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## **Financial Stability Review**

June 2002

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## The **Financial Stability Review** aims:

- to encourage informed debate on financial stability issues, domestically and internationally
- to survey potential risks to financial stability
- to analyse ways of promoting and maintaining a stable financial system

### Essential information

The *Financial Stability Review* is available as a complete document in pdf format, together with additional information about the Review, on the Bank of England's website: [www.bankofengland.co.uk](http://www.bankofengland.co.uk). There is an 'FSR alert service' to inform readers by e-mail shortly before a new issue of the *Review* is going onto the website. For a summary of the main financial stability issues, two sections of the *Review* are available in htm format with hyperlinks to this and earlier *Reviews* where appropriate. The *Financial stability themes and issues* section is at: [www.bankofengland.co.uk/fsreview/themesandissues](http://www.bankofengland.co.uk/fsreview/themesandissues) and the *Financial stability conjuncture and outlook overview* is at: [www.bankofengland.co.uk/fsreview/overview](http://www.bankofengland.co.uk/fsreview/overview) (The Bank's website also has details of job opportunities at the Bank of England at [www.bankofengland.co.uk/jobs](http://www.bankofengland.co.uk/jobs))

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June 2002

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# themes and issues

Over the past five years or so, the international financial system has faced an extraordinary sequence of shocks: the 1997–98 Asian crises, the Russian default and LTCM's collapse in 1998, the 1999 Brazilian crisis, the TMT bubble, the terrible disruption to Wall Street firms and infrastructure on 11 September; and, most recently, the largest ever sovereign and corporate bankruptcies, Argentina and Enron. Throughout, the financial system – in the UK, and internationally – has proved resilient, perhaps remarkably so. Why? This issue of the *Financial Stability Review* explores some of the reasons, as well as some continuing challenges facing the system.

The past five years have also seen significant developments in the way financial authorities – in the UK and internationally – assess and address threats to financial stability. In 1997, the Bank gained operational independence for monetary policy and the Financial Services Authority was created as a unified regulator of UK financial services. In addition to adjusting to its new monetary role, the Bank reconfigured its work on financial stability, which has traditionally been, and remains, a core part of its central banking mandate. Greater transparency was given to the Bank's view of financial stability risks by introducing a *Conjuncture and Outlook* assessment article into this *Review*, while at the same time devoting more space to reporting research. Both reflected shifts in the balance of the Bank's financial stability work, which is organised around three broad areas: surveillance of risks to the financial system; development of policies for strengthening the system; and preparing, so far as possible, for effective crisis management. This issue of the *Review* reports several pieces of work under the first heading.

The framework for the Bank's assessment of risks to stability has been developed around a few basic ideas. First, that it is important to distinguish between shocks to the system (eg an equity market fall or a wave of credit defaults) and the system's capacity to absorb them, reflecting such factors as capital resources and liquidity; second, that a distinction should be made between the probability of a shock to the financial system and its impact; and third, that a distinction should be made between the direct impact of a shock (say, on a particular firm which suffers a loss, or on a particular part of the infrastructure) and the wider consequences for the system as a whole through spillovers and contagion. In very broad terms, this approach calls for a careful analytical separation between: identifying any material imbalances in the macroeconomic or financial market environment that could

# themes and issues



give rise to abrupt rather than gradual adjustments; vulnerabilities in financial firms, markets or infrastructure which may render them unusually susceptible to shocks, or to self-fulfilling problems (eg liquidity runs on account of an overdependence on very short-term debt); and links between different parts of the economy or financial system which could cause problems in one part to be transmitted to others. The three articles in this *Review* tackle elements of this work programme.

The article by Andrew Gracie and Andrew Logan can perhaps best be regarded as a background piece to the *Conjuncture and Outlook* assessment. It dissects the data sources used by the Bank to analyse the UK banking sector's on-balance-sheet exposures – within the UK, overseas, and to other parts of the international financial system. None of them was designed specifically with aggregate system surveillance in mind, but individually and collectively the three key sources – the monetary statistics, cross-border banking exposures data, and regulatory returns – can be used to explore a fair proportion of the relevant issues. Precisely how they fit together and what they can and cannot sensibly be used for is not straightforward, and so Gracie and Logan's article is a contribution to an international debate on data for banking system analysis.

The article by Glenn Hoggarth and Darren Pain, reporting research by Pain due to be published in full later in the year, explores how macroeconomic shocks have in the past affected the asset quality of UK banks, as manifested in published provisions against bad or doubtful debts. Following the article in the December 2001 *Review* by Benito, Whitley and Young on producing forward-looking projections of key indicators of corporate and household sector financial health, it represents a further step in the Bank's efforts to complement its qualitative assessment of risks to UK financial stability with more quantitative work.

The third article, by Simon Hall and Ashley Taylor, asks under what circumstances a problem in one emerging market economy might spill over into others. They focus, in particular, on practical measures of two potential channels of contagion: trade links and the extent of dependence on common bank creditors. The area is, however, immensely complex. For example, notwithstanding channels through which contagion could have occurred, Argentina's defaults did not prove systemic, probably because its problems were signalled sufficiently far in advance for financial market participants to adjust their exposures smoothly. The knock-on effects from Enron's failure may have been modest for similar reasons. Other possible explanations of the system's recent robustness include the capital accumulated by financial firms during the late 1990s and improvements in risk management. Both are discussed in the assessment article, which as usual opens the *Review*.



# The financial stability conjuncture and outlook

## Overview: risks to financial stability

Over the past six months, financial systems, globally and in the UK, have proved resilient to credit deterioration stemming from the sharp slowdown in global growth in 2001, to weak equity markets and to the single biggest ever corporate and sovereign bankruptcies, Enron and Argentina. Banks in most of the industrial world, including the UK, though not immune to recent problems, have generally reported profits and continuing high Tier 1 capital ratios, and are apparently better diversified than in the slowdown a decade ago.

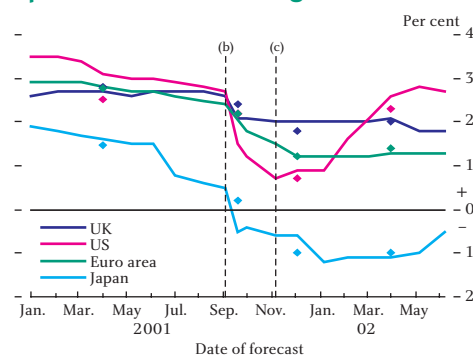
Events have, though, inevitably drawn attention to some underlying vulnerabilities that lenders, borrowers and policy-makers need to consider further, such as opacity of company accounts, corporate sector liquidity risk, counterparty risk, and – following Argentina – the distinctive risks entailed by different types of foreign operation. Greater risk diversification and dispersion, although important in ameliorating the effect of shocks, make it more difficult to track where risks are ending up. It is also not uncommon for some credit risks to crystallise after a recovery has started – because, for example, of increases in interest rates and demand for credit.

### Changes in the economic and market environment

Since December's *Review*, Consensus forecasts<sup>1</sup> for GDP growth in 2002 have been revised upwards for the United States and modestly for Japan, while for the euro area and the UK growth forecasts are marginally lower (Chart A). Yield curves suggest that interest rates – currently below likely long-run equilibrium levels in some countries, most obviously the USA – are expected to rise in the medium term, with considerable uncertainty about their path.

Exchange rates changed little this year until April (Chart B). Subsequently, the dollar has fallen relative to the euro and yen, and by somewhat less against sterling. The MSCI world equity index has fallen since the December *Review* (Chart C), but there have been significant regional differences when measured in a

**Chart A:**  
Expected 2002 real GDP growth<sup>(a)</sup>



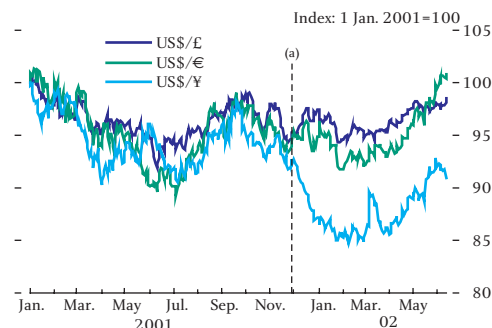
Sources: Consensus Forecasts and IMF World Economic Outlook.

(a) Solid lines represent mean of forecasts from Consensus Forecasts data and markers represent IMF forecasts.

(b) 11 Sep. 2001.

(c) Latest data available at the time of Dec. 2001 *Review*.

**Chart B:**  
Exchange rate movements

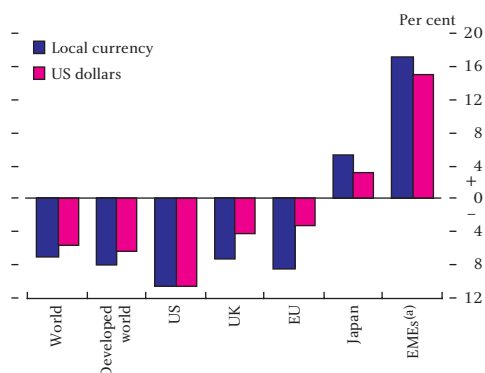


Source: Thomson Financial Datastream.

(a) Dec. 2001 *Review*.

<sup>1</sup>: Every month Consensus Economics Inc survey a panel of forecasters and publish the mean forecast of those surveyed, the predictions of individual forecasters, and the standard deviation of the forecasts in their publication 'Consensus Forecasts'. When referring to the forecasts themselves, rather than their source, this *Review* uses the style Consensus forecasts.

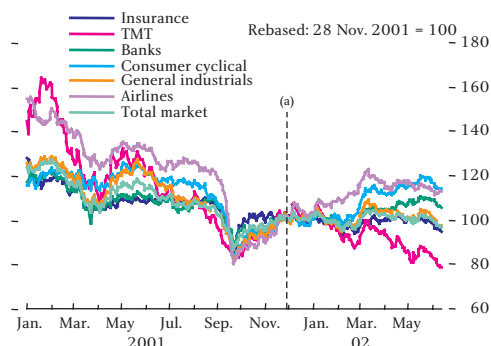
**Chart C:**  
**Percentage change in world equity indices**  
**since December 2001 Review**



Source: MSCI.

(a) Emerging market economies.

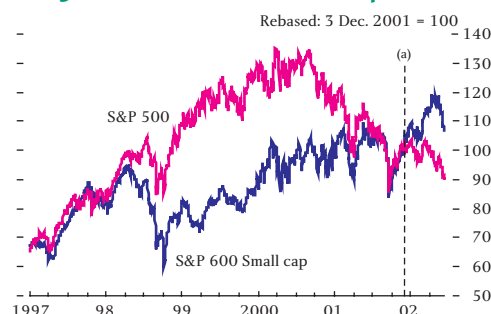
**Chart D:**  
**World sectoral equity indices**



Source: Thomson Financial Datastream.

(a) Dec. 2001 Review.

**Chart E:**  
**S&P 500 and S&P 600 small cap indices**



Source: Thomson Financial Datastream.

(a) Enron filed for bankruptcy.

common currency. The US market has fallen more than the European (including UK) indices. Equity prices of firms in the telecom and IT sectors have again fallen relative to broad market indices (Chart D). To the extent that these exchange rate and equity market developments reflect a re-appraisal of the returns to investment in the 'new economy', they might cast some doubt on the extent of higher long-run productivity growth in the USA or on how far the benefits of higher productivity would flow through to company profits rather than to consumers.

But another possible explanation is an Enron overhang. While Enron's failure itself was not systemic (see Section VI), it prompted debate about the extent to which – even when there is no suspicion of fraud – exploitation of accounting, tax, and regulatory rules can result in complex transactions and group structures, and so in opacity. It is possible, therefore, that uncertainty about the integrity of reported earnings has raised the equity risk premium. Such issues are perhaps more likely to affect large and complex companies than small ones. There is some evidence for this: in the United States, prices of *small cap* stocks have risen relative to those of *large cap* stocks (Chart E), and industrial conglomerates' share prices have tended to fall relative to most other sector indices.

Together with other high-profile company problems – most notably in the USA, but affecting Europe too – Enron also put the spotlight on company liquidity. Old lessons about debt structure, which were underlined by the late 1990s' emerging market economy crises, have proved to be relevant in a developed country setting too. Corporate borrowers have turned towards the bond market – from commercial paper, syndicated loans, and possibly traditional bank lending – in order to lengthen the maturity structure of their debt. That this has been achieved without any market dislocation is good news for stability.

Overall, credit spreads for investment-grade issuers in the dollar (Chart F) and euro markets are little changed since December, and remain materially higher than two years ago.

Sub-investment-grade spreads are generally lower, although rating downgrades and defaults complicate the interpretation of these measures. It is clear, however, that there is considerable variation across and within sectors. There has, for example, been an increase in the dispersion of equity implied volatilities across stocks *within* industry sectors. And credit spreads remain much higher in the technology, media and telecommunications (TMT) sector and, more recently, utilities (which include some energy companies) than elsewhere (Chart G). These patterns might be explained to some degree by reduced uncertainty about the short-run macroeconomic outlook being overlaid by more firm-specific concerns about debt in the TMT sector and accounting practices and earnings quality more generally.

## Sources of risk

While the developments outlined above have unfolded, some longer-run uncertainties, and so risks, have remained.

### *The economic outlook*

One potential source of risk would be a significant rise in US private sector saving, were firms and households to attempt to strengthen balance sheets. Another would be any increased doubts about long-run productivity growth, posing questions about current equity prices and debt levels. Broad US equity indices, while down over 30% from their peaks, still – on some measures – appear high by historical standards.

Provided global economic recovery is sustained, there is likely to be a general fall in credit risk. But some highly indebted countries and firms may suffer more from the interest rate rises that would be likely to accompany recovery than they would benefit from increases in aggregate demand – for example, those EMEs that are highly indebted but less open to trade; and highly geared but not highly cyclical industries. Some firms may find that higher interest costs may be incurred before profits materialise, and as a result face cash-flow pressures in the short run. There could also be yield-curve related interest rate risks if recovery were more rapid than expected; for example, hedging of changes in mortgage prepayment risk in the USA could lead to longer-term interest rates overshooting, presenting financial firms with a risk management challenge whether or not they are directly exposed to the mortgage market (Boxes 4 and 7).

### *Global imbalances*

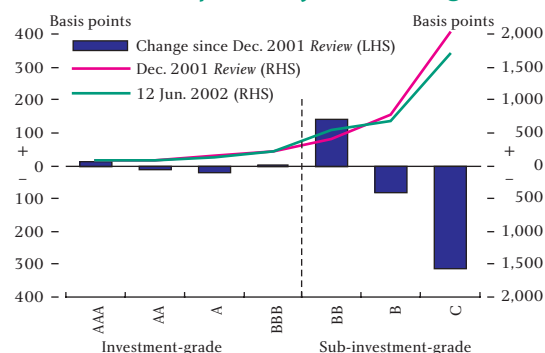
Net capital flows into the United States continued in 2002 Q1 at rates that would be difficult to sustain in the long run. The fall in the dollar since April may signal the beginning of an adjustment to long-standing global imbalances. Such falls may help to resolve rather than trigger financial stability problems, but could be more problematic if they proved sharp. This has not, however, been the experience so far (Chart H) – with, briefly, the exception of \$/¥.

### *Sectoral risks*

Some industry sectors have stood out as possible sources of risk. As discussed above, credit spreads have risen and relative equity prices have fallen in the telecoms sector – including recently the investment-grade sector in the USA – as the outlook for sales has deteriorated, raising questions about some firms' ability to sustain heavy debts. Large borrowers in some other sectors also face liquidity management issues. 'Hard-wiring' of credit conditionality to ratings decisions, through bond covenants for instance, can amplify any such problems. As some recent corporate events perhaps demonstrate, that may have contributed to a 'credit cliff' for some companies on the boundary between investment-grade and sub-investment-grade

**Chart F:**

### US dollar bond spreads by credit rating<sup>(a)</sup>

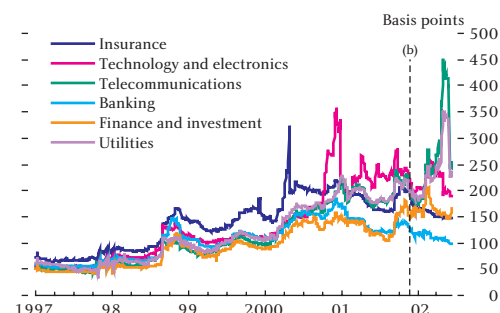


Source: Merrill Lynch.

(a) Weighted average option-adjusted spreads of corporate bonds over government bond yields across all maturities.

**Chart G:**

### US dollar-denominated investment-grade spreads by sector<sup>(a)</sup>



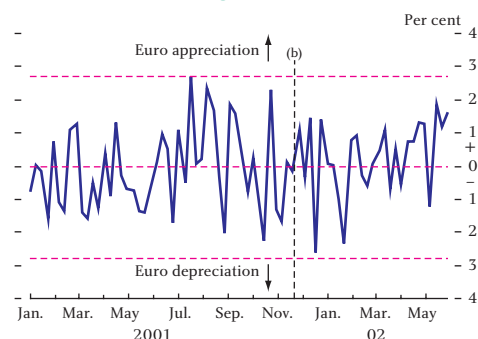
Source: Merrill Lynch.

(a) Weighted average option-adjusted spreads of corporate bonds over government bonds.

(b) Dec. 2001 Review.

**Chart H:**

### Weekly percentage change in the US dollar/euro exchange rate<sup>(a)</sup>

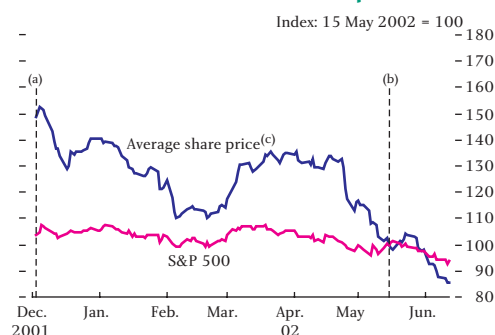


Sources: Thomson Financial Datastream and Bank calculations.

(a) Top pink line is the average weekly percentage change plus two standard deviations; middle line is the average; bottom line is the average less two standard deviations. Average and standard deviation calculated from Jan. 1988.

(b) Dec. 2001 Review.

**Chart I:**  
**Equity prices of companies identified in**  
**Standard & Poor's 'credit cliff' publication**



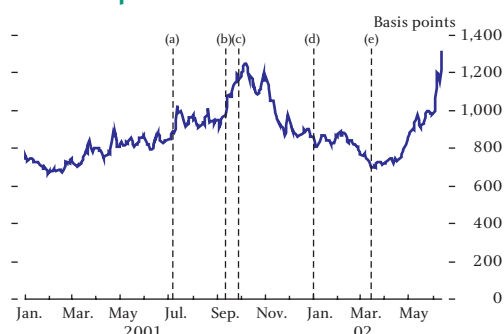
Source: Bloomberg.

(a) Enron filed for bankruptcy.

(b) Publication of Standard & Poor's credit cliff study.

(c) Average of the 18 publicly quoted companies amongst the 22 companies referred to in the Standard & Poor's credit cliff study (24 companies were identified in Standard & Poor's 15 May 2001 release, but two have subsequently been removed from their list).

**Chart J:**  
**Brazilian spreads**



Source: JP Morgan Chase & Co.

(a) 'Zero deficit' rule introduced in Argentina.

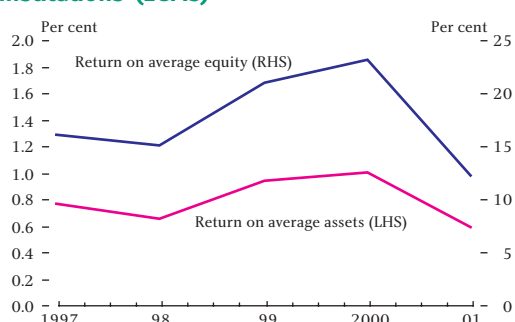
(b) 11 Sep. 2001.

(c) Brazil draws US\$4.7 billion from IMF packages.

(d) Argentine default and devaluation of peso.

(e) Parliament delays voting on financial transaction tax.

**Chart K:**  
**Profitability of large and complex financial**  
**institutions (LCFIs)<sup>(a)</sup>**



Sources: Bloomberg and Bank calculations.

(a) Weighted by total assets.

bonds (Chart I). (Greater transparency about such 'wiring' may help in the longer run if it increases incentives for borrowers to manage their debt prudently.)

### Regional risks

Argentina's default appears to have been sufficiently well signalled that the international financial system was largely undisturbed by it. Indeed, for most of the period since the December Review, the risk to the international financial system from emerging market economies (EMEs) has been low. But recently there have been adverse developments in Latin America – reflected, for example, in the sharp increase in bond spreads in Brazil (Chart J) – that do not seem to have been triggered by Argentina's continuing crisis. Brazilian developments are a reminder of the challenges that several EMEs face in managing their public debt, particularly if there were to be widespread increases in nominal interest rates, or downward pressure on their exchange rates. Brazil is a major borrower in international markets, and a number of internationally active banks have a significant presence there.

Japan successfully transitioned to a new deposit protection scheme in April and there have been signs of a pick-up in economic activity. The structural and financial challenges facing Japan remain, however. US and European banks seem, on the whole, to have reduced on-balance-sheet exposures to Japan and are making greater use of collateral (mainly JGBs). There may, however, be a risk management issue posed by the possible correlation between the market risk and counterparty credit risk implicit in Japanese forward foreign exchange and currency swap business, which has been growing in recent years.

### The international financial system

The health of the international banking system is important for the UK for several reasons: UK-owned banks have large foreign exposures; UK and foreign banks' London offices account for a large share of 'international' banking activity; and links between financial systems via wholesale markets (including, in the UK, unsecured interbank markets) are extensive and complex. Despite rising non-performing loans and provisions, the profitability of internationally active banks has not been seriously impaired (see Chart K for a peer group of large and complex financial institutions<sup>2</sup>), thanks in part to the robustness of non-interest income overall and the impact of the steep yield curve on profits from maturity transformation. That has enabled them to maintain strong reported capital ratios (Chart L). Banks have also benefited from greater apparent dispersion of risk via securitisation and other forms of risk transfer, and geographical and business line diversification. Conjunctural concerns for banks include the decline in income from investment banking

2: See footnote 35, Section VI, for the definition of the peer group.

and a likely change in direction of world interest rates in the period ahead (banks are usually temporarily able to charge higher spreads as official interest rates fall).

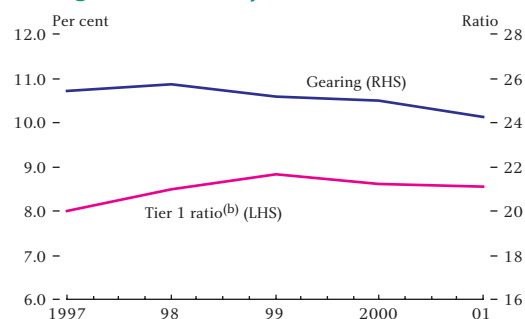
Dispersion of risk helped in the aftermath of the Enron default; and relatively novel means of credit risk transfer, such as credit default swaps, have performed as intended (unlike surety bonds, a long-established product pressed into a new use). But it is more difficult now to assess where risk is ending up. Greater use of credit derivatives by international banks to manage credit risk is also bringing into the credit arena some challenges already encountered in accounting measurement of interest rate and exchange rate risk. As loans and undrawn commitments are valued historically but any derivative hedges are marked to market, reported 'earnings' are likely to be more volatile than otherwise – flattered as credit risk deteriorates, but depressed as risk falls. That should, of course, in principle be discounted by market prices, which should be based on underlying values.

Over the past decade or so, the dispersion of risk from the banking system has depended partly on the appetite of institutional investors. That may be benign on account of their long holding periods and diversification, but there may also be an element of regulatory arbitrage and, more worryingly, possible chasing of yield, because nominal interest rates are lower than many such investment institutions – in Japan and especially in Europe (including the UK) – apparently expected when selling saving and pension products in the past. Equity markets have been weak recently, adversely affecting some European (including UK) life insurers.

Alongside those factors working to make the international financial system more robust, events over the past six months have served to highlight some particular risk management issues. Some have been mentioned above. More generally, banks can still incur large lumpy exposures, for example through contingent exposures such as undrawn credit commitments, CP back-up lines and derivatives. They can be difficult to monitor and manage, partly because transaction structures can be complex, sometimes involving different parts of a group. In particular, underpriced liquidity insurance offered by banks in the form of committed lines might have led to excessive demand for such insurance, and hence to less effort by corporate borrowers to maintain well-spread debt maturities and to greater risk than banks expected. There remain challenges, too, where risk management strategies depend on markets being highly liquid in the face of what could be 'crowded trades'. This may be relevant, for example, to how banks and insurers would cover the risk entailed in guaranteeing the principal invested in funds of hedge funds, which have been growing in popularity. (These credit and market risk management issues are discussed in Section VI.)

**Chart L:**

**Gearing and Tier 1 capital ratios for LCFIs<sup>(a)</sup>**



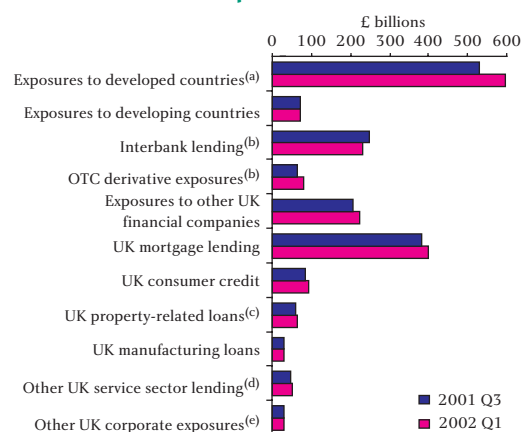
Sources: Bloomberg, Board of Governors of the Federal Reserve System, UBS Annual Report 2001 and Bank calculations.

(a) Weighted by total assets.

(b) LCFI commercial banks only.

**Chart M:**

**UK-owned banks' exposures**



Sources: Bank of England and FSA regulatory returns.

(a) Developed countries includes offshore centres.

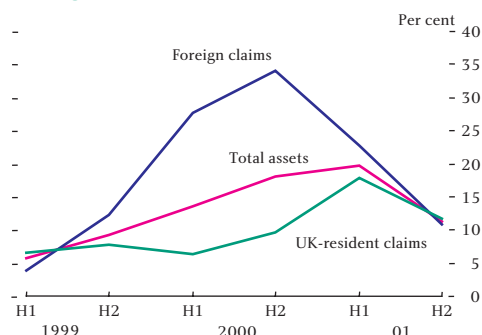
(b) Latest available data for reporting period.

(c) Includes lending to construction.

(d) Includes lending to transport, storage, communication companies, hotels, restaurants, wholesalers and retailers.

(e) Includes lending to other corporates and securities holdings.

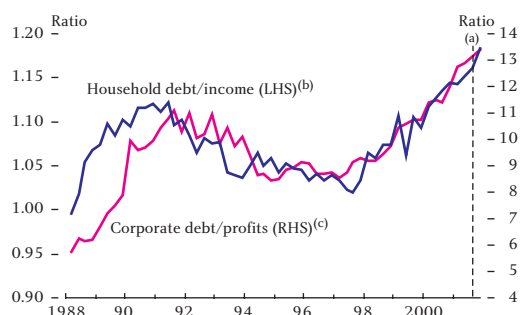
**Chart N:**  
**Major UK banks' annual consolidated asset growth<sup>(a)</sup>**



Sources: FSA regulatory returns and Bank of England.

(a) 'Major UK banks' as defined in footnote 49, Section VIII, plus Standard Chartered and the Co-operative Bank.

**Chart O:**  
**UK corporate debt-to-profits and household debt-to-income ratios**



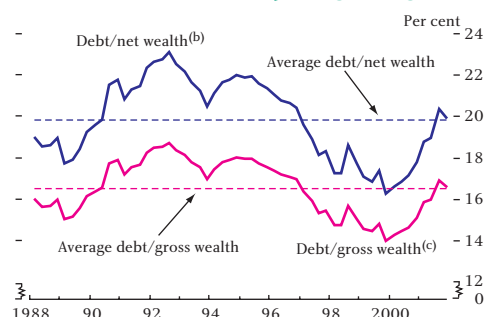
Source: ONS.

