp and sudden reversals as investor sentiment swung from optimism in January, to pessimism in February and March, back to optimism in April and again to a gloomier outlook in mid-May. The bouts of optimism were associated with surprise policy rate cuts, while those of pessimism were marked by news about corporate earnings and macroeconomic developments.

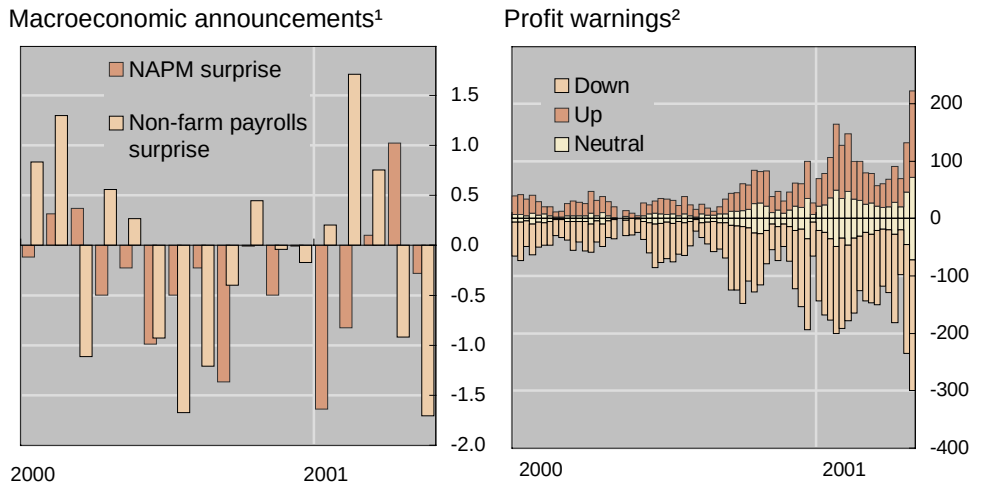
High operating leverage hits earnings

The periods of depressed equity markets were characterised by investor unease at the apparent sensitivity of corporate earnings to the performance of the global economy. A spate of profit warnings in February and March suggested a decline in corporate earnings that was deeper than investors had anticipated, particularly in the case of technology firms (Graph 1.2). In May, a profit warning by Sun Microsystems set off a round of price declines. The economic slowdown exposed two weaknesses of these firms. First, they had overestimated the demand for their products and had overinvested in development, equipment and inventory. Second, a salient feature of their production processes has been high fixed costs and low variable costs. This high operating leverage meant that production cutbacks in response to large declines in sales did not result in comparable declines in costs. For both these reasons, technology firms tended to report a more pronounced collapse in earnings than other firms.

Equity markets welcome surprise monetary policy moves ...

The periods of buoyant markets pointed to the power of surprise policy rate cuts. In the United States, the Federal Reserve twice announced a 50 basis point reduction in its federal funds target rate outside a scheduled Federal Open Market Committee (FOMC) meeting. Both actions, the first on 3 January and the second on 18 April, caught market participants by surprise and generated global market rallies (Table 1.1). The announcements of three other policy rate cuts were different in that they came at the time of FOMC meetings, and the news failed to boost the markets. On 19 March, the Bank of Japan said that it would shift to a "quantitative easing" strategy, effectively pushing its policy rate back to zero. Following this unanticipated shift, the Nikkei gained 7% on the first trading day. Investors apparently took these surprise actions as signals that the central banks were determined to revive their respective economies. Other policy rate cuts not anticipated by market

## Public information in the US stock market




¹ Normalised announcement surprises (for zero mean and unit variances), based on the difference between realised numbers and consensus forecasts. ² Number of US companies issuing profit warnings during the week.

Sources: Bloomberg; BIS calculations. Graph 1.2

participants did not seem to send such a message and thus had smaller effects on stock markets. On 10 May, for example, the European Central Bank and the Bank of England both reduced their policy rates with little warning, but equity market participants seemed to shrug off these actions. It should be noted, however, that there was no suggestion that the central banks intended to influence asset prices.

… but are sceptical about others

The periods of market rallies also revealed an abiding optimism about corporate prospects beyond the current slowdown, as investors proved eager to "see through" the current slowdown towards an expected pickup in profits in the future. A sign of this optimism was a tendency of equity investors to welcome the mere absence of bad news. On 4 April, for example, the news that Dell Computer would meet its much reduced earnings estimate sent the Nasdaq Composite soaring by 9% and the MSCI World Index by 3% in a single day. In previous periods, such news would have depressed stock prices, as investors would have expected the company to exceed the estimate. In April 2001, investors increasingly held the belief that the global slowdown would be short and that recovery would restore strong growth in corporate earnings. Indeed, the market rally that month brought the prices for stocks in the S&P 500 index to 27 times trailing earnings, a price/earnings multiple that was nearly double the historical average. Optimism ran even higher for technology stocks, with the Nasdaq Composite giving a price/earnings multiple that was six times that of the S&P 500.

Anticipation of a prompt recovery lifts price/earnings multiples

One interesting development during the period under review was the unusually swift response of US mutual fund investors to market performance. For the first time since the Russian debt moratorium in August 1998, these investors pulled funds out of US equity mutual funds. As stock prices fell in February and March 2001, net outflows from these funds amounted to $24 billion during those two months (Graph 1.3) Investors transferred some of the money to bond mutual funds and some to money market mutual funds.

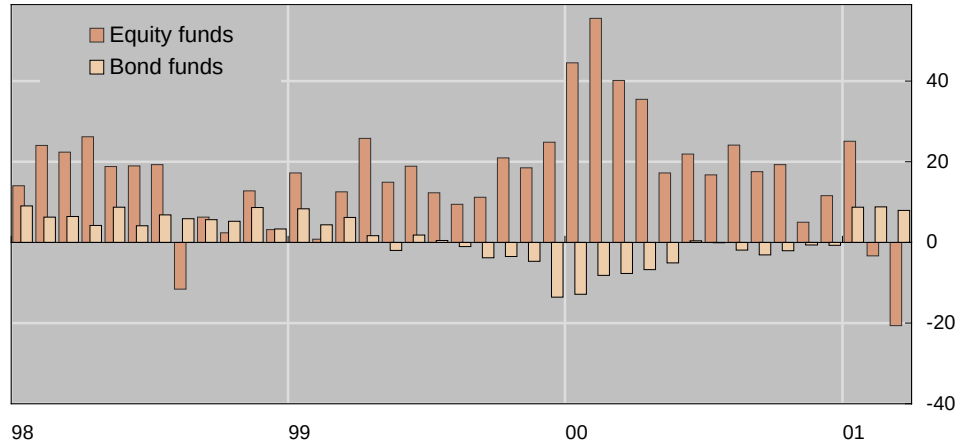
Monetary policy rate cuts and stock prices in 2001

| Date | Monetary authority | Policy rate cut (in basis points) | Market index | One-day price move (percentage change) |
|---|---|---|---|---|
| 3 January | Federal Reserve | 50 | Nasdaq | 14.2 |
| 31 January | Federal Reserve | 50 | Nasdaq | – 2.3 |
| 8 February | Bank of England | 25 | FTSE 100 | – 0.3 |
| 1 March | Bank of Japan | 10 | Nikkei | – 3.3 |
| 19 March | Bank of Japan | 15 | Nikkei | 7.5 |
| 20 March | Federal Reserve | 50 | Nasdaq | – 4.8 |
| 5 April | Bank of England | 25 | FTSE 100 | 1.6 |
| 18 April | Federal Reserve | 50 | Nasdaq | 8.1 |
| 10 May | Bank of England | 25 | FTSE 100 | 1.2 |
| 10 May | European Central Bank | 25 | DJ Euro Stoxx | 1.9 |
| 15 May | Federal Reserve | 50 | Nasdaq | 0.2 |

Table 1.1

## US mutual fund flows

Monthly net cash flows in billions of US dollars




Source: Investment Company Institute. Graph 1.3

## Yield curves suggest growing optimism

The dollar and euro yield curves became progressively steeper in the early part half of 2001, with most of the steepening reflecting declines in short-term rates rather than increases at the long end (Graph 1.4). While there was a dip in long rates in both dollars and euros in March, as some of the gloom affecting equity markets began to weigh on bond markets, this was reversed in April, with bond markets returning to the view that any slowdown in the United States or Europe would be relatively short-lived. The steepness of the US dollar curve beyond the one-year maturity suggested market confidence in the effectiveness of policy rate cuts in spurring a recovery in growth. However, the rise in rates at the long end have may also indicated some concern about inflation risk.

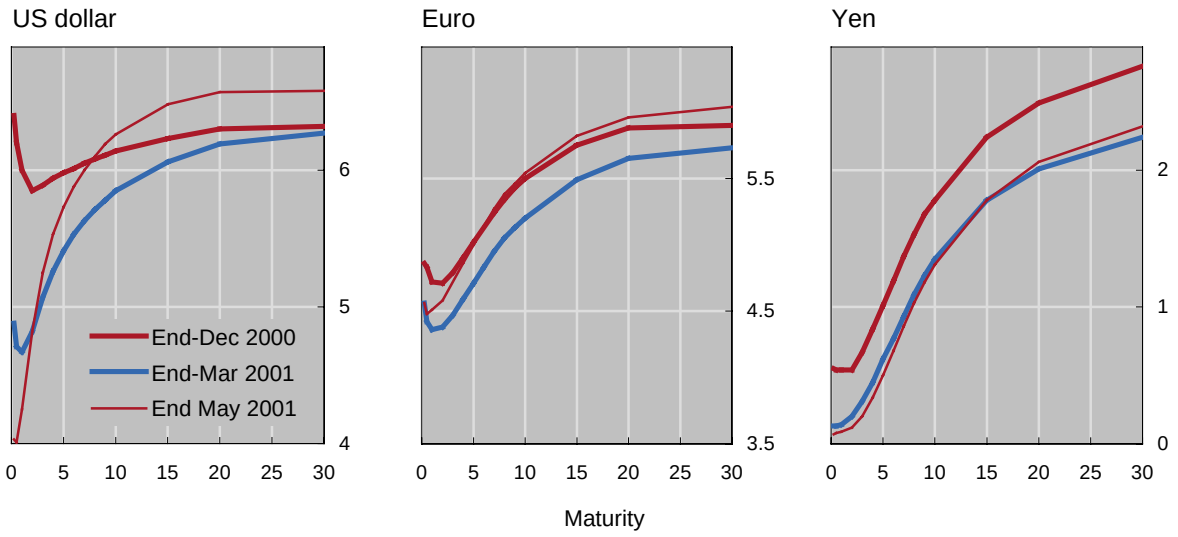
Low risk premia in yield curves suggest high confidence

The changing shape of the yield curve at the short end tracked closely the evolution of market views about the responses of monetary authorities to the slowdown. A pronounced dip in the curve around the intermediate maturities was unusual in that, during previous periods of monetary easing, risk premia had tended to keep the curve relatively flat. The dip suggested the absence of such premia, indicating that market participants held their expectations with a high degree of confidence. In January and February, the curves incorporated the anticipation of monetary easing in both the United States and the euro zone, with policy rates bottoming out in late 2001. By mid-May the downward slope in the curve near the short end had all but disappeared. In the case of the dollar curve, this was because the Fed had cut rates aggressively, to the point where the market was willing to wait and see how macroeconomic indicators developed before pricing further rate cuts into the yield curve.

In the case of the euro zone, where the steepening movement had in any case been less pronounced, two phases can be discerned. From February to

## Yield curves for interest rate swaps

In percentages




Source: Bloomberg.

Graph 1.4

early May, expectations that the Eurosystem would follow a similar strategy to the Fed were gradually abandoned, resulting in a progressive rise and flattening of the short-term forward curve. After the surprise rate cut on 10 May, the market revised its outlook for euro short-term rates downwards, but long rates remained little changed.

Currency markets support the dollar regardless of growth scenarios

In currency markets, traders found reasons to support the US dollar under both optimistic and pessimistic scenarios. A rapid, "V-shaped" recovery was expected to result in a resumption of strong US GDP and productivity growth and a revival in US equity prices, thus reinstating the factors that have supported the dollar against other currencies over the past two years. A more lengthy US slowdown, ironically, may also have been considered positive for the dollar, because of safe haven effects and the perception that this would mean substantially slower growth and lower investment returns elsewhere. Thus, the dollar strengthened from 0.94 to less than 0.88 to the euro in March, at the same time that US (and other) stock markets fell to recent lows. Yet when global equity markets recovered in April and May, the dollar remained in a trading range of 0.88-0.90 to the euro, before subsequently strengthening further.

## Corporate bond investors look past the slowdown but bank lenders are wary

While equity investors struggled to assess the outlook for profitability, corporate bond investors seemed to be less prone to swings in sentiment and instead appeared to adopt a relatively optimistic view of growth and credit conditions. In part this reflected the fact that bond markets had gone further in incorporating a negative growth outlook in the final months of 2000. From a

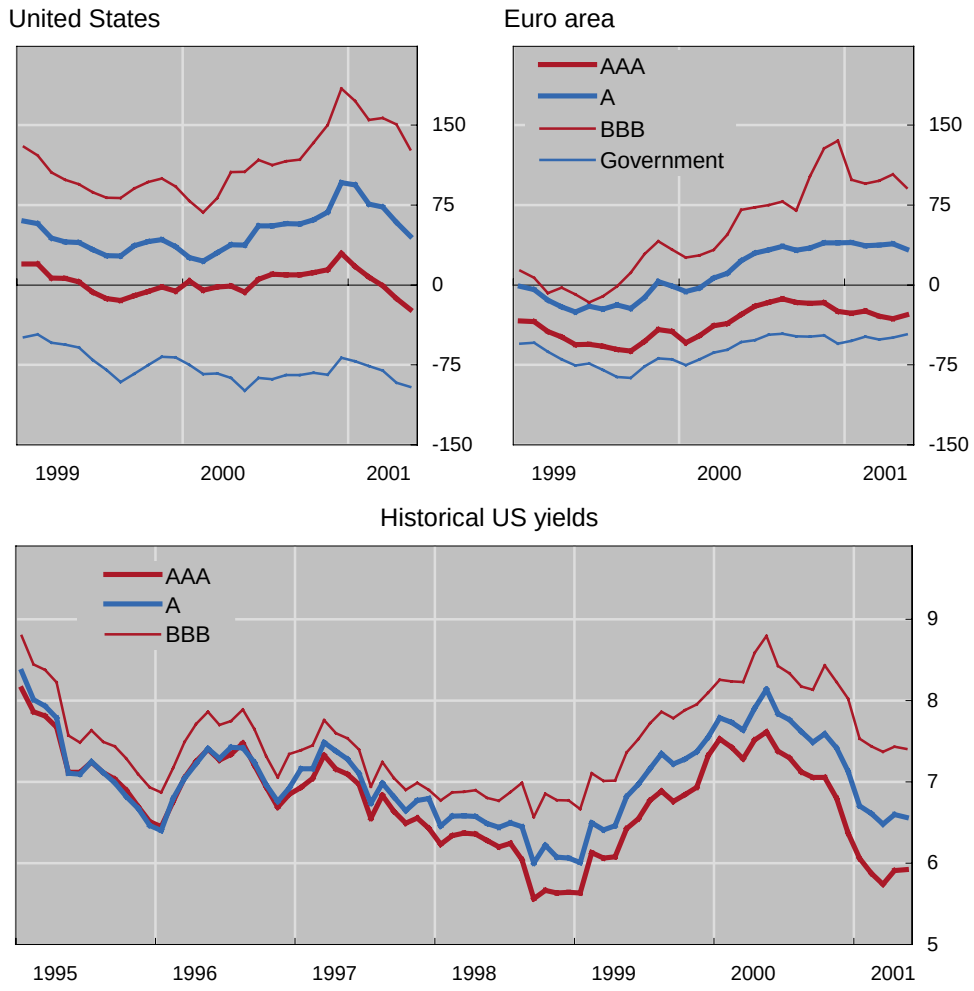
longer-term perspective, bond markets had begun to incorporate expectations of increased corporate credit risk since the financial crisis of autumn 1998. The gloomier earnings outlook of late 2000 and early 2001, even when reinforced by profit warnings, thus had less of an impact on bond markets than on stock markets.

Credit spreads narrow, contributing to a decline in overall credit costs ...

Corporate credit spreads on most debt categories narrowed sharply in January, and more slowly in subsequent months (Graph 1.5). While high-yield spreads did not narrow as consistently, and while the narrowing of spreads on other debt categories merely brought them back to their levels of mid-2000, the fact that underlying risk-free rates also fell meant that the overall price of corporate credit declined sharply in the first quarter of 2001. The Merrill Lynch A and BBB yield indices fell to roughly 6.5% and 7.5% respectively, levels not seen since the first half of 1999. However, some borrowers, notably telecoms

## Corporate and government bond spreads[1]

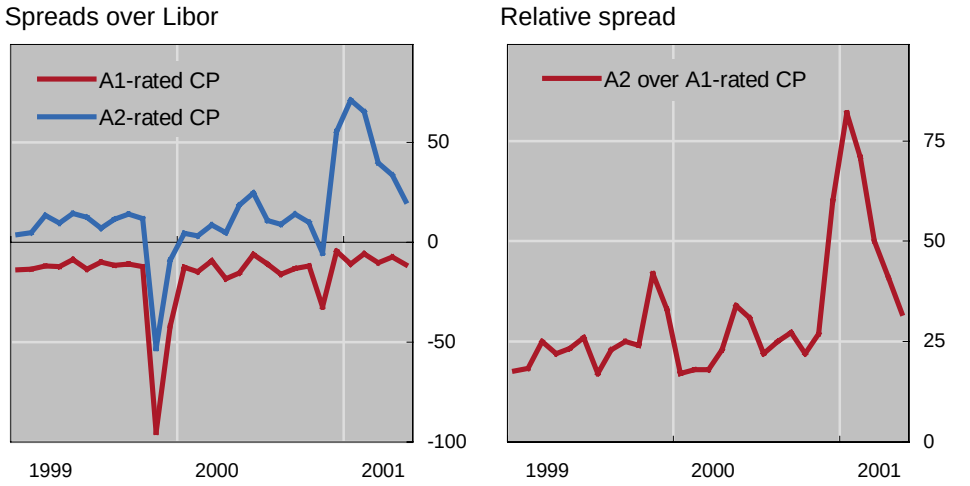
Month-end data




[1] Bond index yields against 10-year swap rates, in basis points, except for historical US yields (in %).

Sources: Bloomberg; Merrill Lynch; national data. Graph 1.5

## US commercial paper spreads[1]




[1] On 30-day yields, in basis points, at month-end.

Sources: Bloomberg; Datastream; BIS calculations. Graph 1.6

companies, experienced significantly higher secondary market yields than others in the same credit rating category. Moreover, spreads stood at very high levels by historical standards. The spreads of single-A and triple-B yields over US dollar swaps remained at levels last seen only twice in the past decade: at the beginning of 1991 and, briefly, in the autumn of 1998.

… despite declining stock prices and rising default rates …

Unusually, narrower spreads were juxtaposed with continued declines in stock prices for much of the first quarter. This does not necessarily mean, however, that the bond market was projecting lower default probabilities at the same time as the equity market was reducing corporate earnings forecasts. Indeed, according to Moody's, some 7.5% of speculative grade issuers defaulted between May 2000 and April 2001, while the number of issuers downgraded exceeded upgrades by around 2%. Moody's now forecasts the speculative grade default rate to reach 10% for 2001 as a whole. If this forecast proves accurate, it would represent the highest level for this rate since 1991, when slightly more than 10% of speculative grade issuers defaulted.

… as investors show increased tolerance of corporate credit risk

Instead, narrower corporate spreads reflected in part a renewed willingness among investors to increase their exposure to corporate credit risk. In the United States, another factor contributing to narrower spreads may have been a fall in the scarcity premium attached to government securities, as a result of the progress of the new administration in implementing a fiscal policy that was expected to lead to a slower reduction of outstanding debt than the market had previously assumed. The equity market's retreat in February and March was thus not associated with a "flight to quality" of the kind seen in autumn 1998 or, to a milder degree, in the run-up to the millennium changeover. Rather than switching from risky securities of all types to government bonds as in the past, on this occasion many investors, including

holders of US mutual funds, seem to have switched from equities to corporate bonds (Graph 1.3).

Non-AAA borrowers respond quickly with increased long-term issuance

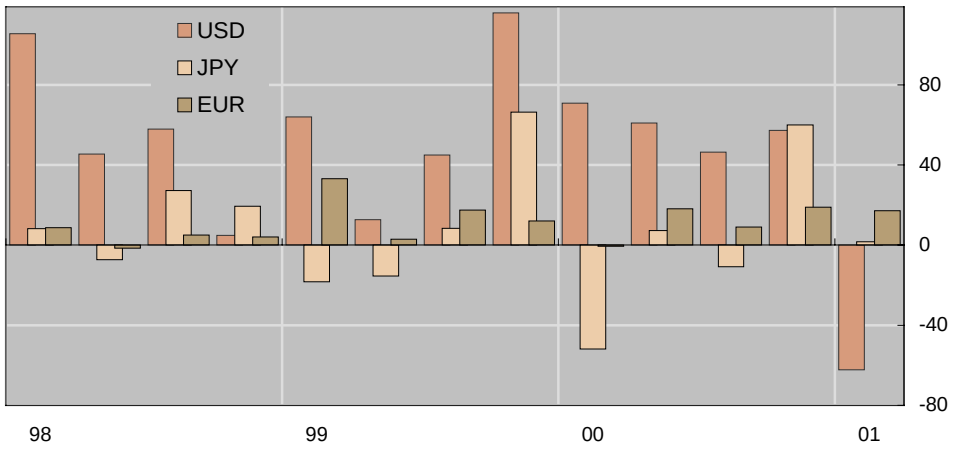
The revival of investor interest contributed to a sharp increase in long-term debt issuance by non-AAA-rated coporates in the first quarter (see Section 3). Corporations were especially eager to issue bonds given the cooling of investor interest in new equity offerings. Faced with persistently high and volatile commercial paper spreads (Graph 1.6) and a sceptical attitude on the part of bank lenders, many companies took advantage of their revived access to debt markets to reduce their CP and bank debt. Telecoms companies, facing large debts related to licence fees as well as the need to construct or upgrade their networks, were especially quick to take advantage of the improved financing conditions.

Bank lenders are cautious ...

In contrast to bond investors, bank lenders appear to have adopted a cautious approach towards taking on new credit exposures in the early months of 2001. Banks had incurred unintended exposures towards the end of 2000, when many borrowers found themselves unable to refinance bridge loans in the bond market and others drew on bank backup lines. While the revival of the corporate bond markets allowed some of these debts to be repaid in 2001, banks were reluctant to extend new loans out of concern about declining corporate credit quality. New international syndicated credit facilities fell by 20% in the first quarter on a seasonally adjusted basis, with the amount of CP backup facilities falling particularly sharply (see “Syndicated credits: large amounts of telecoms facilities mature in 2001” on page 21). Surveys of senior bank loan officers by the Federal Reserve in January, March and May found that roughly half had tightened standards on commercial and industrial loans to large firms in the first half of 2001, a fraction that has risen considerably since last year. In parallel with the corporate credit spreads cited earlier,

## Domestic and international net issuance of commercial paper[1]

In billions of US dollars




[1] Data on domestic issuance for the first quarter of 2001 are preliminary.