(a) Dec. 2001 *Review*.

(b) Gross disposable income, quarterly data.

(c) Gross operating surplus, quarterly data.

**Chart P:**  
**UK household sector capital gearing<sup>(a)</sup>**



Sources: ONS and Bank of England.

(a) Averages 1988 Q1 – 2001 Q4.

(b) Total liabilities as a percentage of the sum of net financial assets and housing wealth.

(c) Total liabilities as a percentage of the sum of total financial assets and housing wealth.

## The United Kingdom

The developments in the external environment discussed above are, of course, highly relevant to the UK banking system; around half of UK-owned banks' assets represent claims on overseas borrowers or on the international financial system (Chart M). Over the past six months, the growth of their consolidated global balance sheet has slowed quite markedly, with both overseas and domestic lending decelerating (Chart N). But lending to the UK household sector has accelerated, largely because of sustained increases in household borrowing – via both mortgages and consumer credit. As discussed in the May *Inflation Report*, the household sector debt-to-income ratio is at a record high (Chart O), although income gearing is low and capital gearing remains well below 1991 peaks (Chart P) – the former partly reflecting low interest rates, and the latter the recent strength of house prices. The minutes of the June meeting of the Monetary Policy Committee noted that the recent rate of increase in house prices was unsustainable and that the longer it persisted, the greater would be the risk of a subsequent sharp correction. Whether that posed a threat to bank loan portfolios would, though, depend on a number of other factors, such as the level of unemployment, which would affect the ability to service debt; and the level of loan-to-value ratios and the effectiveness of bank risk management, which would affect the scale of any losses in the event of defaults.

There are also pressures in parts of the domestic corporate sector. At an aggregate level, capital gearing and debt-to-profit ratios have risen further since the December *Review* (Chart O), while profitability has fallen; but measures of corporate liquidity have improved and income gearing has fallen. Some sectoral weaknesses remain, particularly in telecoms and manufacturing, although, from the banking system's perspective, UK manufacturing companies have been repaying bank debt for a while (Chart M). The commercial property sector is a puzzle. Although capital values have been flat, and rental growth has been slowing, bank borrowing has been growing at an annual rate of around 20% for nearly two years. This may partly reflect an increase in 'sale and lease-back' arrangements and hence an effective transfer of debt to property companies from other parts of the corporate sector, as well as public-to-private transactions.

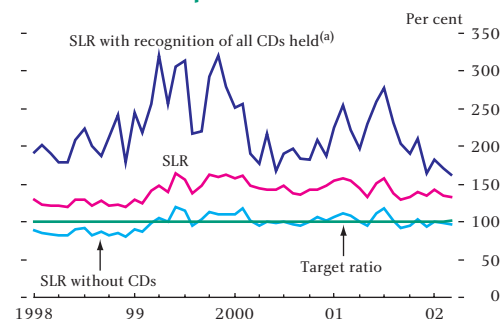
Against the background of those external and domestic developments, the major UK banks' accounts for 2001 reported profits and rates of return on equity which were a little lower than in the previous year, but still strong by historical and international standards. Some deterioration in loan performance has been evident, with both non-performing loans and provisions increasing slightly as a proportion of loan balances. Bankers report that a further modest rise in bad debts may crystallise before the position improves.

Key indicators of the health of the UK banking system, taken as a whole, are nevertheless reassuring. The major banks' stock liquidity ratios – which compare liquid assets with a measure of short-maturity wholesale and retail liabilities – are comfortably above the minimum regulatory level, and still around 100% even if certificates of deposit are excluded from liquid assets (Chart Q). Tier 1 capital ratios have stabilised (Chart R), against a background where in recent years there has been an increase in Tier 2 capital and in the deduction from total capital of investments in insurance subsidiaries.

Some UK insurance companies have been exposed to 11 September-related claims, and the industry generally has been adversely affected by recent equity market weakness, which has contributed to declining free-asset ratios in the life sector (Chart S). A period of poor asset returns has also put pressure on defined benefit pension funds (see Section VII), with possible implications for company sponsors if equity prices were to fall further.

Overall, given the global economic slowdown over the past two years and the other, unrelated, shocks that have occurred, the UK financial system as a whole – and indeed the international financial system more generally – has proved remarkably resilient. Nevertheless, risks remain, including those posed by weaker equity markets for the long-term savings industry. Together with the various risk management challenges facing banks that were discussed above, these risks will need to be monitored closely.

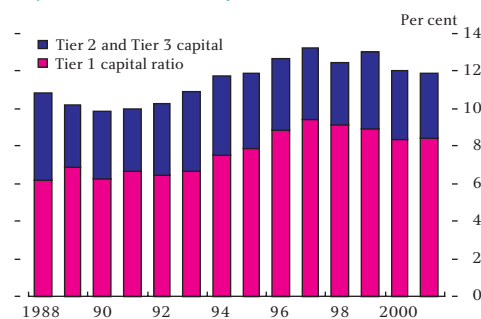
**Chart Q:**  
**Sterling stock liquidity ratio with/without certificates of deposit**



Source: FSA regulatory returns.

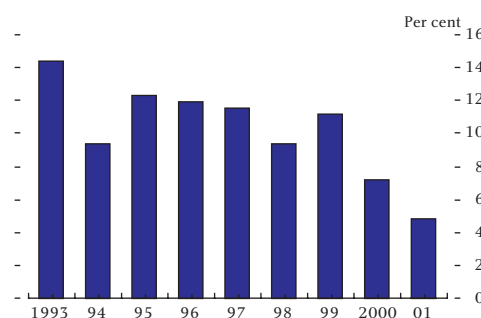
(a) CDs subject to the 15% regulatory discount.

**Chart R:**  
**Major UK banks' capitalisation**



Sources: Published accounts, BBA and Bureau Van Dijk Bankscope.

**Chart S:**  
**Free-asset ratio for UK life insurers<sup>(a)(b)</sup>**



Sources: Standard & Poor's and Bank calculations.

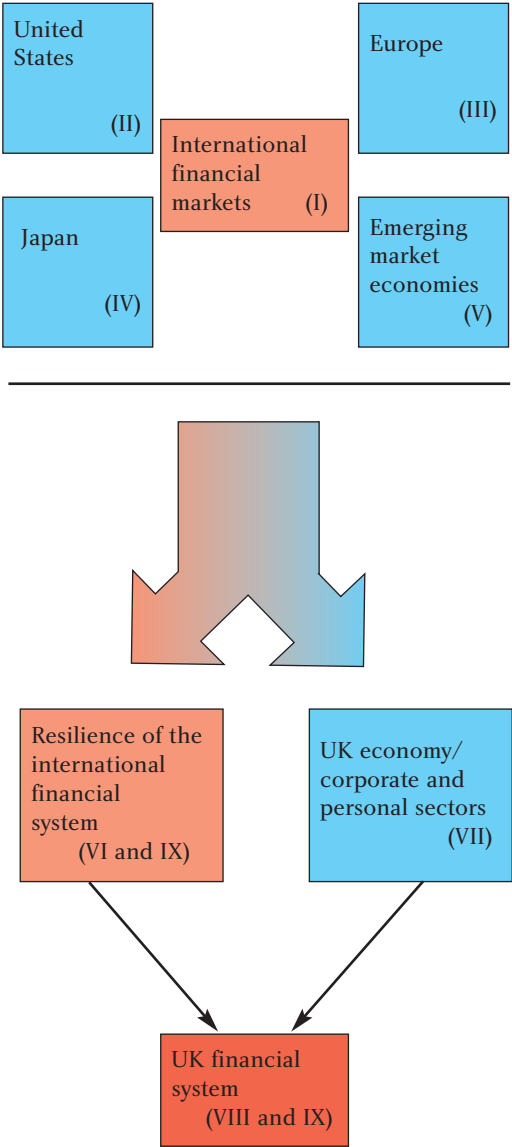
(a) A sample of UK-resident life insurers, representing 70% of the industry's total assets in 2000.

(b) For the sample, the ratio of total net assets admitted for regulatory purposes (after deductions of reserves for liabilities and the required margin of solvency) to total gross admissible assets.



# Introduction

This review of the financial stability conjuncture and outlook discusses changes in risks to financial stability over the period since the Bank's previous assessment last December. It is structured as illustrated below:



# I International financial markets

Since the beginning of the year, the global economy has begun to pick up from the sudden slowdown in 2001, when the annual growth rate of world GDP fell to 2.5% from 4.7% in 2000. The US economy in particular has withstood the impact of the 11 September terrorist attacks much better than most commentators feared at the time. The IMF's April World Economic Outlook projected world GDP<sup>1</sup> growth of 2.8% in 2002, rising to 4.0% in 2003. Consistent with this, financial markets and forecasters are expecting a rise in short-term interest rates in both developed and emerging markets. Central banks in Australia, Canada, Sweden, and New Zealand have increased interest rates this year.

Commodity prices are often regarded as a barometer of global demand relative to potential supply. Despite political tension in the Middle East and South Asia, the oil spot price has not exceeded OPEC's US\$22–28 price target range and uncertainty about its future path is now lower than in December. But commodity prices generally (including base metals) have risen this year.

## Equity markets

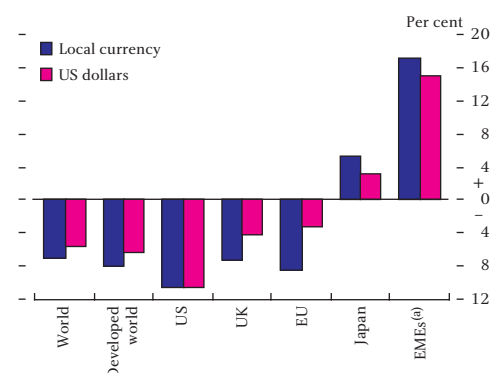
Following marked falls in 2000 and 2001 (over 30% cumulatively in US dollar terms), the world equity index has declined by around a further 5% in 2002. Most major country indices have drifted slightly lower, with the US market the weakest. Emerging markets, however, are higher, as was the Japanese market until very recently (Chart 1). The *ex post* volatility of world equity prices has been lower than it was at the time of the December *Review*, although it has risen since May.

The continued weakness in several equity markets, particularly in the United States, is perhaps surprising given the upward revisions since January to short-run forecasts of GDP for the USA and Japan (Chart 2)<sup>2</sup> and corporate earnings growth. Equity prices may have been affected by heightened concerns, in the wake of Enron's bankruptcy, about the opacity of company accounts and reliability of earnings projections underpinning valuations. This may have led to downward revisions to earnings forecasts for companies under particular scrutiny, and perhaps has added to uncertainty about future corporate earnings generally, and hence increased the equity risk premium.

1: Using purchasing-power-parity weights for GDP: USA = 38%, Japan = 13%, euro-area = 28% and UK = 6%.

2: Every month Consensus Economics Inc survey a panel of forecasters and publish the mean forecast of those surveyed, the predictions of individual forecasters, and the standard deviation of the forecasts in their publication 'Consensus Forecasts'. When referring to the forecasts themselves, rather than their source, this *Review* uses the style Consensus forecasts.

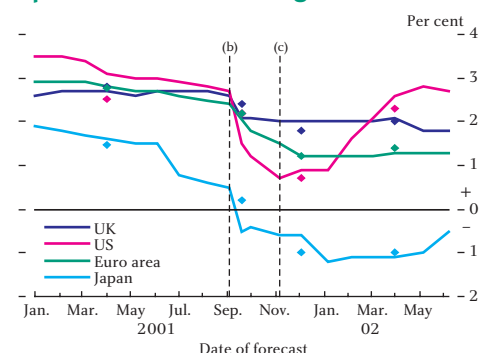
**Chart 1:**  
Percentage change in world equity indices since December 2001 *Review*



Source: MSCI.

(a) Emerging market economies.

**Chart 2:**  
Expected 2002 real GDP growth<sup>(a)</sup>



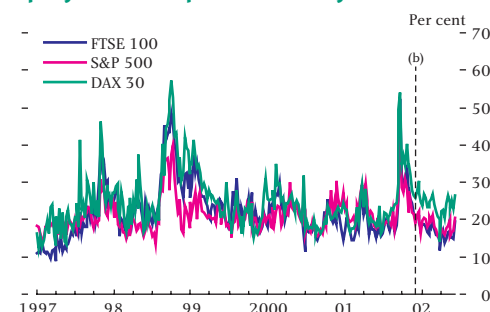
Sources: Consensus Forecasts and IMF World Economic Outlook.

(a) Solid lines represent mean of forecasts from Consensus Forecasts data and markers represent IMF forecasts.

(b) 11 Sep. 2001.

(c) Latest data available at the time of Dec. 2001 *Review*.

**Chart 3:**  
Equity index implied volatility<sup>(a)</sup>

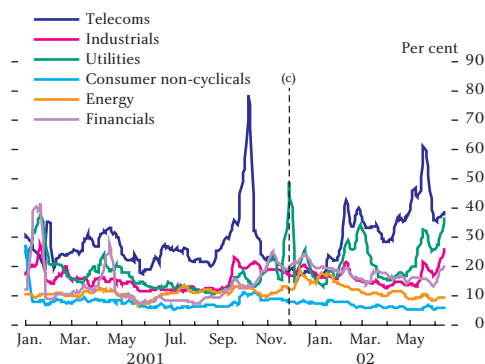


Source: Bloomberg.

(a) Implied volatility of options on equity index futures.

(b) Dec. 2001 *Review*.

**Chart 4:**  
Standard deviation of implied volatilities  
on individual firms' equity prices by  
sector<sup>(a)(b)</sup>



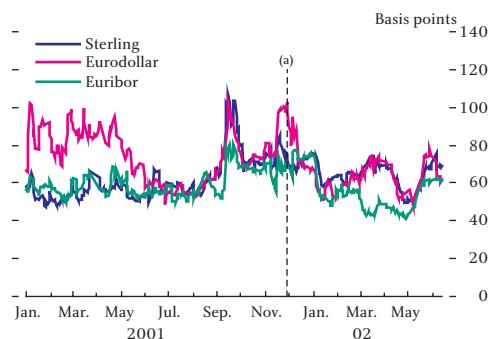
Sources: Bloomberg and Bank calculations.

(a) Calculated using a five-day moving average.

(b) Based on Standard & Poor's GICS (Global Industry Classification Standard) sector indices for the S&P 500.

(c) Dec. 2001 Review.

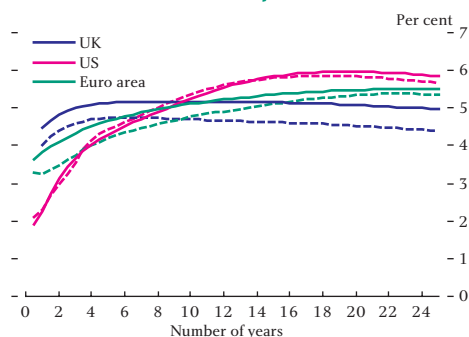
**Chart 7:**  
Implied annualised standard deviation of  
three-month futures rates



Sources: LIFFE, Chicago Mercantile Exchange, Bloomberg and Bank calculations.

(a) Dec. 2001 Review.

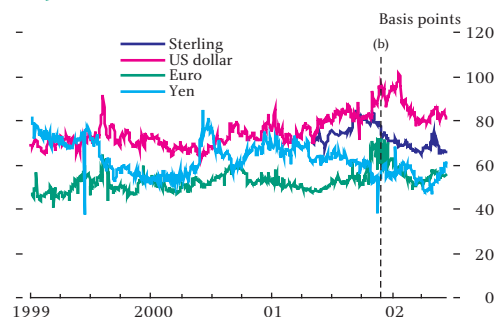
**Chart 5:**  
Nominal interest rate spot curves<sup>(a)</sup>



Sources: Reuters and Bank calculations.

(a) As at 12 Jun. 2002. Dashed lines represent data as at Dec. 2001 Review.

**Chart 8:**  
Implied volatility of ten-year/ten-year  
swaptions in selected currencies<sup>(a)</sup>

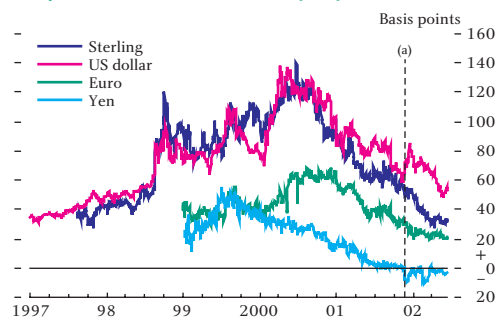


Sources: Bloomberg, Thomson Financial Datastream and Bank calculations.

(a) Option to pay fixed and receive Libor for ten years starting in ten years' time.

(b) Dec. 2001 Review.

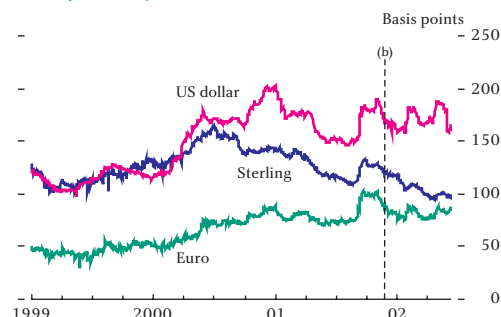
**Chart 6:**  
Ten-year interest rate swap spreads



Source: Bloomberg.

(a) Dec. 2001 Review.

**Chart 9:**  
Aggregate investment-grade corporate  
bond yield spreads<sup>(a)</sup>



Source: Merrill Lynch.

(a) Weighted average option-adjusted spreads of corporate bonds over government bond yields.

(b) Dec. 2001 Review.

Questions about the level of equity valuations are picked up in Section VI.

If there were more uncertainty about future returns, a rise in implied volatilities measured from option prices might be expected. In fact, until the very recent equity market weakness, implied volatilities had fallen across the major equity indices (Chart 3), perhaps because investors extrapolated from the falls in historical volatility earlier in the period under review. The dispersion of implied volatilities for individual stocks has risen, however, particularly within the utilities sector (which includes some energy firms) and amongst telecom companies, where indebtedness is often high, where some specific accounting issues have been widely debated, and in which many of the recent credit rating downgrades and defaults have occurred (Chart 4).

## Interest rate markets

Dollar, euro and yen nominal yield curves remain unusually steep. Since the December Review, the euro and sterling yield curves have also shifted higher across the maturity structure (Chart 5).

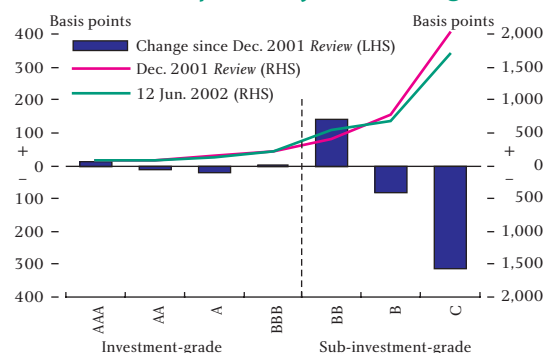
Swap spreads have fallen (Chart 6). It seems unlikely that the rise and fall of swap spreads over the past five years has reflected material shifts in perceptions of banking system credit risk relative to government risk, which in principle is what a fully efficient swap market should capture. In the US dollar market, active mortgage refinancing towards the end of 2001 put downward pressure on swap spreads, as mortgage market participants entered into swaps to receive fixed-rate payments (to maintain the duration of their liabilities close to that of their assets – see Box 7 in Section VI). Since then, a more important factor may have been demand from companies issuing fixed-rate bonds and swapping into floating-rate payments – a feature in sterling and euro markets too. Throughout, another factor may have been increased expectations of government bond issuance, which have affected swap spreads for a year or so.

Implied volatility on short-term money market rates fell back until early May, after which more mixed economic news led to a greater divergence in views about the path of interest rates in both the United States and Europe (Chart 7). Except for a spike around the turn of the year, implied volatilities on long-term interest rates (bond futures) have generally continued to decline. For euro, yen and sterling government bonds, they are now close to the lowest levels since 1997, but remain high for US bonds.

Similarly, implied volatilities are higher on long-maturity options on US dollar interest rate swaps, or ‘swaptions’ (Box 1), than on euro or sterling swaptions (Chart 8). This is not a new

**Chart 10:**

### US dollar bond spreads by credit rating<sup>(a)</sup>

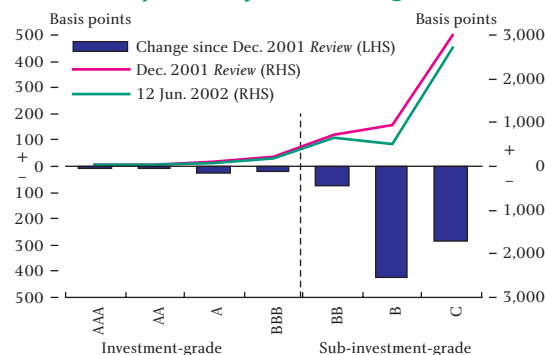


Source: Merrill Lynch.

(a) Weighted average option-adjusted spreads of corporate bonds over government bond yields across all maturities.

**Chart 11:**

### Euro bond spreads by credit rating<sup>(a)</sup>

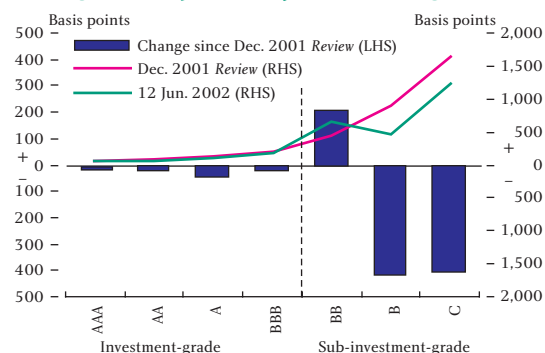


Source: Merrill Lynch.

(a) Weighted average option-adjusted spreads of corporate bonds over government bond yields across all maturities.

**Chart 12:**

### Sterling bond spreads by credit rating<sup>(a)</sup>



Source: Merrill Lynch.

(a) Weighted average option-adjusted spreads of corporate bonds over government bond yields across all maturities.

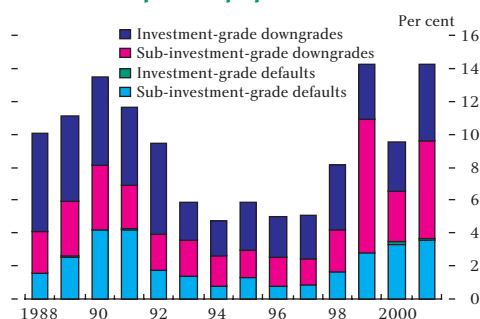
## Box 1: Swaptions

A swaption is an option on an interest rate swap. It gives the buyer the right (but not the obligation) to enter into either a fixed-to-floating or a floating-to-fixed rate swap of agreed maturity on an agreed notional value at a pre-determined rate on or by a pre-determined expiry date. The option writer is obliged to be the counterparty on the other side of the swap if the option is exercised. Swaptions are traded for both short- and long-maturity expiry dates, and for a wide range of swap maturities; for example, a 3M/10Y swaption offers a three-month option on a ten-year swap, and similarly for 6M/5Y or 5Y/5Y swaptions. The swaptions market is generally more liquid and actively traded than options on

government bonds, especially for long-maturity options. Market estimates suggest that the nominal amount outstanding in the global swaptions market may exceed US\$13 trillion, most of which is over-the-counter.

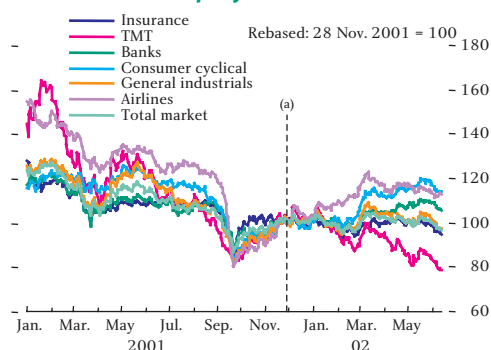
As for any option, the price of a swaption reflects *inter alia* the time distance to maturity of the option and market expectations of the future volatility of the underlying instrument – the interest rate swap rate; and, more specifically (as swaptions are generally European options), reflects the distribution of current expectations of interest rates for the agreed swap maturity *at* the option expiry date.

**Chart 13:**  
Downgrades and defaults as a share of the rated US corporate population<sup>(a)</sup>



Sources: Moody's Investors Service and Bank calculations.  
(a) Calculated by number of companies.

**Chart 14:**  
World sectoral equity indices



Source: Thomson Financial Datastream.  
(a) Dec. 2001 Review.

phenomenon, and probably reflects features of the US residential mortgage market discussed in Sections II and VI.

## Credit markets

Average credit spreads for investment-grade issuers in the dollar and euro markets are little changed since December and remain materially higher than two years ago (Chart 9).

Sub-investment-grade spreads have generally been lower in the dollar market (although not on average for BB companies), and also in the much smaller euro and sterling markets (Charts 10–12).

The suggestion of reduced credit risk amongst lower-rated companies signalled by forward-looking bond spreads contrasts with the evidence from backward-looking indicators such as default rates and credit rating changes. The ratio of rating downgrades to upgrades for US companies rose from 2.9 in 2001 Q4 to 5.3 in April–May 2002, the highest since 1990 Q4. As a proportion of the population of rated companies, downgrades are around the level of the early 1990s, although there are many more rated companies now. The number of defaults relative to downgrades has also been high (Chart 13)<sup>3</sup>. Part of the reduction in bond spreads seems to be a composition effect; the large number of defaults may have 'weeded out' some weaker firms from the relevant bond indices, leaving stronger ones behind. There have been a number of high profile corporate defaults recently and rating agency data indicate that the number of companies that have lost an investment-grade rating (so-called 'fallen angels') has continued to rise –

3: Credit rating downgrades tend to outnumber upgrades – Moody's data show that, from 1984–2001, for companies whose rating was unchanged over the previous year, the probability of a downgrade in the next year was 13.3% versus 8.8% for an upgrade (a ratio of 1.5), not including the 1.1% that defaulted. This tendency arises mainly because issuers coming to market for the first time have typically been investment-grade, and issuers can only go off the scale to the downside – through defaults.

18 investment-grade companies were downgraded to sub-investment grade by Moody's in 2002 Q1, two of which were European companies. Many fallen angels have large debts – for example, Worldcom (around US\$28 billion), Qwest (around US\$23 billion), Xerox (around US\$8 billion) and Nortel Networks (around US\$7 billion). Meanwhile, the number of companies that have been upgraded to investment grade ('rising stars') has been more or less in line with the average over the past five years.

In summary, as the international economy strengthens, market participants might now be looking ahead to some reduction in credit risk overall, after its deterioration in 2001 and early 2002. Any such optimism is not, however, common across all sectors.

### Variation by industry sector

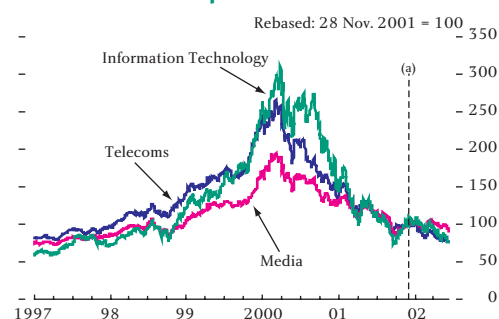
Equity and credit market data suggest that there have been three main and overlapping sectoral developments since last December's *Review*: a renewed decline in the relative prospects for the telecoms industry; heightened concerns about the opacity of company accounts; and worries about some firms' liquidity given their debt structures – themes explored further in Sections II, III, and VI.

Sectoral equity price changes have been widely dispersed since the December *Review* (Chart 14). Datastream global indices for 'old economy' sectors such as consumer cyclicals have risen by around 10% and, consistent with the improving economic conjuncture, significantly more than non-cyclical stocks. Cyclical industries with high fixed costs may have benefited disproportionately from the upturn in demand; the Datastream global index of automobile industry stocks, for example, has also risen by around 10%. Apart from in the USA, the global airline sector has recovered somewhat from its precipitous post-11 September drop, with an increase of around 10% in the sector index. Defence-related manufacturers' stock prices have also increased relative to the broad index. But the global insurance sector index has declined by about 5%, as larger than expected underwriting losses (including those arising from 11 September), affecting property and casualty insurers, have been compounded by weak investment returns, for both them and life insurers.