Sources: Euroclear; national authorities. Graph 1.7

this indicator of credit market tightness had last stood at comparable levels in late 1990 and early 1991.

… contributing to weak commercial paper issuance

Perhaps as a consequence of banks' increased wariness about credit risk, issuance of commercial paper, which usually requires a bank backup line, slowed in the first quarter. Net issuance of CP on the international market ("euro-CP") fell from $27 billion in the fourth quarter of 2000 to $16 billion in the first quarter of 2001 (Graph 1.7), while aggregate net issuance on the largest domestic markets was negative. Spreads between higher and lower-quality commercial paper issues, which had soared at the end of 2000, remained turbulent during the first quarter, after two California electricity utilities defaulted on their obligations and other large borrowers faced repayment difficulties. By the end of the quarter, however, these spreads had returned to their usual levels.

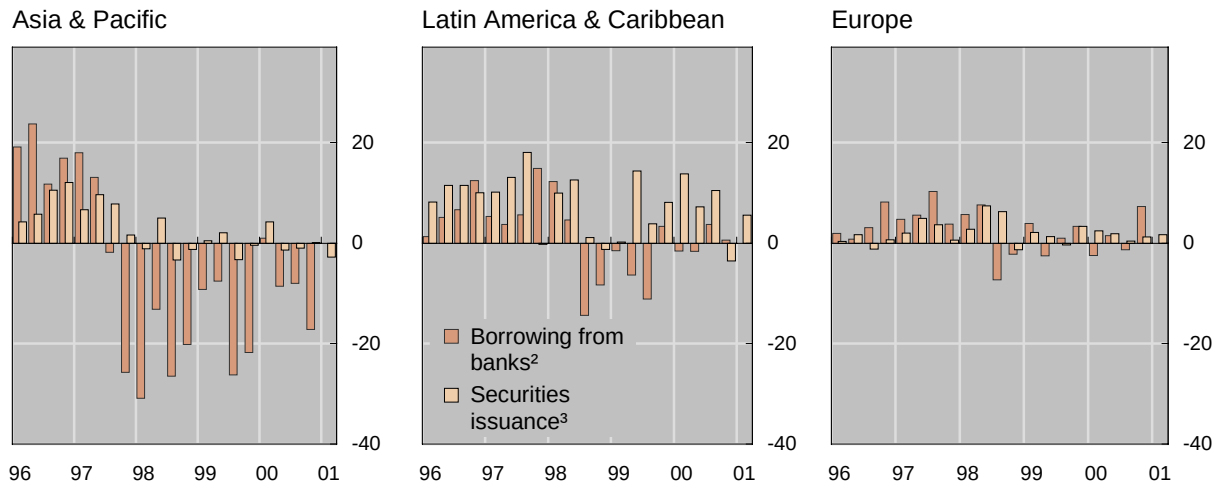
## Borrowing by emerging economies revives in a multi-tier market

Flows to emerging markets rise …

Financing flows to most emerging economies in the first quarter of 2001 benefited from the revived risk appetites of bond investors in the industrial countries. Net securities issuance was again positive in the first quarter, after having turned negative in the fourth quarter of 2000 (Graph 1.8). However, securities flows remained moderate in comparison with the levels that had prevailed in the first three quarters of 2000. The low level of flows represents a continuation of the pattern of recent months. The emerging market countries had been net repayers of bank debt in the fourth quarter of 2000, and for the

### International bank and securities financing in emerging economies[1]

In billions of US dollars



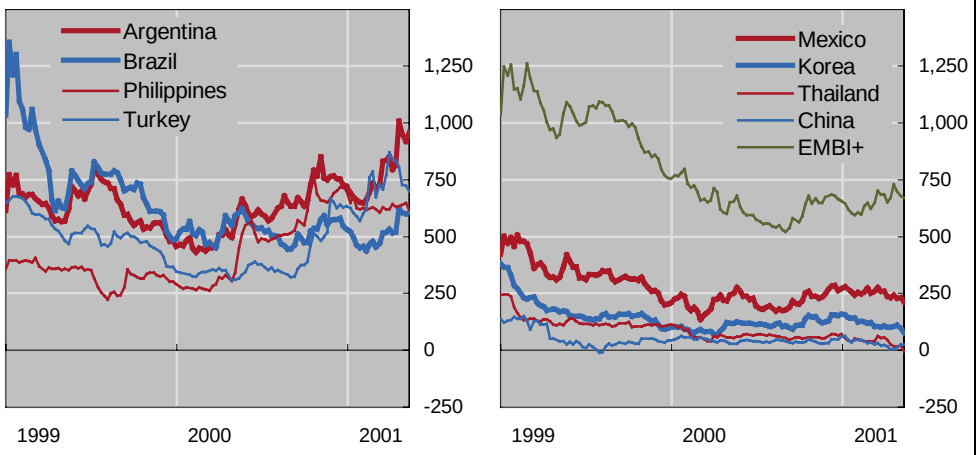

[1] See Annex Table `7A for a list of the countries included in each region. [2] Exchange rate adjusted changes in cross-border loans of BIS reporting banks. Data on bank lending are not yet available for the first quarter of 2001. [3] Net issues of international money market instruments, bonds and notes.

Sources: Bank of England; Capital DATA; Euroclear; ISMA; Thomson Financial Securities Data; national data; BIS locational banking statistics.

Graph 1.8

## Spreads of US dollar sovereign bonds over 10-year swap rates

Weekly averages, in basis points




Sources: Bloomberg; Datastream. Graph 1.9

year as a whole (see Section 2). In addition, oil exporters and East Asian economies placed large deposits with banks in the reporting area.

... but remain subdued

There are several reasons why the level of flows to emerging markets has remained relatively subdued. For one thing, many emerging market borrowers continued to benefit from current account surpluses and thus were not in need of external finance. Second, investors were wary of the impact of a slowdown in the US economy and continued weakness in Japan on growth in emerging economies, especially those that have been dependent on exports of electronic equipment. Markets appear to judge Asian countries as being vulnerable to the outlook for technology industries in the United States, while Latin American economies are exposed to broader shifts in equity market sentiment. A further weakening of the yen is also seen as a particularly salient risk for Asia. Third, banks in the industrial countries have increasingly sought credit exposures in emerging economies by purchasing local banks, rather than through cross-border lending.

A final factor that may have dampened lending to emerging economies was the continued economic turmoil in certain countries, most notably Argentina and Turkey. A comparison of secondary market spreads suggests that, while investors continue to attach relatively low risk premia to investment grade borrowers such as Mexico, Korea and Thailand, they have become somewhat more averse to the debt of lower-rated borrowers, including Brazil and the Philippines (Graph 1.9). As already noted, this has not yet had an appreciable effect on market access, if only because external financing needs have tended to be low. However, if investors and bank lenders remain averse to this risk category, this may cause problems for such borrowers when they next find themselves in need of ready access to international capital markets.

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# 2. The international banking market

A remarkable surge of interbank activity in the fourth quarter of 2000 capped a near-record year in the international banking market. According to the locational banking statistics, cross-border claims increased by $400 billion, $302 billion of which comprised interbank lending.[1] Much of this interbank activity was driven by efforts to recycle large inflows from emerging economies to borrowers in the industrial countries. Oil-exporting countries and emerging economies in East Asia were the main sources of funds, while borrowers in the United States were among the principal recipients.

The surge in fourth quarter activity brought the rise in cross-border claims for the year to $1.2 trillion, a quadrupling over 1999 levels and only slightly below 1997 levels. This headline figure is inflated by interbank activity, which is typically characterised by a multiplier process. Loans to non-bank borrowers actually slowed in 2000, to $55 billion from $107 billion in 1999. Cross-border purchases of securities continued their upward trend, driven by a sixfold increase in purchases of securities issued by US residents. By the end of 2000, securities accounted for 23% of banks' outstanding cross-border claims, up from 15% in 1997.

Purchases of securities were a bright spot in what was otherwise another year of subdued international bank flows to emerging economies. Supported by foreign banks' acquisitions of local financial institutions, especially Latin American banks, securities flows rose to $26 billion in 2000 from $6 billion the previous year. However, loans to emerging economies, in particular to Asia, continued to contract, by $36 billion. Even though total claims contracted at a much slower pace than in previous years, net outflows from emerging economies to international banks during 2000 exceeded average annual outflows during the financial crises of 1997-99 because of large cross-border deposit flows from emerging economies.

[1] The discussion of international bank flows that follows mainly relates to the BIS locational banking statistics, which are based on the residence of reporting banks and adjusted for changes in exchange rates. These data are somewhat different from the BIS consolidated banking statistics, the latest of which were published in a separate BIS press release on 7 May 2001. For an explanation of the differences between the two sets of statistics, see "Introduction to the BIS locational and consolidated international banking statistics" in the Statistical Annex to this publication.

## Main features of cross-border claims of BIS reporting banks

Exchange rate adjusted changes in amounts outstanding, in billions of US dollars

| | 1999 | 2000 | 1999 | 2000 | | | | Stocks at end-Dec 2000 |
|---|---|---|---|---|---|---|---|---|
| | Year | Year | Q4 | Q1 | Q2 | Q3 | Q4 | |
| Total claims | 276.1 | 1,171.8 | 125.7 | 445.1 | 116.9 | 210.1 | 399.7 | 10,764.4 |
| Interbank loans[1] | −214.3 | 658.7 | − 1.1 | 285.2 | −23.4 | 94.7 | 302.2 | 6,262.8 |
| Loans to non-banks | 106.7 | 55.0 | 34.4 | 26.5 | − 1.4 | 17.7 | 12.2 | 2,069.9 |
| Securities[2] | 383.7 | 458.0 | 92.4 | 133.3 | 141.8 | 97.7 | 85.2 | 2,431.7 |
| On developed countries | 467.6 | 1,114.1 | 112.9 | 486.1 | 116.8 | 177.7 | 333.5 | 8,394.2 |
| *of which: intra-euro*[3] | *258.7* | *140.7* | *− 1.7* | *108.1* | *−13.5* | *26.2* | *19.8* | *1,573.4* |
| Interbank loans[1] | 33.4 | 674.9 | − 0.5 | 337.6 | 8.4 | 86.1 | 242.8 | 4,990.5 |
| Loans to non-banks | 117.0 | 69.1 | 39.6 | 41.5 | −13.2 | 23.5 | 17.4 | 1,395.1 |
| Securities[2] | 317.2 | 370.1 | 73.9 | 107.0 | 121.7 | 68.2 | 73.2 | 2,008.6 |
| On offshore centres | −102.6 | 50.4 | 32.0 | −50.1 | 5.5 | 27.5 | 67.5 | 1,257.6 |
| Interbank loans[1] | −139.7 | − 18.8 | 35.9 | −63.5 | −17.6 | 13.6 | 48.6 | 843.3 |
| Loans to non-banks | 9.3 | 18.4 | −11.0 | − 0.9 | 12.6 | − 2.0 | 8.7 | 247.0 |
| Securities[2] | 27.7 | 50.8 | 7.1 | 14.3 | 10.4 | 15.8 | 10.3 | 167.3 |
| On emerging economies | − 69.1 | − 10.0 | − 6.3 | 1.3 | − 3.8 | − 1.3 | − 6.3 | 905.5 |
| Interbank loans[1] | − 58.6 | − 8.9 | − 6.7 | 6.1 | − 9.9 | − 6.9 | 1.9 | 354.1 |
| Loans to non-banks | − 16.6 | − 27.5 | − 2.9 | −16.2 | − 0.1 | − 0.5 | −10.7 | 399.2 |
| Securities[2] | 6.1 | 26.3 | 3.3 | 11.4 | 6.3 | 6.2 | 2.5 | 152.1 |
| Unallocated claims | − 19.8 | 17.3 | −12.9 | 7.7 | − 1.6 | 6.1 | 5.0 | 207.2 |
| *Memo: Syndicated credits*[4] | *1,025.9* | *1,465.7* | *286.2* | *261.8* | *373.9* | *424.3* | *405.7* | |

[1] Including inter-office transactions. [2] Partly estimated. The data comprise mainly debt securities, but also include other assets, which account for less than 5% of total claims outstanding. [3] Cross-border claims of reporting banks in the euro area on residents of the euro area. [4] Signed new facilities.

Sources: Capital DATA; BIS locational banking statistics. Table 2.1

## Interbank activity surges

The fourth quarter of 2000 saw a marked expansion of interbank balance sheets. Cross-border lending to banks in developed countries and offshore centres rose by $291 billion, and interbank liabilities increased by an equally large amount (Table 2.1). The surge in interbank activity in the fourth quarter was similar in magnitude to those observed in the final quarter of 1997 and the first quarter of 2000.

Marked expansion of interbank balance sheets ...

In terms of net interbank flows, in the fourth quarter banks in the United Kingdom, Japan and France were the largest recipients and banks in offshore centres and the United States the proximate sources. These net flows are typically only a fraction of the change in interbank assets, since the process of distributing wholesale funds to other banks builds up both assets and liabilities on the balance sheet. Banks in the Cayman Islands, Hong Kong and the United States channelled funds to the United Kingdom, from where interbank funds were redistributed to banks in the euro area and Japan. Banks in Japan also received large transfers from the euro area and Singapore, while banks in the euro area, especially France, received funds from the United States. The sequencing of flows was further complicated by large transactions between

Swiss banks and their subsidiaries in Japan and the United States, and between US banks and their offices in the Cayman Islands.

## Large deposit flows from emerging economies

... driven by deposits from emerging economies

Whereas the 1997 expansion of interbank activity had been driven by an effort to recycle large repayment flows from borrowers in Asia, and that of the first quarter of 2000 by demand for financing by non-bank borrowers in the euro area, the latest increase appears to reflect, at least in part, the recycling of large deposit flows from emerging economies. Emerging economies deposited $28 billion with international banks in the fourth quarter, bringing total deposits for 2000 to $145 billion. This represents a near fivefold increase over deposit flows in 1999. As a percentage of emerging economies' GDP, 2000 saw the largest deposit flows (2%) since 1979-80, when oil-exporting countries placed windfall revenues with international banks.

Deposits by Taiwan accelerate

Deposit flows from Taiwan, China (henceforth referred to as Taiwan) increased sharply towards the end of 2000. In the first half of the year, there had been little change in reporting banks' liabilities vis-à-vis Taiwan (Table 2.2). However, in the second half, residents placed over $19 billion with international banks, of which $12.6 billion in the fourth quarter. Most of these funds were denominated in US dollars and deposited with banks in offshore centres and the United States. Notably, over three quarters of these funds came from banks, rather than corporations and other non-bank entities. Non-banks in Taiwan stepped up their purchases of foreign currency last year, but instead of investing offshore they deposited these funds in the local financial system. Local banks then placed excess foreign exchange with international banks. Non-banks' preference for onshore accounts suggests that neither political risk nor the credit risk of local banks was a significant motivation for the increase in cross-border deposits.

Continued deposit flows from mainland China ...

Interest rate differentials and weak demand for foreign currency loans explain continued deposit flows from mainland China.[2] Residents of the mainland, again predominantly banks, placed $8.1 billion with international banks in the fourth quarter, and $35.8 billion in 2000 as a whole (25% of total deposits by emerging economies). A little more than half of the deposits in the fourth quarter were denominated in Hong Kong dollars. For the year as a whole, however, the US dollar was the currency of choice. China placed virtually all of its deposits with banks in offshore centres and Europe.

... and OPEC members

After China and Taiwan, oil-exporting countries were the most important source of deposit flows in 2000. OPEC member countries deposited $9 billion with banks in the reporting area in the fourth quarter, and $38 billion in the

[2] For a discussion of the growth of foreign currency deposits in the Chinese banking system, see the special feature by R N McCauley and Y K Mo, "Foreign currency deposits of firms and individuals with banks in China", in the August 2000 issue of the *BIS Quarterly Review*.

## Banks' external positions vis-à-vis emerging economies

Exchange rate adjusted changes in amounts outstanding, in billions of US dollars

| | 1999 | 2000 | 1999 | 2000 | | | | Stocks at end-Dec 2000 |
|---|---|---|---|---|---|---|---|---|
| | Year | Year | Q4 | Q1 | Q2 | Q3 | Q4 | |
| Total claims | – 69.1 | – 10.0 | – 6.3 | 1.3 | – 3.8 | – 1.3 | – 6.3 | 905.5 |
| Africa & Middle East | 0.2 | – 7.7 | 5.2 | – 6.3 | – 1.0 | – 1.4 | 1.0 | 151.8 |
| Saudi Arabia | 2.0 | 0.0 | 0.9 | – 1.2 | – 0.1 | 0.1 | 1.3 | 26.2 |
| Asia & Pacific | – 61.9 | – 28.6 | – 19.9 | 3.0 | – 7.3 | – 6.0 | – 18.3 | 284.8 |
| Mainland China | – 17.1 | – 5.3 | – 5.7 | 0.1 | – 3.4 | – 1.5 | – 0.5 | 59.8 |
| Taiwan, China | – 3.3 | – 3.9 | 0.7 | 1.3 | – 0.1 | – 0.8 | – 4.3 | 15.4 |
| Europe | 8.9 | 12.2 | 4.9 | – 0.4 | 2.6 | 1.8 | 8.3 | 173.8 |
| Russia | – 6.5 | – 6.6 | – 1.3 | – 1.4 | – 1.4 | – 3.2 | – 0.6 | 36.0 |
| Turkey | 5.8 | 11.4 | 1.4 | 2.7 | 2.7 | 2.6 | 3.4 | 49.5 |
| Latin America | – 16.2 | 14.0 | 3.5 | 5.0 | 2.0 | 4.4 | 2.7 | 295.2 |
| Argentina | 0.6 | 1.3 | 1.0 | – 1.2 | – 0.1 | 2.4 | 0.2 | 49.1 |
| Brazil | – 8.9 | 10.0 | 3.2 | 1.5 | 0.1 | 3.8 | 4.6 | 96.3 |
| Total liabilities[1] | 31.8 | 145.1 | 27.8 | 42.2 | 20.7 | 53.9 | 28.2 | 1,051.0 |
| Africa & Middle East | – 6.8 | 47.8 | 16.7 | 7.6 | 8.4 | 21.7 | 10.1 | 315.4 |
| Saudi Arabia | – 17.9 | 10.8 | 1.2 | – 0.4 | – 0.9 | 7.2 | 4.9 | 60.1 |
| Asia & Pacific | 4.9 | 65.8 | – 0.6 | 26.6 | 9.5 | 12.8 | 16.9 | 360.0 |
| Mainland China | – 3.9 | 35.8 | – 0.1 | 12.0 | 10.4 | 5.3 | 8.1 | 102.3 |
| Taiwan, China | 7.5 | 19.6 | 2.8 | 0.0 | 0.6 | 6.5 | 12.6 | 64.6 |
| Europe | 20.3 | 21.0 | 7.3 | 1.8 | 4.9 | 9.2 | 5.1 | 123.6 |
| Russia | 3.8 | 7.3 | 0.8 | 2.4 | 3.4 | 3.2 | – 1.8 | 23.4 |
| Turkey | 3.3 | 2.3 | 2.0 | 0.0 | – 0.6 | 0.3 | 2.6 | 20.7 |
| Latin America | 13.4 | 10.6 | 4.4 | 6.2 | – 2.1 | 10.2 | – 3.7 | 252.1 |
| Argentina | 0.1 | 3.2 | 3.7 | 0.4 | 0.1 | 3.7 | – 1.0 | 40.9 |
| Brazil | 2.2 | – 4.1 | – 2.6 | 1.2 | – 8.9 | 2.8 | 0.7 | 49.1 |
| Net flows[2] | – 100.9 | – 155.1 | – 34.1 | – 40.9 | – 24.5 | – 55.2 | – 34.5 | – 145.5 |
| *Memo:* | | | | | | | | |
| *OPEC members' deposits* | *– 19.8* | *37.8* | *13.3* | *1.9* | *9.5* | *18.0* | *8.5* | *233.2* |

[1] Mainly deposits. Other liabilities account for less than 1% of total liabilities outstanding. [2] Total claims minus total liabilities.

Source: BIS locational banking statistics. Table 2.2

whole of 2000 (26% of total deposits). The bulk of these deposits were denominated in US dollars and placed with banks in the United Kingdom. Saudi Arabia and Iran recorded the largest increases among OPEC members, $10.8 billion and $8.1 billion, respectively, during 2000. Among non-OPEC oil-exporting countries, Mexico and Russia were the largest depositors, placing $7.1 billion and $7.3 billion, respectively. Both Mexico and Russia withdrew funds in the fourth quarter.

Central banks' growing reserves do not explain the large deposit flows

Central banks do not seem to have been major contributors to deposit flows from emerging economies. The foreign exchange reserves of emerging economy central banks increased by $76 billion in 2000, and it may at first sight seem plausible that this increase was behind the large deposit flows to

banks in the reporting area.[3] However, the available evidence does not support this link. Cross-border flows from official monetary institutions – mainly central banks – to banks in the reporting area slowed to $43 billion in 2000 from $60 billion in 1999. These flows include deposits by central banks worldwide, and so withdrawals by industrial country central banks could conceivably have offset deposits by emerging economy central banks. But this is unlikely to have been the case given that the reserves of industrial country central banks also increased in 2000, by $55 billion.[4]

## Claims on emerging economies fall again

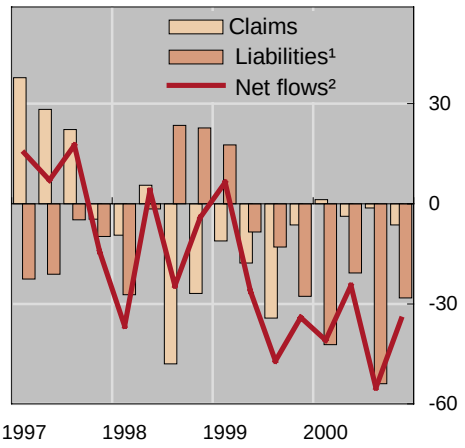
Net outflows from all emerging regions except Latin America

Unlike the experience of the 1970s, recent deposit flows from emerging economies were not recycled back to them. Taking into account changes in both assets and liabilities, Latin America was the only emerging region which was a net recipient of bank flows in 2000 (Graph 2.1). Even then, at $3 billion, these outpace new borrowing from international banks, as large current account surpluses obviated the need for external financing. Bank investment in

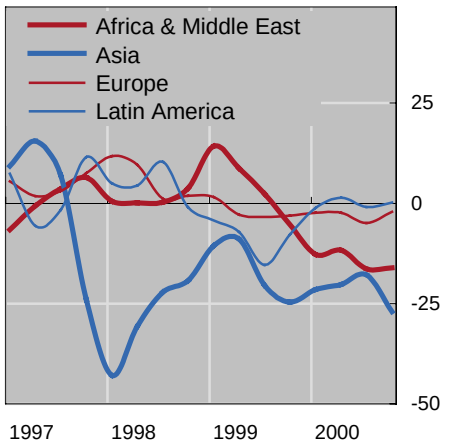
### Banks' external positions vis-à-vis emerging economies

Exchange rate adjusted changes in amounts outstanding, in billions of US dollars

Total bank flows




Bank flows by region[2,3]




¹ A negative (positive) value indicates an increase (decrease) in liabilities. ² Changes in claims minus changes in liabilities. ³ Two-quarter moving average.