The Datastream global IT and telecoms sectors have fallen further, by over 20%, since the December *Review* – back to 1997 levels (Chart 15).

Credit spreads indicate that risk is perceived to have increased in the utilities sector (which, as noted above, includes some energy firms) and the telecoms sector (Chart 16). Credit default swap (CDS) prices for a constant selection of 14 US and European telecom operators rose on average from around 100 basis points

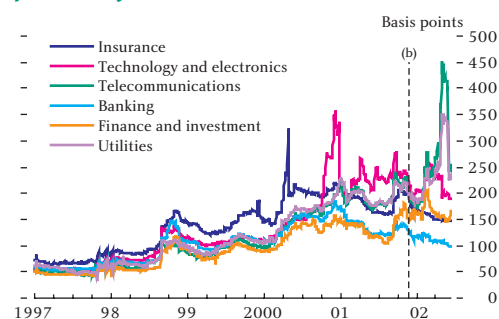
**Chart 15:**  
**World TMT share price indices**



Source: Thomson Financial Datastream.

(a) Dec. 2001 *Review*.

**Chart 16:**  
**US dollar-denominated investment-grade spreads by sector<sup>(a)</sup>**

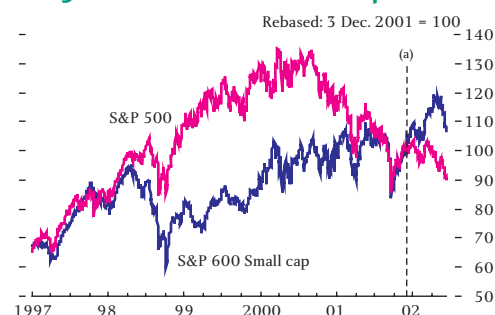


Source: Merrill Lynch.

(a) Weighted average option-adjusted spreads of corporate bonds over government bonds.

(b) Dec. 2001 *Review*.

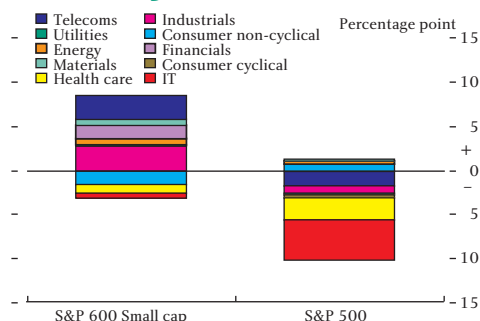
**Chart 17:**  
**S&P 500 and S&P 600 small cap indices**



Source: Thomson Financial Datastream.

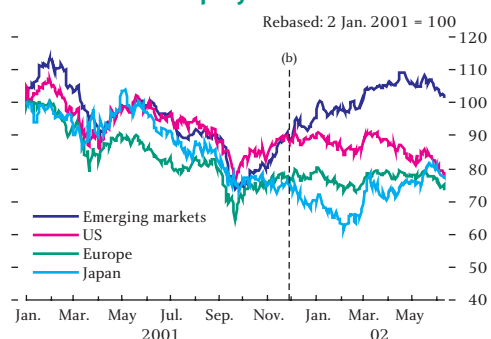
(a) Enron filed for bankruptcy.

**Chart 18:**  
Sectoral contribution to the changes in the S&P 600 Small cap and S&P 500 market values since 3 December 2001



Sources: Thomson Financial Datastream and Bank calculations.

**Chart 19:**  
Selected world equity indices<sup>(a)</sup>

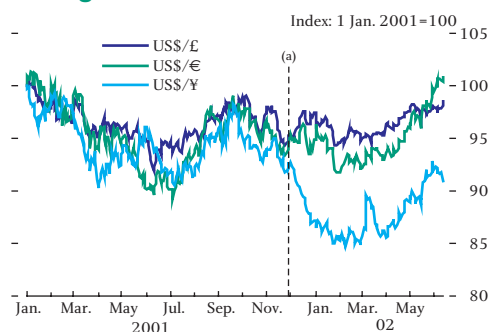


Source: MSCI.

(a) Denominated in US dollars.

(b) Dec. 2001 Review.

**Chart 20:**  
Exchange rate movements



Source: Thomson Financial Datastream.

(a) Dec. 2001 Review.

in January 2002 to 190 basis points in June 2002. The rise in Europe was around 60 basis points, compared with 180 basis points in the USA. The US index contained Worldcom, but not Qwest; the CDS prices of both companies have risen sharply to over 1000 basis points. Some market commentators have ascribed an apparent USA/Europe differentiation to a slightly greater possibility of public sector intervention in Europe, although the European Commission is generally not in favour of a relaxation of 3G-licence terms.

Adding to worries about debt levels, doubts about underlying demand seem to have intensified, affecting both the fixed-line and mobile telecom sectors. This seems to reflect overcapacity in fixed-line markets, putting margins under pressure; increased maturity of mobile markets, so that higher revenue per user rather than subscriber growth will be needed to increase revenues; and downward revisions to the expected take-up of services following the introduction of 3G mobile networks. Along with energy companies, some telecoms have also been prominent amongst firms suffering from post-Enron concerns about the transparency of corporate accounts and earnings quality, with allegations of 'capacity swapping' (selling line capacity to one another to artificially inflate revenues), overvaluation of intangible assets, inadequate disclosure of contingent liabilities, and concerns about debt structure and related liquidity profiles.

As noted above, in the wake of Enron's collapse, there has been a greater focus on the quality and transparency of corporate earnings and accounts. Some of these risks may have affected large companies more than small ones. Since 3 December 2001, when Enron filed for bankruptcy, the market value of the S&P 600 small cap index has risen by over 5%, while the market value of the S&P 500 has fallen by around 10% (Chart 17). The largest contributors to the increase in the relative value of small cap stocks have been industrial and consumer cyclical stocks (eg leisure, textiles), while the largest contributor to the fall in the price of US large cap stocks has been IT (Chart 18). This sectoral pattern has been common across countries since December.

## Variation by region

In other respects, however, there have been some striking divergences across regions. Emerging market economy (EME) stock markets, in particular, have risen, unlike most developed country markets (Chart 19), perhaps because of strengthening domestic demand and the improved export outlook for the open economies of Asia, which are expected to benefit disproportionately from global economic recovery (see Section V). The largest sectoral difference between EME and developed country indices has been in the information technology hardware sectors.

The Japanese equity market was supported by a tightening of short-selling restrictions which, along with the improvement in economic outlook, helped to raise equity prices in the first quarter.

The aggregate European equity market index has fallen slightly (around 5%) since the December Review in dollar terms, while the US market has fallen by over 10%. This might reflect greater concerns about US corporate earnings transparency, combined perhaps with somewhat weakened expectations of the extent to which improvements in trend productivity growth will flow through to corporate profits.

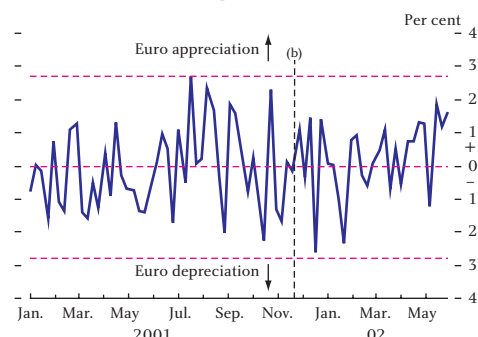
## Exchange rates

The relative movement in US and European equity markets may reflect some of the same factors as the dollar's recent fall against the euro. The yen excepted, exchange rates were relatively stable from December to April. Since then, the dollar has depreciated by just over 6% against the euro and yen (Chart 20), recording eight-month lows in effective terms. While material, the falls have not been unusually abrupt (Chart 21). The dollar has fallen by somewhat less against sterling, which has depreciated by 1.8% in effective terms since the December Review, and by 3.5% since April.

Notwithstanding recent changes in major country exchange rates, uncertainty – as indicated by the *level* of implied volatilities – is lower than in December (Chart 22).

Prices of options across a range of exercise prices for the dollar/euro exchange rate do, however, indicate that there has recently been an increase in the perceived probability of a large fall in the dollar compared with the probability of a large rise (Chart 23). The dollar's depreciation also highlights issues relevant to the sustainability of the US current account, which are related to foreign demand for US financial assets and so are discussed in Section II.

**Chart 21:**  
Weekly percentage change in the US dollar/Euro exchange rate<sup>(a)</sup>

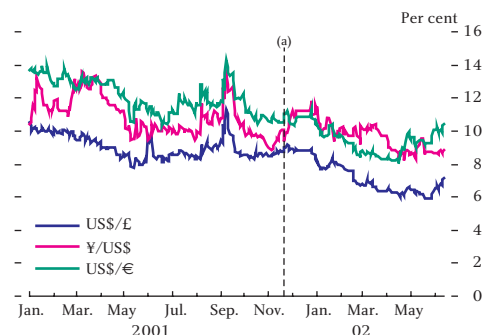


Sources: Thomson Financial Datastream and Bank calculations.

(a) Top pink line is the average weekly percentage change plus two standard deviations; middle line is the average; bottom line is the average less two standard deviations. Average and standard deviation calculated from Jan. 1988.

(b) Dec. 2001 Review.

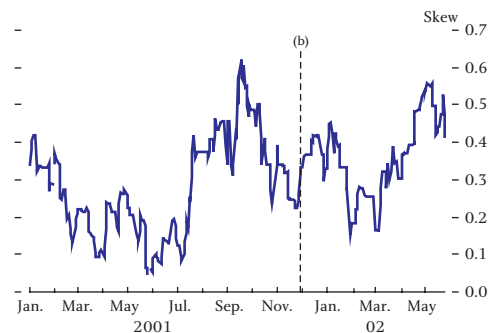
**Chart 22:**  
Three-month exchange rate implied volatilities



Source: Reuters.

(a) Dec. 2001 Review.

**Chart 23:**  
Three-month US dollar/euro skew<sup>(a)</sup>



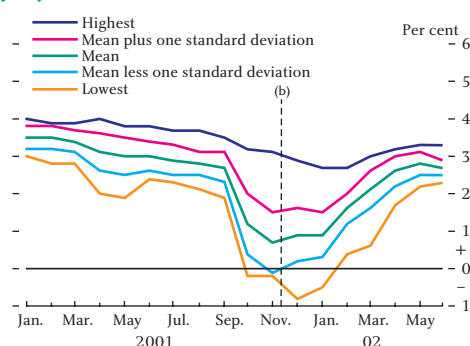
Sources: Natwest Markets Exchange and Bank calculations.

(a) Skewness is derived from option prices and provides an indication of whether markets believe a large upward move (positive skew) is more likely than a large downward move (negative skew). A neutral skewness is zero.

(b) Dec. 2001 Review.

## II The United States

**Chart 24:**  
**Dispersion of 2002 US GDP growth projections<sup>(a)</sup>**

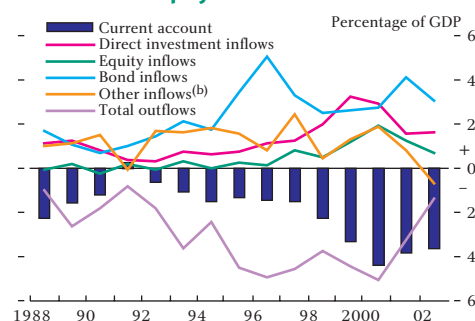


Source: Consensus Forecasts.

(a) Projections made in month shown.

(b) Dec. 2001 *Review*.

**Chart 25:**  
**US balance of payments<sup>(a)</sup>**

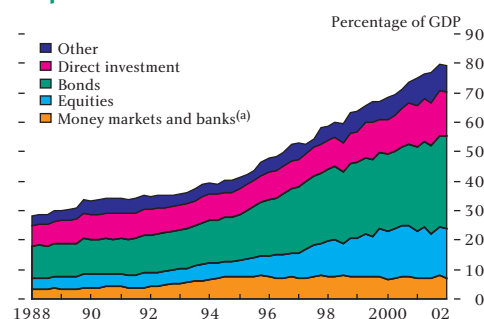


Source: Board of Governors of the Federal Reserve System: 'Flow of Funds Accounts of the United States', 2002 Q1.

(a) Data are annual except for 2002 figure which is Q1 annualised.

(b) Includes external transactions of the banking sector.

**Chart 26:**  
**Composition of US external liabilities**



Source: Board of Governors of the Federal Reserve System: 'Flow of Funds Accounts of the United States', 2002 Q1.

(a) Includes net interbank claims.

Since the December *Review*, a gap has opened up between the macroeconomic outlook and sentiment in and about the corporate sector. The growth of output – but to a lesser extent that of final demand – has recovered since 2001 Q4, reflecting a much reduced rate of destocking, and robust household and public sector consumption. As judged by the dispersion of forecasts collated by Consensus Economics, uncertainty about short-term growth prospects has also diminished (Chart 24). But the outlook for business investment is generally regarded as sluggish, perhaps reflecting excess capacity in sectors such as telecoms combined with caution over the outlook for corporate earnings. Separately, there has been a series of corporate sector revelations, denting confidence in governance and earnings integrity, weighing on equity prices and raising questions about a possible 'underside' to the rapid-growth 1990s. Together with a potential debt overhang, this clouds what would otherwise probably be an improving prospect for credit risk.

### Capital flows and the current account

Net trade has continued to make a negative contribution to output growth; after contracting somewhat during 2001, the current account deficit was larger in 2002 Q1 than the average for 2001 H2. This might continue if economic recovery in the USA is not accompanied by stronger domestic demand growth elsewhere. The risks from the external imbalances – in particular to the dollar's exchange rate – turn on perceptions of the sustainability of the 1990s' improvement in productivity growth and perhaps also on the pattern of capital flows, as discussed in previous *Reviews*<sup>4</sup>. The economic slowdown last year was, in fact, associated with some change in the composition of capital inflows (Chart 25). Inward direct and portfolio investment flows to the US private sector in 2002 Q1 were around 4.1% of GDP, well down on their peak of 6.7% of GDP in 2000 and have perhaps been discouraged by declines in corporate investment and expected earnings growth. While overseas private investment in US government and Agency securities was sharply higher in 2001 Q4, perhaps reflecting a preference for less risky assets in the wake of the 11 September terrorist attacks, it fell back to more normal levels in 2002 Q1.

More important than any one quarter's flow, however, is the structure of the external balance sheet. Since the early-1990s the US net external liability position has risen from around 12% of GNP at end-1991 to 40% at end-March 2002. The composition of the stock of external liabilities has changed considerably over that period (Chart 26). There has been a fall in the share of US liabilities in the form of money market instruments and bank net liabilities, which might be particularly vulnerable to a change in

4: See, for example, the discussion on pp 21-24 of the December 2000 *Review*.

sentiment. The share of holdings of marketable instruments (both bonds and equity) has increased, while that of direct investment has fallen.

## The non-bank private sector

The domestic counterparts to the evolution of the external imbalance in 2001 and in 2002 Q1 were a narrowing of household and corporate sector financial deficits, largely matched by a swing back into deficit of the public sector. Corporate income tax accruals were depressed by declining profits; the household sector benefited from tax rate reductions and rebates, and capital gains tax receipts fell (Chart 27).

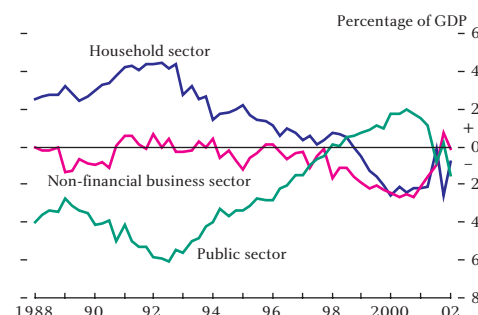
### The household sector

While quarterly movements in household saving have been erratic, partly reflecting fiscal initiatives, personal sector saving as a percentage of GDP rose somewhat on average last year from the very low level of 2000 and increased further in 2002 Q1.

In balance sheet terms, capital gearing and debt relative to income have remained high (Chart 28). Against a background of slower growth and rising unemployment in the second half of 2001, non-business bankruptcies continued to rise, albeit not at the rate of early 2001. According to research by the Congressional Budget Office, personal bankruptcies tend to lag changes in debt service and debt-to-income ratios by around 12 to 18 months<sup>5</sup>, so an increase in these ratios – arising, say, from a faltering of income growth and/or a material increase in debt interest payments – could increase loan defaults.

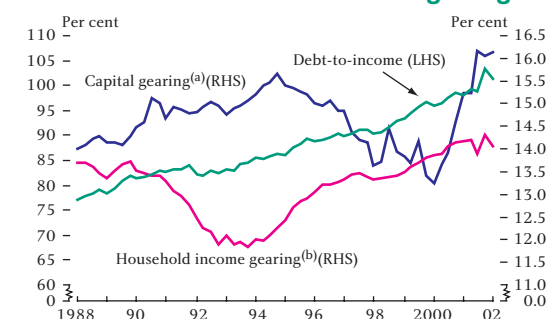
Significantly, however, there has been continuous strength in the housing market accompanied by heavy mortgage refinancing – especially towards the end of last year (Chart 29). The share of adjustable-rate lending in new mortgages has closely tracked the change in official interest rates; a growing spread between fixed and adjustable rates in 2001 encouraged a rise in take-up of adjustable rate mortgages – from around 9% in February 2001 to 19% in April 2002. While net new mortgage lending outstripped new investment in housing by a considerable margin – implying sustained mortgage equity withdrawal – the ratio of outstanding mortgage debt to the market value of houses rose only slightly, reflecting higher house prices (Chart 30). According to Freddie Mac, the share of mortgages where the sum refinanced exceeded the existing debt accounted for more than half of refinancing activity last year, but it was lower than in 2000 (Chart 31). With lower interest rates, the median refinancing rate in 2001 for these mortgages was about a sixth lower than that on the old debt. While much of the proceeds will probably have boosted consumption, a part may also have been used to consolidate or repay other, more expensive debt: the combined

**Chart 27:**  
**US domestic sector financial balances**



Source: Board of Governors of the Federal Reserve System: 'Flow of Funds Accounts of the United States', 2002 Q1.

**Chart 28:**  
**US household sector balance sheet gearing**

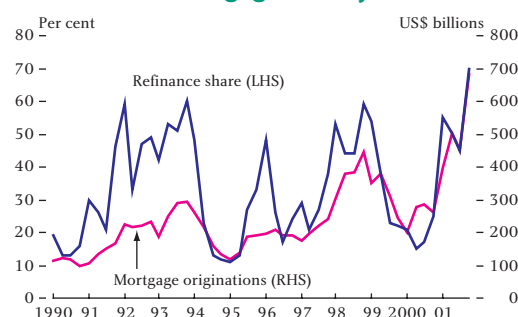


Source: Board of Governors of the Federal Reserve System: 'Flow of Funds Accounts of the United States', 2002 Q1 and Bureau of Economic Analysis, Department of Commerce.

(a) Defined as credit market instruments divided by gross total assets.

(b) Data for 2002 Q1 released on 19 Jun. 2002.

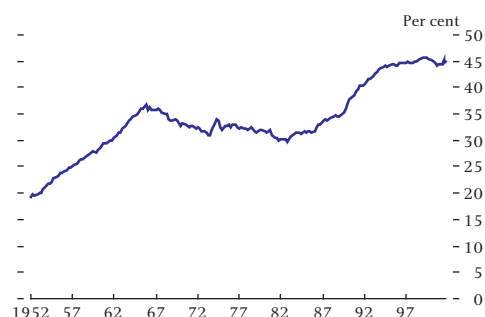
**Chart 29:**  
**US residential mortgage activity**



Source: Mortgage Bankers Association of America.

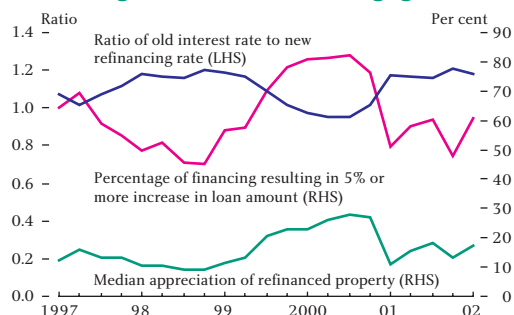
5: Congressional Budget Office: 'Personal Bankruptcy: A Literature Review', September 2000.

**Chart 30:**  
**US residential mortgage debt relative to the market value of houses**



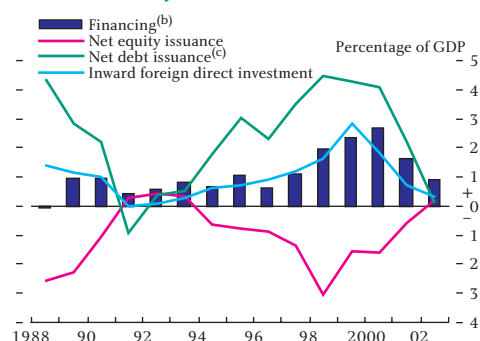
Source: Board of Governors of the Federal Reserve System: 'Flow of Funds Accounts of the United States', 2002 Q1.

**Chart 31:**  
**Refinancing of Freddie Mac mortgages**



Source: Freddie Mac.

**Chart 32:**  
**Sources of corporate finance<sup>(a)</sup>**



Source: Board of Governors of the Federal reserve system: 'Flow of Funds Accounts of the United States', 2002 Q1.

(a) Data are annual except for 2002 figure which is Q1 annualised.

(b) The financing gap is capital expenditure less the sum of US internal funds and inventory valuation adjustment.

(c) Loans, bonds and commercial paper.

flow of home equity loans ('second mortgages' in the UK) and other consumer credit has slowed significantly since 2000. Since the end of last year there have been signs that volumes of mortgage activity and refinancings have fallen back from their very high levels of late 2001.

Extensive mortgage refinancing and associated debt consolidation might have helped to strengthen US household balance sheets somewhat. But the level of income gearing – slightly down, but still over 14% in 2002 Q1<sup>6</sup> notwithstanding a very low Fed funds rate – seems high (Chart 28), potentially signalling some fragility if macroeconomic conditions were to prove more difficult than currently expected. Given the importance of unemployment to household creditworthiness, developments in the corporate sector therefore matter to banking and other financial sector balance sheets indirectly as well as directly.

#### *The corporate sector*

The adjustment of corporate balance sheets to declining sales and earnings and, in more extreme cases, the threat of bankruptcy has entailed, as might be expected, alterations in holdings of both real assets and financial assets and liabilities<sup>3</sup>. A decline last year in internal sources of funds was more than matched by lower fixed-investment spending and a sharp run-off of inventories, leaving a smaller net external financing requirement than in 2000 (Chart 32). This remained the position in 2002 Q1.

Meeting the continuing financing requirement has involved a sharp fall in the growth of both gross financial assets (mainly receivables from other companies within the sector) and liabilities. Amounts outstanding of bank loans and of commercial paper (CP) liabilities of non-financial corporates have fallen in each quarter since end-2000 as companies have turned to the bond market. Non-financial companies have also reduced their net buybacks of shares and in 2002 Q1 were, unusually, net issuers of equity. While the level of liquid assets fell marginally in 2002 Q1, these balance sheet adjustments had hitherto been effected without any rundown of companies' liquid assets overall.

Taken together with lower interest rates, these adjustments helped to bring down income gearing slightly, although capital gearing (at replacement cost) has continued to rise (Chart 33). The ratio of companies' liquid assets to short-term liabilities has strengthened.

This aggregate picture conceals, however, stresses placed on individual firms and on vulnerable sectors such as telecoms.

6: A Box on page 90 of the December 2001 *Review* described the corporate adjustment process more generally.

There have been significant developments since the December Review. The circumstances of Enron's collapse, which became clearer in January (see Section VI), and the restatement of some other companies' accounts have raised investor concerns over the quality of earnings and opaque balance sheet structures. They also underlined the liquidity risks faced by companies whose debt is accelerated – or is subject to collateral calls – on being downgraded to sub-investment grade by the rating agencies. That was already becoming apparent towards the end of 2001 when otherwise sound companies found themselves effectively locked out of the CP market upon losing an A1/P1 short-term rating. In extreme cases, such liquidity pressures have forced companies, whose risk of insolvency would otherwise have seemed remote, to seek bankruptcy protection. The bankruptcy rate for quoted companies, which are more likely to have publicly-rated debt, has risen faster than that for business in general.

There has, in consequence, been greater emphasis on corporate debt structures, as well as on the basic debt-to-income and debt-to-capital ratios discussed above. There are parallels here with the difficulties faced in 1997–1998 by some emerging market countries that were excessively dependent on short-term debt – encouraged by under-pricing, but exposing the country to the risk of a self-fulfilling run<sup>7</sup>. While short-term claims should be less risky than longer-term claims for companies which have prudently spread the maturity of their overall debt, the risk may be high if the debt structure is heavily concentrated in short maturities: a basic principle which seems for a while to have been overlooked by lenders and borrowers alike. The need to 'term-out' liabilities has affected even highly-rated companies, which have significantly reduced their use of CP.

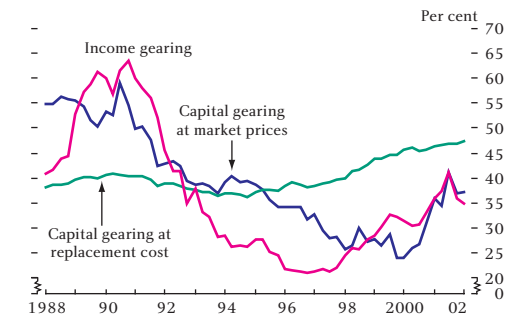
As in the UK (see Section VII), the fall in equity prices in recent years has eroded US company pension fund surpluses<sup>8</sup>, highlighting the market risk assumed by firms on long-term defined benefit liabilities. While the closure of such schemes and their replacement with defined contribution schemes has been controversial in the UK, the process has been under way in the US since the early 1980s (Chart 34). At end-2000, defined contribution schemes and Individual Retirement Accounts, both of which involve employees assuming the market risk on the fund, accounted for 71% of all pension fund assets, up from 60% in 1990.

Nevertheless, for those companies that retain defined benefit schemes, the market value of fund assets in aggregate (after

7: These issues were discussed in the Report of the Working Group on Capital Flows commissioned by the Financial Stability Forum (April 2000). <http://www.fsforum.org/Reports/RepCF.html>

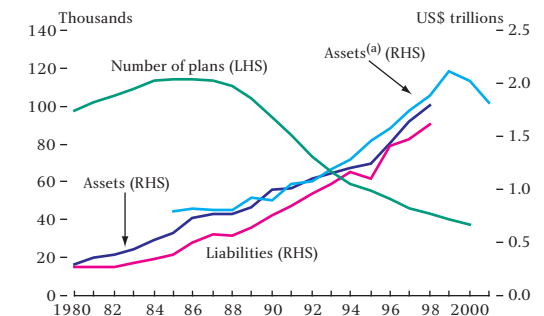
8: US companies are required to show the level of underfunding of pension schemes in the notes to their accounts, but the applicable accounting standard, FAS 87 – unlike the UK standard FRS 17 – permits smoothing of returns, usually over five years.

**Chart 33:**  
**US non-financial corporate business capital and income gearing**



Source: Board of Governors of the Federal Reserve System: 'Flow of Funds Accounts of the United States', 2002 Q1 and Bureau of Economic Analysis, Department of Commerce.

**Chart 34:**  
**PBGC-insured defined benefit plans**



Source: Pension Benefit Guaranty Corporation, 'Pension Insurance Data Book 1999' and Board of Governors of the Federal Reserve System: 'Flow of Funds Accounts of the United States', 2002 Q1.

(a) Flow of funds data provided for comparison and as a leading indicator of PBGC data not yet available.