Source: BIS locational banking statistics. Graph 2.1

[3] Liabilities vis-à-vis banks in emerging economies increased by $123 billion in 2000. In the BIS locational banking statistics, bank counterparties include central banks as well as commercial banks. Banks in the reporting area report a global figure for their liabilities to official monetary institutions, with a currency breakdown but no country breakdown (see Table 5C in the Statistical Annex).

[4] For a discussion of the instrument composition of central banks' US dollar reserves, see B Fung and R N McCauley, "Composition of US dollar foreign exchange reserves by instrument", in the November 2000 issue of the *BIS Quarterly Review*, pp 59-60.

Latin America remained concentrated in Brazil in the fourth quarter. Claims on Brazil increased by $4.6 billion (Table 2.2), owing principally to the purchase of Banespa, a state bank privatised in November, by Banco Santander Central Hispano of Spain. Over half of the $10 billion rise in claims on Brazil in 2000 was related to foreign acquisitions of Brazilian banks. Foreign banks lent $1.1 billion to Argentina in the fourth quarter, but largely offset this increase by selling $0.9 billion worth of Argentine securities. Banks also reduced their holdings of Mexican securities, contributing to a $3.9 billion decline in claims on Mexico in the fourth quarter.

Brazil and Turkey receive the bulk of new credit

In emerging Europe, Turkey was by far the largest recipient of bank flows. Indeed, during 2000, cross-border claims on Turkey increased by more than claims on any other emerging economy: $11.4 billion. In the fourth quarter alone, banks lent $3.4 billion to Turkey. Two thirds of the fourth quarter amount took the form of loans to non-banks, mainly project financing and lending to the central government. The remainder was lent to banks, despite the emergence of strains in Turkey's banking system. More recent data on syndicated credits suggest that banks sharply reduced their lending to Turkey in the early part of 2001 (see page 21).

Repayments by Asian borrowers, which appeared to have bottomed out in the first half of 2000, picked up again in the fourth quarter. Bank claims on emerging economies in Asia fell by $18 billion, bringing the total contraction in claims to $29 billion in 2000. At first glance, this appears to represent a significantly slower pace of outflows than in 1999, when claims fell by $62 billion. But once changes in deposits are taken into account, net outflows from emerging economies in Asia to banks in the reporting area actually increased in 2000, to $94 billion from $67 billion in 1999.

Korea and Taiwan experience large contractions in claims

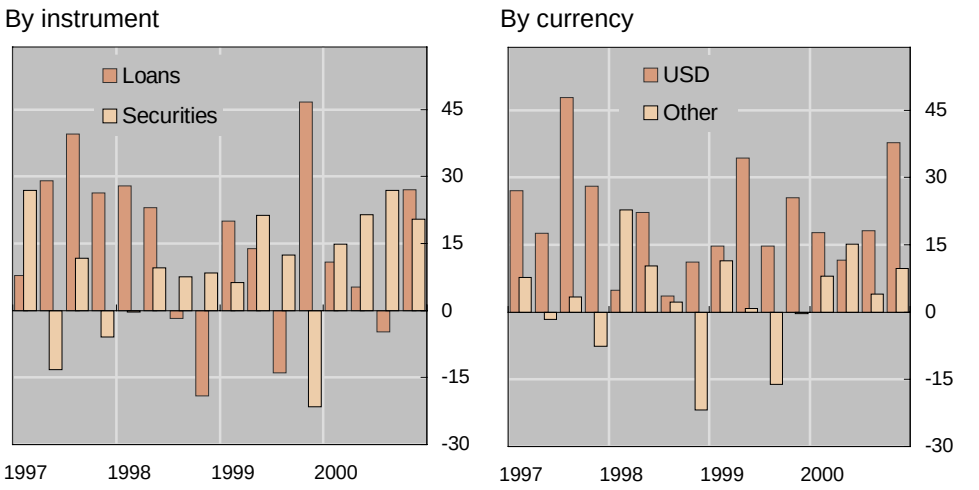
A $9.2 billion contraction in loans to Korean borrowers accounted for half of the decline in claims on Asian borrowers in the fourth quarter. Earlier in 2000, banks in the United States had engaged in reverse repos with borrowers in Korea, and the fourth quarter decline in claims arose in part from the unwinding of these agreements. Cross-border claims on residents of Taiwan fell by $4.3 billion in the fourth quarter, the largest such decline ever recorded. The rapid growth of foreign currency deposits in the local financial system reduced local banks' demand for foreign currency loans from abroad. Also, greater international attention had been given to the soundness of the Taiwanese financial system during 2000, leading many foreign banks to reduce their exposure.

## Funds channelled into the United States

Instead of being channelled into emerging economies, funds made available through the interbank market supported an increase in lending to non-bank borrowers in the industrial countries, especially in the United States. Banks in the reporting area also continued to invest substantial sums in securities issued by US and European borrowers.

## Banks' cross-border claims on US non-banks

Exchange rate adjusted changes in amounts outstanding, in billions of US dollars




Source: BIS locational banking statistics. Graph 2.2

CP issuers and telecoms in the United States turn to banks

After several weak quarters, loans to non-banks in the United States increased by $27 billion in the fourth quarter of 2000 (Graph 2.2). Seasonal factors were partly responsible for this increase; corporate issuance of commercial paper in the United States usually declines towards the end of the year, and issuers turn instead to their backup credit lines with banks. Lending was also boosted by demand from US telecommunications firms, which raised $38 billion in the international syndicated credit market in the fourth quarter.

Even while stepping up their direct lending, international banks continued to purchase large amounts of securities issued by US residents. As a result, cross-border flows – securities purchases plus lending – to non-bank borrowers in the United States increased by 43% between 1999 and 2000, to $121.8 billion. Surprisingly, 30% of these flows were denominated in currencies other than the US dollar. US entities, including US agencies, increased their issuance of euro-denominated bonds in 2000, and this helped to boost euro-denominated flows from international banks to US non-banks to $16.2 billion last year from zero in 1999. Yen-denominated flows rose to $9.8 billion from –$0.5 billion, perhaps boosted by the desire of US non-banks to take advantage of low yen interest rates.

German and Japanese banks lead the increase in claims on US non-banks

The locational banking statistics indicate that, during the course of the year, over half of the cross-border flows to US non-banks were provided by banks in the United Kingdom. However, a substantial proportion of these funds were from euro area and Japanese banks resident in the United Kingdom rather than UK-headquartered banks. Based on the consolidated banking statistics, which are compiled on a nationality basis, German banks' consolidated claims on public sector and non-bank private sector borrowers in the United States increased by $49 billion in 2000. Japanese banks' claims increased by $41 billion. Japanese banks were especially active buyers of US

agency securities. UK banks' consolidated claims on US non-bank borrowers increased by $15 billion over the same period.

## Claims on non-banks in Japan continue to contract

In contrast to the increase in claims on US non-banks, cross-border claims on non-bank borrowers in Japan contracted by $32.7 billion in the fourth quarter. European banks were responsible for most of this decline.

Japanese banks unwind loans booked offshore

For the year as a whole, credit to non-banks in Japan fell by $66.9 billion, making 2000 the fifth consecutive year of cutbacks. The key factor behind this contraction was the continued unwinding of loans to Japanese residents booked through Japanese banks' offices in banking centres abroad. Financial stresses in Japan in 1997-98 had led a large number of Japanese banks to close or scale back their operations abroad. In more recent years, the weakness of the Japanese economy lowered corporate funding needs. These changes had a particularly adverse impact on international banking activity in Hong Kong. Between the end of 1997 and the end of 2000, the claims of banks in Hong Kong vis-à-vis non-bank borrowers in Japan fell by 80%, to $39 billion. Japanese banks' interbank claims on Hong Kong, by which many of the loans were funded, fell in tandem.[5]

## Securities issued by euro area non-banks fall out of favour

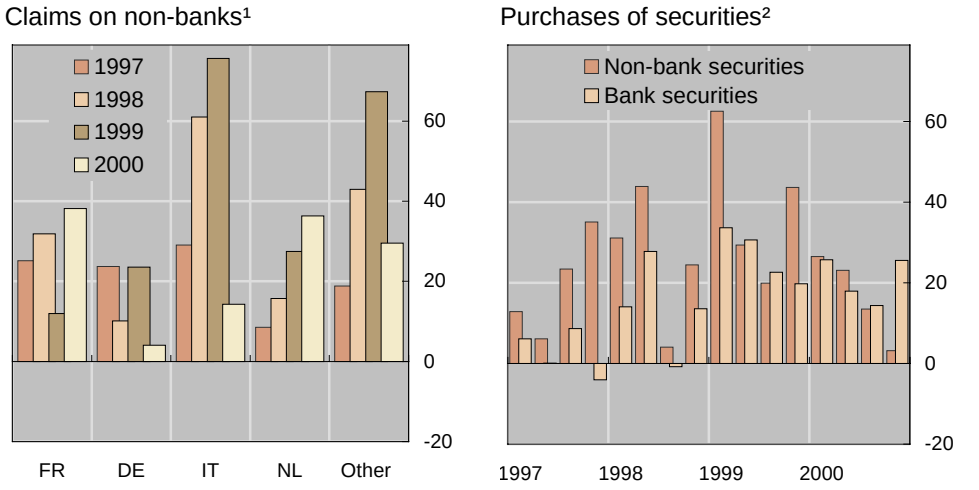
Banks prefer to buy lower-risk bank securities

In the euro area, cross-border flows to non-bank borrowers slowed to $9.8 billion in the fourth quarter, the smallest flows since the start of monetary union. At least part of this slowdown can be explained by a reduction in investors' appetite for risk. As discussed in the previous issue of the *BIS Quarterly Review*, lower-rated borrowers faced significantly wider credit spreads in the fourth quarter of 2000, and consequently reduced their bond issuance. At the same time, highly rated borrowers retained favourable access to debt securities markets. The locational banking statistics clearly illustrate the shifts in demand that were behind this deterioration in financing conditions. Even while reducing their purchases of corporate bonds and other non-bank securities, which tend to be rated below triple-A, banks in the reporting area increased their cross-border purchases of bank securities (Graph 2.3). In the euro area, many bank securities, such as Pfandbriefe, have top credit ratings, and so are regarded as safe assets.

[5] For a discussion of international banking activity in Hong Kong, see the box by R N McCauley and Y K Mo, "Recent developments in the international banking business of Hong Kong", in the June 1999 issue of the *BIS Quarterly Review*.

## Banks' cross-border claims on euro area borrowers

Exchange rate adjusted changes in amounts outstanding, in billions of US dollars




[1] By residence of borrower. Note: FR=France; DE=Germany; IT=Italy; NL=Netherlands. [2] By type of issuer.

Source: BIS locational banking statistics. Graph 2.3

Cross-border flows to non-banks in the euro area halve in 2000

Despite the record amounts raised by euro area telecoms in the international syndicated credit market in 2000, flows to euro area non-banks almost halved in 2000, to $122 billion from $206 billion in 1999. Cross-border credit to non-bank borrowers in a few euro area countries, in particular France and the Netherlands, picked up in 2000 (Graph 2.3). Yet the majority of countries saw a moderation of inflows. Italy experienced an especially sharp slowdown, with cross-border claims on non-banks increasing by only $14.3 billion in 2000, compared to $75.6 billion in 1999.

Euro area banks were wholly responsible for the slowdown in cross-border flows to euro area non-banks. The introduction of the single currency had effectively relaxed prudential and regulatory controls over currency mismatches, and thereby encouraged financial institutions to diversify their portfolios by investing across the euro area. Consequently, immediately before and after the launch of monetary union, banks had stepped up their cross-border purchases of securities, boosting flows to non-banks in the euro area. This adjustment of portfolios now appears to have run its course.

## Syndicated credits: large amounts of telecoms facilities mature in 2001

*Blaise Gadanecz*

After an exceptionally strong second half of 2000, activity in the international syndicated credit market slowed sharply in the first quarter of 2001: facilities signed fell to $253 billion from $406 billion in the fourth quarter of 2000. The first quarter has historically been weak, but even on a seasonally adjusted basis signings dropped by 20%.

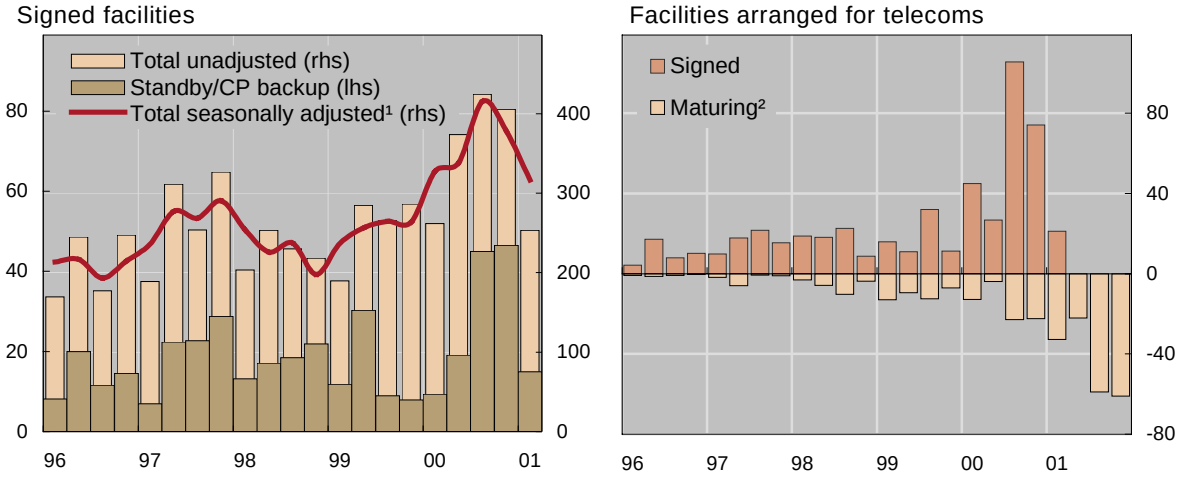
Large US corporations were the main drivers of activity in the first quarter. Kellogg and American Home Products each borrowed $6 billion. Facilities totalling $6 billion were arranged for Lucent Technologies to help the firm meet its obligations after losing access to the commercial paper (CP) market. The general deterioration in financing conditions in the CP market around the turn of the year, and thus the higher likelihood that issuers would call on their backup lines with commercial banks, led banks to tighten the conditions attached to new standby or CP support facilities. As a result, volumes in this segment of the syndicated credit market slowed to $15 billion in the first quarter from $45 billion in each of the two previous quarters.

An important factor behind the overall slowdown in activity in the first quarter was the more moderate pace of lending to telecommunications companies. Massive sums had been arranged for telecoms in the second half of 2000, but this activity dropped off in the first quarter. Telecoms instead tapped bond markets (see page 23). Many of the telecoms facilities arranged in 2000 were short-term, and consequently will need to be refinanced in 2001. First quarter activity already reflected the rolling-over of maturing facilities. Pacific Century Cyberworks arranged a $4.7 billion term loan to refinance part of a facility contracted in early 2000 to fund the purchase of Hong Kong Telecom. Assuming that the facilities previously arranged are fully drawn down and not repaid early, repayments will peak at $60 billion in the third and fourth quarters of 2001.

Emerging economies raised $13 billion in the syndicated credit market in the first quarter. Turkey, the largest borrower in 2000, was all but absent from the market. Turkish banks raised $0.3 billion, down from an average of $1.4 billion a quarter in 2000, and corporations another $0.2 billion. Mexico was the largest recipient of funds, obtaining $2.3 billion. Most of this was raised by CEMEX, a cement manufacturer, to finance an acquisition in the United States.

### Activity in the international syndicated credit market

In billions of US dollars




[1] Adjusted using the US Census Board's X11 Arima seasonal adjustment process. [2] Estimated. Maturing facilities are based on facilities signed from January 1993 onwards and assume that the full amount was drawn down and the facility was not repaid early.

Sources: Capital DATA; BIS.

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# 3. The international debt securities market

Against the backdrop of narrowing credit spreads and generally favourable market conditions in debt markets, net issuance of straight fixed rate bonds and notes surged during the first quarter of 2001 (Table 3.1). Nevertheless, aggregate net issuance in the international debt securities market declined from $323 billion to $298 billion over the same period, because of a sharp fall in the net issuance of money market securities. Gross announced issuance of bonds and notes rose to $578 billion during the first quarter of 2001 from $438 billion in the previous quarter, while repayments also rose from $197 billion to $269 billion over the same period (Table 3.2).

The shift from short-term to long-term funds represented a return to more normal patterns. Net issuance of money market instruments declined from the previous quarter's unusually high amounts as borrowers took advantage of favourable market conditions to lengthen the maturity of their debt. Emerging economies returned to the bond market, and issuance by public sector entities increased. Issuance by corporate borrowers also increased during the first quarter, which may have reflected a shift away from equity issuance because of reduced demand for IPOs. In some instances, lower-rated corporate borrowers looked to the international bond market as a substitute for commercial paper issuance, which was not feasible as a result of credit downgrades and a reduced willingness of banks to provide backup credit facilities.

## More favourable market conditions support long-term borrowing

An improvement in market conditions underlined a resurgence in long-term issuance in the first quarter of 2001. As discussed in the Overview (Section 1), the narrowing of credit spreads in long-term debt markets was accompanied by a decline in the general level of interest rates, which brought issuers back to the market. Net issuance of straight fixed rate bonds and notes rose from $165 billion during the final quarter of 2000 to $204 billion during the first quarter of 2001, an all-time high. The rise in net issuance of straight fixed rate bonds and notes was associated with a 60% surge in gross issuance to $422 billion over the same period (Table 3.2).

Net issuance of straight fixed rate bonds and notes reaches a record amount ...

## Main features of net issuance in international debt securities markets

In billions of US dollars

| | 1999 | 2000 | 2000 | | | | 2001 | Stocks at end-March 2001 |
|---|---|---|---|---|---|---|---|---|
| | Year | Year | Q1 | Q2 | Q3 | Q4 | Q1 | |
| Total net issues | 1,230.3 | 1,234.6 | 286.7 | 319.8 | 304.8 | 323.4 | 298.4 | 6,514.7 |
| Money market instruments[1] | 66.4 | 86.5 | 1.3 | 24.4 | 14.9 | 45.9 | 14.6 | 346.1 |
| *Commercial paper* | *44.3* | *49.3* | *– 0.6* | *10.6* | *12.1* | *27.1* | *16.1* | *238.5* |
| Bonds and notes[1] | 1,163.9 | 1,148.2 | 285.4 | 295.4 | 289.9 | 277.4 | 283.8 | 6,168.7 |
| *Floating rate issues* | *334.1* | *386.6* | *84.0* | *110.1* | *90.0* | *102.6* | *73.8* | *1,607.9* |
| *Straight fixed rate issues* | *798.7* | *743.9* | *198.6* | *181.5* | *199.0* | *164.9* | *204.4* | *4,317.5* |
| *Equity-related issues* | *31.1* | *17.6* | *2.8* | *3.8* | *1.0* | *10.0* | *5.6* | *243.3* |
| Developed countries | 1,152.9 | 1,151.7 | 257.1 | 303.2 | 282.2 | 309.1 | 283.9 | 5,602.7 |
| *Euro area* | *507.9* | *555.0* | *131.1* | *149.2* | *129.7* | *144.9* | *133.4* | *2,288.6* |
| *Japan* | *2.7* | *– 29.9* | *– 13.2* | *– 1.3* | *– 9.1* | *– 6.3* | *– 6.5* | *268.0* |
| *United States* | *482.2* | *465.7* | *91.4* | *111.8* | *138.5* | *124.0* | *145.7* | *1,894.2* |
| Offshore centres | 12.0 | 19.1 | 1.4 | 3.7 | 6.8 | 7.2 | 7.3 | 83.0 |
| Emerging economies | 40.8 | 42.1 | 23.3 | 6.3 | 13.4 | – 0.9 | 6.0 | 458.5 |
| International institutions | 24.6 | 21.7 | 4.9 | 6.7 | 2.2 | 7.9 | 1.3 | 370.6 |
| Private sector | 1,010.4 | 970.3 | 203.2 | 276.6 | 228.7 | 261.8 | 237.8 | 4,849.3 |
| *Financial institutions*[2] | *656.7* | *670.7* | *164.7* | *185.3* | *136.1* | *184.6* | *146.5* | *3,189.6* |
| *Corporate issuers* | *353.7* | *299.6* | *38.5* | *91.3* | *92.6* | *77.2* | *91.3* | *1,659.7* |
| Public sector[3] | 195.3 | 242.6 | 78.6 | 36.6 | 73.8 | 53.6 | 59.3 | 1,294.8 |
| *Central government* | *37.2* | *50.5* | *33.1* | *12.7* | *8.3* | *– 3.5* | *6.4* | *483.3* |
| *State agencies and other* | *158.1* | *192.0* | *45.5* | *23.9* | *65.5* | *57.2* | *52.9* | *811.5* |
| *Memo:* | | | | | | | | |
| *Domestic CP*[4] | *341.2* | *254.3* | *29.8* | *72.1* | *40.2* | *112.2* | *– 56.5* | *1,983.0* |
| *of which: US* | *232.8* | *208.3* | *75.3* | *54.9* | *35.6* | *42.5* | *– 63.1* | *1,539.0* |

[1] Excluding notes issued by non-residents in the domestic market. [2] Commercial banks and other financial institutions. [3] Excluding international institutions. [4] Data for the first quarter of 2001 are preliminary.

Sources: Bank of England; Capital DATA; Euroclear; ISMA; Thomson Financial Securities Data; national authorities; BIS.

Table 3.1

... as low- and medium-rated borrowers return to the market ...

The increase in long-term issuance was due solely to the activities of low- and medium-rated borrowers. Among rated issues, gross issuance in the non-triple-A investment grade class rose markedly from $64 billion during the final quarter of 2000 to $126 billion in the first quarter of 2001 (Graph 3.1, right-hand panel), more than reversing the previous quarter-on-quarter decline in announcements in these rating categories. A large portion of the total increase in non-triple-A issuance was due to the activities of telecoms, whose gross issuance surged from $19 billion to $49 billion over the same period. This total included the largest ever corporate bond: a $16 billion issue in six tranches by France Telecom. Also, some firms that had difficulty accessing the commercial paper market (see below) were able to tap the long-term debt markets. DaimlerChrysler, a single-A borrower, for example, floated $7.5 billion of longer-term debt during the first quarter. Stronger issuance also took place in

the speculative grade category, which witnessed an increase in announcements to $7 billion during the first quarter of 2001, up from $3 billion in the previous one. In contrast, gross issuance in the triple-A category declined slightly from $100 billion to $94 billion. This occurred despite a surge in gross public sector issuance to $128 billion, an increase of 70%, due in large measure to $98.5 billion of issuance by state agencies, a record amount.

... and net issuance of money market instruments declines

At the same time, net issuance of money market instruments in the international debt securities market fell from an unusually large $46 billion to $15 billion, with that of commercial paper, the largest component of money market instruments, decreasing from $27 billion to $16 billion. These developments paralleled an even larger fall in net issuance in the domestic CP markets. After several years of rapid growth, net domestic issuance in the three largest markets (the United States, Japan and Canada) turned sharply negative during the first quarter of 2001. Contributing factors to the slowdown in net CP issuance were a number of credit downgrades and a reduced willingness of banks to underwrite new issues. Money market funds are the main purchasers of CP, and the amount of lower-rated CP that they can hold is limited by SEC regulations. Credit downgrades below a given threshold can therefore severely curtail the demand for a particular issuer's commercial paper. Such credit downgrades reportedly constrained the ability of some firms to access the CP

## Gross issuance in the international bond and note markets

In billions of US dollars

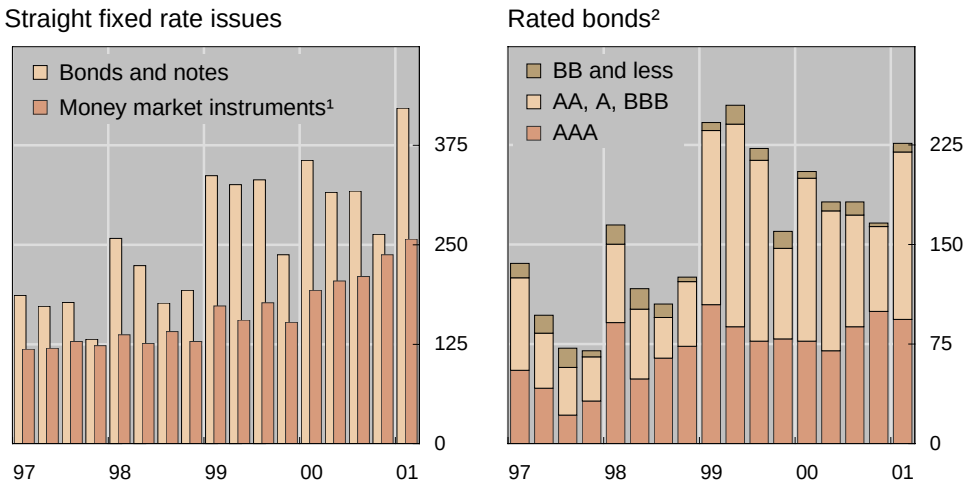
| | 1999 | 2000 | 2000 | | | | 2001 |
|---|---|---|---|---|---|---|---|
| | Year | Year | Q1 | Q2 | Q3 | Q4 | Q1 |
| Total announced issues | 1,766.8 | 1,933.5 | 508.3 | 484.6 | 502.4 | 438.3 | 578.2 |
| Floating rate issues | 483.8 | 624.3 | 138.0 | 157.0 | 168.3 | 161.0 | 142.6 |
| Straight fixed rate issues | 1,230.9 | 1,252.7 | 356.0 | 315.7 | 317.6 | 263.5 | 421.7 |
| Equity-related issues[1] | 52.1 | 56.5 | 14.3 | 11.9 | 16.5 | 13.8 | 13.8 |
| US dollar | 775.4 | 859.3 | 216.9 | 206.6 | 240.8 | 194.9 | 264.8 |
| Euro | 677.9 | 647.8 | 186.8 | 153.1 | 150.7 | 157.2 | 221.2 |
| Yen | 118.9 | 204.6 | 49.2 | 76.1 | 51.2 | 28.1 | 34.8 |
| Other currencies | 194.6 | 221.8 | 55.3 | 48.7 | 59.8 | 58.1 | 57.4 |
| Private sector | 1,374.3 | 1,499.9 | 374.4 | 397.5 | 380.3 | 347.8 | 429.2 |
| *Financial institutions*[2] | *897.7* | *1,021.4* | *276.0* | *251.5* | *249.8* | *244.1* | *278.1* |
| *Corporate issuers* | *476.6* | *478.5* | *98.3* | *146.0* | *130.5* | *103.7* | *151.2* |
| *of which: telecoms* | *84.3* | *115.7* | *24.7* | *46.7* | *25.0* | *19.3* | *48.7* |
| Public sector | 314.7 | 363.0 | 113.4 | 66.7 | 107.7 | 75.2 | 127.6 |
| *Central government* | *94.2* | *93.0* | *46.0* | *18.7* | *23.7* | *4.7* | *29.1* |
| *State agencies and other* | *220.5* | *269.9* | *67.5* | *48.0* | *84.0* | *70.5* | *98.5* |
| International institutions | 77.8 | 70.7 | 20.5 | 20.4 | 14.5 | 15.3 | 21.3 |
| Completed issues | 1,771.2 | 1,935.3 | 474.9 | 485.2 | 501.0 | 474.2 | 552.9 |
| Repayments | 607.3 | 787.2 | 189.5 | 189.8 | 211.1 | 196.7 | 269.1 |

[1] Convertible bonds and bonds with equity warrants. [2] Commercial banks and other financial institutions.

Sources: Bank of England; Capital DATA; Euroclear; ISMA; Thomson Financial Securities Data; BIS. Table 3.2

## Announced issuance by maturity and credit rating

International issuance, in billions of US dollars




¹ Excludes issues redeemed in the same quarter. ² Includes bonds issued under EMTN documentation.

Sources: Bank of England; Capital DATA; Euroclear; ISMA; Thomson Financial Securities Data; BIS. Graph 3.1

market. For example, DaimlerChrysler's short-term rating fell to A2/P2 in late February. At the same time, bank lenders pulled back from credit extension (see the box on syndicated credits on page 21), withdrawing the support of backup credit facilities.

The first quarter of 2001 also witnessed a decline in net issuance by financial institutions. One possible reason for the decline was a large amount of issuance of asset-backed securities in the fourth quarter of 2000, relative to the first quarter of 2001. For example, ABN AMRO originated an asset-backed security amounting to €7.8 billion during the final quarter of 2000.

## Emerging market borrowers return

The generally more favourable conditions in fixed income markets extended to the demand for issues by emerging economies, although market participants clearly made distinctions across credit risks. As noted in the Overview (Section 1), secondary market spreads on the issues of investment grade borrowers such as Mexico, Korea and China declined during the first quarter of 2001 while those on lower-rated issues of Turkey, Brazil and Argentina rose. Against this backdrop, total net issuance by emerging economies in the international debt securities market increased during the first quarter of 2001 to $6 billion from the depressed level of –$1 billion in the previous one. The rise in net issuance occurred in spite of an increase in repayments from $15.1 billion in the fourth quarter of 2000 to $17 billion in the first quarter of 2001, the largest amount for two years.

Net issuance rebounds from the depressed level of fourth quarter of 2000

## Net issuance of international debt securities by currency and region[1]

In billions of US dollars

| | | 1999 | 2000 | 2000 | | | | 2001 |
|---|---|---|---|---|---|---|---|---|
| | | Year | Year | Q1 | Q2 | Q3 | Q4 | Q1 |
| Europe | US dollar | 58.2 | 174.5 | 37.9 | 39.3 | 42.9 | 54.4 | 22.7 |
| | Euro | 503.0 | 406.7 | 113.3 | 106.8 | 74.2 | 112.5 | 117.6 |
| | Yen | 6.4 | 39.0 | 4.0 | 31.0 | 7.5 | – 3.5 | – 9.2 |
| | Other currencies | 75.2 | 87.3 | 20.8 | 16.0 | 24.5 | 25.9 | 15.6 |
| North America | US dollar | 434.5 | 380.7 | 73.1 | 91.1 | 116.4 | 100.1 | 118.1 |
| | Euro | 46.3 | 45.3 | 7.9 | 8.7 | 16.0 | 12.7 | 19.2 |
| | Yen | – 1.3 | 16.7 | 5.4 | 4.9 | 3.4 | 3.0 | 2.8 |
| | Other currencies | 16.5 | 15.4 | 2.5 | 1.0 | 3.5 | 8.4 | 4.1 |
| Others | US dollar | 53.3 | 63.7 | 23.7 | 17.5 | 14.2 | 8.3 | 7.1 |
| | Euro | 38.1 | 14.0 | 5.5 | 4.6 | 1.6 | 2.3 | 4.7 |
| | Yen | – 12.2 | – 22.4 | – 10.3 | – 3.8 | – 2.9 | – 5.4 | – 4.6 |
| | Other currencies | 12.3 | 13.7 | 2.9 | 2.7 | 3.4 | 4.6 | 0.2 |
| Total | US dollar | 546.0 | 618.9 | 134.7 | 147.9 | 173.5 | 162.7 | 148.0 |
| | Euro | 587.4 | 466.1 | 126.6 | 120.1 | 91.8 | 127.5 | 141.4 |
| | Yen | – 7.0 | 33.3 | – 0.9 | 32.1 | 8.0 | – 5.9 | – 11.0 |
| | Other currencies | 104.0 | 116.4 | 26.3 | 19.8 | 31.4 | 39.0 | 19.9 |

[1] Based on the nationality of the borrower.

Sources: Bank of England; Capital DATA; Euroclear; ISMA; Thomson Financial Securities Data; BIS. Table 3.3

The recovery of net issuance was not evenly spread across regions. Net issuance in Latin America rose, to $6.3 billion during the fourth quarter of 2001 from –$2.5 billion in the previous quarter, as did net issuance in non-industrial Europe, from $1.1 billion to $2.3 billion. Included in the latter figure was €750 million of new announcements by the Republic of Turkey. In contrast, net issuance in emerging Asia declined from $0.3 billion to –$3.4 billion in response to a sharp fall in gross issuance from $4.9 billion to $1.9 billion, due in part to a decline of new announcements in the telecoms sector, which were particularly high for China and Malaysia during the fourth quarter of 2000.

As mentioned in the previous *BIS Quarterly Review*, one way for countries facing relatively wide spreads to reduce borrowing costs is to seek funding in a currency with low interest rates like the yen. The first quarter of 2001 witnessed continued flotation in the samurai market by emerging economies. Brazil issued $669 million of yen-denominated securities during the period; Tunisia and Uruguay floated $294 million and $260 million of yen securities, respectively.

## Euro issuance gains ground

The first quarter of 2001 saw greater use of the euro as the currency of denomination in the international debt securities market. Net euro issuance climbed from $128 billion to $141 billion during the first quarter of 2001 (Table 3.3). There were increases in euro issuance across all regions. At $19 billion, a record amount, net issuance of euro-denominated securities was

Issuers turn to the euro globally

particularly strong in North America. At the same time, net dollar issuance declined and net yen issuance fell from –$6 billion to –$11 billion, an unusually large contraction. Both dollar and yen issuance were particularly weak in Europe.

Seen from a longer-term perspective, the pickup in issuance during the first quarter was a continuation of the recovery which had begun in the fourth quarter of 2000. This in turn had reversed a slowdown during the first three quarters of 2000, after an exceptionally strong 1999. As in 1999, and in contrast to the previous quarter, the pickup occurred at a time when the single currency was depreciating against the dollar. This contrasts with a long-standing empirical pattern of issues favouring the stronger currency.

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# 4. Derivatives markets

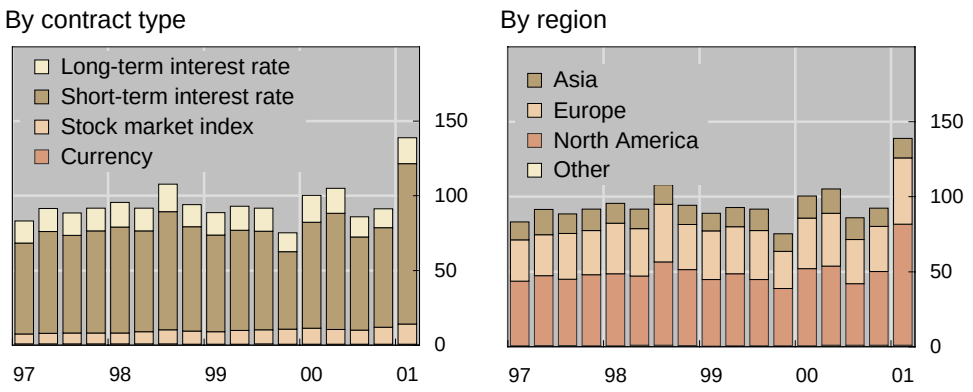
Recent data on exchange-traded and over-the-counter (OTC) market activity suggest a possible reversal of roles between the two market segments. The expansion of the notional amount of outstanding OTC contracts slowed down considerably in the second half of 2000, while the value of turnover on exchanges rose by a record amount in the first quarter of 2001. If sustained, this would represent a significant departure from previous patterns since the growth of OTC activity has consistently outpaced that on exchanges in recent years. The most notable feature of the moderation in OTC activity was a decline in inter-dealer transactions, particularly in euro-denominated interest rate swaps. The surge in exchange-traded business was led by short-term interest rate contracts, with the surprise cut in US policy rates in January apparently fuelling trading.

## Surprise cut in US policy rate fuels money market activity

Activity in exchange-traded markets expanded sharply in the first quarter of 2001, with the dollar value of contracts monitored by the BIS rising by 50%, to $138.9 trillion. Interest rate contracts grew by 55%, to $124.8 trillion, and equity contracts expanded by 16%, to $13.4 trillion.

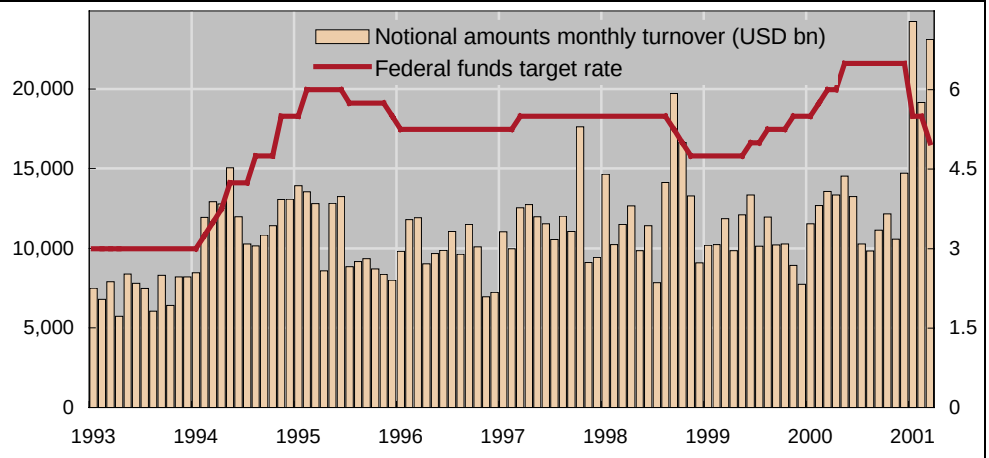
### Turnover of exchange-traded futures and options

Quarterly data, in trillions of US dollars




Sources: FOW TRADEdata; Futures Industry Association; BIS calculations. Graph 4.1

## Federal funds target rate and short-term interest rate contracts




Sources: Datastream; FOW TRADEdata; Futures Industry Association. Graph 4.2

Surprise US easing leads to surge in short-term contracts

Developments in short-term fixed income markets took centre stage, with the turnover of money market contracts rising by 61%, to $107.3 trillion. Activity was particularly buoyant on short-term US dollar rates (up by 76%) and on the Euribor (by 50%). The surge in short-term US contracts seems to have been primarily related to the surprise caused by the 50 basis point inter-meeting cut in the federal funds target rate in early January and by the possibility of futher monetary easing. In the case of Europe, the Eurosystem did not reverse its tightening stance of the first half of 2000 but market participants' expectations of lower short-term rates appear to have supported turnover in Euribor contracts. Activity in short-term contracts may have received an additional boost from second-round effects working through other market segments. For example, the Fed's rate cut was followed by a sharp recovery in the issuance of dollar-denominated corporate debt (see Section 3). This issuance is likely to have generated activity in the interest rate swap market as issuers swapped between fixed and floating rate liabilities. The increase in swap transactions may in turn have been associated with more active money market business, particularly in eurodollar futures, since such instruments are commonly used in the hedging of swaps.

Change in market conditions also affects longer-term instruments

The global adjustment to the cut in the US policy rate also supported overall activity in longer-term instruments, with business rising by 29%, to $17.5 trillion. However, the geographical pattern of activity differed from that observed in the short-term segment, with the turnover of instruments on European government bonds rising by more than that on US government bonds (49% versus 21%).

Turnover of bond contracts rises sharply on Eurex

One of the most notable developments in Europe was the sharp increase of activity in government bond contracts traded on Eurex. The long-term contract ("bund") expanded rapidly and remained by far the most active bond contract in the world (with transactions rising by 51%, to $4.3 trillion) but turnover in the intermediate maturity contracts ("schatz" and "bobl") grew even faster. While the overall increase in the turnover of German contracts probably

reflected expectations of an easing of monetary policy, the more rapid expansion of business in intermediate contracts may have been related to the growing acceptance of intermediate German government securities as European benchmarks. Business in the "notionnel" contract on Matif/Euronext, currently the only alternative to Eurex's bund contract, also expanded at a fairly robust pace (25%), although turnover in that contract remains much smaller than that in the bund.

Further recovery of activity in US bond contracts

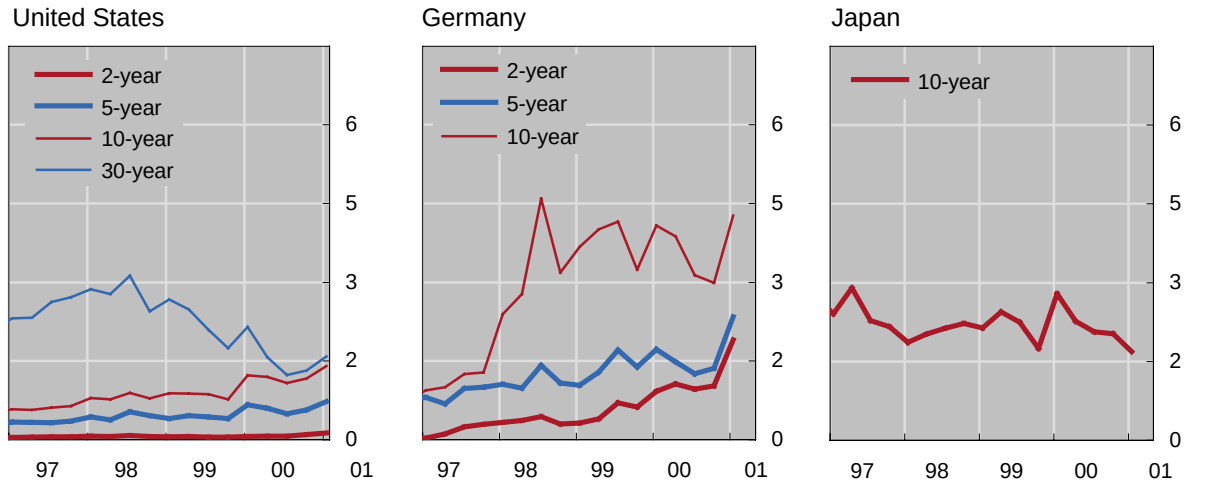
The Fed's easing of policy rates in early January, together with mixed evidence concerning the duration of the US economic slowdown, underpinned a broad-based recovery of turnover in US government bond contracts (Graph 4.3). It should be noted that the 10-year Treasury note futures, which had been expected by some market participants to trade more actively than the Treasury bond contract, ended up tracking closely its slightly more active counterpart. Net repayments of US government debt, combined with a shift of issuance to intermediate maturities, have affected the liquidity of the US Treasury bond contract in recent periods, leading some commentators to predict its eventual demise.

Volatility in global equity markets leads to recovery in index contracts

Shifting sentiment about the depth and length of the global economic slowdown accentuated volatility in most major equity markets, leading to a further recovery of activity in equity index contracts. The value of turnover rose by 16%, to $13.4 trillion. As in the previous quarter, option contracts grew more rapidly than futures (by 21% versus 12%). North American exchanges accounted for much of the increase in business (by 23%, to $8.2 trillion). Transactions on the CBOE grew particularly rapidly (by 38%, to $3.7 trillion) and the exchange nearly matched the volume of index business conducted on the CME ($4.3 trillion). European markets also witnessed a fairly rapid expansion of activity (12%, to $3.1 trillion). By contrast, activity in the Asia-Pacific area remained subdued.

## Turnover in government bond contracts

Quarterly futures contract turnover, in trillions of US dollars




Sources: FOW TRADEdata; Futures Industry Association.

Graph 4.3

## Exchanges introduce products based on swap rates, agency securities and single stocks

A squeeze on Eurex encourages alternative instruments

Exchanges introduced a number of new contracts during the course of the quarter. This was in response to anticipated new demands or to changes in the pattern of activity in underlying markets. For example, the recent squeeze experienced by Eurex on its medium-term government bond contract encouraged LIFFE to reintroduce futures on euro-denominated swap rates in March (see the box on pages 32 and 33). The SwapNotes contracts are expected to be less prone to squeezes because the euro-denominated swap market is considerably larger than the stock of government securities underlying the futures contracts. The swap curve's growing role as a homogeneous euro zone benchmark should also help ensure market acceptance of these new contracts.

Meanwhile, some US exchanges moved to capitalise on the upward trend in state agency and asset-backed financing by launching contracts on US agency benchmarks and mortgage-backed securities. For example, in early January the CBOT introduced five-year agency note futures and options, while in late March it launched mortgage-backed futures and options.

In the area of equity contracts, LIFFE and the Montreal Exchange attracted the attention of the industry with the introduction of futures on single stocks. LIFFE's Universal Stock Futures on 25 large European and US companies met with a favourable response, with turnover amounting to almost 10% of the exchange's business in options on single equities. The major US exchanges have also expressed strong interest in such products and are planning to market them as soon as they receive authorisation later this year. By March, LIFFE and Nasdaq had already announced that they would introduce electronic trading in US stock futures through a US-regulated joint venture.

## Global OTC market slows in the second half of 2000

The latest data from the BIS semiannual survey on positions in the global over-the-counter (OTC) derivatives market point to a slowdown of market growth in the second half of 2000. The total estimated notional amount of outstanding OTC contracts stood at $95.2 trillion at end-December 2000, a 1% increase over end-June 2000 and an 8% increase since end-December 1999. At the same time, however, gross market values rose by 24%, to $3.2 trillion.

In terms of broad market risk categories, the two largest market segments, interest rate and foreign exchange contracts, grew at the slowest pace (1%), while equity-linked and commodity-related contracts expanded rapidly (by 15% and 13% respectively).[6] Three other significant developments are worth

[6] Credit derivatives, which according to market sources have recently grown rapidly, are not identified in this survey.

## Anatomy of a squeeze

*Serge Jeanneau and Robert Scott*

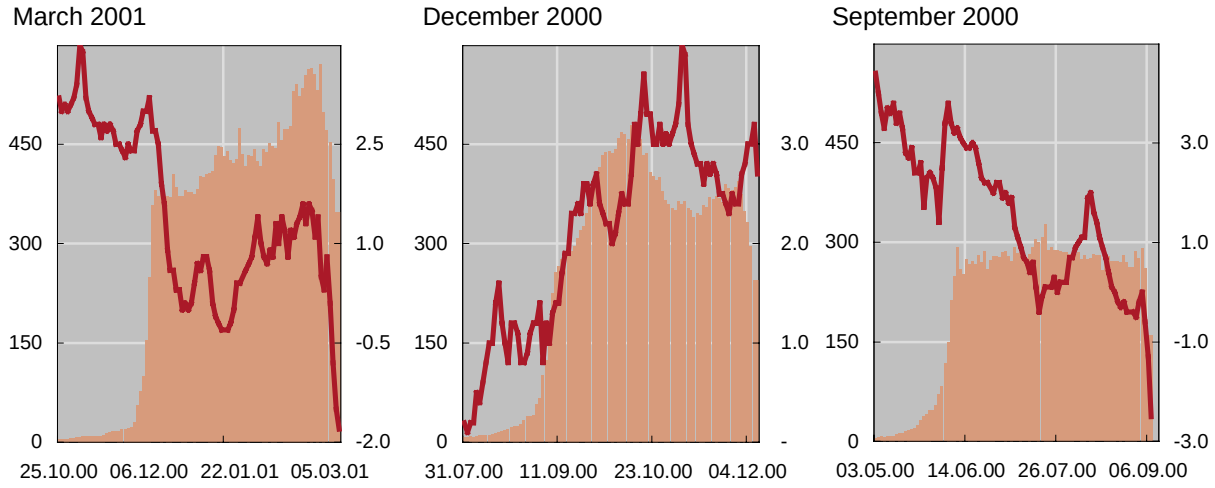
The remarkable success of German government bond contracts has created some difficulties in recent years. Most recently, a market squeeze on the "bobl" contract was reported during the first quarter of 2001.[1] The bobl is the five-year German government note, which is used as the underlying asset for related futures and options traded on Eurex. A small number of European banks apparently cornered the "cheapest-to-deliver" (CTD) note for the contract maturing in March 2001, causing major losses to traders with short positions. This was not the first such incident on Eurex. Similar squeezes have also affected the long-term bond contract ("bund"), the most notable cases being in September 1998 and June 1999.[2] This box examines the squeeze that occurred on the bobl in March 2001.