**Chart 35:**  
**US pension funds: proxies for capital gains/losses<sup>(a)(b)</sup>**



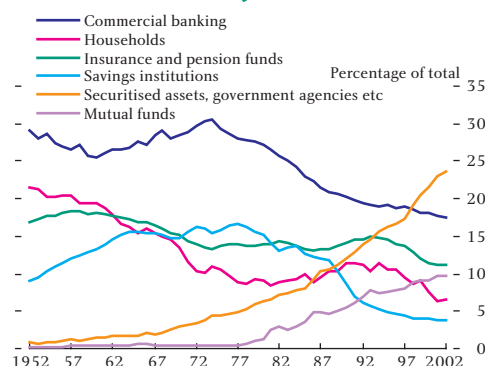
Source: Board of Governors of the Federal Reserve System: 'Flow of Funds Accounts of the United States', 2002 Q1.

(a) Annual change in stock of financial assets less net annual investment flow.

(b) As a percentage of previous year's stock.

**Chart 36:**

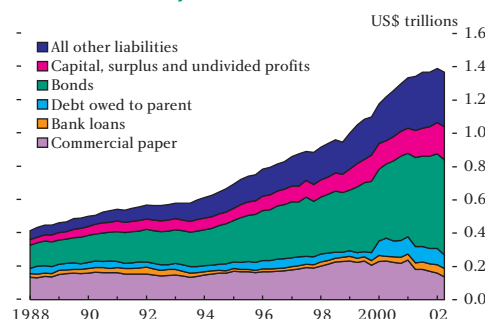
**Share of total debt by holder**



Source: Board of Governors of the Federal Reserve System: 'Flow of Funds Accounts of the United States', 2002 Q1.

**Chart 37:**

**US finance companies' liabilities**



Source: Board of Governors of the Federal Reserve System.

allowing for net acquisitions of financial assets) has fallen by 10% since 1999, after earlier large capital gains (Chart 35). A survey of the 50 largest schemes by Milliman USA<sup>9</sup> indicated that by end-2001 falls in the value of scheme assets relative to liabilities had reduced the average funded ratio to 104% as against 135% at end-1999. Data published by the Pension Benefit Guaranty Corporation, a US Government corporation, which assumes the insured defined benefit scheme liabilities of companies that go into liquidation, show that in 1998 32% (as measured by liabilities) of single employer insured schemes were to a degree underfunded, although only in 5% of schemes was the level of underfunding greater than 20% of the scheme's liabilities. The incidence and scale of underfunding in the smaller group of multi-employer schemes was, however, higher.

*The non-bank financial sector*

Disintermediation of credit outside the banking sector is more developed in the USA than in any other developed economy. Much of this has occurred via capital markets: through the development over the past decade or so of a high-yield corporate bond market, non-bank participation in wholesale loan markets (for example, Collateralised Loan Obligations and prime loan mutual funds), and the securitisation of mortgages, credit card loans, trade receivables, etc (Chart 36). Other things being equal, this should enhance financial system stability to the extent that credit risk is held by asset managers or other financial institutions which are not part of the payments system and are not exposed to the liquidity risk inherent in bank balance sheets<sup>10</sup>. In two areas, however, non-bank (and thrift) provision of credit is accompanied by maturity transformation and so liquidity risk: first, finance companies are to some extent funded by CP; and second, US life insurance companies issue short-term deposit-like 'guaranteed investment contracts' and 'funding agreements', the latter increasingly to overseas investors (Box 2).

In a period of rapid balance sheet growth, US finance companies have for a while been reducing their CP issuance (Chart 37) – during 2001 and into 2002, perhaps partly in response to the more general market concerns about corporate sector liquidity discussed above, and accompanied by some rise in bank borrowing. Depending on the term of other liabilities, this might have strengthened the ability of the sector to withstand adverse shocks to asset portfolios or to the financing markets (in particular CP).

In the early 1990s, a number of North American life insurance companies encountered severe liquidity problems arising from a combination of heavy exposures to a severely depressed commercial property market and to sub-investment grade bonds,

9: <http://www.milliman.co>

10: For a discussion of banking sector liquidity risk (in a UK context) see Chaplin, Emblow and Michael, 'Banking system liquidity: developments and issues' in the December 2000 *Review*.

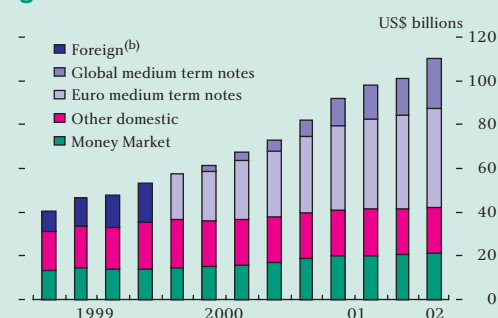
## Box 2: GICs and Funding Agreements issued by US life insurance companies

In addition to life insurance policies, US insurance companies offer a variety of guaranteed-return, deposit-like contracts to investors. Some of these contracts are not treated by regulators or rating agencies as debt. In a liquidation they would rank alongside policyholder claims and so are senior to general creditors, as well as to investors in holding company bonds.

Guaranteed investment contracts ('GICs') were first offered to the sponsors of pension plans ('qualifying investors' under the Employee Retirement Income Security Act (ERISA) of 1974) from the middle of the 1970s. They typically have a fixed 2–10 years maturity and provide a guaranteed fixed or floating rate return. Unless otherwise specified, they are not puttable except in response to a withdrawal by a pension plan member<sup>1</sup>.

Similar contracts – known as 'funding agreements' – are offered to 'non-qualifying' investors, including municipal governments, and money market mutual funds and other short-term institutional investors. Recently, funding agreements have been offered in securitised form to investors outside the USA as the assets backing Euro and Global Medium Term Notes. According to a recent survey of 23 companies, around US\$110 billion of funding agreements were outstanding at end-March 2002, with nearly two thirds issued outside the USA (Chart A). (Issuance is highly concentrated, with five companies accounting for nearly two-thirds of sales in 2002 Q1.)

**Chart A:**  
US life insurance companies' funding agreements<sup>(a)</sup>



Source: Townsend & Schupp Company.

(a) Balance as at end of period.

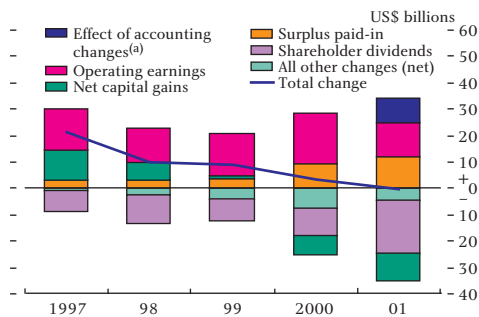
(b) No split of EMTNs and GMTNs available prior to 2001 Q1.

1: Contracts have to be 'benefit responsive' to be treated as 'operational leverage' rather than as debt. A benefit-responsive investment contract is one issued to a defined contribution plan that provides 'book value protection' for all transfers and withdrawals initiated by a pension plan member that are consistent with plan rules. In the event of a repayment, the GIC (or wrap) issuer absorbs any market losses.

together with the issuance of short-term guaranteed liabilities, some carrying low-cost put options. As recently as 1999, an insurance company<sup>11</sup> failed in the face of acute liquidity problems after aggressively selling funding agreements with seven-day puts to the point that its liabilities accounted for more than half the market. In current market conditions, investments in the commercial property market are unlikely to be as problematic and funding agreements with such short-term puts seem no longer to be issued. While US life companies have earlier issued policies with guaranteed rates of return – either higher than those currently available or linked asymmetrically to equity market returns or other indices which have fallen – market contacts suggest that, in contrast to some of their European and Japanese counterparts, US life companies as a whole have relatively small unhedged positions. Their exposure to equity

11: General American Life Insurance Company.

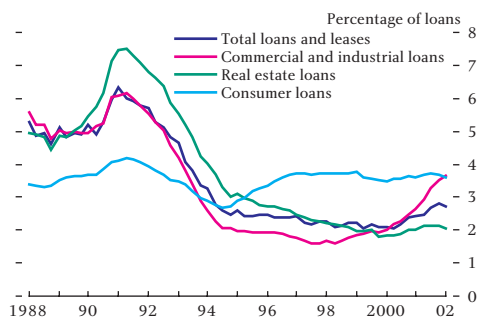
**Chart 38:**  
**Change in life insurance companies' surplus**



Source: Townsend & Schupp Company.

(a) With effect from 1 Jan. 2001, the US life insurance industry adopted a common, revised set of accounting principles and presentation. A significant change was to recognise deferred tax liabilities and deferred tax assets in the calculation of insurers' surplus.

**Chart 39:**  
**Largest 100 US banks' loan delinquency rates**<sup>(a)(b)</sup>

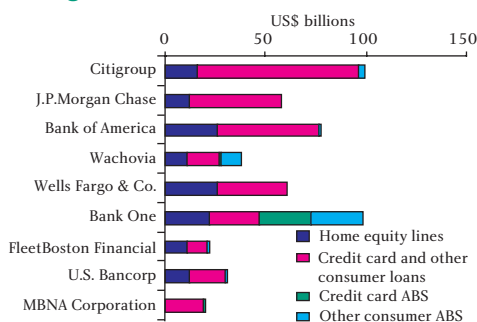


Source: Board of Governors of the Federal Reserve System.

(a) Seasonally adjusted.

(b) Loans past due 30 days or more, including those still accruing interest as well as those in non-accrual status.

**Chart 40:**  
**Major US banks' domestic consumer lending, end-2001**<sup>(a)(b)</sup>



Source: Board of Governors of the Federal Reserve System.

(a) Lending to households (other than first lien mortgages) plus fair value of holdings of asset-backed securities (ABS) collateralised by consumer receivables.

(b) Ranked in order of balance sheet size.

markets is lower than in other countries, as much of the market risk on equities is borne by 'separate account' policyholders. Nevertheless, capital losses on investments have depressed the growth in life companies' combined surplus over the past two years (Chart 38).

## The US domestic banking system

The economic slowdown has led to a rise in banks' loan delinquencies and provisions, especially in corporate loan portfolios, reflecting some of the pressures discussed above (Chart 39). This usually continues for some time after a trough in activity has passed. Argentina's debt and banking crises, losses on venture capital, Enron and other significant corporate failures have affected some large banks.

A number of factors have, however, helped to cushion these losses and overall earnings have grown strongly. First, the increasing ability of banks to lay off credit risk through loan sales, securitisation and credit derivatives is likely, overall, to have reduced concentrations of exposure, although as discussed in Section VI, there has, nevertheless, been some evidence of lumpy exposures. Second, the persistence of a fairly steep yield curve has raised banks' spread earnings. Third, non-interest income overall has been quite stable (see Box 3), notwithstanding subdued investment banking activity outside debt markets and lower returns from fund management. Fourth, banks may to some degree have been able to draw on smoothed profits from earlier periods. Looking forward, it is unclear to what extent these supportive factors will persist; and, in addition to the corporate sector risks discussed above, the system is potentially exposed to various other sources of credit and interest-rate risk, depending on macroeconomic outturns.

### Lending secured on property

As noted in the December Review, the share of banks' lending secured by real estate began to rise again in the mid-1990s having been previously discouraged by the commercial property market crisis. The recent economic slowdown has been associated with some weakness in the commercial property market, particularly in pockets affected by the fall-out in the Telecom, Media and Technology (TMT) sector. The decline has not, however, followed a particularly strong property boom, in contrast to the late 1980s.

### Consumer lending

Since the mid-1990s, the buoyancy of the housing market has underpinned a rise – from around 20% to 30% – in the share of consumer borrowing (other than in the form of first lien mortgages or mortgage-backed securities) that is represented by revolving and fixed home equity lines. For some large banks, such secured borrowing has become a significant share of their overall exposure to the household sector (Chart 40), which also includes

## Box 3: US banks' non-interest income

Since the early 1980s US banks' non-interest sources of income have steadily become more diverse and prominent as the returns from traditional intermediation activity – deposit taking and lending – have eroded. The two sources of income are only moderately correlated (notwithstanding services from deposit taking remaining an important source of fee income), providing scope for reduced earnings risk through diversification.

Since June 2001, US supervisors have been collecting more detailed data on non-interest earnings, facilitating comparisons between institutions.

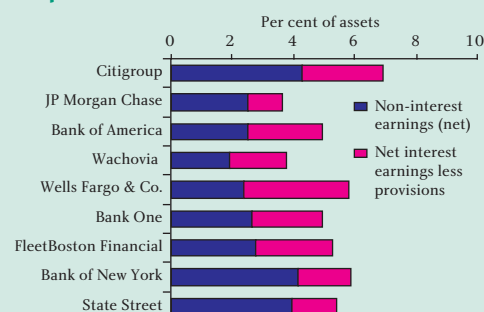
The relative importance of non-interest income to some of the largest US bank holding companies is evident from Chart A. These banks, representing around 55% of the system's total on-balance sheet assets, accounted for about 70% of total non-interest income. For them, non-interest income represented almost two thirds of total gross income (that is net interest income less provisions for loan losses, plus gross non-interest income). That was despite large losses by some banks on their venture capital business, reflecting especially a fall in TMT company valuations<sup>1</sup> (Chart B).

For each bank, Chart C identifies the four largest components (excluding venture capital earnings) of non-interest income in the total and so indicates their specialisation. Citigroup's non-interest income was much higher than that of the other banks, partly reflecting earnings from its Travelers insurance subsidiaries<sup>2</sup>. Investment banking (earnings from brokerage, mergers and acquisitions, and new issues) was a significant activity for all but Bank One, the contribution last year will have been reduced by recently depressed market conditions. Trading income was important for most of the large banks. Earnings from fiduciary activities (such as custody services) undertaken by banks' trust departments were particularly significant for Bank of New York and State Street, and also large for JP Morgan Chase, Wachovia, Bank One and FleetBoston. Earnings from securitisations and servicing fees were important for Bank One, Wells Fargo, Bank of America and Citigroup, reflecting the importance of their mortgage and consumer lending activities. Despite diversification into activities not directly linked to traditional intermediation, fees from traditional deposit taking continue to account for a significant share in the non-interest income of most major banks.

1: US regulators have recently issued new capital requirements for bank holding companies' investments in venture capital and other non-financial companies. See Section IX.

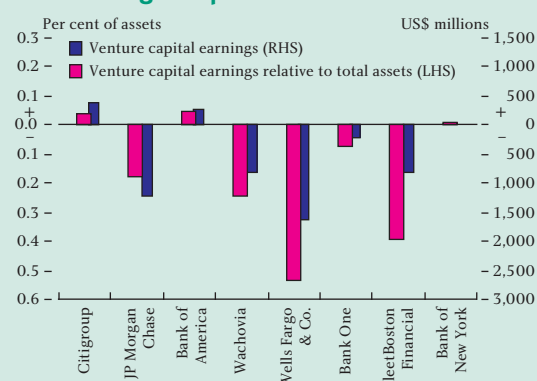
2: The property and casualty business of Travelers has recently been sold.

**Chart A:**  
Gross earnings of large US bank holding companies 2001<sup>(a)</sup>



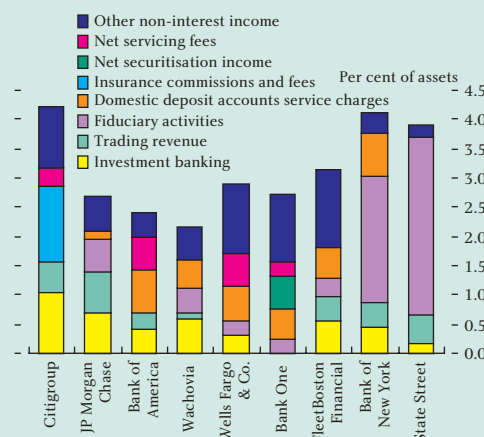
Source: Board of Governors of the Federal Reserve System.  
(a) Banks ordered by size of balance sheet end-2001.

**Chart B:**  
Net venture capital earnings of large US bank holding companies 2001<sup>(a)</sup>



Source: Board of Governors of the Federal Reserve System.  
(a) State Street recorded no income from this source.

**Chart C:**  
Large US bank holding companies' non-interest income in 2001<sup>(a)</sup>: further detail



Source: Board of Governors of the Federal Reserve System.  
(a) Excluding venture capital income.

## Box 4: The structure of the US mortgage market

The structure of the US\$7.6 trillion<sup>1</sup> US mortgage market is distinctive and complex. First, a very large proportion of US mortgages are securitised into mortgage-backed securities (MBS) of various types. Second, in consequence, there is an industry of 'mortgage servicers', who collect interest and principal payments for a fee related to the value of such payments. A few large banks and savings and loan institutions ('thrifts') account for most of this activity, with the present value of 'mortgage servicing rights' shown as an asset on their balance sheets<sup>2</sup>. Third, the mortgages in most MBS are guaranteed by various Federal Agencies and Government Sponsored Enterprises (GSEs) plus a few private sector insurers. Fourth, the mortgage lending of many regional banks and thrifts is often partly funded via the Federal Home Loan Banks ('FHLBs'). A further feature of the market is the preponderance of long-term, fixed-rate mortgages where the borrower has a right to prepay at short notice with little or no penalty. The market implications of the prepayment risk to which lenders, MBS investors and mortgage servicers are exposed are discussed in Section VI.

The Government National Mortgage Association ('Ginnie Mae') is a government-owned corporation which guarantees securities backed by pools of mortgages insured or guaranteed by a number of Government Departments. It acts as a guarantor only.

Other GSEs include the Federal National Mortgage Association ('Fannie Mae'), the Federal Home Loan Mortgage Association ('Freddie Mac') and the FHLBs. Fannie Mae and Freddie Mac purchase mortgages originated by others and repackage them as backing for MBS, which they fully or partly guarantee. Most of these MBS are sold on to investors but large amounts are also retained on the Agencies' own balance sheets. Their mortgage portfolios comprise mainly these retained MBS, but also some mortgages directly held, as well as MBS issued by others. Their own funding – that is debt claims on the two Agencies themselves – totalled US\$1.3 trillion at end-2001<sup>3</sup>.

The FHLBs are owned by nearly 7,900 member institutions, mainly banks and thrifts. With the proceeds of a range of issued securities, FHLBs help to fund their members' mortgage lending. The FHLBs' own holdings of mortgages and MBS are relatively modest. The FHLBs also act as a risk management counterparty to their members (for example, providing hedges on equity-linked certificates of deposit and members' other liabilities). They are very active issuers of a wide range of structured notes, including bonds with embedded options.

The central place of the Agencies in the mortgage market is illustrated in Diagram A. The arrows represent the direction of the main flows of funds to and from the major players, including, in the case of the Agencies and private Asset-Backed Security (ABS) issuers, securitised claims with a credit guarantee 'wrapped' by an Agency or private insurer. The numbers show stocks of assets/liabilities outstanding at end-2001 (restricted to those greater than US\$50 billion).

The Agencies and the securitisations they sponsor receive their funding mainly from insurance, pension and mutual funds, and from banks, savings and other financial institutions. Overseas investors also hold over US\$700 billion of Agency or Agency-sponsored securities. Other investors include US state and local governments, ABS issuers and the household sector.

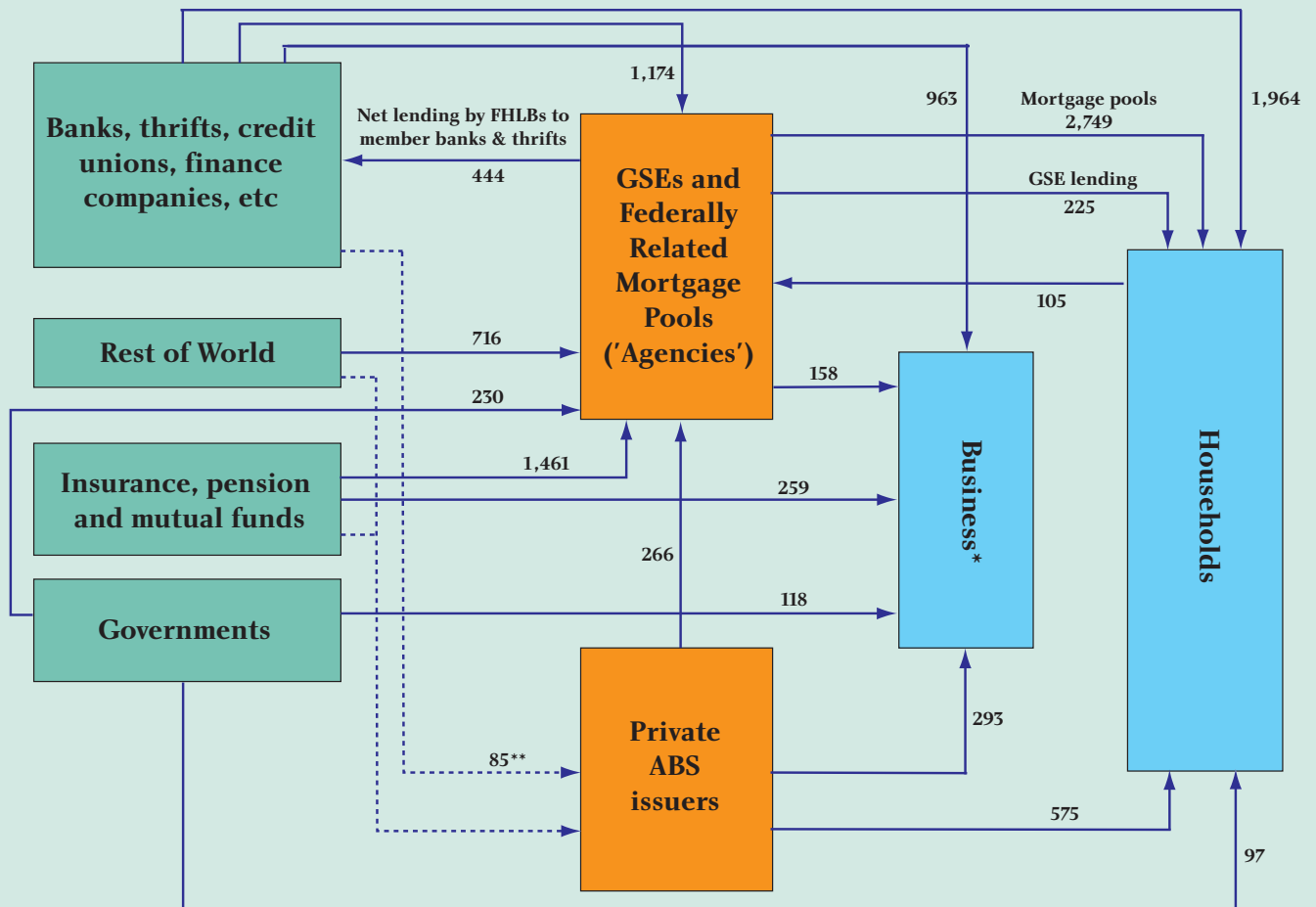
Sources of residential mortgage finance other than the Agencies include direct lending by banks, thrifts, credit unions, finance companies and ABS securitisations. Insurance, pension and mutual funds provide little residential mortgage finance directly, their main direct lending being via commercial mortgages.

1: At end-2001. Data include one-to-four family home, multifamily residential, commercial and farm mortgages.

2: While such rights commonly occur when assets originated by a bank are securitised, they may also be purchased from third parties. The largest mortgage servicers include some foreign-owned banks, including US subsidiaries of ABN Amro and HSBC. The fair value of mortgage, credit card and other servicing assets is also very sensitive to prepayment risk and the US regulators have recently strengthened the regulatory capital treatment of such exposures.

3: See Box 5 in the June 2000 *Review* (pages 54-55) for a discussion of the Agencies' ambiguous private/public status.

Diagram A



\* Multi-family residential, commercial and farm mortgages

\*\* US chartered banks only

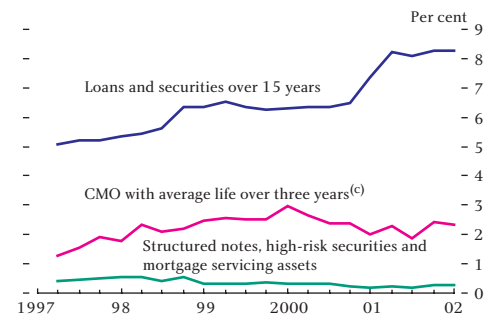
Source: Board of Governors of the Federal Reserve System, 'Flow of Funds', June 2002. Data are US\$ billions at end-2001.

securities backed by credit card and other consumer receivables. While a higher share of credits secured by a second charge on the borrower's home may reduce the loss to banks from this source, it also points to the importance of good credit assessment of unsecured lending which might otherwise be subject to a higher risk of default.

#### Investment-related interest rate and credit risk exposures

As described in Box 4 and discussed in Section VI, holdings of fixed-rate mortgages and mortgage-backed securities are exposed to prepayment risk. Banks that hold or purchase mortgage, credit card or other servicing rights are similarly exposed. Chart 41 shows the growth and distribution of major US banks' holdings of a selection of assets whose value is particularly interest-sensitive. Banks have generally increased their holdings of interest-sensitive assets, particularly those institutions with the largest holdings (Chart 42). Such data are, however, indicative only of *potential* interest rate risk. Banks should be managing the interest sensitivity of their net assets through the

Chart 41:  
Indicators of potential interest rate risk for large US banks<sup>(a)(b)</sup>



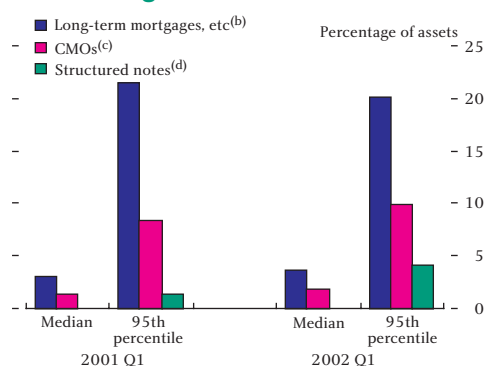
Source: Federal Financial Institutions Examination Council.

(a) Peer group of banks with balance sheets of US\$10 billion or more. Data for banks within a group are not consolidated.

(b) As a percentage of total assets.

(c) Collateralised mortgage obligations.

**Chart 42:**  
**Holdings of certain interest-sensitive assets of large US banks<sup>(a)</sup>**



Source: Board of Governors of the Federal Reserve System.

(a) Distribution of holdings within peer group of banks with total assets of more than US\$10 billion.

(b) Mortgage loans and pass-through securities with a residual maturity of more than 15 years.

(c) Collateralised mortgage obligations with residual maturity of more than three years.

(d) Structured notes, high-risk securities and present value of mortgage servicing assets.

**Table 1:**  
**Large US banks' off-balance-sheet exposures<sup>(a)</sup>**

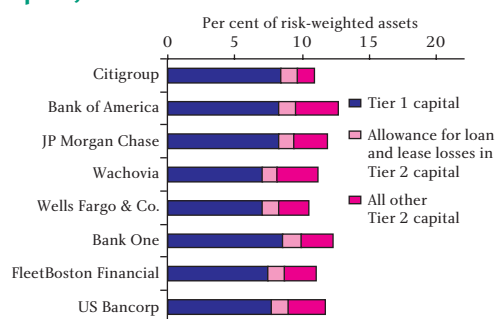
Average per cent of assets <sup>(b)</sup>	Mar.2002	End-1997
Off balance sheet items	57.1	57.5
of which:		
Credit cards	2.0	6.2
Home equity lines	3.9	2.6
Total loan and lease commitments	30.5	41.5
Standby letters of credit	4.2	5.2
Assets sold or securitised with recourse	5.3	0.9

Source: Federal Financial Institutions Examination Council, Uniform Bank Performance Report.

(a) Banks with balance sheets of US\$10 billion or greater. Data for banks within a group are not consolidated.

(b) Averages are trimmed means excluding outliers and so are close to medians. Components are therefore not additive.

**Chart 43:**  
**Composition of major US banks' regulatory capital, end-2001<sup>(a)</sup>**



Source: Board of Governors of the Federal Reserve System.

(a) Ranked in order of balance sheet size.

maturity matching of their assets and liabilities and/or the use of derivatives. Over the past year, bank liquidity is likely to have been boosted – but earnings potentially depressed – by the sluggish growth in lending and the early exercise of callable Agency debt. The Office of the Comptroller of the Currency<sup>12</sup> has recently cautioned banks against taking on excessive exposures in lower-rated securities and/or those with embedded options in a search for higher yields.

#### *Off-balance-sheet exposures*

As discussed in the December *Review*, US banks' off-balance-sheet exposures have risen strongly over the past decade. At end-March 2002 off-balance-sheet items of a peer group of the largest US banks were equal, on average, to around 57% of on-balance-sheet assets, little changed overall from the level at end-1997 (Table 1). However, the shares of home equity lines and loan commitments (to both corporates and households) have fallen, the latter partly reflecting the securitisation of credit card lines. There has been a corresponding rise in assets sold or securitised (including credit card commitments) where the bank retains some of the credit exposure or other obligation. Retained interests associated with securitisation, undrawn liquidity lines and servicing assets can include a range of credit, interest rate and other market and liquidity risks, and exposure levels tend to vary significantly between banks.

#### *Capital*

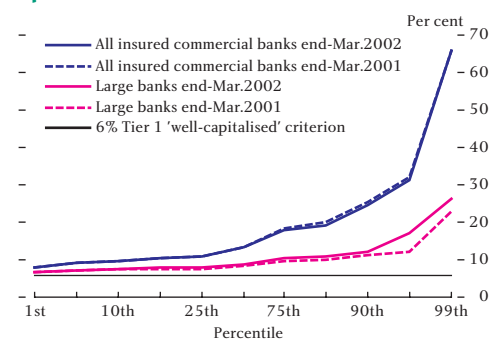
Despite a rise in delinquency rates and provisions, and, for some banks, losses on Argentina and venture capital, the regulatory capital of the major US banking groups remains strong. Tier 1 ratios often exceed both the 8% Basel minimum set for *total* regulatory capital and US domestic regulators' own 6% Tier 1 'well capitalised' criterion by some margin (Chart 43). (Most also comfortably exceed the 'well capitalised' 10% criterion for total regulatory capital.) The main difference between banks' equity capital and Tier 1 is the deduction of goodwill from the latter; massive write-downs of goodwill by some non-banks in recent months have underlined the importance of the exclusion of this element of accounting equity. Within Tier 2 capital, the level of general loan loss provisions is generally close to the maximum 1.25% of risk-weighted assets permitted. For both banks as a whole and the largest banks (which tend to have less surplus regulatory capital), Tier 1 ratios have remained comfortably above the US domestic regulators' own 6% 'well capitalised' criterion over the past year as rising earnings have more than covered the increase in loan loss provisions (Chart 44).

Although there have been six bank failures so far in 2002, including two banks with assets in excess of US\$500 million, the strength of the US banking system relative to the early 1990s recession – see Box 2, pp 39–40 and pp 41–42 of the December

Review – has also been reflected in a much smaller number of bank failures (Chart 45).

Over the shorter term, this strength is also evident in credit default swap prices for major banks. These rose sharply following the 11 September terrorist attacks and picked up again temporarily during May when large investment banks were subject to scrutiny and threats of legal action over the role of in-house analysts. But prices have, for the most part, fallen back in recent months (Chart 46).

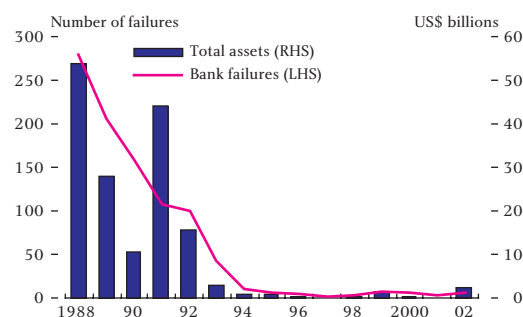
**Chart 44:**  
**Distribution of US banks' Tier 1 capital ratios<sup>(a)</sup>**



Source: Federal Financial Institutions Examination Council.

(a) Percentage of risk-weighted assets. Data for all insured commercial banks, covering about 8,000 institutions in each period. Large banks include institutions with total assets of US\$10 billion or greater (69 banks at end-Mar.2001 and 74 banks at end-Mar.2002), accounting for around 70% of the banking system's total assets.

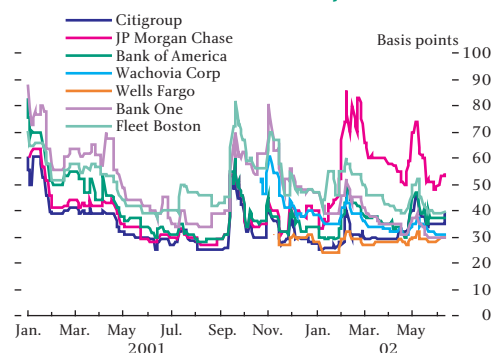
**Chart 45:**  
**Number of bank failures and failed bank assets<sup>(a)</sup>**



Source: Federal Deposit Insurance Corporation.

(a) 2002 figures are up to Apr.2002.

**Chart 46:**  
**US banks' credit default swaps<sup>(a)</sup>**

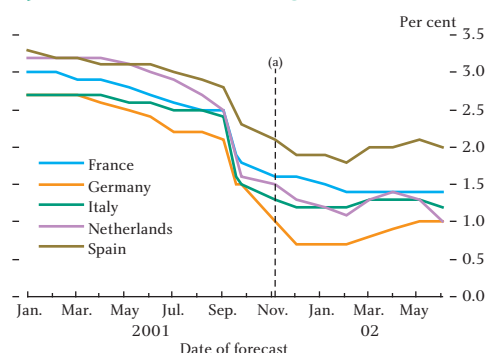


Source: CreditTrade.

(a) Average of bid-offer prices of five-year senior debt credit default swap contracts.

### III Europe<sup>13</sup>

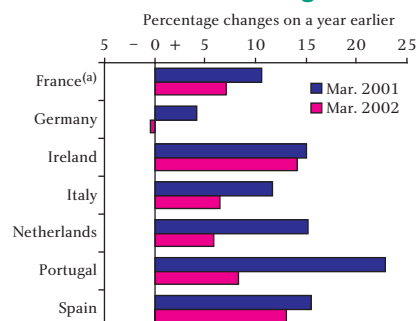
**Chart 47:**  
**Expected 2002 real GDP growth**



Source: Consensus Forecasts.

(a) Dec. 2001 Review.

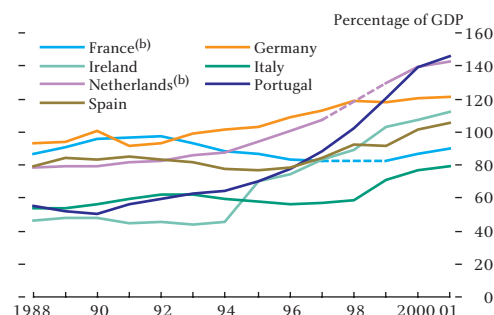
**Chart 48:**  
**Private sector bank lending**



Source: IMF.

(a) Latest data available are for Jan. 2002.

**Chart 49:**  
**Private sector bank debt as share of GDP<sup>(a)</sup>**



Sources: IMF and Eurostat.

(a) Annual.

(b) Dashed lines indicate interpolation for missing data.

Links between the UK financial system and the rest of Europe are strong, as Box 5 underlines. This section, therefore, summarises some recent developments affecting risks in the European non-financial and financial sectors.

#### Macroeconomic developments

Euro-area GDP rose by 0.2% in 2002 Q1 after contracting by 0.3% in 2001 Q4 and confidence surveys have recently picked up. Consensus forecasts for 2002 GDP growth are little changed since the December Review (Chart 47), with the exception of the Netherlands. Short-term official interest rates have been unchanged but their expected path has moved up slightly (see Section I). This could affect future debt servicing costs.

The annual rate of growth of credit to the euro-area private sector fell in April to 5.1%, from 6.8% in October. Annual rates of growth of bank lending fell in most euro-area countries and their dispersion diminished slightly. Lending growth rates are nevertheless still high in some countries (Chart 48). Private sector bank debt as a proportion of GDP increased generally in the euro area in 2001 (Chart 49). On this measure, of the five countries with the most heavily indebted private sectors, debt has continued to grow in Portugal, the Netherlands, Ireland and Spain.

#### Sectoral financial soundness

##### *The non-financial corporate sector*

Traditionally, the German corporate sector has been more heavily indebted than companies elsewhere in the euro area, as measured by the ratio of corporate debt to total assets (Chart 50). Recently, however, there has been a build-up of corporate sector debt in some other countries. While this has been perhaps most marked in Portugal, where there has been extensive financial liberalisation in recent years, the debt burden in the Netherlands and Italy is – at least on this measure – now also close to German levels<sup>14</sup>.

Ability to service debt depends in part on profitability. Since the beginning of 2001, profit forecasts for all the major countries in Europe have been revised down (Chart 51). This has been particularly marked for German companies. Profit forecasts for Spanish companies have held up relatively well, although developments in Argentina since December may have had a modest negative effect.

13: European Economic Area, plus Switzerland, but excluding the UK.

14: Of the four countries identified in the previous paragraph, only Ireland does not publish financial accounts data. Other countries for which they are not available are Greece and Luxembourg.

## Box 5: UK banking sector links with the rest of Europe

Links between the UK banking sector and the rest of Europe arise in a variety of ways: through the financial markets in London and elsewhere, and through bank lending in both directions. As illustrated here, the on-balance sheet interlinkages are large, which motivates the Bank of England's surveillance of financial stability-related developments elsewhere in Europe.

Over 100 banks from other developed European countries are authorised to take deposits in the UK. In aggregate, they play a significant part in the UK interbank deposit and repo markets. At end-March they held 27% of total interbank assets and 38% of total interbank liabilities. The sterling market is dominated by UK banks, and if such business is excluded, these European-owned banks held about half of total foreign currency assets and liabilities of the UK-resident banking system (see also Box 11, Section VIII).

The UK is the world's largest centre for cross-border banking, accounting for around a fifth of global cross-border claims (as measured by BIS locational data). Links with the rest of Europe are strong: for example German- and Swiss-owned banks respectively hold 19% and 14% of UK-based banks' cross-border claims. And half of UK-based banks' cross-border claims are on other developed European countries.

For most European countries, over half their banks' consolidated foreign claims are on other European countries, with the UK typically the largest or second largest of those European country exposures (Table A).

UK-owned banks are similarly exposed to borrowers elsewhere in Europe. At end-2001, some 27% of their global consolidated foreign claims (including locally based offices' local currency claims) were on the rest of Europe (Chart A), compared with 30% on the US and 4% on Japan. Adjusted for identified risk transfers, by far the largest consolidated foreign claims by UK-owned banks within Europe were on Germany, followed by France, Italy and the Netherlands. Adding local-based local currency lending increases the measured exposure to France (largely reflecting HSBC's ownership of CCF), but does not otherwise materially alter the relative position (Chart B).

**Table A:**

**European-owned banks' consolidated foreign claims<sup>(a)</sup>, end of 2001 Q4**

	Total US\$ billions	Percentage of total		UK rank <sup>(b)</sup>
		Europe	UK	
Austria	51	58.0	8.2	2
Belgium	454	73.2	13.7	2
Denmark	46	84.8	21.2	2
Finland	52	76.2	7.7	4
France	812	49.8	11.5	1
Germany	2,200	58.7	21.1	1
Ireland	95	63.9	48.8	1
Italy	274	56.7	15.2	1
Netherlands	415	55.4	15.6	1
Portugal	40	57.0	17.0	1
Spain	346	37.2	7.0	2
Sweden	142	78.4	17.3	2
Switzerland	1,060	32.9	18.5	1

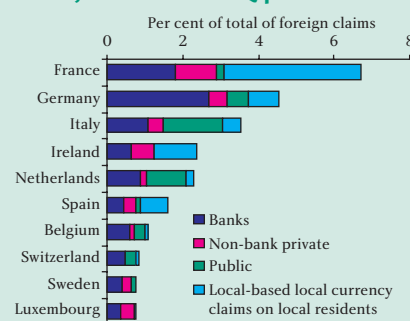
Source: BIS.

(a) Not adjusted for risk transfers.

(b) UK ranking within each country's consolidated foreign claims on European countries.

**Chart A:**

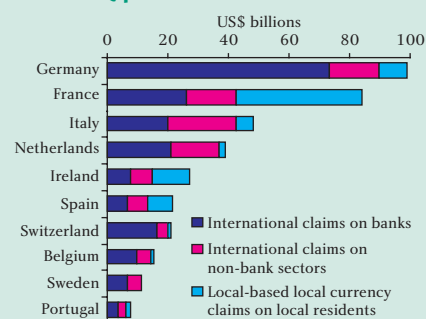
**UK-owned banks' consolidated foreign claims, end of 2001 Q4**



Source: Bank of England.

**Chart B:**

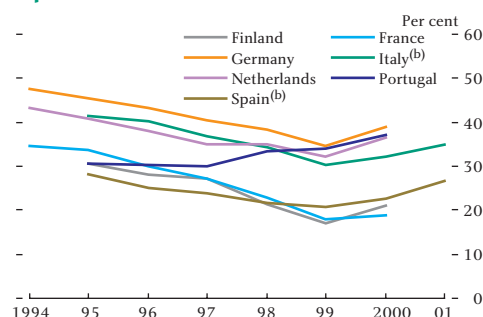
**UK-owned banks' consolidated foreign claims, adjusted for risk transfers<sup>(a)</sup>, end of 2001 Q4**



Source: Bank of England.

(a) Where a claim is guaranteed by a third party, it is transferred from the country of the debtor's residence to the country of residence of the guarantor. Local currency claims on local residents cannot be adjusted for risk transfers.

**Chart 50:**  
**Indebtedness of private non-financial corporates<sup>(a)</sup>**

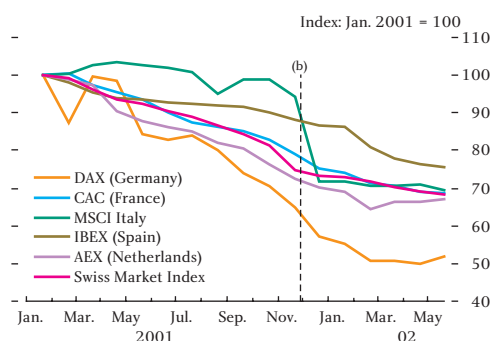


Sources: Eurostat, Banca d'Italia, Banco de España, Deutsche Bundesbank and Bank calculations.

(a) Interest-bearing debt over total assets at market price.

(b) 2001 Q3.

**Chart 51:**  
**European company profit forecasts for 2002<sup>(a)</sup>**

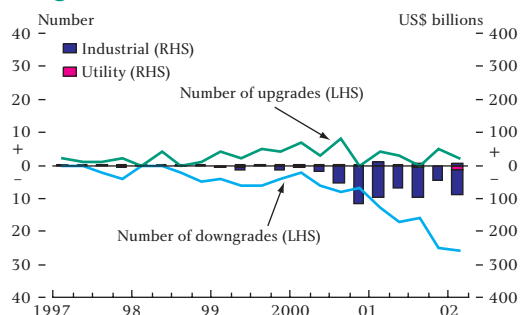


Source: Thomson Financial Datastream.

(a) Forecast aggregate profit of all constituent companies of the index in 2002.

(b) Dec. 2001 Review.

**Chart 52:**  
**European non-financial sector ratings changes and value of debt affected<sup>(a)</sup>**



Source: Moody's Investors Service.

(a) Entities that have their debt downgraded more than once in a quarter are counted only once for that quarter.

Judged by default rates and downgrades, corporate sector credit quality has deteriorated since December, following the slowdown in European economic activity in 2001. Moody's European<sup>15</sup> non-financial corporate ratings downgrades exceeded upgrades in both number and value terms in 2001 Q4 and 2002 Q1 (Chart 52). Broad measures of credit quality mask, however, some important geographical and sectoral differences. Problems that have arisen in recent months have typically been associated with high indebtedness, although issues of corporate transparency have also come to the fore.

Corporate credit risk seems to have increased in Germany in 2001, where the economic slowdown triggered a record 32,400 business insolvencies, an increase of 18% on 2000 (Chart 53). Signs are that 2002 will be another record year. Since the beginning of the year, there has been a series of high-profile insolvencies. In April, Kirch Media, followed a month later by KirchPay TV, filed for insolvency. The whole Kirch Group was estimated to have about €6 billion of debt plus €2–3 billion in contingent liabilities in late 2001. Although much of the exposure was collateralised, collateral quality became a concern for the creditor banks. The continuing rationalisation of the German construction industry led to Philipp Holzmann, which received a €2.2 billion bank rescue in 1999, filing for insolvency in March.

Another high-profile company in difficulty was Fiat, which sustained a €529 million loss in 2002 Q1, owing to declining sales and market share. Its debt is estimated to be over €30 billion. A consortium of six Italian banks put together a €3 billion refinancing plan to avoid its being downgraded to sub-investment grade.

The heavily indebted TMT sector continues to raise particular concern throughout Europe (including the UK), as in the US. Most European telecommunications companies reported poor 2001 results, in many cases reflecting large write-downs on assets acquired in recent years. Several operators (France Telecom, Telecom Italia and Telefonica) also made provisions or write-downs against investments in subsidiaries in Argentina. KPN made a loss of €7.5 billion (the largest in Dutch corporate history), while France Telecom posted a loss of €8.3 billion. Credit rating agencies have downgraded Alcatel, Deutsche Telekom, Ericsson and Telefonica since the December Review and put France Telecom on review for downgrade. Moody's downgraded Vivendi, the French media company, to Baa3 following a 2001 loss of €13.6 billion, the largest in French corporate history. It was identified in a Standard and Poor's report as one of the European companies facing a 'credit cliff'<sup>16</sup>;

15: Adapted to meet the definition at the beginning of this section.

16: Where, due to ratings triggers in debt contracts, even a modest decline in credit quality can lead to a liquidity problem (Section VI).

but has since reduced its exposure to ratings triggers and its name has been withdrawn from the list. Weak asset markets have impeded disposals and spin-offs by TMT firms, frustrating attempts to reduce large debt burdens. Reflecting these developments, euro-denominated TMT credit spreads have widened again since the *December Review* (Chart 54); and CDS prices have increased for many of Europe's large TMT companies (Chart 55).

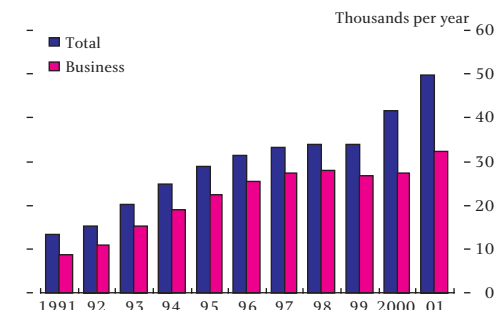
Some of the other challenges confronting US-based companies, however, have on the face of it been less prevalent in Europe. First, accounting and transparency-related issues – globally prominent since the collapse of Enron – have been less evident. There have, though, been a few instances of accounts being significantly revised. Elan, the Irish pharmaceutical company, announced in February that it had two 'Qualifying Special-Purpose Entities' which had not been consolidated into its financial results as presented under US accounting principles (but had been disclosed in published accounts prepared under Irish accounting principles). While confidence in European accounting practice has not been dented by recent developments in the US, issues concerning the level of disclosure in European company accounts have been debated.

Second, European companies' access to the euro commercial paper (ECP) market has remained largely intact; indeed, outstandings reached new highs in recent months as both US and European companies switched from the US dollar CP to the ECP market. But some large European companies (for example ABB) – mainly those actively using the US dollar CP market – have faced liquidity pressures stemming from rating agency downgrades. On the whole, though, strains of this kind seem so far to have been less widespread than in the US (see Sections II and VI).

#### The household sector

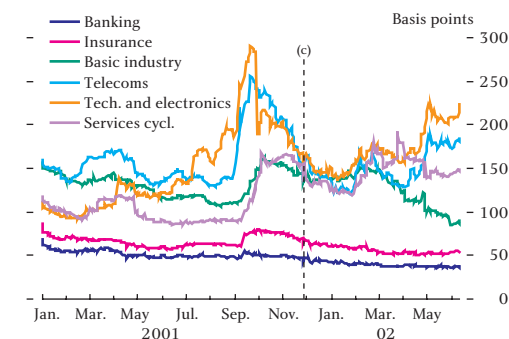
The ratio of debt to GDP for euro-area households was just over 49% in December 2001, broadly unchanged during 2000 and 2001. As shown in the *December Review*, the indebtedness of the German household sector – as proxied by total financial liabilities as a proportion of financial assets – is the highest in the euro area but has been relatively stable over the past decade (Chart 56). Household indebtedness on this measure has, however, risen markedly in Spain and Portugal, which are among the countries where credit has grown rapidly in recent years. House prices have also continued to rise fairly rapidly in Ireland and Spain – and latterly in the UK (Sections VII and VIII) – although in relation to income the rise in the Netherlands has been the most significant (Chart 57).

**Chart 53:**  
**German insolvencies**



Source: Creditreform.

**Chart 54:**  
**Euro-denominated<sup>(a)</sup> investment-grade credit spreads<sup>(b)</sup>**



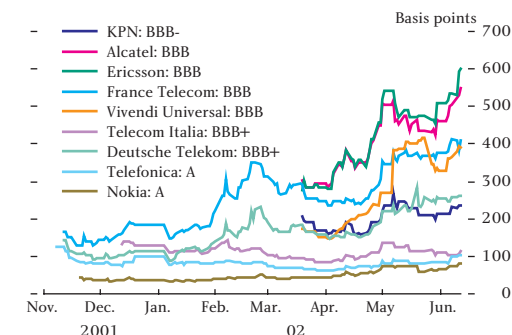
Source: Merrill Lynch.

(a) Euro-denominated issuance is dominated by European companies.

(b) Weighted average option-adjusted spread of corporate bonds over government bonds.

(c) Dec. 2001 *Review*.

**Chart 55:**  
**Five-year CDS prices<sup>(a)</sup> and credit ratings for European TMT companies**

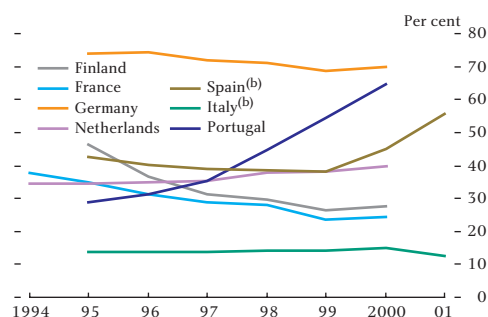


Sources: CreditTrade and Standard & Poor's.

(a) Annual premium for credit protection on US\$10 million, or local currency equivalent, measured as mid-point between last bid and ask quotes.

**Chart 56:**

**Household sector indebtedness<sup>(a)</sup>**



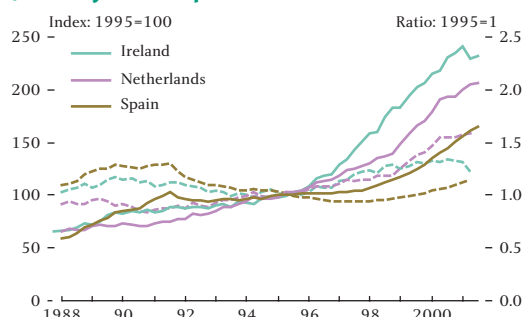
Sources: Banca d'Italia, Banco de España, Eurostat and Bank calculations.

(a) Total liabilities over total financial assets.

(b) 2001 Q3.

**Chart 57:**

**Quarterly house prices<sup>(a)</sup>**

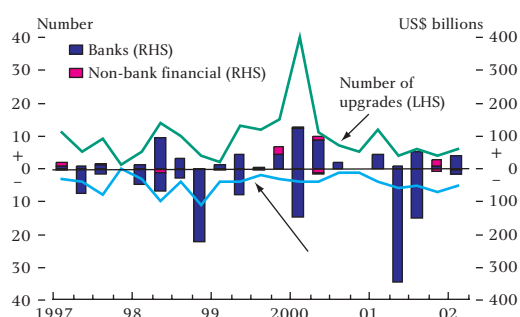


Sources: BIS, National Institute Global Econometric Model and Bank calculations.

(a) Dashed lines indicate the ratio of house prices to the sum of nominal disposable income over previous four quarters (RHS); solid lines indicate house price index (LHS).

**Chart 58:**

**European financial sector ratings changes and value of debt affected<sup>(a)</sup>**



Source: Moody's Investors Service.

(a) Entities that have their debt downgraded more than once in a quarter are counted only once for that quarter.

## The non-bank financial system

There has been a trend towards households saving an increasing amount through non-bank financial institutions in Europe. Life insurance companies are an important intermediary, selling both savings products and deferred annuities related to pension plans, many carrying guaranteed nominal returns materially higher than current bond yields<sup>17</sup>.

Low asset returns over recent years have prompted European life insurers to increase their technical provisions, other things being equal putting pressure on profits. In some countries, companies have announced plans to stop writing group life business and moves to strengthen capital. In an effort to increase the return on their portfolios, insurers and pension funds are also thought to have increased holdings, subject to regulatory limits, of riskier assets such as equities or bonds with embedded call options. Some are also said to have taken on more credit risk, including through purchases of the more leveraged tranches of collateralised debt obligations; and there is also thought to have been significant investment in so-called 'alternative' asset classes, such as funds of hedge funds.

These issues are relevant to the banking system as some European (including UK) banks have diversified their earnings streams through, for example, bancassurance and asset management tie-ups. Several models exist: banks owning insurers and/or asset managers, insurers owning banks, and financial holding company structures. Accounting and regulatory treatments differ from country to country, making comparisons difficult.

## The banking system

The creditworthiness of most major European banks does not appear, on the whole, to have been impaired by the economic slowdown. In contrast to the non-financial corporate sector, Moody's ratings upgrades for the financial sector<sup>18</sup> exceeded downgrades in Europe<sup>19</sup> in 2001 Q4 and 2002 Q1 by value, although not by number (Chart 58). Chart 59 plots the *stand-alone* financial strength ratings of some of the major European banks against those of their long-term debt, the former taking into account the rating agency's assessment of the likelihood of banks requiring external support. By comparing the two sets of ratings, it can be seen for example that the long-term senior debt ratings of the two Landesbanks clearly benefit from explicit guarantees of support.

17: For example, regulation obliges Swiss life insurers to offer returns of 4% on group business together with a guaranteed annuity option of 7.2%, set in 1985. Typical guarantees offered by Danish insurers and pension funds have fallen from 4.5% in the early 1990s to around 1.5% since 1999.

18: Includes bank and non-bank financial companies.

19: Adapted to meet the definition at the beginning of this section.

Credit spreads have remained low (Chart 54), and CDS prices of the major banks have generally been below those of US banks (Charts 112 and 113 in Section VI).

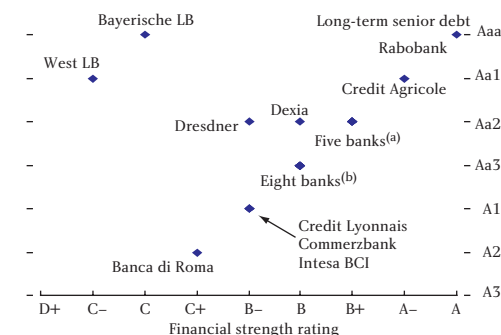
Major European banks remained profitable in 2001 and 2002 Q1, although profits were generally down on the previous year. Credit quality deterioration associated with domestic economic slowdown and adverse international developments prompted increased provisioning, in some cases more than offsetting any growth in pre-provision operating profits. Bank share prices have generally risen relative to the respective national market since the December Review, except in Switzerland (Chart 60). The strength of French bank equity prices is a notable exception. Differences in operating profitability across banks largely reflected the relative importance of investment and retail banking, as net commission and fee income decreased in 2001, in contrast to net interest income.

Margins on domestic retail banking business are low in France, Germany and Switzerland (Chart 61). Banks may have been able to compensate by cross-selling higher-margin products to their domestic customers, as happens for example in France, or by increasing lending volumes. Austrian and German commercial banks' margins may have been constrained by the ability of publicly guaranteed banks to compete on the basis of lower funding costs. The European Commission ruled in April that Austrian banks benefit from illegal state aid. In the same month, the German authorities agreed with the Commission the principles for phasing out their guarantees.