The use of futures and options on German government bonds expanded rapidly in the second half of the 1990s as the underlying securities gained acceptance as benchmarks for hedging and position-taking on euro zone interest rates. As a result, the amount of exposure in these contracts has become substantially larger than that on the underlying securities. The build-up of large open futures positions relative to the available stock of deliverable securities has at times allowed some traders to "squeeze" other market participants.

In futures markets, squeezes occur when holders of short positions cannot acquire or borrow the securities required for delivery under the terms of a contract. Delivery does not normally pose a problem for traders because the majority close their positions with offsetting transactions prior to contract expiry. However, a trader who remains short at the contract's expiration is obliged to deliver the specified securities, just as one who remains long must take delivery. Because of the difficulty in obtaining transparent prices in bond markets, most contracts on government bonds require physical delivery. This is in contrast to contracts on interbank rates and equity indices, which are settled in cash on the basis of transparent price indices. Physical delivery requires specification of the range of eligible securities and a pricing mechanism to

### Five-year Bobl open interest and spread between CTD and next cheapest security

Open interest in millions of contracts (bars - lhs) and basis points (lines - rhs)




Sources: Datastream; Reuters; BIS calculations.

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[1] See "Le marché est confronté au 'squeeze' des titres allemands admis sur Eurex", *L'Agefi*, 9 March 2001, and "Bobl squeeze may help Eurex rivals", Wall Street Journal Europe, 9 April 2001. [2] Wolfgang Schulte analyses these squeezes in "Interactions between cash and derivatives bond markets: some evidence for the euro area" in "The changing shape of fixed income markets", *BIS Papers No 8*, forthcoming.

turn the different securities into equivalent assets. In the case of the bobl future, the deliverable securities are German government notes with maturities between 4.5 and 5.5 years. To adjust for differences in coupons and maturities, the prices of these bonds are multiplied by a conversion factor based on a valuation of coupons and principal at an annual yield of 6% for all payment dates. However, because this adjustment is imperfect, one of the securities will always turn out to be cheapest to deliver, depending on the level of market interest rates and the slope of the yield curve. Low interest rates relative to the notional coupon would tend to favour delivery of a high-coupon and short-maturity security.

Squeezes are more likely if the supply of the CTD is small, if the choice of CTD is highly predictable and if its rotation to other deliverable securities is prevented by a lack of issues with fairly similar price sensitivities. Indeed, in previous squeezes involving the bund contract, the deliverable basket was composed of a small number of securities with widely different duration characteristics, which reduced the probability of a switch in the CTD. The bias in the conversion factor also made it easy for market participants to predict which security would be the CTD, and thus to target it for a squeeze, while the small size of the CTD encouraged them to squeeze the contract.

Market circumstances in February 2001 appear to have provided a good opportunity for a squeeze. The CTD was the 6.5% note maturing in October 2005. Open interest in the bobl future rose to over 565,000 contracts by 22 February, amounting to a notional amount of €57 billion. This was over five times the stock of CTD notes and about one and a half times the total size of the deliverable basket. By contrast, the December and September 2000 contracts had respectively only 384,000 and 281,000 futures outstanding two weeks before expiry. The graph on the previous page provides an illustration of market conditions prior to expiry of the March 2001 contract and compares them with those prevailing on previous expiry dates. It shows that the increase in open interest of the March 2001 was unusually large. That build-up also happened to coincide with a relatively small amount of the CTD note. Moreover, the next CTD, the 6% note maturing in January 2006, would have been significantly more expensive to deliver.

A small number of European banks apparently took this as an opportunity to corner the CTD note. With these banks buying large amounts of the note, short sellers found that when they tried to offset their positions, the price of the contract rose sharply. Indeed, the implied futures yield fell by almost 30 basis points in the two-week period before expiry. By the final day of trading, on 8 March, a participant who had shorted the contract at the peak of open interest would have lost 17 basis points of the implied yield of the futures contract.

The experience with the March 2001 contract has apparently led traders to adopt a defensive attitude. Hoarding of the deliverable securities on the next maturing bobl contracts (June and September) has been reported, which could have negative consequences for market liquidity. The reluctance of traders to take short positions on German government bonds could also depress the yield on deliverable securities relative to other securities.

These problems could become more acute if reduced German budget deficits resulted in a smaller basket of deliverable securities, with significant differences in coupons and maturities. However, the German government has begun to concentrate issuance in a narrower range of benchmarks. A higher volume of issuance of two-year, five-year and 10-year bonds should help increase the amount of underlying securities for Eurex contracts.

For its part, Eurex announced in early June the introduction of position limits on the open interest of single market participants and lower penalties for failure to deliver. Market participants had suggested a number of other measures, including a widening of the basket of deliverable securities to other European government bonds, cash settlement and an extension of the physical delivery period. Steps to improve the functioning of the repo market have also been proposed. A more efficient repo market would allow more effective arbitrage between the cash and futures markets, making squeezes more difficult to carry out.

## The global over-the-counter (OTC) derivatives markets[1]

Amounts outstanding, in billions of US dollars

| | Notional amounts | | | | Gross market values | | | |
|---|---|---|---|---|---|---|---|---|
| | End-June | End-Dec | End-June | End-Dec | End-June | End-Dec | End-June | End-Dec |
| | 1999 | | 2000 | | 1999 | | 2000 | |
| Grand total | 81,458 | 88,201 | 94,008 | 95,199 | 2,628 | 2,813 | 2,572 | 3,180 |
| A. Foreign exchange contracts | 14,899 | 14,344 | 15,494 | 15,666 | 582 | 662 | 578 | 849 |
| Outright forwards and forex swaps | 9,541 | 9,593 | 10,504 | 10,134 | 329 | 352 | 283 | 469 |
| Currency swaps | 2,350 | 2,444 | 2,605 | 3,194 | 192 | 250 | 239 | 313 |
| Options | 3,009 | 2,307 | 2,385 | 2,338 | 61 | 60 | 55 | 67 |
| B. Interest rate contracts[2] | 54,072 | 60,091 | 64,125 | 64,668 | 1,357 | 1,304 | 1,230 | 1,426 |
| FRAs | 7,137 | 6,775 | 6,771 | 6,423 | 12 | 12 | 13 | 12 |
| Swaps | 38,372 | 43,936 | 47,993 | 48,768 | 1,222 | 1,150 | 1,072 | 1,260 |
| Options | 8,562 | 9,380 | 9,361 | 9,476 | 123 | 141 | 145 | 154 |
| C. Equity-linked contracts | 1,511 | 1,809 | 1,645 | 1,891 | 244 | 359 | 293 | 289 |
| Forwards and swaps | 198 | 283 | 340 | 335 | 52 | 71 | 62 | 61 |
| Options | 1,313 | 1,527 | 1,306 | 1,555 | 193 | 288 | 231 | 229 |
| D. Commodity contracts[3] | 441 | 548 | 584 | 662 | 44 | 59 | 80 | 133 |
| Gold | 189 | 243 | 261 | 218 | 23 | 23 | 19 | 17 |
| Other | 252 | 305 | 323 | 445 | 22 | 37 | 61 | 116 |
| Forwards and swaps | 127 | 163 | 168 | 248 | .. | .. | .. | .. |
| Options | 125 | 143 | 155 | 196 | .. | .. | .. | .. |
| E. Other[4] | 10,536 | 11,408 | 12,159 | 12,313 | 400 | 429 | 392 | 483 |
| Gross credit exposure[5] | | | | | 1,119 | 1,023 | 937 | 1,080 |
| *Memo:* *Exchange-traded contracts*[6] | *15,501* | *13,522* | *13,918* | *14,302* | . | . | . | . |

[1] All figures are adjusted for double-counting. Notional amounts outstanding have been adjusted by halving positions vis-à-vis other reporting dealers. Gross market values have been calculated as the sum of the total gross positive market value of contracts and the absolute value of the gross negative market value of contracts with non-reporting counterparties. [2] Single-currency contracts only. [3] Adjustments for double-counting estimated. [4] Estimated positions of non-regular reporting institutions. [5] Gross market values after taking into account legally enforceable bilateral netting agreements. [6] Sources: FOW TRADEdata; Futures Industry Association; various futures and options exchanges. Table 4.1

highlighting. First, there was an actual decline in the stock of contracts that tend to be of short maturity (particularly outright forwards and forex swaps but also forward rate agreements (FRAs)). Second, interest rate swaps – the largest component of the OTC market – witnessed a particularly pronounced slowdown. Third, the stock of inter-dealer transactions declined in both interest rate and foreign exchange instruments.

Mergers may account for some of the slowdown

Consolidation in the financial industry may possibly have accounted for some of the slowdown in the aggregate numbers, since mergers and acquisitions between reporting entities result in a consolidation of bilateral transactions and, consequently, a reduction of outstanding contracts. The figures, however, do not reflect the impact of the merger of JP Morgan and Chase announced in September 2000, as the firms involved continued to publish separate accounts until the end of the reporting period.

The *interest rate segment* expanded by only 1% in the second half of 2000, to $64.7 trillion. While the stock of FRAs declined by 5% and that of options rose by 1%, the swap market grew by 2%, to $48.8 trillion. Two other developments also stand out in the area of interest rate instruments. First, contracts with a maturity of up to one year decreased by 7%, while longer-term instruments continued to expand at a healthy pace (about 5%). Second, euro-denominated contracts fell by 7%, while those denominated in US dollars maintained their rapid growth.

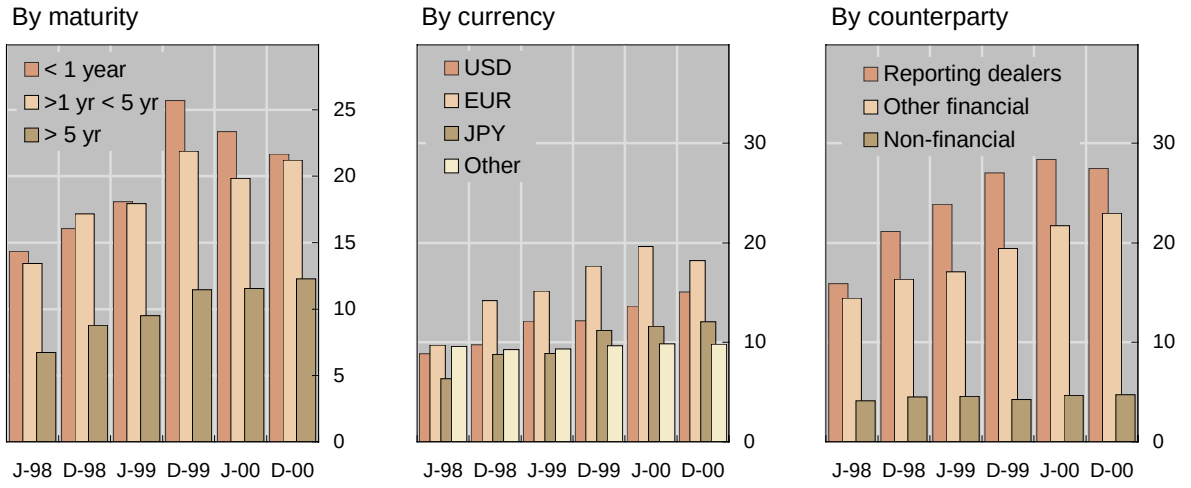
Euro-denominated interest rate swaps decline

In the specific case of the interest rate swap market, the deceleration in growth was in sharp contrast to the very rapid pace of business seen since the end of 1998. This slowdown resulted essentially from a 5% contraction of euro-denominated swaps. The decline in euro-denominated business was spread across the three types of counterparties, but the most significant drop occurred in the inter-dealer group. Various factors may have accounted for this development. These include financial sector consolidation, reduced issuance of certain types of "domestic" securities (such as Pfandbriefe, which are often hedged with swaps) and belated efforts by banks to clean up their pre-euro legacy currency portfolios.[7] By contrast, the stock of dollar-denominated swaps continued to grow at a sustained rate (10%). Net repayments of US government debt have affected the liquidity of the US government bond market and the effectiveness of traditional hedging vehicles, such as cash market securities or government bond futures. This has encouraged market

US dollar swaps continue to grow

## Interest rate swaps and forward rate agreements

Notional amounts outstanding, in trillions of US dollars




Graph 4.4

[7] The transition to the euro allowed market participants to apply netting rules across contracts originally established in legacy currencies.

participants to switch to more effective hedging instruments, such as interest rate swaps.[8]

Most currency instruments slow down

In the area of *currency instruments*, the value of contracts outstanding rose by 1%, to $15.7 trillion, following a fairly strong increase in the previous reporting period. While the stock of outright forward and forex swap contracts fell by 4% and that of currency options declined by 2%, currency swaps grew by 23%. Instruments involving the US dollar and the euro expanded slightly but this was partly offset by declines in contracts involving the yen. This seems to be consistent with the pattern of implied volatility observed in the second half of 2000, whereby the volatility of the dollar/yen pair dropped sharply, while that of the dollar/euro remained high.

The lower value of outstandings in outright forwards, forex swaps and options may have reflected longer-term influences in the underlying spot market. Although new data on turnover and outstandings in the foreign exchange and derivatives markets will not be published by the BIS before the fourth quarter of 2001, anecdotal evidence suggests that interbank trading of currencies has declined in recent years. This could be due to a number of factors, including consolidation in the financial sector, the move to electronic broking and the paring-down of leveraged positions in the aftermath of the Asian and Russian financial crises.

Cross-currency swaps represent the main exception

The cross-currency swap market represented the main exception to the downward trend observed in foreign exchange instruments. This segment has expanded steadily since the BIS began collecting data on the OTC market. Business is likely to have been fuelled by the large volume of syndicated loans and securities issues, particularly those arranged for telecommunications firms. In contrast, the introduction by the US Financial Accounting Standards Board (FASB) of new rules on derivatives and hedge accounting for all publicly traded US companies with a fiscal year ending on 15 June 2000 does not seem to have had any contractionary effect.[9] In fact, the paring-down of positions by some companies in anticipation of the new rules might well have been offset by new business resulting from the replacement of complex hedges with simpler structures.

Activity in equity-linked contracts grows strongly

Activity in the *equity-linked sector* grew strongly, to $1.9 trillion, with all of the expansion taking place in the option segment. The second half of 2000 was a period of renewed uncertainty in global equity markets, with strong downward price pressures, particularly in technology stocks, leading to an upsurge in volatility. Business was most buoyant in options on European equities, such that this segment now accounts for nearly 60% of the stock of equity-linked

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[8] See the special feature by R N McCauley, "Benchmark tipping in the money and bond markets", in the March 2001 issue of the *BIS Quarterly Review*, pp 39-45.

[9] FASB Statement No 133 requires companies to record derivatives on their balance sheets as assets or liabilities that will be measured at fair value. Companies have to record in the income statement or in "Other comprehensive income" any changes in the value of such instruments designated as hedges that do not closely offset changes in the value of the underlying assets.

instruments. Although it may be too early to draw firm conclusions about longer-term trends, the increase in European option business in the second half of 2000 may also have been related to deeper underlying factors. One possible explanation may have been the greater popularity in Europe of equity-related investment products, such as stock investment funds, retail-targeted equity index products, convertible bonds and equity warrants.

## Gross market values rise sharply

Estimated gross market values rose by 24% to $3.2 trillion, the most pronounced increase since the BIS began collecting data on the OTC market. Such an increase was somewhat unusual since the notional amount of outstanding contracts barely increased over the review period. As a result, the ratio of gross market values to notional amounts outstanding rose to 3.3% at end-December 2000 from 2.7% at end-June 2000, reversing a downward trend observed since the second half of 1998. As a percentage of notional amounts, the gross market value of foreign exchange contracts jumped to 5.4% from 3.7%, while that of interest rate contracts rose to 2.2% from 1.9%. One possible factor may have been a steady lengthening in the average maturity of interest rate and foreign exchange contracts.

Higher gross market values may result from longer maturities

## Comparing data sources on the OTC derivatives market

*Robert Scott*

Interest in statistics on the global OTC derivatives market has been growing in line with the market's development. Several organisations regularly publish statistics on the total size and composition of the market. It is important for users to be aware of the key characteristics of each set of data. The semiannual and triennial surveys of activity in OTC derivatives markets, conducted by the G10 central banks and coordinated by the BIS, the ISDA survey and the Swaps Monitor survey all provide fairly comprehensive aggregates on the OTC market but have different methodologies and reporting populations. A brief discussion of these surveys follows.

### Characteristics of OTC data

| Data characteristics | BIS | ISDA | Swaps Monitor |
|---|---|---|---|
| Instrument coverage: | | | |
| Interest rate: | FRAs, swaps & options | Swaps & options | FRAs, swaps & options |
| Currency: | FX swaps, currency swaps, options | currency swaps | FX swaps, currency swaps, options |
| Equity: | Swaps, options | .. | Swaps, options |
| Other: | Commodity | .. | Commodity |
| Frequency | Semiannual | Semiannual | Semiannual |
| Reporting lag | 4-5 months | 5 months | 5-6 months |
| Elimination of double-counting | Yes | No | Estimates only |
| Beginning of data collection | 1998 | 1987 | 1992 |
| Data sources | Reporting banks via G10 central banks | ISDA members | Published bank financial statements |
| Total contracts outstanding (June 2000) | $94 trillion | $60 trillion | $103 trillion |
| Of which: interest rate contracts (June 2000) | $64 trillion | $60 trillion | $79 trillion |

*The International Swaps and Derivatives Association (ISDA) survey*

ISDA was the first organisation to publish data on the OTC derivatives market with a detailed survey introduced in 1987. In 1998, however, the detailed survey was discontinued and replaced by a semiannual "flash-survey" reporting only the total notional amounts outstanding of interest rate swaps, interest rate options and currency swaps outstanding. The survey is based on reporting of derivatives positions from ISDA members. The amounts outstanding from this survey have been very close in magnitude to those covered by the BIS survey for currency swaps and interest rate swaps and options. However, foreign exchange swaps, forward rate agreements and a number of other derivative products, such as equity and commodity derivatives, are not covered.

*The Swaps Monitor survey*

Using a methodology that is quite different from that of both the BIS and ISDA surveys, Swaps Monitor aggregates data based on disclosed positions in the financial statements of large dealers. These aggregates are of similar magnitudes to both the BIS and ISDA measures. Owing

to the lack of detail in financial statements, the instrument and counterparty breakdowns are estimated. The counterparty information is very important in this exercise since inter-dealer positions must be halved to avoid double-counting. Swaps Monitor owns the longest consistent time series on the OTC market. Coverage includes interest rate, currency, equity and commodity contracts.

*The G10 central bank/BIS surveys*

The semiannual survey of OTC derivatives markets provides worldwide consolidated data on the notional amounts and market values of the largest 60 dealers in the G10 countries. Detailed data are available by market risk category, contract type, maturity, currency and type of counterparty. The statistics include estimates of the activity by non-reporting dealers based on the BIS triennial survey, which is similar in structure, but much wider in scope, covering almost 50 countries. The data are adjusted for double-counting by halving positions between reporting dealers, which are reported separately in the statistics. G10 central banks and the BIS are the only providers of data on turnover in the OTC derivatives market. Currently, such data are collected as part of the triennial central bank survey of foreign exchange and derivatives market activity. The triennial central bank survey also provides global data on credit derivatives. With growing demand for information on activity in credit derivatives, central banks are now considering a more frequent collection of data in the context of the semiannual survey.

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# Is there a "Nasdaq effect" in emerging equity markets?

The Nasdaq Composite has come to symbolise the new economy. As an index of technology stocks, its movements have reflected perceptions of changes in productivity growth brought about by new technology and the internet. The extraordinary rise and equally spectacular decline of the index both drew widespread attention. The Nasdaq's peak in March 2000 marked the high point of the euphoria about the new economy, just as the subsequent shedding of 60% of its value indicated that previous valuations had been based on overly optimistic projections of a new growth era. Along with these developments, one fact that also attracted attention in the financial press and in the policy community was the close co-movement of emerging economy equity markets with the Nasdaq.[10]

The strong positive relationship observed between the Nasdaq and emerging market equities has been less evident between the Nasdaq and broader equity indices in industrial economies. This difference in co-movement might simply reflect differences in the composition of these indices. In particular, equity indices for economies with large technology sectors should be highly correlated with the technology-heavy Nasdaq. Indeed, it has been argued elsewhere that sectoral effects now play a larger role in driving the behaviour of equity indices across the world than in the past.[11] However, the relatively higher correlations of emerging market equities with the Nasdaq may reflect other factors as well, such as a perception that these assets have common risk attributes or attract a similar class of investors.

This special feature investigates whether there is a "Nasdaq effect" in the sense that changes in this index drive the movements in headline emerging market equity indices even after accounting for common global and sectoral components. The analysis suggests that changes in the Nasdaq have little additional explanatory power beyond these components, except in a few cases.

[10] For instance, see The Economist (2000), The Wall Street Journal (2001), International Monetary Fund (2000, 2001) and, for the euro area, Tsatsaronis (2001).

[11] See Brooks and Catão (2000), Baca et al (2000) and Sinha et al (2001).

However, the analysis also points to the possibility of instability in the examined relationships, particularly during 2000.