The restructuring of the German banking sector which these changes will inevitably engender may ultimately enhance the robustness of the sector, which has encountered problems in recent months. Property sector and small- and medium-sized enterprise (SME) problems in some regions have brought about the failure of some local banks over the past year. In the most recent period, it was disclosed that the losses at Schmidt Bank, which was rescued by a private- and public-sector consortium last year, are now expected to be about €1.3 billion, considerably larger than earlier thought. Gontard and Metallbank, another small SME lender, was temporarily closed by regulators at the beginning of May after losses threatened its capital base, and subsequently filed for insolvency.

While German domestic banking returns have tended to be low – for the structural reasons mentioned in the December Review as well as currently weak domestic market conditions – it is not obvious that the recent bank failures presage a trend. There have, nevertheless, been a number of ratings downgrades of standalone/individual ratings of German banks, in a number of instances because of low profitability.

**Chart 59:**  
**Credit ratings of some major European banks**

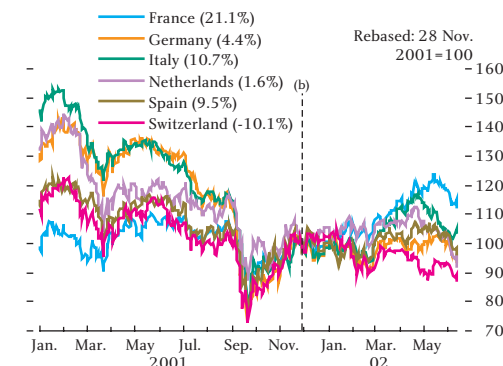


Source: Moody's Investors Service.

(a) ABN Amro, BBVA, BNP Paribas, ING Group, and UBS Group.

(b) Credit Suisse, Deutsche Bank, Fortis, HVB, Sanpaolo IMI, SCH, Societe Generale, and Unicredit.

**Chart 60:**  
**Banking sector indices<sup>(a)</sup>**

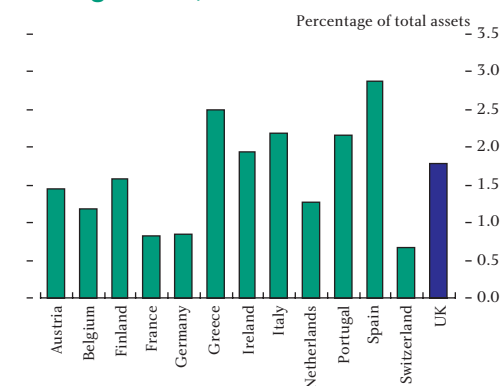


Source: Thomson Financial Datastream.

(a) Figures in brackets indicate percentage change relative to national market since Dec. 2001 Review.

(b) Dec. 2001 Review.

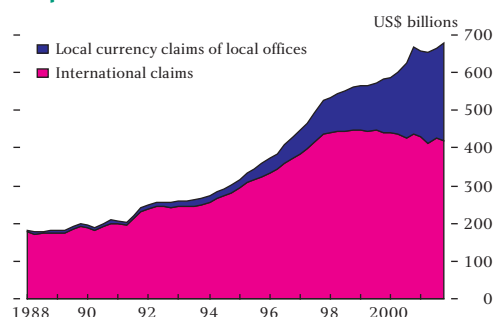
**Chart 61:**  
**Average bank margins<sup>(a)</sup> of European banking sectors, 2001**



Source: Bureau van Dijk Bankscope.

(a) Net interest revenue as a percentage of total assets.

**Chart 62:**  
**Consolidated foreign claims on EMEs by**  
**European-owned banks<sup>(a)(b)(c)</sup>**



Source: BIS.

(a) Excludes UK, Switzerland and uses 2001 Q3 data for Italian banks' end-2001 claims.

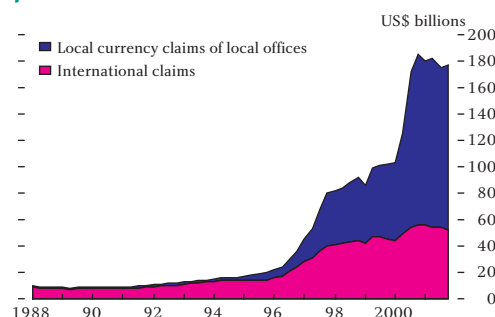
(b) International claims include cross-border claims and foreign currency claims of local offices.

(c) The sample of reporting banks may have changed over time if banks have moved their head offices into the area.

The strength of domestic market conditions is important, as many European banks still remain dependent on their respective home markets, with over half of their operating profits attributable to domestic business. Many major European banks have, though, expanded beyond Europe, typically to the US, to diversify their risk and income streams. Increasingly, diversification into EME countries has been through greater participation in their banking systems rather than through cross-border lending (Chart 62 and Section V). This has been particularly marked amongst Spanish banks, with local currency lending accounting for an increasing proportion of their claims in Latin America (Chart 63).

Since the previous *Review*, international business has entailed some notable losses. These include Enron-related losses, trading losses at the US operations of Allied Irish Banks, and Argentina-related losses for Spanish, French and Italian banks (as well as UK banks – see Section VIII). Developments in Argentina have affected a number of European banks (see Section V). All have made provisions against their investments there, without any apparent spillover to parental credit standing.

**Chart 63:**  
**Consolidated foreign claims on EMEs by**  
**Spanish-owned banks<sup>(a)(b)</sup>**



Source: BIS.

(a) International claims include cross-border claims and foreign currency claims of local offices.

(b) The sample of reporting banks may have changed over time if banks have moved their head offices into the area.

## IV Japan

In Japan, the near-term economic outlook has, on balance, improved somewhat since the December 2001 *Review*, while medium-term economic and financial challenges remain.

### Recent economic and financial developments

After falling by 0.6% in 2001, real GDP is officially estimated to have risen in 2002 Q1 by 1.4%, quarter-on-quarter, although initial preliminary expenditure-based GDP estimates have in the past tended to be heavily revised; all-industry output increased by only 0.6%. Industrial production picked up as external demand strengthened, but service sector output has so far remained subdued (Chart 64). Consensus forecasts for GDP growth in 2002 were revised up sharply in June in the wake of the strong Q1 outturn (Chart 65).

Meanwhile, consumer prices have continued to fall, increasing the real value of debt, although the pace of deflation is expected to moderate in 2003. Land prices fell 6.7% in the year to March and are now more than 40% below their 1991 peak.

The general government financial deficit narrowed to 6.1% of GDP in the fiscal year to March 2001 and recent data indicate that it was broadly the same in the year to March 2002 (Chart 66). Japan's debt has nevertheless continued to rise, with the general government (excluding social security) net debt-to-GDP ratio reaching 95% at end-2001. Japan's long-term credit rating has been cut further since the December *Review*. Standard and Poor's downgraded both domestic and foreign currency debt by one notch to AA-, while Moody's cut its domestic currency rating by two notches to A2 (with a stable outlook). Neither downgrade had much impact on the Japanese government bond (JGB) or credit default swap markets (Chart 67), perhaps partly reflecting the fact that JGBs are still largely owned by Japanese institutions, or the possibility that Japan might already have been below 'AA' in international financial firms' internal ratings.

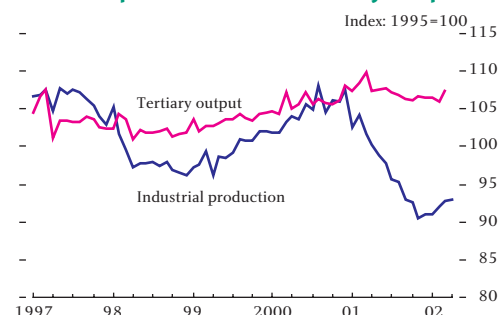
#### Household sector finances

The continued weakness in land prices and the labour market may be starting to cause financial strains for the household sector. Its financial surplus has fallen for the past three years (Chart 66). Personal bankruptcy filings increased by 15% last year but are still low by US standards. Japanese banks' exposure, though growing, is limited; lending to households accounts for only a fifth of their domestic lending.

#### Corporate sector finances

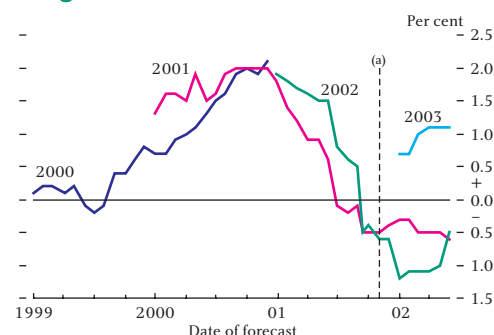
Lending to non-financial companies accounted for 65% of Japanese banks' domestic loan book as at end-March 2002. Adjusted for write-offs, lending fell by 2.6% in the twelve months

**Chart 64:**  
**Industrial production and tertiary output**



Source: Thomson Financial Datastream.

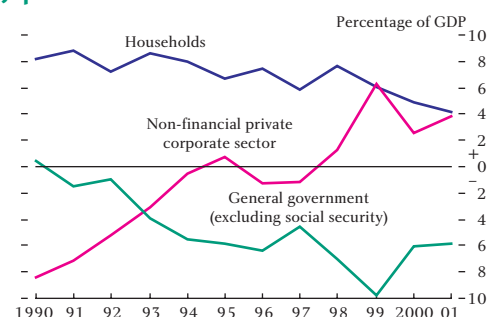
**Chart 65:**  
**Consensus forecasts for Japanese GDP growth**



Source: Consensus Forecasts.

(a) Dec. 2001 *Review*.

**Chart 66:**  
**Japanese financial balances<sup>(a)</sup>**



Sources: Bank of Japan and Economic and Social Research Institute of the Japanese Cabinet Office.

(a) Financial years, except for the latest observation which is calendar 2001.

**Chart 67:**  
**Credit default swap prices for Japanese government debt<sup>(a)</sup>**

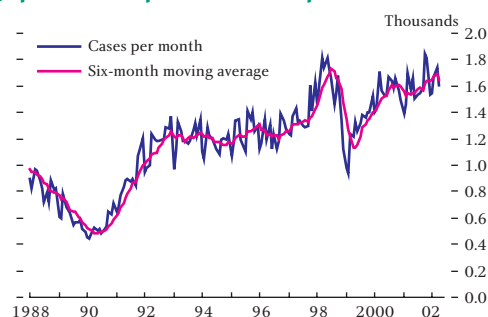


Source: CreditTrade.

(a) Annual premium for credit protection on US\$10 million, or local currency equivalent, measured as mid-point between last bid and ask quotes.

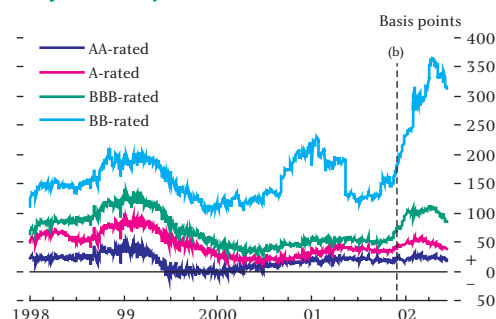
(b) Dec. 2001 *Review*.

**Chart 68:**  
**Japanese corporate bankruptcies**



Source: Bloomberg.

**Chart 69:**  
**Japanese corporate bond spreads over five-year swap rates<sup>(a)</sup>**



Source: Bloomberg.

(a) Moody's rated yen-denominated corporate bonds.

(b) Dec. 2001 *Review*.

to May, compared with 1.9% in the year to October. The Bank of Japan's April Senior Loan Officer Survey suggested that this was largely due to further weakening in firms' demand for credit, though there is some evidence that banks have tightened credit conditions. The corporate sector has now run a financial surplus for four years (Chart 66) which, coming after years of persistent deficits, would be consistent with attempts to reduce gearing.

Non-financial listed firms' consolidated current profits fell 41% in the year to March, slightly more than they had expected at the time of the December 2001 *Review*. Perhaps partly reflecting this, corporate bankruptcies remain at historically high levels (Chart 68) and the yield spread on lower rated corporate bonds has increased further since December (Chart 69). Firms, however, expect their current profits to increase by 67% in FY2002 as sales pick up.

## Japan's financial sector

The most significant development for financial stability since the December 2001 *Review* was the successful transition to new deposit protection arrangements. From 1 April, 100% protection for time deposits was replaced by a partial deposit guarantee covering only ¥10 million (approximately US\$80,000) per depositor per bank. There had been fears that banks might face liquidity problems. In the event, the impact was relatively small, perhaps because of better sentiment in the equity market<sup>20</sup> (Chart 19, Section I) and provision of liquidity by the Bank of Japan.

There was, however, some switch from large time deposits to demand deposits, which remain covered by 100% deposit insurance until April 2003, and to a lesser extent to small time deposits. In the year to March, the value of time deposits in accounts of over ¥10 million fell by 27%, while demand deposits increased by 35% and small time deposits rose slightly (Chart 70). All 'liquid' deposits remaining 100% protected until April 2003 helped to contain the movement of deposits *between* financial institutions. In the year to end-April, deposits with city banks increased by nearly 17%, those with first-tier regional banks were almost unchanged, while those with second-tier regional banks fell by over 2%. Market measures of perceived bank credit risk, such as credit default swap prices, have fallen back since the regime change, although most remain higher than in 2001 (Chart 71).

## Non-performing loans

In April, Japan's Financial Services Agency (JFSA) announced the results of special inspections of the major banks' provisioning against non-performing loans (NPLs). The JFSA examined loans

20: The rise in the equity market partly reflected the impact of new short-selling regulations, introduced as part of the government's February anti-deflation package.

with a total face value of ¥12.9 trillion, around 4% of the major banks' outstanding loans. The inspections covered large loans to companies whose market reputations had deteriorated significantly. Loans with a face value of ¥7.5 trillion (58%) were downgraded, resulting in ¥1.9 trillion additional provisions. Partly as a result, the level of NPLs at the major banks increased by more than ¥6 trillion between end-September 2001 and end-March to ¥27.5 trillion.

#### Banking sector profitability and capital ratios

The major banks recorded a combined consolidated loss of ¥4.1 trillion in 2001, mainly due to high loan-loss provisions (Chart 72). In consequence, their average published capital ratios fell from 10.6% at end-September to 10.4% at end-March, while their average Tier 1 ratio fell to 5.4%. Deferred tax, which mainly reflects timing differences on tax deductibility of loan-loss provisions<sup>21</sup>, accounts for an increasing portion of bank assets (¥8.4 trillion at end-March, as against ¥7.7 trillion at end-September), equivalent to almost half their aggregate Tier 1 capital. The amount of deferred tax that may be included on banks' balance sheets is limited to their projected taxable income for the next five years multiplied by the tax rate. If banks' projections turn out to be broadly correct, they should be able to use these tax assets before they expire. If not, the amount of Tier 1 capital available to absorb losses would be smaller.

#### The insurance sector

The fiscal 2001 results of the ten largest life insurers showed investment returns again falling short of returns guaranteed to policyholders. Nevertheless, they were still able to make ¥2.1 trillion in operating profits owing to lower-than-budgeted expenses and lower-than-expected mortality rates. Published solvency margins mostly improved between September and March, largely because of the recovery in domestic equity prices.

In the year to end-March 2002, the major insurers incurred ¥1.5 trillion in appraisal losses on their equity holdings, ¥1 trillion relating to their holdings of bank shares. This underlined the close links between banks and life insurers. At end-March 2001, life insurers held ¥10.6 trillion of bank equity and subordinated debt while banks held ¥2.3 trillion of the capital of the top ten life insurers.

## Links to the international financial system

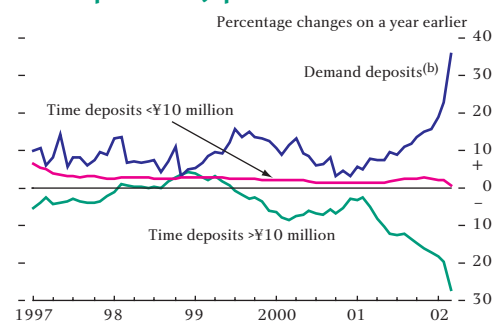
#### Japan's external balance sheet

Japan's gross external assets and liabilities illustrate the scale of the financial links between Japan and the rest of the world. At end-2001, Japan had gross external assets totalling US\$2.9 trillion and gross external liabilities totalling US\$1.5 trillion, a net

21: Loan-loss provisions count as a tax-deductible expense only when the loss is finalised rather than when the provision is made. When the loss is finalised it creates a loss-carry forward which must be used within the following five years.

Chart 70:

#### Time deposits at Japanese banks<sup>(a)</sup>



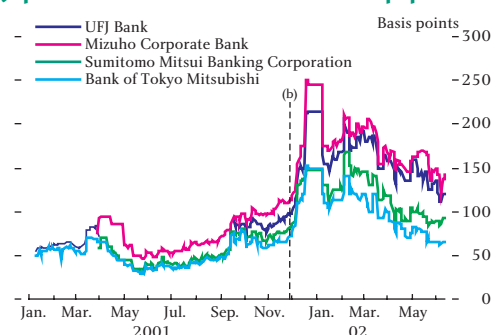
Source: Bank of Japan.

(a) End-period deposits outstanding with domestically licensed banks.

(b) Also include deposits with foreign banks in Japan, Shinkin banks, Shinkin Central Bank, Norinchukin Bank and Shoko Chukin Bank.

Chart 71:

#### Japanese bank credit default swap prices<sup>(a)</sup>



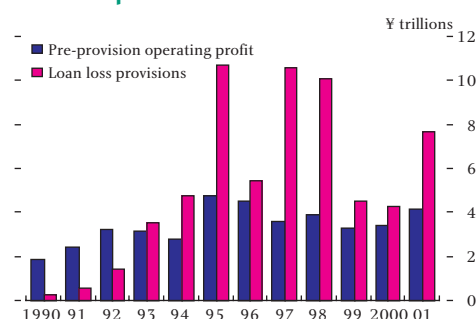
Source: CreditTrade.

(a) Annual premium for credit protection on US\$10 million, or local currency equivalent, measured as mid-point between last bid and ask quotes.

(b) Dec. 2001 Review.

Chart 72:

#### Major Japanese banks' profits and loan-loss provisions<sup>(a)</sup>



Source: Fitch IBCA.

(a) Unconsolidated.

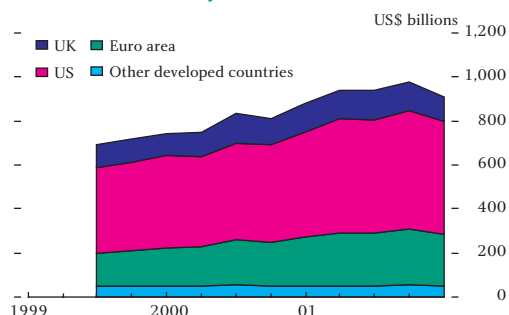
**Table 2:**  
**Japan's external balance sheet<sup>(a)</sup>**

US\$ billions, end-2001		
Asset class	Assets	Liabilities
Direct investment	300.7	50.4
Equity securities	227.8	376.8
Debt securities	1,064.5	290.3
Financial derivatives	3.0	3.6
Loans and deposits	733.3	700.8
Trade credits	32.8	8.7
Other	123.9	93.8
Reserve assets	401.2	0.0
Total	2,887.2	1,524.4

Source: Bank of Japan.

(a) Converted at year-end exchange rate of US\$1=¥131.54; totals may not add up due to rounding.

**Chart 73:**  
**Japanese banks' consolidated foreign claims<sup>(a)</sup> on developed countries<sup>(b)</sup>**

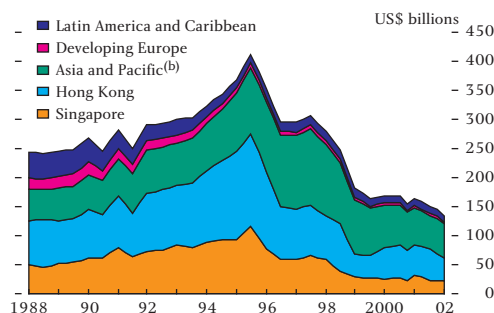


Source: BIS.

(a) Not adjusted for risk transfers.

(b) Excludes offshore financial centres.

**Chart 74:**  
**Stock of lending<sup>(a)</sup> by Japanese banks to EMEs**



Source: BIS.

(a) Consolidated foreign claims, not adjusted for risk transfers.

(b) Excludes Hong Kong and Singapore, which are classified as offshore financial centres, otherwise excluded.

increase of US\$0.2 trillion over the previous year (Table 2). This was partly due to the current account surplus but mainly the result of yen depreciation and valuation effects.

At end-2001, direct investment and portfolio investment in foreign equities accounted for nearly a fifth of Japan's gross overseas assets, portfolio investment in debt securities another third, and loans and deposits another quarter. Japanese residents own a substantial portion of some asset classes, including 10% of US Treasury securities, and are a major source of finance for some countries. If these were ever repatriated on a large scale, there could be significant effects on international markets.

At end-2001, Japanese-owned banks' foreign claims totalled US\$1.2 trillion, three-quarters of which were on developed countries, 16% on offshore financial centres (OFCs), and less than 7% on developing economies. Japanese claims on developed countries fell by US\$22 billion<sup>22</sup> from end-June (Chart 73) while claims on OFCs fell by US\$12 billion<sup>22</sup>, reflecting a drop in claims on Hong Kong. Over the same period, their foreign claims on the Cayman Islands rose by US\$5 billion to US\$94 billion. An interesting question is what these claims represent.

Japanese-owned banks' consolidated foreign claims on Argentina totalled just US\$1.4 billion at end-2001, limiting the impact of its crisis. Japanese banks have scaled back activities in Asia since the mid-1990s (Chart 74), but still account for 15% of the total claims of BIS-area banks on Asian emerging market economies. (see Section V for a discussion of Asian EMEs' dependence on Japanese bank finance). There is little evidence, however, that Japanese banks have been scaling back their Asian activities since the December 2001 *Review*.

#### Foreign claims on Japan

At end-2001, foreign portfolio investment in Japanese equities accounted for a quarter of Japan's gross external liabilities, portfolio investment in debt securities around a fifth and loans and deposits a further two-fifths. Foreigners held approximately 19% of Japanese equities but just 5% of JGBs. Foreigners have been net sellers of Japanese bonds since end-2001.

*On-balance-sheet* foreign claims of BIS-area banks on Japan totalled US\$553 billion at end-2001, less than 5% of their worldwide foreign claims, with euro-area banks accounting for around one-third of the total. They have generally fallen since the previous *Review*, and market contacts suggest that maturities might have shortened somewhat (Chart 75).

22: Adjusted for the discontinuity caused by the reclassification of claims on Jersey, Guernsey and Isle of Man from claims on UK residents to claims on offshore financial centres with effect from Q1.

Internationally active banks do, though, also have *off-balance-sheet* positions with Japanese financial institutions through derivatives transactions such as forward foreign exchange, currency swaps, interest rate swaps and structured notes, perhaps increasingly collateralised by JGBs. Some exposures may involve so-called ‘wrong-way’ risk: counterparty risk correlated with the underlying market risk. For example, to the extent that Japanese banks borrow, say, dollars via forward foreign exchange contracts, the circumstances in which the counterparties were heavily ‘in the money’ through a large fall in the yen might plausibly also be circumstances in which Japanese bank counterparty creditworthiness was impaired. Internationally active banks could usefully explore any such risks in their stress testing and scenario analysis (see Section VI for a discussion of ‘wrong way’ risk).

#### UK banks’ claims on Japan

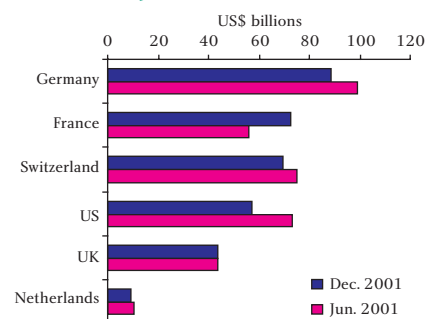
On the face of it, UK-owned commercial banks have substantial on-balance-sheet claims on Japan, £28.8 billion at end-2001, through both cross-border lending and their Japanese offices. They also have significant exposures to the UK branches of Japanese banks via London’s interbank market. These exposures are included in the BIS data for foreign claims by ultimate risk, which take into account risk transfers<sup>23</sup>. UK-owned commercial banks’ foreign claims on Japan by ultimate risk fell between end-June and end-December 2001 to £31.9 billion, equivalent to 49% of Tier 1 capital (Chart 76). Most of the local currency claims of UK banks’ Japanese offices are, however, secured interbank claims under reverse repos.

UK-owned commercial banks also have off-balance-sheet positions with Japanese financial institutions. The gross mark-to-market value of their claims on Japan under financial derivatives contracts increased from £5.6 billion at end-June 2001 to £7.7 billion at end-December 2001, equivalent to about 12% of their Tier 1 capital (Chart 77). The potential credit risk entailed in these contracts will depend not only on movements in the underlying instrument but also on the extent of collateral and netting agreements.

The near-term outlook for the economy and corporate sector financial health has, on balance, improved somewhat since the December 2001 *Review*. Nevertheless, despite the successful transition to new deposit protection arrangements, previously identified financial sector vulnerabilities remain. Recent evidence on links between Japan and the rest of the world does not suggest much change since the December 2001 *Review* in the risk of contagion.

23: Where a claim is guaranteed by a third party, it is reallocated from the country of the *debtor’s residence*, to the country of residence of the *guarantor*. Risk transfers via credit derivatives are not yet captured in the data.

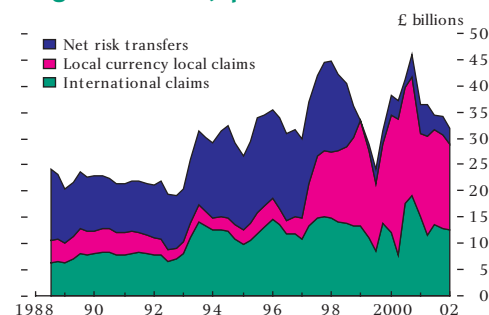
**Chart 75:**  
**Consolidated foreign claims of BIS-area banks on Japan<sup>(a)</sup>**



Source: BIS.

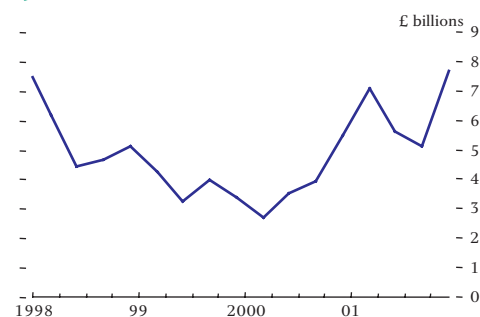
(a) Not adjusted for risk transfers.

**Chart 76:**  
**UK-owned commercial banks’ consolidated foreign claims on Japan**



Source: Bank of England.

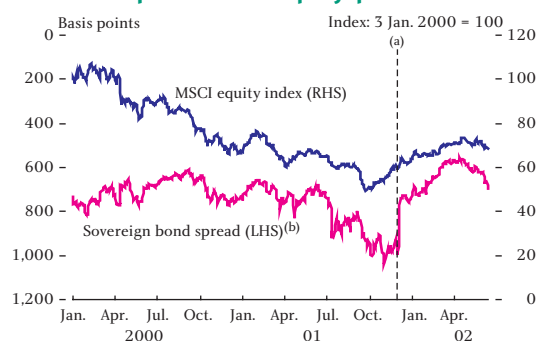
**Chart 77:**  
**UK-owned commercial banks’ claims on Japan under derivatives contracts<sup>(a)</sup>**



Source: Bank of England.

(a) Mark-to-market value of gross claims.

**Chart 78:**  
**EME bond spreads and equity prices**

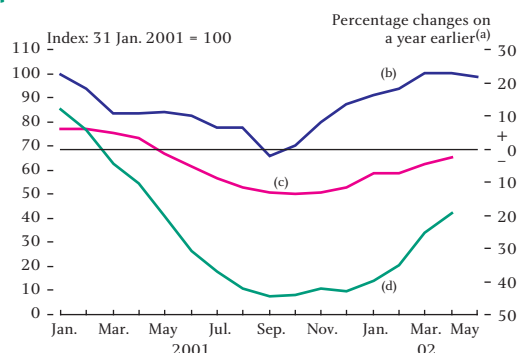


Sources: MSCI and JP Morgan Chase & Co.

(a) Dec. 2001 *Review*.

(b) Composite; inverted scale.

**Chart 79:**  
**Non-Japan Asia: total exports and equity prices**



Sources: Bloomberg, MSCI, Thomson Financial Datastream and IMF.

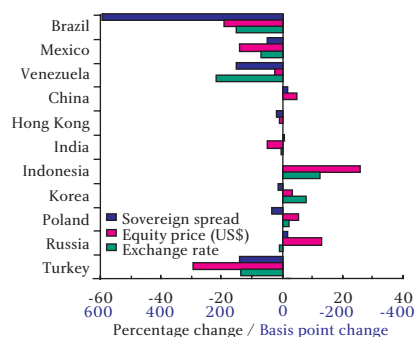
(a) Three-month moving averages.

(b) Emerging Asia MSCI equity index (LHS).

(c) Non-Japan Asia total exports (RHS).

(d) World semi-conductors sales (RHS).

**Chart 80:**  
**Changes in EME asset prices since end-March 2002**



Sources: JP Morgan Chase & Co, Bloomberg, Reuters and MSCI.

## V Emerging market economies

For most of the period since the *December Review*, the risks to the international financial system from EMEs appeared relatively low. Sovereign bonds spreads fell and equity prices rose as the global outlook improved and capital market conditions appeared benign. There was no widespread impact from the default in Argentina. Since the end of March, however, risks have risen in Latin America, a region where foreign banks have large local operations. After a discussion of the major EMEs, this *Review* focuses on the slightly different risks associated with those operations relative to cross-border lending.

### Asset prices

Asset prices in EMEs strengthened between the *December Review* and the end of March. Equity prices rose by 15% in dollar terms, compared with a fall of 6% in developed country markets, and weighted-average bond spreads fell (Chart 78). This rise in asset prices probably reflected several factors. First, the global outlook began to improve shortly after the *December Review*. In Asia, demand for high technology products picked up, contributing to a rebound in equity prices (Chart 79), although the largest rises were in discretionary consumer products. Second, lower nominal yields due to low global interest rates contributed directly to a reduction in risk for those with high near-term borrowing needs. Third, investors may have believed that the fundamental riskiness of EME assets had declined. Russia, Mexico and Korea have had their sovereign credit ratings upgraded since November 2001. Finally, investors may have been taking on additional risk either because risk aversion fell or because for institutional reasons they were seeking absolute returns.

These favourable market conditions were reflected in an increase in primary market issuance relative to the low base of 2001. EME equity issuance increased to US\$6.8 billion in the first five months of this year compared with US\$3.3 billion over the same period of 2001 (and US\$11.8 billion for 2001 as a whole). International bond issuance was slightly stronger – US\$35 billion in the first five months of 2002, US\$3 billion more than the same period in 2001. Excluding Argentina, EME bond issuance was the strongest since 1997. However, as syndicated lending to EMEs has weakened, gross international financing remains subdued.

Since end-March, asset prices have fallen sharply across Latin America (Chart 80). This began in Brazil, extending across Latin America in May and June. By June, there were signs it was spreading to other regions. Reflecting this geographic distinction, the discussion of country risks is ordered by region.

## Latin America

In December 2001, Argentina announced a moratorium on payments on public debt – the largest sovereign default in history. With the exception of Uruguay, where banking links with Argentina are relatively close, this had little discernible impact on the sovereign spreads of other EMEs. As the default was widely anticipated during 2001, investors had time to reposition relatively slowly, without the sudden liquidation of other positions – a proximate cause of past market instability<sup>24</sup>.

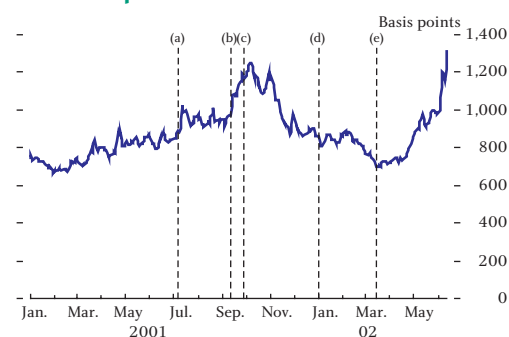
Brazilian spreads, for example, were unaffected by the default and continued to fall from the October 2001 peak (Chart 81). They have, however, risen sharply since end-March, particularly at short maturities (Chart 82). Higher yields are a potential source of concern as Brazil has substantial external financing needs and the public debt-servicing burden is sensitive to exchange rate movements and domestic interest rates. Moreover, progress on restructuring of its debt profile appears to have stalled as the average term and duration of federal securities are little changed since August 2001. On 13 June, the Brazilian authorities announced a number of measures, including their intention to draw on their stand-by arrangement with the IMF, and an increase in 2002's primary surplus target.

Compared with Argentina, Brazil has relatively close bilateral trade links with the rest of Latin America – accounting for 1.5% of the region's exports in 2000 compared with 0.7% for Argentina. But this still appears to be less significant than the links between Asian economies at the time of the Asia crisis in 1996–97. Brazil is, however, a major EME bond issuer, with an 18% weight in JP Morgan Chase & Co's EMBI Global bond index. Moreover, developed country banks' exposures to Brazil are large relative to those of other EMEs, as reviewed below. Co-movement between EME bond spreads has become significantly positive since early June as spread rises have become more widespread (Chart 83).

If the debt problems in Brazil were to worsen significantly, Venezuela and Colombia are the major EMEs with the closest bilateral trade links with Brazil. In Venezuela, the authorities' decision in February to abandon the crawling peg currency regime has improved the ability to service domestic debt, because oil revenues are received in foreign currency. However, political events have affected domestic investor confidence. Reliance on oil also makes Venezuela's fiscal position highly dependent on the international oil price and there is little slack built into the budget to absorb any price fall (Chart 84). Declining domestic confidence has also resulted in a 12% withdrawal of deposits between December and April.

24: 'Spillovers from recent emerging market crises: what might account for limited contagion from Argentina?' by Simon Hall and Ashley Taylor in this *Review* discusses the lack of widespread spillovers in greater detail.

**Chart 81:**  
**Brazilian spreads**



Source: JP Morgan Chase & Co.

(a) 'Zero deficit' rule introduced in Argentina.

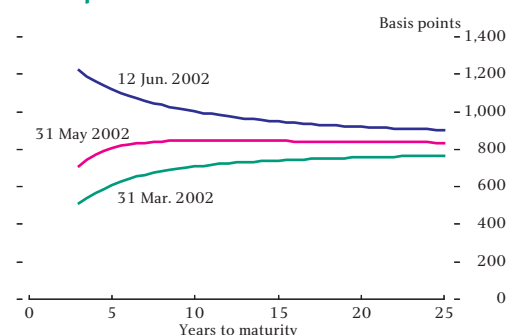
(b) 11 Sep. 2001.

(c) Brazil draws US\$4.7 billion from IMF packages.

(d) Argentine default and devaluation of peso.

(e) Parliament delays voting on financial transaction tax.

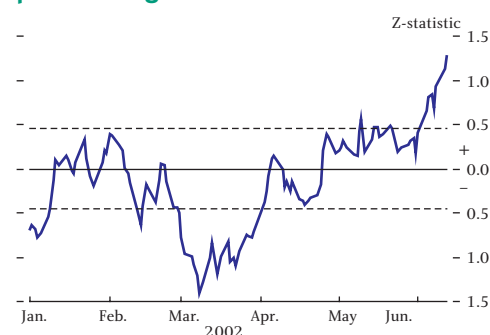
**Chart 82:**  
**Term structure of Brazilian US dollar bond spreads<sup>(a)</sup>**



Sources: JP Morgan Chase & Co and Bank calculations.

(a) Nelson-Siegel method as described in Cunningham, Dixon and Hayes, Dec. 2001 *Review*.

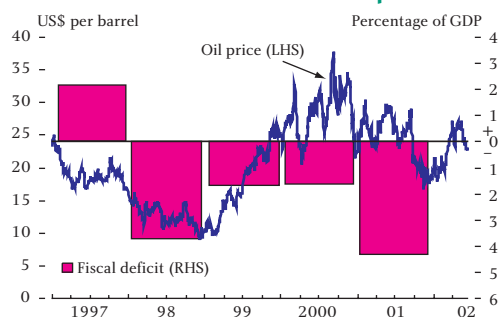
**Chart 83:**  
**Co-movement between daily EME bond spread changes<sup>(a)(b)</sup>**



Sources: JP Morgan Chase & Co and Bank calculations.

(a) Calculation details set out in Cunningham, Dixon and Hayes, Dec. 2001 *Review*.

(b) As the focus is on spillovers from Latin America, Asian spread changes have been lagged to account for differences in time zones.

**Chart 84:****Venezuela's fiscal deficit and oil prices<sup>(a)(b)</sup>**

Sources: Bloomberg, Venezuela Ministry of Economy and IMF.

(a) Central government fiscal deficit and Brent oil price.

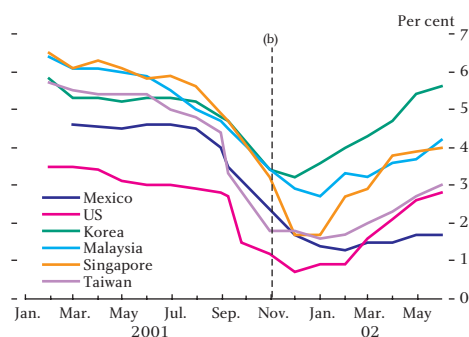
(b) IFS data for 1997. Ministry of Economy data from 1998-2001.

**Table 3:****EME short-term debt-to-reserves ratios<sup>(a)</sup>**

Country	1997 Q4	1999 Q4	2001 Q4
Brazil	1.0	1.0	0.9
Mexico	0.9	0.7	0.6
Venezuela	0.3	0.4	0.4
China	0.2	0.1	0.1
Hong Kong	1.8	0.8	0.5
India	0.3	0.3	0.1
Indonesia	2.1	0.7	0.6
Korea	2.9	0.5	0.3
Philippines	1.6	0.6	0.5
Poland	0.2	0.2	0.4
Russia	2.5	1.3	0.4

Sources: BIS and IFS.

(a) Short-term debt defined as consolidated foreign claims of reporting banks with up to and including a year until maturity.

**Chart 85:****Consensus forecasts for GDP growth in****2002<sup>(a)</sup>**

Source: Consensus Forecasts.

(a) Mean of forecasts.

(b) Dec. 2001 Review.

Mexico benefited from the improvement in market conditions earlier in the year, with spreads reaching record lows in March. Sovereign spreads have, however, risen since April in line with other Latin American economies. Risks in Mexico are relatively low but capacity to absorb shocks may be still limited. Short-term debts remain higher relative to reserves than for many EMEs (Table 3), while fiscal policy is somewhat constrained by the size of public sector debt. Indeed, fiscal policy was tightened in 2002 as the economy slowed in order to remain on track to meet its targeted budget deficit. This pro-cyclical fiscal policy may hamper resumption of growth, which remains important to the sustainability of Mexico's public sector debt position.

**Asia**

Since the December Review, country risk has generally fallen in Asia, and is reflected in lower sovereign bond spreads. Countries with strong public and external balance sheet positions were able to respond to the world economic slowdown last year through combinations of exchange rate falls, lower interest rates and looser fiscal policy. Domestic demand subsequently strengthened in Korea, Singapore, Taiwan and Malaysia. As this stimulus began to take effect towards the end of 2001, the outlook for the world economy also began to improve and the sharp decline in exports was halted, resulting in upward revisions to GDP growth forecasts for these countries (Chart 85).

Given their openness, these Asian economies remain vulnerable to downside risks to the global outlook and for some the capacity to loosen policy further, where necessary, may be limited. For instance, Korean public sector debt remains relatively low, suggesting scope for further fiscal policy stimulus. But monetary policy is potentially constrained by the need to control inflationary pressures, particularly in the household sector where mortgage and credit card lending has been increasing strongly. Although the level of household indebtedness remains relatively low, rapid growth in consumer borrowing potentially carries risks to the banking sector as evident in rising credit card default rates. In May 2002, however, the Korean authorities responded by applying more stringent loan-loss provisioning requirements to banks' lending to households.

Hong Kong is of particular interest to international financial stability given the large involvement of some global financial groups, including UK-owned banks, in its banking sector. Domestic demand is yet to recover despite monetary and fiscal policy stimulus during 2001. The currency board constrains Hong Kong's monetary policy and, with deflation having persisted, real interest rates remain relatively high. This could be exacerbated if US interest rates were to rise. In February 2002, a government taskforce concluded that there was a structural element to the budget deficit. Although Hong Kong has no material public debt, the Basic Law requires the authorities to

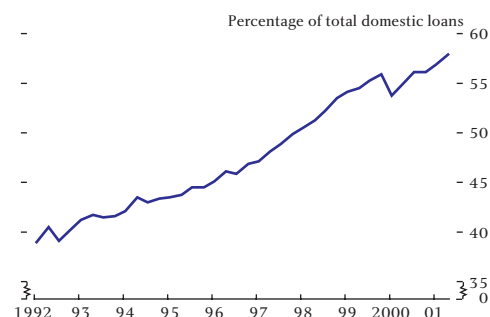
avoid persistent deficits, constraining the application of further fiscal stimulus. Weak domestic demand has been reflected in continued subdued activity in the property market, where banks have high and rising exposures (Chart 86), and in a pick-up in credit card defaults. This, and intense competition, is putting pressure on banks' profitability. Nevertheless, delinquency ratios on mortgage debt remain low and published banking sector capital ratios are comfortably above the Basel minimum.

Other Asian economies face more pressing constraints on macroeconomic policy. After meeting government fiscal targets in 2001, there has been some slippage in fiscal performance in the Philippines in 2002 due to revenue shortfalls. Indonesia's fiscal position also remains fragile. Some progress on implementing reform, including the Bank Central Asia sale and a Paris Club restructuring, have increased investor confidence and helped raise the exchange rate and equity prices: up 19% and 53% (in local currency terms) respectively since the December Review. But Indonesia's financing plans are vulnerable to a downturn in investor confidence, because external indebtedness remains high and there is a spike in debt servicing requirements due in 2004 (Chart 87). Resumption of strong growth is hampered by weaknesses in the corporate and banking sectors, where restructuring is dependent on legal and judicial reforms. Indonesia and the Philippines are also the most vulnerable to any repatriation of funds by Japanese banks, which are a particularly important source of finance for the private sector.

India and Pakistan are currently of particular interest given political and military tensions. Domestically, India has an increasingly fragile fiscal outlook. The combined deficit of central and state governments was around 10% of GDP in fiscal year 2000/01. The political impetus for fiscal consolidation seems weak; for example, the proposed Fiscal Responsibility Act has yet to be passed. With lack of progress to date on consolidation, debt sustainability relies largely on maintaining rapid growth, which is partly dependent on the implementation of structural reforms, including further progress in privatisation of state-owned companies. India's external position, however, has strengthened in recent years, with reserves rising to around US\$56 billion and the ratio of short-term liabilities to BIS banks to GDP falling (Table 3). Banks in developed countries do not carry material exposures to Pakistan (no one country's exposures exceeding US\$1.6 billion).

Progress on structural reform is also important in China. Non-performing loans of the banking system were 25% at end-2001 according to official estimates. Standard & Poor's estimate that the state's *de facto* contingent liabilities in the banking systems amount to up to 50% of GDP. This risk could start to crystallise as state-owned industries and banks become

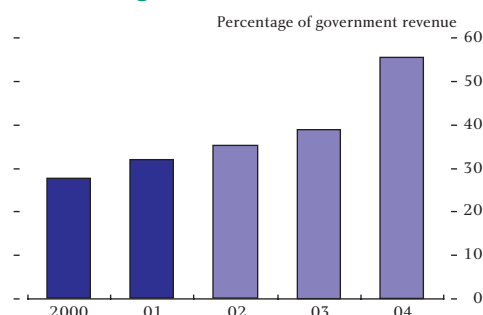
**Chart 86:**  
**Hong Kong property-related domestic loans<sup>(a)</sup>**



Source: Hong Kong Monetary Authority.

(a) Loans for use in Hong Kong for commercial construction and residential property.

**Chart 87:**  
**Indonesian government debt service<sup>(a)(b)</sup>**

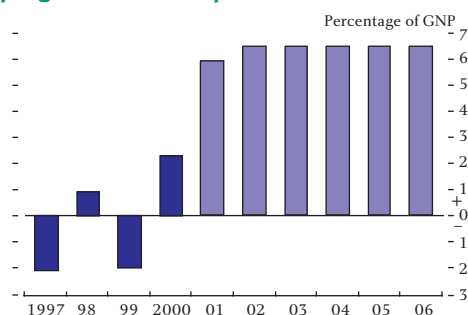


Source: World Bank.

(a) Calendar year with exception of 2000 (March to December).

(b) Projections include impact of Paris Club rescheduling in 2002 and 2003.

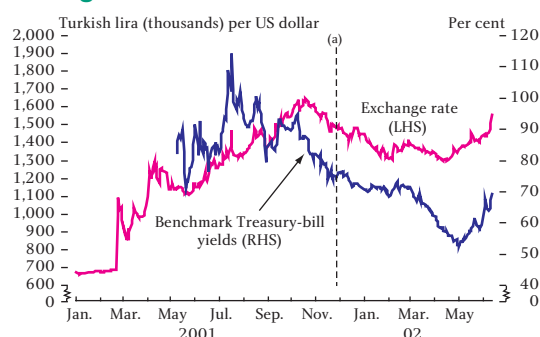
**Chart 88:**  
**Turkey's primary surplus: outturns and programme assumptions<sup>(a)</sup>**



Source: IMF.

(a) 2001-06 show the IMF assumptions contained in the Apr. 2002 Stand-By Arrangement First Review.

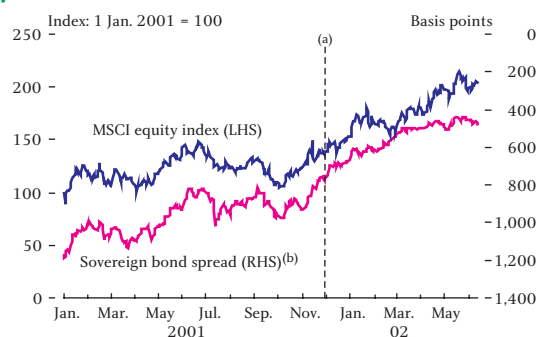
**Chart 89:**  
**Turkish Treasury-bill yields and exchange rate**



Sources: Bloomberg and Reuters.

(a) Dec. 2001 Review.

**Chart 90:**  
**Russian sovereign bond spread and equity prices**



Sources: Bloomberg and JP Morgan Chase & Co.

(a) Dec. 2001 Review.

(b) Inverted scale.

increasingly exposed to international competition following China's entry to the World Trade Organisation last December.

## Emerging Europe

In Emerging Europe, the picture is mixed. In Turkey, IMF public sector primary budget surplus targets have been achieved, despite ongoing weakness in economic activity. Successful completion of Turkey's IMF programme will require continued attainment of large primary surpluses (6.5% of GNP for 2002-06), see Chart 88. Turkey's debt position is fragile – over three-quarters of sovereign debt is now floating rate or linked to the exchange rate – making sustainability highly sensitive to market sentiment. During the first quarter of 2001, asset prices strengthened but since then Turkish spreads have risen and the exchange rate has depreciated (Chart 89). The adverse effect on spreads and the exchange rate of a health scare for the Prime Minister indicated the fragility of market confidence. Although weak activity has helped to keep inflation subdued, which in turn has enabled the central bank to reduce overnight interest rates, it has been damaging corporate balance sheets. As a result, non-performing loans in the financial system remain large. Recapitalisation by the public sector or the triggering of deposit guarantees would put public debt sustainability under further pressure. Ultimately debt sustainability depends on a resumption of growth.

In Russia, significant progress has been made towards improving the fiscal and external positions. Russian sovereign bond spreads have fallen, equity prices have risen (Chart 90) and the credit rating of sovereign debt has been upgraded by the three main rating agencies. Russia has taken steps to consolidate its fiscal position, including the creation of a fiscal reserve in 2002 of around US\$3.5 billion to provide some protection against falls in oil revenue. It has also removed a projected spike in debt service in 2003 through debt buybacks and early repayment of IMF loans. Furthermore, Russia has accumulated over US\$38 billion in foreign currency reserves, helped by relatively high oil prices and a depreciating exchange rate. Debt dynamics have been further improved by continued solid growth (albeit moderating from the previous year) and a strong primary surplus.

Since 1998, growth and inflation in Poland have fallen sharply, putting pressure on public finances: the fiscal deficit exceeded 4% of GDP at the end of 2001 and has remained high since. However, weak domestic demand has lowered the current account deficit from 8% of GDP in March 2000 to 4% in April 2002. As mentioned in previous Reviews, twin deficits can affect the exchange rate with potentially adverse consequences for the credit quality of foreign currency denominated bank loans to the corporate and personal sectors. Such loans increased by 22% in 2001 and now represent 11% of banking sector assets.

## Links to the international financial system: local versus cross-border lending

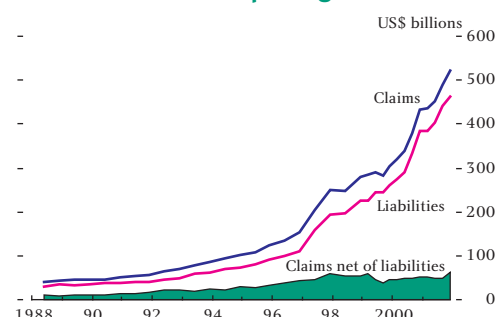
Historically, developed country banks have been exposed to credit risk on EME sovereigns and firms through *external* debt. While some banks have had branch or subsidiary networks in EMEs for many years, their exposures were small relative to international claims. Local exposures have, however, increased sharply in recent years in large part through the purchase of EME banks (Chart 91 and Box 6).

Foreign claims are largest on Mexico (US\$215 billion), Brazil (US\$142 billion), Argentina (US\$74 billion), Korea (US\$73 billion) and Poland (US\$66 billion). With the exception of Argentina and Korea, the bulk represent local office exposures as foreign participation in local banking systems has increased (Chart 92). This is most marked in Mexico (Chart 93), where some 80% of the local banking sector is now foreign-owned following a series of major acquisitions since the ‘Tequila crisis’ in 1994/95. In Brazil, foreign participation is less pervasive than in Mexico, but still accounts for around 52% of BIS reporting banks’ foreign claims (Chart 94). US, Spanish, British and Dutch banks have major local office interests in Brazil. Many of these banking groups also have branches or subsidiaries in the other major Latin American economies.

The BIS describes the widespread increase in local office activities as a shift from ‘international’ to ‘global’ banking<sup>25</sup>. The global model may have different implications for risk management. First, it may generate more information on the country’s circumstances and those of private sector borrowers. Second, the nature of business undertaken by local offices may entail different risks from those associated with cross-border lending. Cross-border lending has historically been denominated in foreign currency, exposing EME borrowers to exchange rate risk unless they have foreign currency assets or earnings streams. If they do not, a real depreciation affects the credit risk in the lender’s loan portfolio. Local currency lending is less likely to generate exchange rate risk for the borrower, and if financed locally, should not entail currency mismatch for the banks. Parent equity stakes in EME subsidiaries and earnings streams denominated in EME currencies, though, are exposed to currency risk. The risk profile of the loan portfolio may also change if local entities have established local networks which enable them to lend to small-scale (corporate or household) borrowers who would not normally have access to cross-border lending; the net effects of this are difficult to gauge.

Another type of risk arises from business being undertaken in a different legal jurisdiction. Sovereign actions can affect the

**Chart 91:**  
Local currency claims and liabilities of  
local offices of BIS reporting banks



Source: BIS.

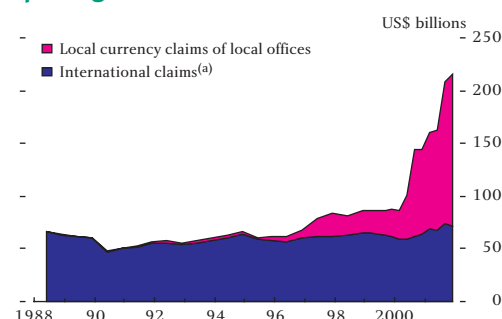
**Chart 92:**  
International and local currency claims of  
local offices, 2001 Q4



Source: BIS.

(a) International claims include cross-border claims and foreign currency claims of local offices, not adjusted for risk transfers.

**Chart 93:**  
Consolidated claims on Mexico by BIS  
reporting banks



Source: BIS.

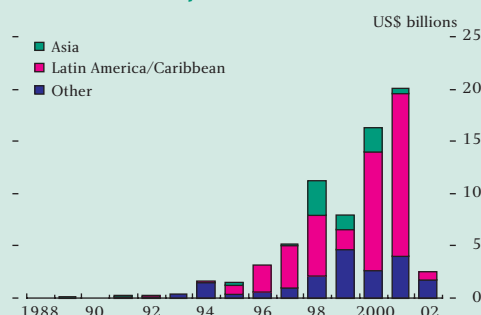
(a) International claims include cross-border claims and foreign currency claims of local offices, not adjusted for risk transfers.

25: ‘Globalising International Banking’ by Robert N McCauley, Judith S Rudd and Philip D Wooldridge, BIS Quarterly Review, International Banking and Financial Developments, March 2002.

## Box 6: The increase in local lending to EMEs

**Chart A:**

### Cross-border acquisitions of EME banks<sup>(a)</sup>

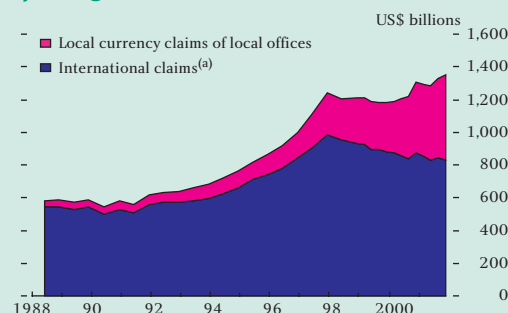


Sources: Thomson Financial and Bank calculations.

(a) Total transaction value of over US\$25 million.

**Chart B:**

### Consolidated claims on EMEs, by BIS reporting banks

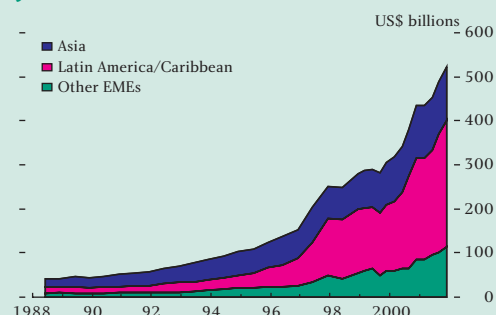


Source: BIS.

(a) International claims include cross-border claims and foreign currency claims of local offices, not adjusted for risk transfers.

**Chart C:**

### Local claims of local offices in all EMEs, by location of local office



Source: BIS.

Since the late 1990s, there has been a marked increase in foreign participation in EME banking sectors, as banks in developed countries have bought EME operations. Cross-border purchases increased rapidly in the late 1990s, first in Latin America, then in Eastern Europe (Chart A). Some EME banking systems are now dominated by banking groups with parents in developed countries – for example, in Mexico and Poland where around 80% of national banking systems (by assets) are now controlled by foreign banking groups.

The increase in foreign participation in EME banking sectors has been reflected in a change in the composition of developed country banks' exposures to EMEs as measured by the BIS international banking statistics<sup>1</sup>. Local currency claims of BIS reporting banks' local offices have increased by US\$272 billion to US\$523 billion since the end of 1997, at the same time as their international claims have fallen by US\$157 billion to US\$830 billion<sup>2</sup> (Chart B). Local currency liabilities have risen almost in line with local currency claims, consistent with local offices funding themselves locally (Chart 288).