## Basic facts

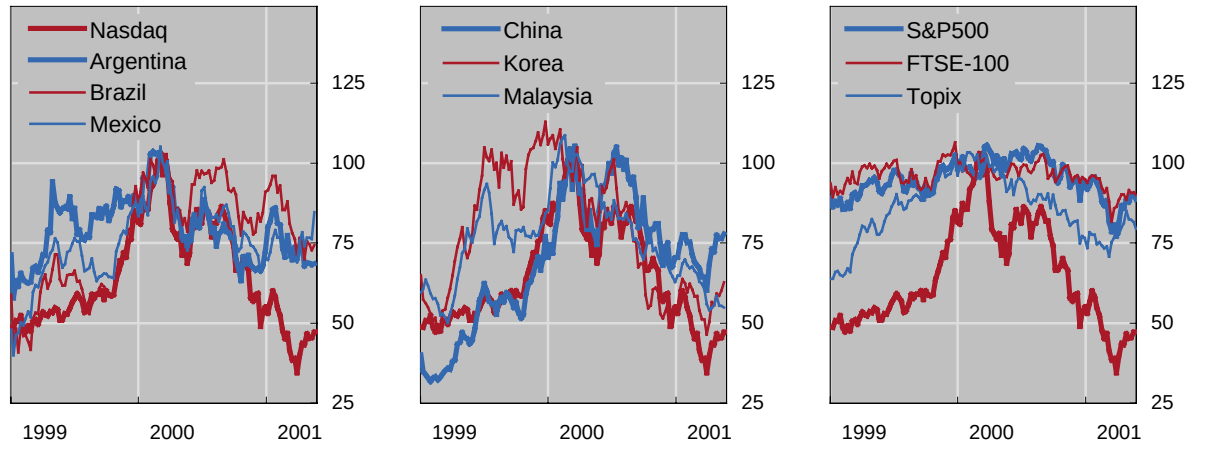
The co-movement between the Nasdaq and equity prices in a number of emerging market economies is evident in Graph 1.[12] Not only did stock prices in most of these economies tend to rise with the Nasdaq during 1999 and the early part of 2000; they also fell in close step during most of last year. In contrast, the relationship with broader equity indices in the United States and other industrial economies appears to be much weaker (right-hand panel).

Table 1 provides a more precise measure of the degree of co-movement of emerging equity market indices with the Nasdaq and its intensification over the last few years. The first column shows the correlation of weekly returns over the period from January 1996 to March 2001, while the remaining columns report correlations over 12-month sub-periods corresponding to calendar years.[13] Most of these correlations are positive, and tend to be highest for Latin American economies. Moreover, there is roughly an upward trend in their values over the five-year period. The majority of the 20 indices moved more closely with the Nasdaq in the year 2000 than they did on average over the

Large, positive gross correlations

### The Nasdaq and other stock markets

March 2000 = 100




Sources: IFC; Bloomberg; Datastream. Graph 1

[12] Note that the indices have been rebased to equal 100 in March 2000. Most of the equity markets examined peaked during the course of that month.

[13] All returns refer to the main (headline) index of the economy. Returns on the Nasdaq and indices in Latin America are calculated using Wednesday closing prices; for all other economies, Thursday closing prices. They are expressed in US dollar terms; thus, issues related to the relationship between equity markets and currency movements are not considered (see Bernard and Galati (2000)).

| Correlation between emerging market equities and the Nasdaq | | | | | | |
|---|---|---|---|---|---|---|
| | 1996-2001 | 1996 | 1997 | 1998 | 1999 | 2000 |
| Asia | | | | | | |
| China | 0.236 | 0.094 | 0.105 | 0.229 | 0.318 | 0.553 |
| Hong Kong | 0.406 | 0.415 | 0.329 | 0.414 | 0.463 | 0.588 |
| India | 0.189 | 0.043 | 0.094 | 0.321 | 0.192 | 0.479 |
| Indonesia | 0.112 | 0.272 | 0.294 | 0.034 | 0.116 | 0.059 |
| Korea | 0.227 | 0.295 | 0.122 | 0.155 | 0.404 | 0.521 |
| Malaysia | 0.219 | 0.200 | 0.232 | 0.167 | 0.397 | 0.103 |
| Philippines | 0.260 | 0.246 | 0.260 | 0.295 | 0.309 | 0.106 |
| Singapore | 0.268 | 0.212 | 0.342 | 0.225 | 0.328 | 0.531 |
| Taiwan, China | 0.211 | 0.130 | 0.266 | 0.247 | 0.191 | 0.408 |
| Thailand | 0.263 | 0.411 | 0.170 | 0.265 | 0.285 | 0.273 |
| Eastern Europe | | | | | | |
| Czech Republic | 0.176 | – 0.075 | 0.086 | 0.394 | 0.08 | 0.341 |
| Poland | 0.414 | 0.192 | 0.381 | 0.509 | 0.510 | 0.292 |
| Russia | 0.247 | .. | 0.427 | 0.317 | 0.150 | 0.309 |
| Turkey | 0.263 | 0.260 | 0.228 | 0.424 | 0.117 | – 0.002 |
| Latin America | | | | | | |
| Argentina | 0.435 | 0.377 | 0.47 | 0.585 | 0.215 | 0.507 |
| Brazil | 0.484 | 0.123 | 0.472 | 0.527 | 0.515 | 0.558 |
| Chile | 0.367 | 0.102 | 0.409 | 0.456 | 0.274 | 0.360 |
| Mexico | 0.537 | 0.417 | 0.483 | 0.597 | 0.532 | 0.464 |
| Venezuela | 0.232 | 0.202 | 0.408 | 0.305 | 0.127 | 0.130 |
| South Africa | 0.246 | 0.242 | 0.337 | 0.238 | 0.248 | 0.391 |
| Average | 0.290 | 0.219 | 0.296 | 0.335 | 0.289 | 0.346 |

Sources: IFC; Bloomberg; BIS calculations. Table 1

whole period from 1996, and the average correlation with the Nasdaq across economies was highest in 2000 as well. That year represents the peak period of correlation for eight out of the 20 emerging economies considered here.

Differences in composition

The closeness of movement with the Nasdaq is somewhat surprising in view of the differences in the composition of the indices across economies. For instance, based on the sector shares (in terms of market capitalisation) in the FTSE indices for emerging market economies in June 2000, few had an important technology sector, which is the dominant component of the Nasdaq index.[14] Moreover, there is broad dispersion in the sectoral make-up of these markets, indicating that economic structure is unlikely to account for the intensity of their co-movement.

[14] There are 10 industrial sectors in the FTSE classification: resources, basic industries, general industrial, cyclical goods, non-cyclical goods, cyclical services, non-cyclical services, utilities, financials and information technology. The share of the IT sector ranged from, for example, 1.4% in Korea to 64.9% in Taiwan, while it was not identified as even existing in several other countries.

## Methodology for computing the Nasdaq effect[15]

In order to determine whether a Nasdaq effect existed in the second half of the 1990s, it is necessary to go beyond the simple return correlations of Table 1. This section describes the methods used to assess whether changes in the Nasdaq help explain changes in emerging market indices, above and beyond what can be explained by a global equity trend and similarities in industrial composition. The starting point of the analysis is to obtain measures of returns in emerging market countries and on the Nasdaq that are stripped of the influence of these factors. Using these "stripped returns", the marginal influence of the Nasdaq on emerging market indices can then be assessed.

Taking account of common global factors ...

... to obtain "stripped" returns…

Ideally, estimates of the stripped returns would be computed by decomposing sectoral-level data across both industrial and emerging market economies, for each week, into four sets of factors using a regression technique developed by Heston and Rouwenhorst (1994): the global mean in equity returns; the excess returns (over the global mean) attributable to sectors; the excess returns attributable to economies; and an idiosyncratic shock term. The sequence of estimates of the economy-specific factors for each emerging market economy would provide a weekly time series of stripped returns. The residuals from a regression of the gross Nasdaq returns on the estimated global equity trend and sectoral factors would provide a measure of stripped Nasdaq returns. Estimates of the Nasdaq effect could then be obtained by looking at the relationship between the stripped Nasdaq and emerging market returns (eg non-zero correlations would indicate the presence of a Nasdaq effect).

... to measure the Nasdaq effect

Lack of sectoral-level data for emerging markets

Because sectoral-level data on emerging equity market indices are not readily available for the entire 1996–2001 period, the analysis here employs a slightly different procedure. In the first step, the methodology is applied to construct measures of the global trend factor and industrial sector factors by using sectoral-level data from a number of industrial economies only.[16] In the second step, the influence of sector returns in emerging markets can be isolated by a time series regression of the weekly returns of the headline index, in excess of the global trend factor, on the set of excess returns to the 10 sector factors that were estimated in the first step. Furthermore, including the excess return on the Nasdaq (over the global trend factor) in this regression provides a measure of its marginal impact on emerging market equities beyond what can be explained by the global trend factor and industrial composition.[17]

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[15] The reader interested only in the findings of this article, rather than in the technicalities of the methodology, can skip to the next section.

[16] Ten sector factors are estimated corresponding to the FTSE classification mentioned in footnote 14. The estimated factors have the interpretation of the price of a portfolio that has an exposure to the specific sector but is fully diversified across all other sectors and countries, expressed in terms of its return in excess of the global trend factor.

[17] This regression is akin to the style-analysis methodology first proposed by Sharpe (1992), who used a similar regression to infer portfolio allocation strategies for managed portfolios from information on their returns.

By comparison with the first procedure described above, the approach taken here amounts to assuming that the estimates of the global trend factor and sector factors, which are based on industrial economy data alone, are valid proxies for those that would be obtained using both industrial and emerging market data. Under this alternative method, notice that, by first subtracting the global trend factor from both the emerging market and Nasdaq returns, and then including the excess returns to the sectors in the second-step regression, stripped returns are effectively obtained. These stripped returns are the equivalent of the country factors that would be estimated from the regression on sectoral-level data.

Testing for changes in behaviour

Finally, it has been argued that changes in correlation do not necessarily reflect changes in the underlying links between variables in cases in which the economic environment has become more volatile; higher correlations might simply be a statistical artefact of the increase in volatility. In order to assess whether variations in the strength of the Nasdaq effect observed across subperiods are the result of structural changes in the link with the Nasdaq, a test suggested by Loretan and English (2000) is constructed.[18]

## Evidence of a Nasdaq effect

The gross correlations shown in Table 1 reflect all of the risk factors driving stock indices. The measures of the Nasdaq effect presented in this section are obtained as the coefficient in a regression of emerging market returns on Nasdaq returns, after controlling for the correlation that would be expected to derive from their co-movements with global market returns and sector-specific factors. Coefficient estimates for the entire period January 1996–March 2001, as well as for five subperiods corresponding to calendar years, are presented in Table 2. Entries with an asterisk are statistically significant.

Generally, the Nasdaq effect does not appear to be present. Over the full period, a significant relationship holds in Argentina, Mexico and Turkey only. However, in those cases where the coefficient is significant, it is positive. The results display two other interesting features.

Lack of clear geographical ...

First, they point to a lack of sharp geographical differences. Even though the Nasdaq effect is not found to exist at all in Asia over the entire sample period, it is present in only a few economies in the rest of the world. Moreover, the results in individual years are mixed across the regions. Thus, it can be concluded that the positive correlations reported in Table 1 mostly reflect a link with the Nasdaq that can be explained by industrial composition effects or the global trend in equity market returns.

[18] Bootstrapped confidence intervals are computed for the unconditional correlations of the stripped excess returns on the emerging market indices and the Nasdaq (ie net of sector effects) for each calendar year. Drawing random samples equal in length to one year from the 63-month history of the set of stripped excess returns, the confidence intervals are calculated by conditioning on the variance of the Nasdaq in each random sample falling within 10 basis points of the observed volatility of the Nasdaq in the corresponding calendar year. The interested reader is referred to Loretan and English (2000) for further details.

... and temporal differences

Second, there are no discernible temporal patterns in these results. Aside from the finding that the Nasdaq effect was completely absent in 1997, none of the other years studied looks special. If anything, the link with the Nasdaq was statistically stronger in more economies in 1999 than in 2000. One surprising conclusion from this analysis is that the Nasdaq does not appear to have had a positive independent influence on Asian stock prices during 2000.[19]

The Nasdaq experienced marked changes in volatility during the period under investigation. As mentioned in the previous section, when volatility fluctuates, changes in correlations may simply be statistical artefacts rather than reflecting changes in underlying behaviour. Using the simple correlations between the stripped returns (as opposed to the regression coefficients presented in Table 2), a test was undertaken to see if the underlying relationship with the Nasdaq was stable throughout the period

The estimated importance of the Nasdaq effect

| | 1996-2001 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|
| Asia | | | | | | |
| China | 0.042 | 0.296 | 0.271 | 0.392 | −0.111 | −0.154 |
| Hong Kong | 0.104 | 0.379[1] | − 1.023 | 0.632 | 0.042 | 0.023 |
| India | 0.270 | −0.518 | − 0.284 | 0.099 | 0.873[1] | −0.008 |
| Indonesia | −0.098 | 0.259 | 0.258 | −0.077 | 0.260 | −0.527 |
| Korea | −0.136 | −0.121 | 0.763 | −0.536 | 0.936 | 0.487 |
| Malaysia | 0.439 | −0.130 | 1.461 | −0.533 | 1.173[1] | 0.540 |
| Philippines | 0.120 | −0.090 | 0.601 | 0.424 | 0.273 | −0.429 |
| Singapore | 0.281 | −0.063 | 0.326 | 0.463 | 0.733[1] | −0.104 |
| Taiwan, China | 0.034 | −0.148 | − 0.165 | 0.204 | 0.314 | 0.016 |
| Thailand | 0.464 | 0.020 | − 0.208 | 1.109 | 0.644 | −0.414 |
| Eastern Europe | | | | | | |
| Czech Republic | 0.147 | −0.521 | 0.883 | 0.650 | −0.607 | 0.760[1] |
| Poland | 0.273 | −0.764 | 0.757 | 0.390 | 0.243 | 0.428 |
| Russia | 0.563 | .. | 0.342 | −0.469 | 2.357[1] | 0.065 |
| Turkey | 0.856[1] | 0.420 | 1.992 | 0.993 | 0.249 | −0.171 |
| Latin America | | | | | | |
| Argentina | 0.820[1] | 1.065[1] | − 0.108 | 1.079[1] | 0.162 | 0.546[1] |
| Brazil | 0.218 | 0.129 | − 0.047 | 0.742 | −0.499 | −0.012 |
| Chile | 0.270 | −0.089 | 0.202 | 0.882[1] | −0.262 | 0.293 |
| Mexico | 0.361[1] | 0.536 | 0.008 | 0.586 | 0.012 | 0.241 |
| Venezuela | 0.497 | 0.646 | 0.750 | 0.408 | 0.103 | 0.594 |
| South Africa | 0.262 | 0.675[1] | 0.179 | 0.64 | −0.091 | 0.536[1] |
| Average | 0.289 | 0.104 | 0.348 | 0.404 | 0.340 | 0.136 |

[1] indicates significance at the 90% confidence level.

Sources: IFC; Bloomberg; BIS calculations. Table 2

[19] To investigate whether a Nasdaq effect exists in industrial economies, the same procedure used to produce Table 2 was also applied to broad-based equity indices in a selection of economies. Over the full sample period, the results show that the Nasdaq had a marginal influence in only a few economies. In these cases, the coefficients are negative, suggesting that the Nasdaq attracted funds at the expense of equity markets in these economies.

under consideration.[20] The results of the test are reported in Table 3. Entries with asterisks correspond to those that, conditional on the observed volatility of the Nasdaq during that year, are different than would have been expected if no change in the underlying link with the Nasdaq had occurred.

The correlations paint a slightly different picture than the previous results in Table 2. The correlations in Table 3 point to changes in underlying behaviour in eight of the 11 cases in Table 2 in which coefficients were found to be significant in subperiods. Furthermore, there is some evidence that 2000 differed from other years, although for reasons that run contrary to widely held beliefs. In the Philippines, Singapore and Thailand, for example, the correlation between stripped returns was negative and unusually large (in absolute value). However, large, positive coefficients are obtained in some other countries, implying that the direction of Nasdaq influence overall was mixed during 2000.

Correlation between emerging market equities and the Nasdaq net of sector effects

| | 1996-2001 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|
| Asia | | | | | | |
| China | 0.004 | −0.046 | 0.046 | 0.065 | 0.037 | −0.101 |
| Hong Kong | 0.029 | 0.225[1] | − 0.128 | 0.125 | 0.085 | −0.071 |
| India | 0.087 | 0.020 | − 0.035 | 0.087 | 0.241[1] | −0.031 |
| Indonesia | − 0.016 | 0.16 | 0.052 | −0.054 | 0.070 | −0.246 |
| Korea | − 0.033 | −0.061 | − 0.014 | −0.113 | 0.200[1] | 0.093 |
| Malaysia | 0.084 | 0.027 | 0.140 | −0.031 | 0.302 | 0.191 |
| Philippines | 0.031 | 0.067 | 0.085 | 0.055 | 0.130 | −0.275[1] |
| Singapore | 0.096 | −0.086 | 0.126 | 0.093 | 0.273 | −0.116[1] |
| Taiwan, China | 0.012 | −0.074 | − 0.105 | 0.037 | 0.127 | 0.026 |
| Thailand | 0.079 | 0.189 | − 0.031 | 0.133 | 0.186 | −0.208[1] |
| Eastern Europe | | | | | | |
| Czech Republic | 0.047 | −0.159 | 0.189 | 0.159 | − 0.16 | 0.295[1] |
| Poland | 0.063 | −0.170 | 0.215 | 0.116 | 0.003 | 0.088 |
| Russia | 0.058 | .. | 0.010 | −0.066 | 0.286[1] | 0.028 |
| Turkey | 0.114 | 0.118 | 0.199 | 0.138 | 0.038 | −0.057 |
| Latin America | | | | | | |
| Argentina | 0.235 | 0.423[1] | − 0.056 | 0.345[1] | 0.097 | 0.147 |
| Brazil | 0.032 | −0.007 | − 0.019 | 0.213[1] | −0.132 | −0.169[1] |
| Chile | 0.010 | −0.129 | 0.121 | 0.256 | −0.039 | 0.124[1] |
| Mexico | 0.108 | 0.182 | − 0.011 | 0.226 | 0.004 | 0.015 |
| Venezuela | 0.092 | 0.136 | 0.155 | 0.036 | 0.088 | 0.161 |
| South Africa | 0.079 | 0.203[1] | 0.063 | 0.106[1] | −0.044 | 0.168[1] |
| Average | 0.065 | 0.054 | 0.050 | 0.096 | 0.090 | 0.003 |

[1] indicates significance at the 90% confidence level.

Sources: IFC; Bloomberg; BIS calculations. Table 3

[20] The test used was the one suggested by Loretan and English (2000), as described in the previous section. Notice that the standard deviations of weekly stripped Nasdaq returns were 1.2% (1996), 0.94% (1997), 1.27% (1998), 1.26% (1999) and 1.77% (2000).

## Conclusions

This article has found that, after accounting for industrial composition effects, the correlation between returns on the Nasdaq and headline equity indices in emerging market economies was generally weak in the second half of the 1990s. This suggests that, in a few cases only, an alternative common risk factor has affected the pricing of Nasdaq stocks and equities in these markets.

In economies where the Nasdaq effect was found (Argentina, Mexico and Turkey), the evidence presented here is sufficient to identify the existence of an effect, but not to characterise it. One possible explanation is that equities in the Nasdaq and these economies lie close to each other in the spectrum of asset classes from the point of view of international investors. However, this view is difficult to reconcile with the evidence against the existence of a Nasdaq effect in most emerging market economies. Presumably, stocks in many of these economies share a similar risk profile.

Nasdaq effect could be underestimated

It is important to realise that the methods used here attempt to capture what is possibly only one part of a larger total influence of the Nasdaq on other equity indices. To the extent that returns on the Nasdaq are themselves a main force driving the global trend factor, the estimates of the Nasdaq effect provided here would be biased downwards. This is because the Nasdaq effect as defined here captures co-movements once the global trend and sectoral factors, assumed to be exogenous to the Nasdaq, are already accounted for. If, instead, the Nasdaq is used as a benchmark for pricing all global equities, then the average return on global equities itself will be subject to a Nasdaq effect as well. Likewise, if excess returns in the global IT sector are cued off changes in the Nasdaq, then the methodology employed here will miss this effect too. Unfortunately, there is no simple way to separately identify the independent influence of the Nasdaq through these two channels. Moreover, the Nasdaq effect may be stronger at a different frequency. For instance, stripped daily returns might exhibit higher correlations than the weekly returns used here.

Implications for portfolio diversification and contagion

The result that a common risk factor does not appear to affect Nasdaq stocks and emerging market equities suggests that there is still scope for international diversification along geographical lines. In addition, the hypothesis that the Nasdaq might be a new channel through which global financial contagion could spread is not supported by the results. However, there could be implications for portfolio diversification and contagion if, as discussed, the Nasdaq is indeed used as a benchmark pricing index in a way not captured here.

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# Do macro announcements still drive the US bond market?

In the 1990s, the sharpest movements in the price of US Treasury securities tended to take place at release times of macroeconomic announcements. In theory, the yield on (and thus the price of) a default-free, fixed income security reflects the financial market's view of the future path of risk-free short-term interest rates over the remaining life of the instrument. In turn, the most fundamental influences leading to changes in the market's expectation of future short rates are macroeconomic developments that induce changes in beliefs regarding future real interest rates or inflation, including beliefs about shifts in monetary policy. Consistent with this view, Fleming and Remolona (1999) find that each of the 25 largest short-term price movements in the five-year US Treasury note during the one-year period from August 1993 to August 1994 was associated with a macroeconomic announcement.

An alternative view suggests that yields on default-free securities might fluctuate because of liquidity-driven movements in the demand for fixed income securities relative to other assets. For example, volatility in equity prices might generate short-term portfolio flows between the equity and bond markets. Such demand-related influences would be expected to be most prevalent in relatively illiquid markets. Although it still ranks among the most liquid markets in the world, Fleming (2000) has documented that, according to various measures, the US Treasury market has witnessed a decline in liquidity in recent years, in part due to reduced issuance. The combination of higher equity price volatility and lower Treasury market liquidity has led some to assert that bond market movements are driven less by macroeconomic developments than was previously the case.

Announcements in 1999 still exerted an influence on bond prices

In this special feature, we explore the extent to which macroeconomic announcements and large, short-run equity price movements are associated with large, short-run changes in the price of the five-year US Treasury note during the calendar year 1999.[21] The analysis yields five basic results. First, we find that the largest short-term price movements in the Treasury market were still associated with macroeconomic announcements, but the set of

[21] More recent Treasury market data were not yet available for examination.

announcements having large impacts was broader than before. Second, announcements continued to be associated with higher than average price volatility. Third, the surprise content of announcements in 1999 was smaller than before. Fourth, the price response to surprises in non-farm payrolls, the single most important announcement, was no longer consistent in sign although the price response to inflation surprises was similar to that previously found. Finally, we find no evidence that large equity price changes drove bond price movements in 1999.

## The five-year Treasury note in 1999

Data for this feature come from GovPX, Inc., a joint venture of the primary US dealers and inter-dealer brokers. The data contain information on each quote, purchase and sale in the US Treasury market that was transacted through one of five of the leading six inter-dealer brokers. We examine the on-the-run five-year Treasury note, a security that was very actively traded. GovPX posted a daily average of 535 trades for it during 1999, representing a 19% decline in the number of trades reported relative to 1993-94.

In this feature, we follow the empirical methodology of Fleming and Remolona (1999) wherever possible, but focus on the four announcements identified in the earlier study as the most important: employment (with non-farm payroll as the headline number), the producer price index, the consumer price index and advanced retail sales.[22] These four announcements, which we will refer to as the "major" announcements, are made at precisely 08:30 New York time on announcement days. To be certain that price movements in the Treasury note can be associated with the announcement, we examine the change in note price covering a narrow time interval, beginning with the price quote immediately preceding 08:30 and ending with the price quote immediately preceding 08:35.

## The largest price moves of the year

Many announcements produced sharp bond price movements

Each of the largest 25 five-minute price changes in the five-year note in 1999 was associated with some type of announcement. Further, all occurred in response to new information that related either directly to US monetary policy or to US economic developments that indirectly conveyed information regarding US monetary policy. Economic developments outside the United States did not cause large changes in US Treasury prices in 1999.

More specifically, four of the largest 25 moves were associated with the announcement of the target federal funds rate and another two were related to comments made by Federal Reserve Chairman Alan Greenspan. The

[22] Fleming and Remolona (1999) also indicate the importance of the Fed's announcement of the outcome of the FOMC meeting. This announcement was not examined in this study because the forecast value of the funds rate was equal to the actual funds rate on each of the eight announcement dates in 1999. That is, even though these announcements still occasionally moved the bond market, they contained no surprises.

remaining 19 of the largest price moves in 1999 were associated with nine different types of announcements regarding the state of the US economy. The announcements most frequently associated with the largest 25 price moves in 1999 were the employment report, which was associated with five, and the CPI and PPI announcements, which were each associated with three.

A comparison of the largest price moves in 1999 with those in the earlier period suggests several differences. First, the range of announcements associated with large price moves has increased. In 1993-94, only seven different announcements accounted for the 25 largest price moves whereas 11 were relevant in 1999. Second, whereas the four major announcements were associated with 19 out of the 25 largest price moves in 1993-94, they can only explain 11 out of the 25 largest in 1999. Third, the employment report has apparently become less associated with large price reactions. In 1993-94, this report was associated with the four largest price moves and 10 of the 25 largest. By contrast, employment reports in 1999 were only associated with five of the 25 largest, although they did account for the second, third and fifth largest five-minute price moves. Finally, announcements that were unrelated to

The 25 largest five-minute price moves in 1999[1]

| Rank | Date | Time | Price variation[2] | Announcement |
|---|---|---|---|---|
| 1 | 30 Jun 1999 | 14:15 | 74.3 | Fed policy rate |
| 2 | 05 Mar 1999 | 08:30 | 52.7 | Employment |
| 3 | 03 Sep 1999 | 08:30 | 41.8 | Employment |
| 4 | 14 May 1999 | 08:30 | 40.8 | Consumer price index |
| 5 | 06 Aug 1999 | 08:30 | 39.1 | Employment |
| 6 | 22 Jul 1999 | 11:00 | 38.8 | Greenspan testimony |
| 7 | 29 Apr 1999 | 08:30 | 36.5 | Employment cost index |
| 8 | 18 May 1999 | 14:15 | 35.2 | Fed policy rate |
| 9 | 22 Jul 1999 | 11:05 | 29.8 | Greenspan testimony |
| 10 | 08 Jan 1999 | 08:30 | 29.4 | Employment |
| 11 | 15 Oct 1999 | 08:30 | 26.7 | Producer price index |
| 12 | 01 Jun 1999 | 10:00 | 26.2 | NAPM[3] index |
| 13 | 10 Nov 1999 | 08:30 | 24.2 | Producer price index |
| 14 | 05 Nov 1999 | 08:30 | 24.1 | Employment |
| 15 | 29 Jul 1999 | 08:30 | 23.1 | Employment cost index |
| 16 | 13 Jan 1999 | 07:40 | 22.1 | Producer price index |
| 17 | 30 Apr 1999 | 08:30 | 21.8 | GDP and GDP price deflator |
| 18 | 30 Jun 1999 | 15:00 | 21.5 | Fed policy rate |
| 19 | 01 Oct 1999 | 10:00 | 21.3 | NAPM[3] index |
| 20 | 28 May 1999 | 10:00 | 20.6 | University of Michigan confidence indicator |
| 21 | 14 May 1999 | 09:15 | 20.5 | Industrial production |
| 22 | 16 Jun 1999 | 08:30 | 20.4 | Consumer price index |
| 23 | 25 Feb 1999 | 16:00 | 19.2 | Existing home sales |
| 24 | 15 Sep 1999 | 08:30 | 19.0 | Consumer price index |
| 25 | 16 Nov 1999 | 14:15 | 18.8 | Fed policy rate |

[1] The five-minute price moves are sorted in descending order. [2] In basis points. [3] National Association of Purchasing Management.

Sources: Bloomberg; GovPX Inc.; BIS calculations. Table 1

large price moves during the earlier period were important in 1999. In particular, the announcement of the employment cost index and the National Association of Purchasing Management (NAPM) index were each responsible for two of the largest 25 price moves in 1999.

## Announcements and price volatility

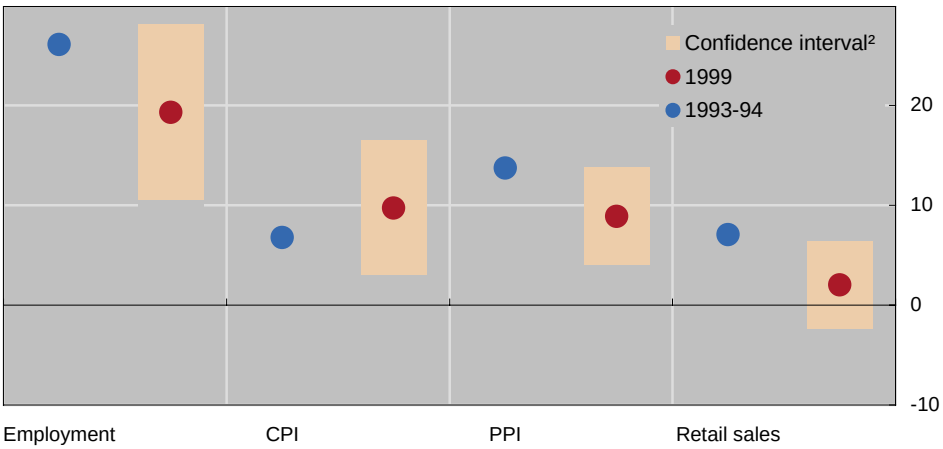
Certain types of announcements convey more information on average to market participants than others. Thus, the typical price response should vary across types of announcement.

As the four announcements considered in this feature are released at 08:30, it is possible to determine which has the largest price impact by comparing the magnitude of the 08:30 price change on different announcement days. The magnitude of the price change at 08:30 is measured as the absolute value of the change in the log price between 08:30 and 08:35, where price is defined as the midpoint of the bid and ask price. For each of the 250 business days in the sample period, this measure of price volatility was regressed on four dummy variables, one for each of the four announcements, where each dummy variable was set equal to one on days when the given announcement was made.

Price volatility rose shortly after announcements

The results for the regression using 1999 data indicate that the announcement of the employment report generates the greatest price volatility of just under 20 basis points. The CPI and PPI announcements are associated with roughly half the volatility. These results are quite similar to those found for 1993-94. The estimated coefficients for the employment, CPI and PPI announcements are not statistically significantly different from the point estimates reported for the earlier period. The one difference from the earlier

### Impact of announcements on Treasury note price volatility[1]




[1] Regression coefficients indicate the average difference in price volatility for the five-year US Treasury note for the five-minute period after an announcement as compared with the same period on non-announcement days. Volatility is defined as the absolute value of the log price change times $10^4$. Coefficient significance is based on two-sided t-tests using heteroskedasticity consistent standard errors [2] Based on two standard errors on either side.

Sources: Fleming and Remolona (1999); GovPX Inc.; BIS calculations. Graph 1

results is the impact of the data release for retail sales. In 1993-94, this type of announcement was associated with a 7 basis point change in price. In 1999, no statistically significant increase in price volatility is found on days when retail sales figures are made public.

## How informative are the announcements?

The previous section has documented that announcement times are associated with an increase in price volatility. To the extent that markets are efficient, one might expect that these rapid price changes are reflecting only the new information contained in the announcement.

We identify what is "new" in an announcement as the announcement's "surprise", defined as the difference between the actual announced value and the median forecast value of that same variable.[23] We then calculate the average size of the announcement surprises in 1999 for each of the four announcements. Comparing the average size of the surprises with those reported in the earlier study, we find that announcements have generally become more predictable. Specifically, the mean absolute size of the surprise component in the announcements of consumer prices, producer prices and retail sales was 10%, 21% and 50% lower respectively in 1999 than in 1993-94. The clear exception is the surprise content of the employment report, which has remained roughly the same.

Surprises were smaller in 1999 than in 1993-94

There are at least two explanations for the apparent reduction in announcement surprises. First, market participants may have become better at forecasting macroeconomic developments. Second, public disclosures other than macroeconomic announcements may have become more revealing. In either of these cases, the amount of new information actually contained in an announcement may have declined.

## Announcement surprises and price movements

The next obvious question is whether the bond market incorporates the new information contained in an announcement surprise into prices in the same way as in the past. In particular, does new information tend to move prices in a predictable direction and by a predictable amount as it did in 1993-94?

To answer this question, we regressed actual five-minute changes in the note's log price on the set of four surprise variables.[24] The sample for this

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[23] So defined, the data indicate that the forecasts for the four macroeconomic variables were unbiased in 1999. Surprises were relatively evenly split between positive and negative values, and each variable's mean surprise was much smaller than its standard deviation. Since Fleming and Remolona (1999) did not report information on the dispersion of announcement surprises, one cannot determine whether forecasts were unbiased estimates of announced values during 1993-94.

[24] To determine whether price movements could be attributed solely to the surprise, the regressions were initially run also including the expected component of the announcement. None of the four expected values was statistically significantly different from zero.

estimation was constrained to contain only the 42 days on which at least one of the four major announcements was made, and the surprise variables were set to zero whenever a given day did not have the given announcement. The results for both 1993-94 and 1999 have been scaled to reflect identically sized surprises. In particular, the coefficients represent the estimated price change in response to a positive surprise of 100,000 new non-farm jobs in the employment report or a 0.10% positive surprise in consumer prices, producer prices or retail sales.

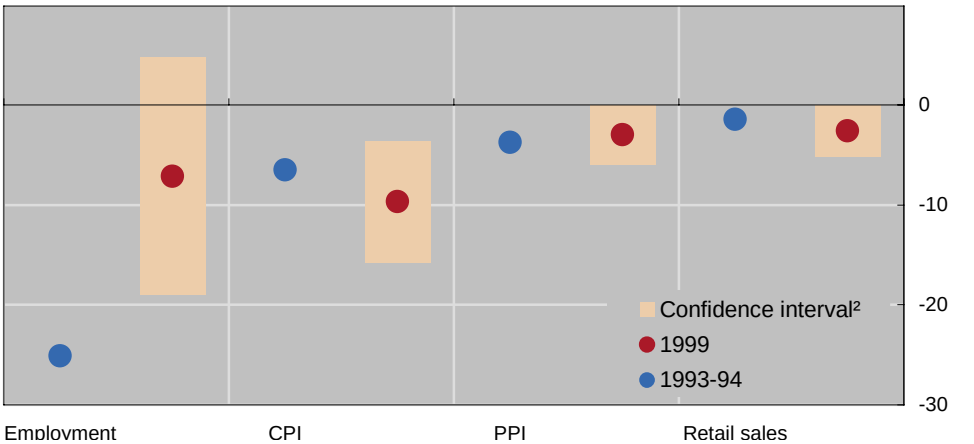
Positive surprises increase the expectation of monetary tightening

Surprises were defined so that positive values indicate either that the real economy (employment and sales) is performing better than expected or that prices (consumer and producer) are higher than expected. As a result, any positive surprise would probably increase the market's expectation of future monetary tightening, leading to an immediate fall in Treasury prices. This expected negative correlation between announcement surprises and price movements was found in the earlier study for most of announcements examined, but was especially strong for non-farm payrolls.

The response to the employment report was no longer predictable

Perhaps the most significant difference between the two periods is the lack of a consistent market response in 1999 to non-farm payroll surprises. In 1993-94, a positive surprise of 100,000 in the change in the non-farm payroll number in the employment announcement was associated with a 25.11 basis point decline in the price of the five-year note. By contrast, in 1999, the response was not statistically different from zero. Since we found earlier that employment announcements during this period were in fact associated with large absolute price movements, this result indicates that the direction of the price change in response to employment surprises was no longer consistent.

## Impact of announcement surprises on Treasury note prices[1]

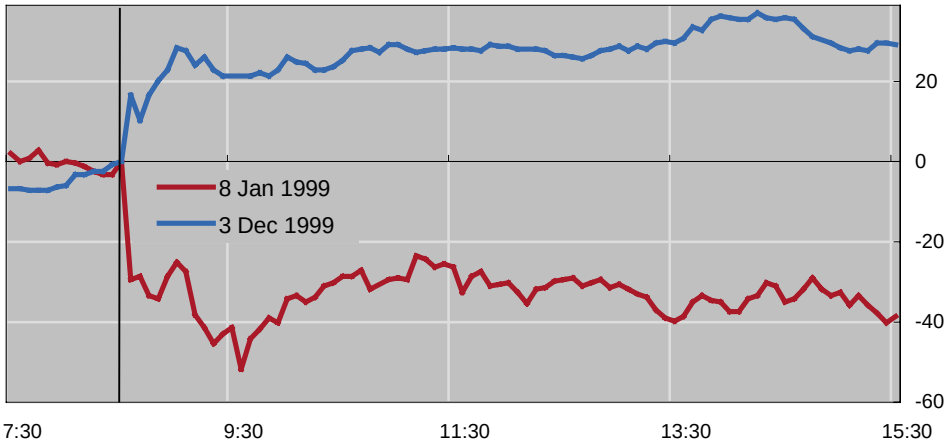



[1] Regression coefficients indicate the impact of announcement surprises on the price of the five-year US Treasury note. Price changes are defined as the log price change times $10^4$. Announcement surprises are actual numbers announced minus forecast numbers. Impacts are scaled to reflect a positive surprise of 100,000 new jobs, or a 0.1% surprise on the CPI, PPI or retail sales figures. Coefficient significance is based on two-sided t-tests using heteroskedasticity-consistent standard errors. [2] Based on two standard errors on either side.

Sources: Fleming and Remolona (1999); GovPX Inc.; Bloomberg; BIS calculations. Graph 2

## The five-year note on two days with positive employment surprises[1]

Change in price (basis points)




[1] Prices quoted in five minute intervals between 7.30 am and 3.30 pm. The vertical line denotes the time of the announcement; the scales of the vertical axes represent the number of basis points difference from the price at 8.30 am. Employment surprise defined as surprise in non-farm payroll.

Sources: GovPX Inc.; BIS calculations. Graph 3

As an illustration, one can compare the bond market reaction to the release of employment reports on different dates. On 8 January and 3 December 1999, the employment report revealed that the US economy had created 158,000 and 34,000 more non-farm jobs respectively than had been expected. Based on the results of the 1993-94 study, a fall in the Treasury note price would have been expected on both days. In the five minutes after the announcement, however, the price of the five-year note fell by 29.4 basis points on 8 January, but rose by 16.6 basis points on 3 December.

A second, less obvious difference between the two periods is the response to retail sales announcements. In the period 1993-94, while the response was negative, it was not statistically significant. In 1999, however, a 0.10% positive surprise in this announcement led to a 2.58 basis point decline in the five-year Treasury note price.

Positive inflation surprises still caused bond prices to fall

Finally, in 1993-94 and 1999, a given positive surprise in either the consumer or the producer price index led to a fall in the Treasury note price of a broadly similar magnitude. In particular, a 0.10% positive surprise in consumer prices led to a 6.48 basis point decline in the Treasury note price in 1993-94. A similarly sized surprise in 1999 led to a 9.64 basis point fall in price, although this estimate is not significantly larger than the estimate for the earlier period in a statistical sense. The results for the producer price announcement

are qualitatively similar, with a 0.10% positive surprise leading to a 3.73 basis point decline in the price in 1993-94 and a 2.97 basis point decline in 1999.[25]

## Do equity flows move the bond market?

In recent years, prices of US equities, especially those in the technology sector, have been particularly volatile. Volatility in equity prices has led to large swings in short-term cash flows into and out of equity markets. As the US Treasury market is a natural place to park funds, a movement of funds into or out of equities might be expected to be mirrored by a compensating change in the demand for US Treasuries. If so, in the short run at least, equity and bond prices would move in the opposite direction.

In a recent study, Fair (2001) finds no evidence for this hypothesis for the period 1993-94. In fact, he documents that stock and bond prices nearly always moved in the same direction following announcements. Specifically, of the 17 large bond price changes for which he has equity price information, Fair (2001) reports that 16 were associated with equity price movements in the same direction.

Stock and bond prices still moved in the same direction

This finding was confirmed for 1999. Each of the nine episodes examined by Fair that were associated with the four macroeconomic announcements considered in this feature led to movements in stock and bond prices in the same direction. Fair also reports eight large equity price changes in 1999 that were not associated with any event. These "unexplained" large changes in equity prices were not accompanied by swings in bond prices either. On only one of these eight occasions did the price of the five-year Treasury note change by more than 1 basis point.

## Conclusion

A comparison of the impact of announcements on Treasury market prices in 1999 with those in 1993-94 suggests that large changes in bond prices over short time periods continued to be associated with macroeconomic announcements. Further, the range of announcements leading to significant price movements seems to have increased. The announcements regarding employment, CPI, PPI and retail sales continued to give rise to sizeable increases in short-run price volatility, with positive inflation surprises inducing significant declines in bond prices. In a notable change from previous results, surprises revealed in the employment report did lead to large price changes, but the direction of the changes was unpredictable. In addition, macroeconomic surprises, in general, were smaller than in the past. Finally, stock and bond prices continued to move together following announcements.

[25] These five-minute reactions are quite large considering that the median *daily* price change throughout 1999 was approximately 17 basis points.

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# Stress testing in practice: a survey of 43 major financial institutions

Over the last couple of years large, internationally active financial institutions have engaged in increasingly complex and diverse activities. This tendency towards greater complexity, together with the experience of recent financial market crises, has reinforced an already large and growing interest in how these institutions measure and monitor their risk exposures. A specific set of risk management techniques, called "stress testing", has attracted particular attention among both practitioners and regulators.[26] Stress tests are tools used by financial firms to gauge their potential vulnerability to exceptional but plausible events. Typically, a stress test estimates how the value of the firm's portfolio would change if a particular market event were to occur. In recent years, stress testing has grown in importance, being used as a supplement to frameworks based on value-at-risk (VaR) and other risk measurement tools.

Stress tests gauge exposures to exceptional events

## A census of stress test scenarios

Against this background, in March 2000, the Committee on the Global Financial System (CGFS)[27] decided, as a follow-up to previous work in the area of risk measurement and management, to organise a global census of stress tests in use at major financial institutions. To that end, the Committee established a Task Force of G10 central bank staff, which was asked to investigate the role of stress testing in risk management, identify which exceptional events market participants considered to be significant risks, and develop information on the heterogeneity of risk-taking at any given point in time.

CGFS undertakes a survey …

[26] The interest of the regulatory community, for example, is apparent from the 1996 *Amendment to the Capital Accord to incorporate market risks* of the Basel Committee on Banking Supervision. It explicitly recommends testing the firm's portfolio against a number of historical events, including the two ERM crises of 1992 and 1993 and the 1987 stock market crash.

[27] The CGFS is a central bank committee established by the Governors of the G10 central banks. It monitors and examines broad issues relating to financial markets and systems. In carrying out its tasks, the Committee places particular emphasis on assisting the Governors in recognising, analysing and responding to threats to the stability of financial markets and the global financial system. The Committee is chaired by Yutaka Yamaguchi, Deputy Governor of the Bank of Japan.

... and 43 major institutions take part ...

Forty-three major commercial and investment banks from 10 countries participated in the census and were asked to report their firm-wide stress tests that captured material risks as of 31 May 2000. Based on a set of survey forms, these banks and securities firms submitted a total of 293 *stress test scenarios* (based on a possible market event, such as a stock market crash) and 131 *sensitivity stress tests* (based on standardised moves in closely linked market risk factors, such as a parallel yield curve shift).

## Stress test scenarios and their use in risk management

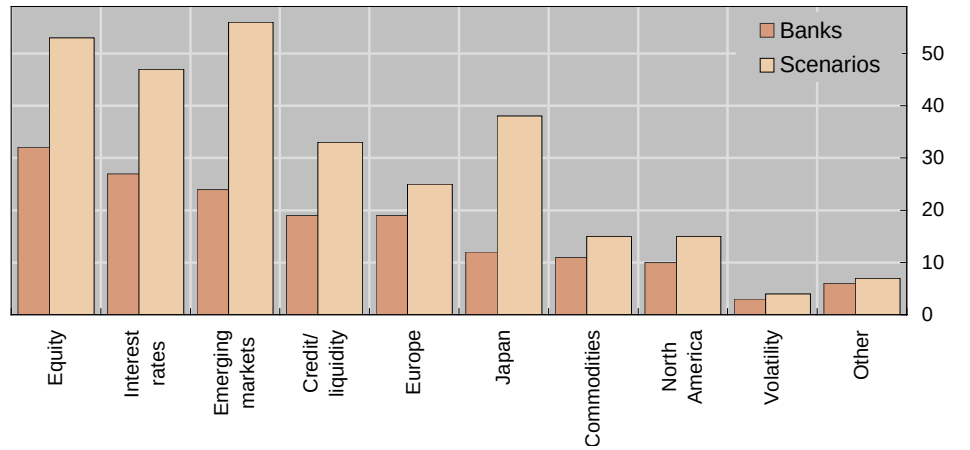
... submitting 293 firm-wide scenarios

Graph 1 sets out information on the 293 firm-wide stress test scenarios reported in the census, the main part of the Task Force's analysis.[28] Stress test scenarios were classified into themes based on their dominant asset class or geographical region. The graph shows the number of banks running a stress test in a particular area, regardless of how many similar stress tests that bank runs, and the total number of scenarios reported in the census for a particular theme. The four most common areas stress-tested were equity prices, interest rates, emerging markets and credit/liquidity spreads, followed by those focused on stress events in particular regions (including stress to foreign exchange rates). Only a few stress tests focused on commodities and related risk factors or on stress in options markets.

Scenarios focus on asymmetry in risks ...

Based on a detailed examination of these firm-wide stress test scenarios, as discussed in the Task Force's report, a number of observations can be made. First, there is a perceived asymmetry in risks. Crashes were much more likely to be stress-tested than booms for equity prices and emerging markets. Increases in interest rates and credit/liquidity spreads were more commonly stress-tested than decreases. Exchange rate related stress tests were more

Stress test scenarios by theme




Source: BIS calculations. Graph 1

[28] The Task Force's report, entitled *A survey of stress tests and current practice at major financial institutions*, was published in April 2001 and is available at www.bis.org. The Task Force was chaired by Alain Duchateau of the Banque de France/Commission Bancaire.

balanced, though "weak dollar" scenarios outnumbered "strong dollar" ones. In the follow-up interviews conducted by the Task Force members, risk managers attributed this asymmetry to asymmetric exposures (eg banks are exposed to the risk of rising interest rates, declining equity prices and widening credit spreads), asymmetric probabilities (eg higher risk of a stock market crash because of historically high equity market valuations), and managers' personal experience of stressful events, which, in turn, is perceived to be asymmetric.

... and on markets with risks not captured by other measures

Second, it seems that banks rely on stress tests particularly for those markets or products whose risks may be inadequately captured by statistical risk measures like VaR. Interviewed risk managers suggested several reasons why VaR may inadequately measure risk for some markets or products, which would lead them to rely on the use of stress tests. Among those were: a lack of good historical price data, a tendency for markets to gap, illiquidity, or difficulties in estimating the highly non-linear exposures from options dealing. Risk managers cited emerging markets as a leading example of the above conclusion that some markets are particularly well suited for stress testing. This is particularly apparent from the prominence of stress tests involving emerging market exposures.

Shock sizes vary even among historical scenarios ...

Another striking result of the census is the substantial heterogeneity across scenarios that, on the surface, look rather similar. This is reflected, for example, in the fact that the assumed magnitude of shocks varies substantially even among those scenarios portraying essentially identical events. While differences in shock sizes are not surprising in the case of hypothetical scenarios, differences are apparent even for historical scenarios that are based on an actual episode whose shocks are a matter of common knowledge. A potential source of these differences is that banks, when devising their stress tests, use different time horizons to measure historical shocks. One bank may use a one-day shock, another may use a two-week shock and a third may use the peak-to-trough shock.

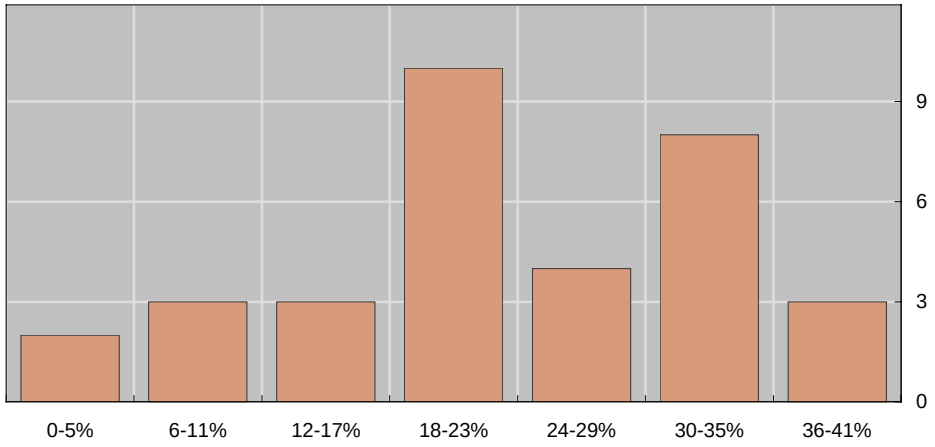
Graph 2 illustrates the point. It displays the frequency distribution of the magnitude of shocks to stock market indices in the United States as applied in 20 "Black Monday 1987" and 13 "hypothetical stock market crash" scenarios reported in the census. It is obvious that banks use quite differently sized shocks to capture an equity crash. A second example for this sort of heterogeneity is apparent from the cross-market effects assumed for the equity crash scenarios (not indicated in the graph). In 16 of these scenarios interest rates are shocked in addition to equity price indices. Of these 16 scenarios, nine assume that interest rates will decline, while five assume they will rise. The two remaining scenarios assume a mixture of rising and falling rates across countries.

... and cross-market effects can be very different

Finally, banks were asked a number of supplementary questions about how they implemented stress testing. According to their responses, stress testing has become a standard risk management technique for the reporting banks. All the

Shocks to equity crash scenarios (US index decline)

In number of scenarios




Source: BIS calculations. Graph 2

banks use stress tests to understand the firm's risk profile and to communicate the results to senior management. Just over half of the banks use stress tests to set limits, while one fifth use them for capital allocation. Two thirds of banks claimed that the results of stress tests had, at least once, directly led them to hedge or unwind a position. However, such a response, as indicated in the follow-up interviews, is by no means automatic as decisions tend to be made on a case by case basis. Most banks run at least some of their stress tests at a high frequency (daily/weekly). In contrast, some bank representatives said in interviews that the more complicated scenarios were costly to run, implying a lower frequency (monthly/quarterly). One quarter of banks run stress tests that allow for some, albeit limited, interaction of market and counterparty (default) credit risk. However, none of the interviewed risk managers claimed complete integration of market and counterparty credit risk, an area that received considerable attention in the wake of the 1997-98 crisis. Banks suggested that, at least at present, such interaction was limited to business lines or specific products that are assumed to have a material impact on exposure.

## Implications of the census

Stress tests an integral part of risk management ...

The following implications of the census can be highlighted. First, it appears that stress testing, at least at those institutions reporting in the census, has become an integral part of banks' risk management. In devising their stress tests, risk managers seem to recognise the character of firms' exposures as well as the relative merits of scenario analysis and other techniques, such as VaR and sensitivity analysis, in dealing with specific exposures and different markets.

... but response not mechanical

Second, in interpreting the results, firms seem to take into account their position in the market and the strategic aspects of risk management. Thus,

there is no unique response by the reporting banks to the information gained through stress testing. In particular, there is no indication that banks reporting in the census apply strict, mechanistic policies to unwind positions if the corresponding stress test limits are being breached. Decisions are thus being taken on a case by case basis. In this regard, interviewed risk managers suggested that the appropriate reaction to a stress test will depend on the relationship between their bank's positions, other banks' positions, and the size of the market they operate in.

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# Structural and regulatory developments

## Initiatives and reports concerning financial institutions

*January*

BCBS issues new capital adequacy proposals

The Basel Committee on Banking Supervision (BCBS) issued a second round of proposals for a new Capital Accord that, once finalised, will replace the current 1988 Accord. The proposals were summarised in the previous issue of the *BIS Quarterly Review*.[29]

G10 working party reports on financial sector consolidation

A working party of the Group of Ten released a report on the implications of consolidation in the financial sector.[30] Reviewing developments in 13 countries, the working party found that consolidation had the potential to improve operating efficiency in merged institutions but that the overall evidence in favour of efficiency gains was weak. It suggested that central bankers should remain alert to developments that might reduce the competitiveness of the markets most important for monetary policy. Moreover, it noted that consolidation could increase the challenge of winding down large and complex financial organisations, particularly since non-bank financial institutions were also potential sources of systemic risk. It further indicated that consolidation in payment and settlement systems might require increased cooperation between banking and payment system supervisors, both domestically and internationally.

US FASB recommends accounting changes for financial instruments

The US Financial Accounting Standards Board (FASB) published a report prepared by the Financial Instruments Joint Working Group of standard setters recommending far-reaching changes to the accounting treatment of financial instruments.[31] These changes include: (a) the measurement of virtually all financial instruments at fair value; (b) the recognition of almost all gains and losses resulting from changes in fair value in the income statement in the period in which they arise; (c) the elimination of special accounting for financial

[29] See "The New Basel Capital Accord", *BIS Quarterly Review*, Basel, March 2001, pp 61-2.

[30] See *Report on consolidation in the financial sector*, Group of Ten, Basel, Paris and Washington, January 2001. Available at www.bis.org, www.imf.org and www.oecd.org.

[31] The report is available at www.fasb.org.

instruments used in hedging; (d) the adoption of a components approach under which parts of certain transferred financial assets are derecognised, while others continue to be recognised; and (e) the expansion of disclosures about financial instruments, risk positions and income statement effects.

*February*

European Commission launches consultations on new capital standards

The European Commission launched a second round of consultations on a new capital adequacy framework for banks and investment firms. Interested parties have been invited to comment on a consultative paper by the end of May 2001.[32] The paper is designed to be read in conjunction with related documents issued by the Basel Committee in January 2001, while also concentrating on issues of particular concern to EU firms.

*March*

BCBS and IOSCO review issues related to HLIs

The BCBS and the International Organization of Securities Commissions (IOSCO) published a review of issues related to banks' and securities firms' dealings with highly leveraged institutions (HLIs).[33] The Joint HLI Working Group was encouraged by financial firms' progress in implementing the sound practice recommendations made by the BCBS and IOSCO in 1999. Senior management at many firms had strengthened their oversight of HLI activities through improved policies and a clearer definition of overall risk appetites. Notwithstanding these advances, the Working Group identified a number of areas where additional progress was needed, including some difficult areas where progress was likely to be gradual. In particular, it remained important for financial firms to continue to enhance their methodologies to measure exposures. Firms should devote resources to enhancing their stress testing capabilities for assessing the combined impact of large market moves, counterparty credit exposures and collateral values. While the availability of information from HLI counterparties had improved over the last two years, progress had been inconsistent, particularly in the provision of quantitative information. Lastly, firms had generally been able to strengthen contractual provisions with respect to the HLI sector, but competitive pressures continued to affect their ability to insist on an optimal set of measures to mitigate risk.

[32] Available at www.europa.eu.int.

[33] See *Review of issues relating to highly leveraged institutions*, BCBS and IOSCO, Basel and Montreal, March 2001. Available at www.bis.org.

## Initiatives and reports concerning financial markets and their infrastructure

*January*

CGFS releases report on electronic trading and financial markets

The Committee on the Global Financial System (CFGS) released a report by a working group on the implications of electronic trading in financial markets.[34] The working group was asked to investigate how electronic trading systems functioned in the wholesale markets most relevant to central banks, and their actual and potential impact on market structure, price dynamics and overall financial intermediation. It found that electronic trading offered great scope for cost reduction but that this had yet to be fully realised in most markets. It also noted that the spread of electronic trading might have affected the business of some dealers, and might have led to a diminished commitment to market-making. However, there was so far no firm indication that liquidity had suffered from its introduction nor that trading had moved away from electronic platforms in times of stress.

CPSS sets out core principles for systemically important payment systems

The Task Force on Payment Systems Principles and Practices of the Committee on Payment and Settlement Systems (CPSS) released a report setting out core principles for systemically important payment systems.[35] The core principles fulfil the public policy objectives of reducing risk, achieving safety and increasing efficiency in systemically important payment systems by outlining a common set of international standards. They detail the key characteristics that all payment systems should satisfy. The principles are to be used by countries wishing to assess their own systems and to develop appropriate strategies for compliance.

CPSS and IOSCO draw up recommendations for securities settlement

The CPSS and IOSCO released a joint consultative report containing recommendations for the design, operation and oversight of securities settlement systems.[36] The report identifies minimum requirements that securities settlement systems should meet and the best practices that systems should strive for. The recommendations are designed to cover systems for all types of securities issued in industrialised or emerging economies. They also aim to cover settlement of both domestic and cross-border trades.

WGPD recommends enhanced disclosure

The Working Group on Public Disclosure (WGPD) released a report recommending enhanced and more frequent public disclosure of financial

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[34] See *The implications of electronic trading in financial markets*, CGFS, Basel, January 2001. Available at www.bis.org.

[35] See *Core principles for systemically important payment systems*, CPSS, Basel, January 2001. Available at www.bis.org.

[36] See *Recommendations for securities settlement systems*, CPSS and IOSCO, Basel and Montreal, January 2001. Available at www.bis.org and www.iosco.org.

information by banking and securities organisations.[37] According to the Group, market risk information that had hitherto been disclosed annually should be disclosed on a quarterly basis and the content of disclosed information should be improved. Additional credit risk information on wholesale exposures should also be made available quarterly.

US IRS introduces new withholding tax rules

The US Internal Revenue Service (IRS) introduced new withholding tax rules that may have implications for both US and non-US individuals and financial institutions investing in the US market. The IRS will impose a withholding tax of 31% on dividends, interest rate payments and gross proceeds of securities sales on all US securities transactions not carried out by "qualified intermediaries".[38]

FOMC extends use of expanded list of eligible securities

The Federal Open Market Committee (FOMC) voted to approve a temporary extension, up to the first scheduled meeting of 2002, of the expanded list of securities eligible as collateral in repurchase transactions undertaken by the Federal Reserve Bank of New York (FRBNY) in the management of banking system reserves.[39]

*February*

FATF discusses progress in combating money laundering

The Financial Action Task Force (FATF) reported that significant additional progress had been made by most of the 15 jurisdictions it had identified in June 2000 as "non-cooperative" in the global fight against money laundering. It stated that a number of non-cooperative countries had made impressive strides towards improving their financial regimes, as reflected in legislation introduced by various parliamentary bodies. The FATF noted with particular satisfaction that seven jurisdictions (the Bahamas, the Cayman Islands, the Cook Islands, Israel, Liechtenstein, the Marshall Islands and Panama) had enacted most if not all legislation needed to remedy the identified deficiencies. It highlighted that the enactment of the necessary legislation and the promulgation of

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[9] The WGPD, which was established in April 2000 by the Board of Governors of the US Federal Reserve System, gathered participants from leading private sector firms active in US financial markets. Its mandate was to evaluate the use of enhanced public disclosure as a means of improving the ability of markets to assess the risk exposure and management practices of large and complex financial services organisations.

[38] Financial institutions and brokers which are not already qualified intermediaries can obtain such status by meeting certain requirements, including a demonstration that they have adequate knowledge of their clients and can correctly assess tax liabilities. Intermediaries that do not obtain qualified intermediary status will still be allowed to shield their investors from tax provided that they identify their clients to the IRS. However, if investors fail to identify themselves, they will be subject to withholding tax even if they are not US citizens or are not subject to US tax. While the new rules aim at preventing US citizens from avoiding their tax obligations, the requirement that non-US investors trading on US markets identify themselves will also affect them.

[39] At its 24 August 1999 meeting, the FOMC had approved the use of an expanded list of eligible collateral in order to improve the FRBNY's ability to address expanded reserve needs anticipated for the fourth quarter of 1999. The principal effect of this expansion was the inclusion of pass-through mortgage securities of the GNMA, FHLMC and FNMA, STRIP securities of the US Treasury and stripped securities of other government agencies.

associated regulations were fundamental first steps for jurisdictions to be removed from the list.

ISDA creates task force on credit events for default swaps

The International Swaps and Derivatives Association (ISDA) created a task force that will look at the precise type of negative credit events that should be included in the documentation used for credit default swaps. Since mid-2000 an intense debate has taken place among participants in the credit derivatives market over whether loan restructurings should trigger payouts under a credit default swap.[40] Recent debt restructurings had created doubts in the minds of the sellers of credit protection about the value of assets delivered under credit default swaps. Such credit events have sometimes led to bonds trading at a lower value than bank loans, which meant that investors holding exposure to the underlying credits took delivery from protection buyers of the lower-value bonds rather than the bank loans they expected to receive. Some market participants believe that the issue could be resolved by improving the definition of loan restructurings and better specifying the assets that could be delivered following such credit events. The restructuring issue also created uncertainty in the financial and regulatory communities about the capital relief that could be obtained through such derivatives.[41]

*March*

FSF discusses vulnerabilities in international financial system

The Financial Stability Forum (FSF) held its fifth meeting on 22-23 March 2001 at the World Bank in Washington, D.C. Members exchanged views on vulnerabilities in the international financial system and considered the progress made in implementing its earlier recommendations. Concerning the latter point, the FSF reviewed the actions taken so far to address concerns raised in the report of its Working Group on HLIs. Members welcomed the completion of the work of the Multidisciplinary Working Group on Enhanced Disclosure and urged taking this initiative forward. They were encouraged by the development of trading principles for foreign exchange market activities by significant private sector participants and underscored the importance of their application.[42] The FSF noted the actions to improve supervisory and information practices in offshore financial centres.

CGFS releases report on collateral in wholesale markets

A working group of the CGFS released a report on the management of collateral in wholesale financial markets.[43] The group was asked to assess recent trends in the demand for and supply of collateral, with a special

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[40] See the previous issue of the *BIS Quarterly Review*.

[41] The new capital adequacy proposals issued by the BCBS would require a matching of contract maturity and the inclusion of a restructuring clause for the granting of capital relief.

[42] In February, a group of 16 banks active in the global foreign exchange market released a set of voluntary guidelines for good trading practices in response to the recent currency crises in Asia and Russia. See Tom Buerkle, "A code of conduct for currency traders", *International Herald Tribune*, 23 February 2001.

[43] See *Collateral in wholesale financial markets: recent trends, risk management and market dynamics*, CGFS, Basel, March 2001. Available at www.bis.org.

emphasis on the role of collateral in influencing market price dynamics and liquidity. The report concluded that the rapid growth of collateral usage relative to supply was likely to continue, but that markets had the capacity to adjust through pricing, generating new supply and using a broader range of assets as collateral. Under these circumstances, the transparent use of collateral and the use of appropriate risk management practices were the key prerequisites for fully exploiting the benefits of collateral as a risk mitigation technique.

European Commission proposes uniform legal framework for collateral

The European Commission proposed a directive that would create a uniform EU legal framework to limit credit risk in financial transactions through the provision of securities and cash as collateral.[44] Current rules applied to the use of collateral throughout the EU were complex and impractical, resulting in uncertainty regarding the effectiveness of collateral as protection in cross-border transactions. Creation of a clear and uniform pan-EU legal framework for the use of collateral would contribute to the greater integration and cost-efficiency of European financial markets by encouraging cross-border business and creating a more competitive market.

EU Council of Ministers extends tax shelter for international bonds

The EU Council of Ministers agreed to extend a clause providing shelter to outstanding international bonds from withholding tax regulations forming part of a directive on the taxation of savings income agreed in November 2000.[45] Under the original directive, interest paid on all international bonds issued after 1 March 2001 would have been subject to new withholding tax rules, making it impossible to launch additional tranches of existing issues.[46] The agreement will extend by one year the "grandfathering" clause exempting interest paid on new tranches. It specifies that if the first issue of a bond occurred before 1 March 2001 (or the original prospectus was certified before that date), the bonds would be grandfathered (ie the directive would not apply), provided that the last tap took place before 1 March 2002. A failure to extend grandfathering would have posed problems for sovereign and other borrowers since they often tap into existing bond issues rather than issue new bonds.

BOTCC and GSCC reach cross-margining agreement

The Board of Trade Clearing Corporation (BOTCC), which clears transactions in US exchange-traded derivatives, and the Government Securities Clearing Corporation (GSCC), the main clearer for government bond and repurchase markets, reached a cross-margining agreement for cash US government securities and related exchange-traded derivatives contracts. The agreement will help investors and trading firms to aggregate risk positions in the cash and futures markets, with those holding offsetting positions being able to enjoy lower margin and collateral requirements. The agreement, which has been submitted to regulatory authorities, is expected to take effect in the third quarter of 2001.

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[44] Detailed information available at www.europa.eu.int.

[45] See the previous issue of the *BIS Quarterly Review* and www.europa.eu.int.

[46] Essentially because differences in the tax language would have prevented the fungibility of the issues.

## Final report of the Committee of Wise Men on the Regulation of European Securities Markets

*Serge Jeanneau*

In February 2001, the Committee of Wise Men on the Regulation of European Securities Markets published its final report.[1] The document broadly confirms the approach taken in the initial report, but the subsequent consultation process resulted in a number of amendments. In particular, the final report attempts to address the European Parliament's concerns about the implications of the proposed regulatory structure. It refines the Committee's initial ideas, including a number of new proposals and safeguards, to ensure that there is a proper and fair inter-institutional balance. The importance of full transparency, flanked by an open consultation process for both market participants and consumers, is also given much greater prominence.

The proposals centre around a four-level approach to the regulation of European securities markets. Under Level 1, legislative acts would concentrate on the core political principles of each directive or regulation. In other words, the Council and the European Parliament, acting on a proposal from the Commission, would agree on the key political direction and orientation for each subject that would be transmitted to the next level. Under Level 2, the European Commission, after consulting a new European Securities Committee (made up of representatives of the European Commission and of member states), would request advice from a new European Securities Regulators Committee (with advisory functions) on the rapid and detailed implementation of Level 1 directives or regulations. Under Level 3, the European Securities Regulators Committee would work on joint interpretation and common standards in order to ensure consistent implementation and application of Level 1 and Level 2 legislation. Under Level 4, the European Commission would verify whether member states were in compliance with EU legislation and would ensure a more vigorous enforcement of Community law.

The Committee did not feel that it was necessary to introduce a parliamentary override provision, believing that the European Parliament would maintain a significant degree of control over the Level 2 decision-making process. It also argued that if the European Commission exceeded its implementing powers, the European Parliament could always pass a resolution requiring it to re-examine its proposal. The report suggested several deadlines for a rapid implementation of its proposals. First, the main elements of the Financial Services Action Plan should be adopted by the end of 2003. These include the creation of a single prospectus for securities issuers, home country control for all wholesale members, modernised investment rules for institutional investors and a single passport for recognised stock exchanges. Second, the report called for a full and open review of the four-level process ahead of an Intergovernmental Conference to be held in 2004 (and one year ahead of the European Commission's own deadline for the Financial Services Action Plan). If the review were to reveal that the approach did not have any prospect of success, a Treaty change might be appropriate, including the creation of a single EU regulatory authority for financial services.

In March, the European Council of Heads of State and Government adopted a resolution in Stockholm based on the Committee of Wise Men's recommendations. It asked for every effort to be made by all parties concerned to achieve an integrated securities market by the end of 2003. This meant giving priority to securities market legislation provided for in the Financial Services Action Plan, including those steps endorsed in the report by the Committee of Wise Men. However, the Council stated that if the draft measures submitted by the Commission were seen by the European Parliament to exceed the implementing powers of the framework legislation, the Commission would have to commit itself to re-examine those draft measures, taking account of the Parliament's position and stating its reasons for the action it intended to take. The Council also noted that the Commission had committed itself to avoid going against predominant views emerging within the Council in the case of sensitive issues.

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[1] The Committee, under the chairmanship of Alexandre Lamfalussy, was established by ECOFIN in July 2000 with the mandate of assessing current conditions for the implementation of the regulation of securities markets in the European Union. The *Final report of the Committee of Wise Men on the Regulation of European Securities Markets* is available at www.europa.eu.int. The previous issue of the *BIS Quarterly Review* discusses the key elements of the initial report.

## Chronology of major structural and regulatory developments

| Month | Body | Initiative |
|---|---|---|
| January 2001 | Basel Committee on Banking Supervision | Issues a second round of proposals for a new Capital Accord |
| | Working Party of the Group of Ten | Releases a report on the possible effects and implications of consolidation in the financial sector |
| | Committee on the Global Financial System | Releases a report on the implications of electronic trading in financial markets |
| | Committee on Payment and Settlement Systems | Releases a report on core principles for systemically important payment systems |
| | Committee on Payment and Settlement Systems and International Organization of Securities Commissions | Release a joint report containing recommendations for the design, operation and oversight of securities settlement systems |
| | Working Group on Public Disclosure | Releases a report recommending enhanced disclosure of information by banking and securities organisations |
| | US Internal Revenue Service | Introduces new withholding tax rules for investors |
| | US Federal Open Market Committee | Approves a temporary extension of the expanded list of securities available as collateral |
| | US Financial Accounting Standards Board | Publishes a report recommending far-reaching changes to the accounting treatment of financial instruments |
| February 2001 | Committee of Wise Men on the Regulation of European Securities Markets | Publishes its final report on the regulation of European securities markets |
| | European Commission | Launches a second round of consultations on a new capital adequacy framework |
| | Financial Action Task Force | Discusses progress made by offshore financial centres in the global fight against money laundering |
| | International Swaps and Derivatives Association | Creates a new task force to look at the precise type of credit events that should be included in the documentation for credit swaps |
| March 2001 | Basel Committee on Banking Supervision and International Organization of Securities Commissions | Publish a review of issues related to banks' and securities firms' dealings with highly leveraged institutions |
| | Financial Stability Forum | Holds its fifth meeting |
| | Committee on the Global Financial System | Releases a report on the management of collateral in wholesale markets |
| | EU Council of Ministers | Extends shelter of outstanding international bonds from withholding tax |
| | European Commission | Proposes a directive that would create a uniform European framework for collateral |
| | Board of Trade Clearing Corporation and Government Securities Clearing Corporation | Reach a cross-margining agreement for cash US government securities and exchange-traded derivatives |