The bulk of the recent increase in local office activities has been concentrated in Latin America (Chart C), which now accounts for 55% of all BIS reporting banks' local currency claims of local offices in EMEs. Local office activities have also increased in Eastern Europe, where local claims of BIS reporting banks' local offices have increased by 139% from US\$36 billion to US\$86 billion in the four years to December 2001. Banking groups with head offices in a range of EU economies have branches and subsidiaries in Eastern Europe. In particular, Belgian, German and Italian-owned banking groups each have over US\$10 billion of local office claims in Eastern Europe.

Banking groups from a number of BIS reporting countries have increased local office activities in EMEs. Most prominent are US and Spanish-owned banks (see Sections III and IV), which together accounted for 54% of such claims in 2001 Q4. Spanish banks have sizeable subsidiary networks in Latin America, while US and UK-owned banks' local office activities are spread across a range of developing countries. French, German and Japanese-owned banks have not increased local office activities materially in recent years.

1: The Bank of England's use of these data for financial stability analysis is discussed in the article by Gracie and Logan in this Review.

2: These data include only the local currency claims of local offices and so will understate the extent of branch and subsidiary networks in EMEs where banks offer loans denominated in other currencies.

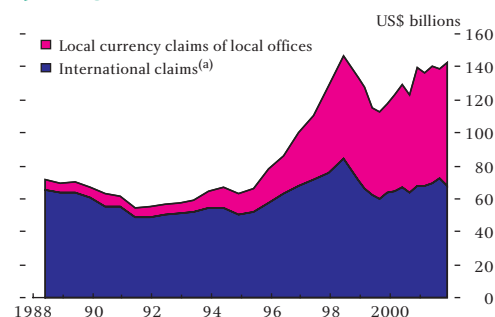
credit risk in both cross-border and local office lending – most obviously through default on their own obligations. But, as highlighted by Argentina recently, changes to local laws may affect local banks' balance sheets in other ways – both by amending contracts and by impeding payments by solvent borrowers through the imposition of banking restrictions. Imposition of capital controls may, however, similarly affect prospects for payment on cross-border loans – this 'transfer risk' has, in the past, led ratings agencies to impose a sovereign ceiling on credit ratings.

Finally, risks borne by local offices may have limited implications for internationally active banks if they are separate legal entities, ring-fenced from the parent group. Banks may participate in foreign banking systems through branch or subsidiary networks. Legally, the parent may have an option to sell off or close down an insolvent or illiquid *subsidiary*. As a legally distinct entity from the parent, the parent's losses in a subsidiary would, in principle, be no larger than its equity stake net of any intra-group lending – though this may be subject to legal challenge. There may, however, be reputational or strategic reasons for maintaining an ongoing interest in a loss-making subsidiary. In the case of *branch* activities, the parent is not typically legally distinct from the branch so that branch closure may not, of itself, shield the parent from losses. The picture may, however, be more complex where there are *de facto* ring-fencing restrictions that make deposits payable only at the local branches and not at branches in other countries. A number of banking groups seem to apply restrictions of this nature.

Some of these issues have been highlighted by events in Argentina where BIS reporting banks' local offices had local currency claims of US\$18.5 billion at the end of 2001 (Chart 95). Since December, the Argentine authorities have declared a moratorium on payments on their public debts, abandoned the currency board and determined that dollar-denominated loans and deposits would be exchanged into pesos at different rates (1:1 and 1:1.4 respectively). These and other crisis policy responses created large losses in the Argentine banking system, which had already been weakened by declining credit quality and a succession of large deposit withdrawals during 2001.

As a result, a number of internationally active banks have sustained substantial losses. The five banks with the largest operations in Argentina have made around US\$8 billion in pre-tax provisions on Argentina. Some parent banks have decided not to re-capitalise their local offices, but others have chosen to support theirs.

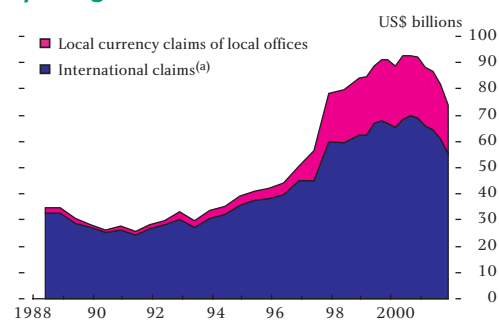
**Chart 94:**  
**Consolidated claims on Brazil by BIS reporting banks**



Source: BIS.

(a) International claims include cross-border claims and foreign currency claims of local offices, not adjusted for risk transfers.

**Chart 95:**  
**Consolidated claims on Argentina by BIS reporting banks**

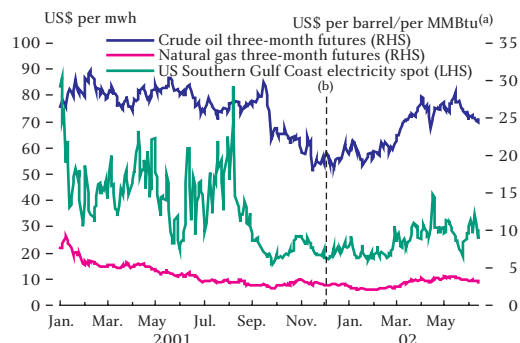


Source: BIS.

(a) International claims include cross-border claims and foreign currency claims of local offices, not adjusted for risk transfers.

## VI The international financial system

**Chart 96:**  
**Energy market prices**

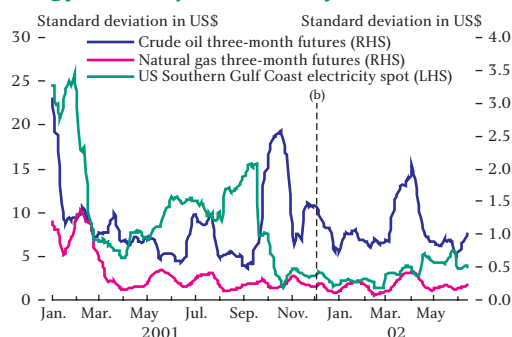


Source: Bloomberg.

(a) Millions of British thermal units.

(b) Enron filed for bankruptcy.

**Chart 97:**  
**Energy market price volatility<sup>(a)</sup>**



Sources: Bloomberg and Bank calculations.

(a) Calculated as a 30-day rolling standard deviation of the energy price level.

(b) Enron filed for bankruptcy.

Sections I to V discussed a series of disruptions that the international financial system has successfully negotiated since the *December Review*. As well as the largest ever sovereign default (Argentina), the system has faced the largest ever corporate default (Enron) and continued uncertainty about the eventual cost of the 11 September attacks. This section picks up those issues; and also assesses the resilience of the international financial system in the light of various risks inherent in the current conjuncture or revealed by recent developments.

### Enron, and credit market resilience

Enron filed for Chapter 11 bankruptcy on 2 December 2001 with outstanding liabilities of over US\$50 billion. It had been a significant intermediary in gas, electricity and oil trading markets in North America and elsewhere, including in the UK electricity market. It had also participated in a wider range of commodity and financial markets; for example, a subsidiary, Enron Metals, was a member of the London Metal Exchange and a clearing member of the London Clearing House. But Enron's collapse did not disrupt markets unduly and had little discernible effect on energy market prices (Charts 96 and 97). Reasons given by market participants include that Enron had been a trader rather than a major supplier or distributor of energy, so that underlying supply and demand were hardly affected; that it had run a broadly matched book; that counterparties had been able to replace trades in an orderly way over the previous few months because its difficulties had been well signalled; and that its financial market activities beyond energy trading had not been as extensive as sometimes implied. Exposures to Enron appear to have been well spread through the financial system or held by large financial institutions able to absorb the losses.

### Enron lessons and aftermath

The causes and circumstances of Enron's collapse, however, have revealed a number of potential vulnerabilities in the international financial system. Not all the facts are yet known<sup>26</sup>. But it appears that Enron engaged in pervasive 'rules arbitrage': entering into transactions that aimed to qualify for particular accounting, tax or regulatory treatments while leaving economic exposures substantially unchanged. These included: transactions with special purpose entities (SPEs) and limited partnerships giving the impression in its accounts that assets had been sold and debts reduced when Enron remained at risk; transactions purporting to hedge the price risk on loss-making investments with related entities whose main assets appear to have been Enron's own shares; and devices to bring forward and capitalise future earnings that were highly uncertain and from illiquid

<sup>26</sup> The following is based largely on a report to the Enron board by William Powers of the University of Texas School of Law, published on 1 February 2002.

investments or ventures. While Enron's accounts had revealed the existence of such transactions, they had not made clear their nature and motivation.

The failures of governance involved have been widely discussed (see Section IX). The episode also highlighted a set of important, and now widely debated, accounting issues: for example, about the consolidation of related entities, the recognition of future revenues, and the reporting of financial instruments. A more general question is the extent to which accounting standards should be founded on detailed rules or on broader principles, with the onus on directors and auditors to judge whether reporting is 'true and fair'. One drawback of a 'rules-based' approach is that management may be tempted to alter the economic appearance of a transaction while staying strictly within the rules. Normally, the underlying transaction is legitimate, but the 'rules arbitrage' still adds complexity. That in turn can lead to opacity, making it harder for shareholders and creditors to assess entity-wide risk. It is perhaps surprising that the proliferation of highly structured transactions in recent years – often with real economic benefits but also often motivated, in degree, by 'rules arbitrage' – did not lead to greater rises in risk premia because of the added uncertainty about companies' financial circumstances.

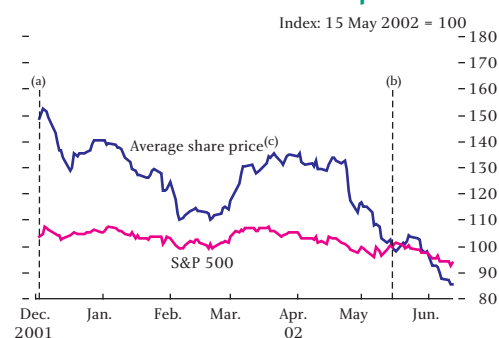
According to contacts, financial intermediaries and corporates have been scrutinising some types of structured transaction more closely, lengthening the time taken to complete deals. This would perhaps be welcome if it leads to flagrant rules arbitrage-type transactions being challenged and rejected, but transparent and economically efficient structures being maintained.

#### *Credit market resilience and corporate sector liquidity issues*

Enron filed for Chapter 11 bankruptcy protection because it faced a liquidity call of nearly US\$4 billion following a downgrade from investment (Baa/BBB) to sub-investment grade (B) by Moody's and Standard & Poor's on 28 November. This triggered early-repayment clauses in some bond issues and clauses requiring collateralisation of derivative transactions. Since Enron's collapse, investors and the rating agencies themselves have examined more closely the potential for companies to face self-fulfilling liquidity squeezes as a result of ratings-based triggers in debt and derivatives contracts, and other contingent calls on liquidity<sup>27</sup>. For example, from over 1,000 companies surveyed, Standard and Poor's have identified 22 US and European industrial and utility companies that might be exposed to material liquidity pressures following a downgrade of one full rating category or less. Their share prices had already been falling relative to the S&P 500 (Chart 98).

27: See, for example, 'Identifying Ratings Triggers and Other Contingent Calls on Liquidity', Standard & Poor's, 15 May 2002, and 'The Unintended Consequences of Rating Triggers', Moody's, December 2001.

**Chart 98:**  
**Equity prices of companies identified in Standard & Poor's 'credit cliff' publication**



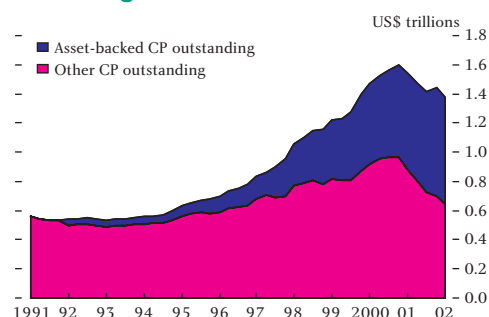
Source: Bloomberg.

(a) Enron filed for bankruptcy.

(b) Publication of Standard & Poor's credit cliff study.

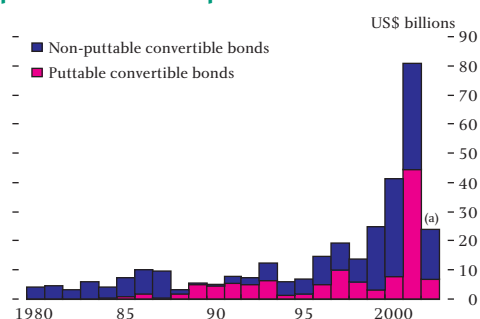
(c) Average of the 18 publicly quoted companies amongst the 22 companies referred to in the Standard & Poor's credit cliff study (24 companies were identified in Standard & Poor's 15 May 2001 release, but two have subsequently been removed from their list).

**Chart 99:**  
**Asset-backed and other US-issued CP outstanding**



Source: Board of Governors of the Federal Reserve System.

**Chart 100:**  
**US domestic convertible issuance – puttable and non-puttable**



Source: Thomson Financial.

(a) 2002 to date.

**Table 4:**  
**Insurance premiums at Lloyd's of London, 2001 Q4<sup>(a)</sup>**

Line of business	Percentage changes on a year earlier
Aviation	60 to 90
Directors and officers	35 to 60
Property reinsurance	35 to 60
Marine	25 to 250
Motor	10 to 15
Personal accident	25 to 35
Property	10 to 50
General liability	20 to 50

Source: Lloyd's of London.

(a) Percentage increase reflects changes in price and/or in terms and conditions.

More generalised concerns about refinancing risk, even for some of the most highly-rated companies, have resulted in a further decline in US-issued CP outstanding, especially when asset-backed issues are excluded (Chart 99). The market for single-name corporate CP had in fact begun to shrink in 2001 as a number of large issuers were downgraded to below A1/P1, effectively shutting them out of a market in which many investors can hold only prime-rated paper.

Whereas last year there was, in aggregate, a switch to financing via commercial banks' asset-backed CP vehicles, more recently – as discussed in Section II – companies have responded by lengthening the maturity of their liabilities, primarily via bond markets where liquidity has proved resilient. The net effect has been to move some liquidity risk from corporates (and from banks that provide them with back-up lines – see below) to bond investors. Any investors with short holding periods will rely on the liquidity of secondary bond markets. To the extent that investors such as pension funds and insurance companies have long holding periods, the extension of debt maturities is likely to benefit financial stability.

An exception is where bond issues include put options giving investors rights to sell bonds back to the issuer for cash. As described in previous *Reviews*, convertible bonds have been a 'capital market of last resort' for many troubled companies, especially in the USA. Some 35%–40% of such bond issues in 2001 (around US\$45 billion), however, included such puts, often exercisable after only one year (Chart 100). The apparent lengthening of the maturity of the issuers' liabilities was, in effect, made dependent on a recovery in their share prices. It is not clear that the associated liquidity risks were clearly identified at the point of issuance.

## Insurance and reinsurance

The collapse of Enron underlined the importance of managers and board members' accountability to shareholders. The number of securities class actions by shareholders has been rising in the USA, leading to higher payouts on Directors and Officers (D&O) liability insurance policies. In response, insurance brokers report that even for companies with no claims experience, D&O premiums rose 35%–50% from 2001 to 2002. There have apparently been broadly similar increases in premiums for professionals' errors and omissions (E&O) insurance against failures in performance resulting in losses to clients.

D&O and E&O are just two of many lines for which premiums have risen (Table 4). Two powerful factors seem to lie behind this: first, low recent and prospective asset returns, so that property and casualty insurers have been less able to cross-subsidise risk underwriting with investment gains; and second, claims following the 11 September terrorist attacks. Surveys of the US market

suggest that premiums are expected to increase by 15% this year (Chart 101) – large, but not as large as the increase that followed the mid-1980s asbestos claims. The extent of cover has also been rationed to some extent, with higher deductibles and greater use of exclusion clauses, most evident in the withdrawal of cover for losses following terrorist actions<sup>28</sup>. This has affected not only aviation and property cover but also, for example, group life cover purchased by occupational pension funds.

Market tightness has been moderated by new capital (around US\$20-30 billion), which has entered the market more quickly than after Hurricane Andrew in 1992, when around US\$8 billion was invested over two years. But the eventual impact of 11 September on the robustness of the global insurance industry remains uncertain. To date, only around US\$16 billion of claims have been filed and few have been settled. The scale of final claims remains unclear, with ‘top-down’ estimates ranging from US\$30 to US\$70 billion. The largest uncertainty surrounds employer and other liability (dependent on possible litigation) and business interruption (Chart 102). Non-US-resident insurers have been required to pledge collateral to cover their expected gross claims. Most resident insurers, which face the bulk of claims, have not yet made significant payouts.

Low recent equity returns have not only put upward pressure on property and casualty premiums, there has also been an adverse effect on the life insurance industry in some countries – probably more so in Europe (including the UK) than in the USA, where equities typically account for a smaller share of insurers’ asset portfolios. If equity markets were to remain weak, there could potentially be pressure on firms that have guaranteed minimum returns on policies (see Section III).

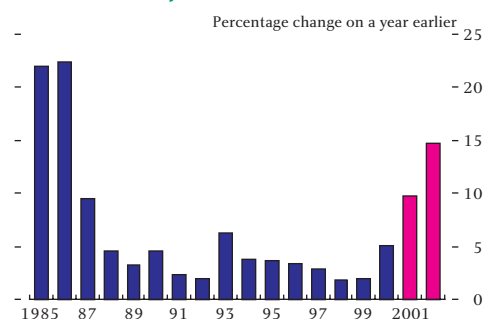
## The international banking system

Developments in the insurance industry affect the banking system in a variety of ways. For example, since 11 September, trade credit insurance premiums have risen, and some companies may have lost cover, possibly increasing risk for banks providing working capital finance. Potentially more important links include cross-sectoral risk transfers<sup>29</sup> and bancassurance-type mergers designed to diversify risk.

Industrial country banks have in recent years also diversified geographically. As discussed in Section V, Box 6, following acquisitions of banks in emerging market economies, loan business booked in locally based offices has been growing more rapidly than cross-border lending (which has in fact generally fallen since the 1990s’ EME crises). By contrast, a fairly high

**Chart 101:**

**Net insurance premiums written<sup>(a)(b)</sup>**



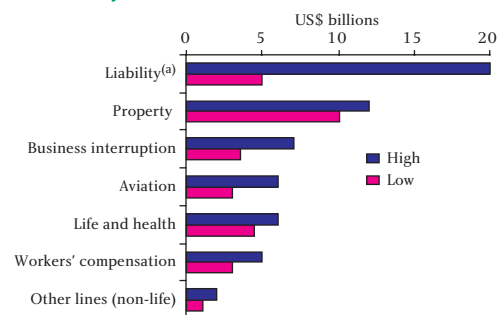
Source: Insurance Information Institute.

(a) Estimate for 2001, and forecast for 2002 based on survey of industry analysts in the US.

(b) Net written premiums equal direct premiums, plus reinsurance assumed premiums, less reinsurance ceded premiums.

**Chart 102:**

**Estimated range of insurance losses from the 11 September attacks**



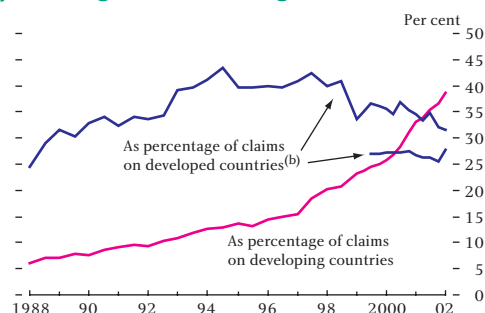
Source: Benfield Group, Apr. 2002.

(a) Insurance covering what the policyholder is legally obligated to pay a third party as compensation for some human or mechanical error or oversight.

28: Deductibles denote the proportion of the insured loss borne by the policyholder; exclusions limit the scope of the insured risk.

29: See ‘Risk transfer between banks, insurance companies and capital markets’, David Rule, December 2001 *Review*.

**Chart 103:**  
International banks' foreign offices' local currency claims on local residents as percentage of total foreign claims<sup>(a)</sup>

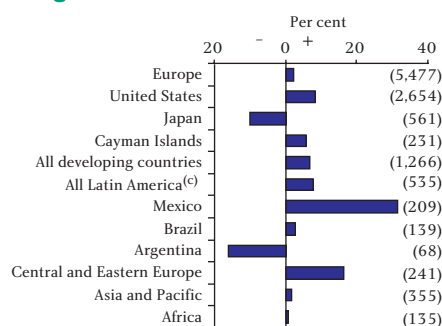


Source: BIS.

(a) This measure understates 'local' business as, for most lenders, foreign offices' non-local currency claims on local residents cannot be distinguished from cross-border claims.

(b) Two separate series for claims on developed countries are shown due to the inclusion in data for 1999 Q2 onwards of claims on the reporting countries themselves.

**Chart 104:**  
International banks' foreign exposures, change over 2001 H2<sup>(a)(b)</sup>



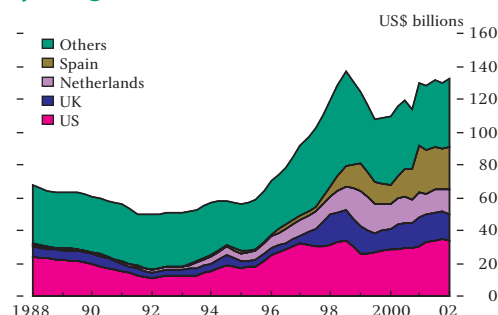
Source: BIS.

(a) Total foreign claims after reallocation from the country of the immediate counterparty to that of any third party guarantor or the head office of legally dependent branches.

(b) Figures in brackets show total exposure in US\$ billions, end-2001.

(c) Including the Caribbean.

**Chart 105:**  
Foreign claims on Brazil, by ownership of reporting bank, end-2001<sup>(a)</sup>



Source: BIS.

(a) Affiliates within the BIS-reporting area but of non-reporting country ownership are excluded from total.

share of international banks' lending to developed countries has been booked locally for some time (Chart 103)<sup>30</sup>.

#### Internationally active banks' foreign exposures

Developed country banks' total on-balance-sheet foreign exposures<sup>31</sup> increased by around 4% in US dollar terms in 2001 H2, although growth slowed to almost nothing in the fourth quarter. Around four fifths of global exposure is to other developed countries. Consistent with anecdotal information suggesting that both US and European banks may have cut back the scale and maturity of on-balance-sheet claims on Japanese counterparties (Section IV), exposure to Japan declined by around 10%<sup>32</sup> (Chart 104). In contrast, non-US banks' exposures to the USA increased, as German and UK banks expanded there<sup>33</sup>. Exposure to institutions in offshore financial centres also increased, largely because of a US\$13 billion rise in risk-transferred claims *vis-à-vis* the Cayman Islands, where many hedge funds and collateralised debt obligation (CDO) vehicles are legally domiciled.

Emerging market economy exposures increased at a faster rate than those to developed countries, largely on account of increasing claims on Eastern European countries and, in Latin America, on Mexico. Exposure to Argentina fell sharply. Aggregate exposures to Brazil, where sovereign credit spreads have recently risen sharply (Section V), increased marginally in 2001 H2 (Chart 105).

For banks in the USA, data are also available on the marked-to-market value of exposures via financial derivative contracts (where positive). For ten large banking organisations<sup>34</sup>, which account for over 90% of reported foreign exposure inclusive of derivatives, exposure to Japan fell sharply in 2001 H2 (Chart 106) to 11% of reported Tier 1 capital from 20% at end-June 2001. Their largest end-year EME exposures were to Brazil and Mexico, at 13% and 11% of Tier 1 capital respectively, up from 12% and 9%. US banks account for a significant share of total international banking system claims on Brazil (Chart 105).

30: This is accounted for largely by claims on the USA. Foreign claims on the USA accounted for around 30% of total foreign claims on developed countries at end-2001. Local claims on the USA accounted for around 50% of total local claims on developed countries.

31: Total on-balance-sheet claims (both cross-border and local). Cross-border claims are measured after reallocation, where possible, from the country of the immediate counterparty to that of any third-party guarantor or the head office of legally dependent branches (the country of 'ultimate risk').

32: The change partly reflects the depreciation of the yen against the US dollar (foreign claims are reported in US dollars only).

33: Risk-transfer adjusted data on national banking system exposures to individual countries/regions are not published by all countries, impeding more detailed analysis of the pattern of international exposures.

34: The group of ten organisations includes the main US-incorporated holding companies of Deutsche Bank and HSBC Holdings. In contrast to the BIS data, local country exposure is defined as gross claims less locally payable deposits where the balance is positive. 'Local business' includes all currencies and the country allocation of exposure reflects ultimate risk.

### Large and complex financial institutions

As discussed in the December Review (pp 80–82), surveillance of the international activities and exposures of essentially national banking systems needs to be supplemented with analysis of developments amongst those large and complex financial institutions (LCFIs) whose activities are close to being global. These groups have a major share of a number of core wholesale markets (Chart 107).

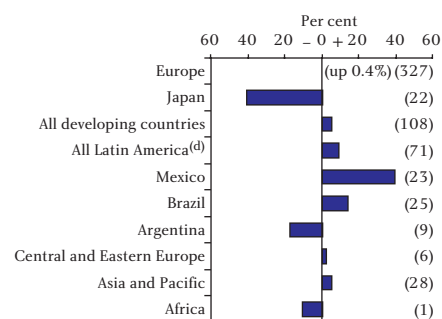
The reported return on equity and assets of one possible peer group of LCFIs<sup>35</sup> declined in 2001 (Chart 108) and remained lower in the first part of 2002. Non-performing loans of the eleven commercial banks in this peer group increased slightly relative to total loans during 2001 (Chart 109). For most of them, new provisions were lower in 2002 Q1 than 2001 Q4, but remained considerably higher than a year earlier. For the LCFI group as a whole, investment banking income has fallen. Many firms have responded by cutting costs. Looking forward, an important question is whether risk appetite would increase if, say, IPO and M&A activity were to remain subdued for some time and returns on equity remained lower than in the 1990s. Market risk – as measured by reported average daily Value-at-Risk (VaR) in trading portfolios – was typically slightly higher in relation to shareholders' equity in 2001 than 2000 (Chart 110).

Recently-weaker earnings have had only a limited impact on indicators of resilience. For the commercial banks, published Tier 1 capital ratios, weighted by total assets, are barely changed; and for the peer group as a whole, leverage has fallen somewhat (Chart 111). Credit default swap (CDS) prices for the US firms in this peer group have mostly returned to levels prevailing six months' ago (Chart 112), with movements during the period following news about exposures to Argentina and Enron, and threats of legal action against providers of equity research. CDS prices for the European firms in this group (Chart 113) have generally been lower than those for their US counterparts.

### System resilience

More widely than LCFIs, the American and European banking systems, taken as a whole, have so far proved resilient to the current global slowdown. There are various possible explanations for this. As discussed in Sections II and III, most banks have remained profitable, and have reported Tier 1 capital ratios materially higher than during the economic downturn a decade ago. Market contacts also believe that risk management has generally improved. This has been aided by banks' increased ability to disperse credit risk – some of it to medium-sized and small banks, whose risk management will need to respond

**Chart 106:**  
US large banks' foreign exposures, change over 2001 H2<sup>(a)(b)(c)</sup>



Source: Federal Financial Institutions Examination Council (E.16 country exposure lending survey).

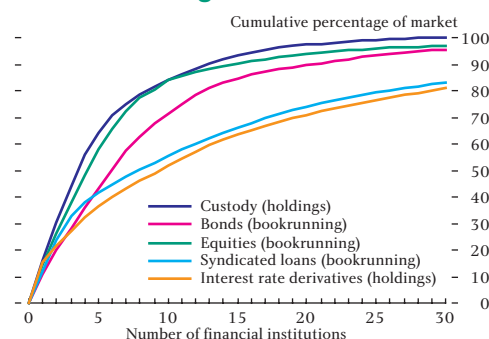
(a) Change between 30 Jun. 2001 and 31 Dec. 2001.

(b) Figures in brackets show total exposure in US\$ billions, end-2001.

(c) BIS geographical definitions.

(d) Including the Caribbean.

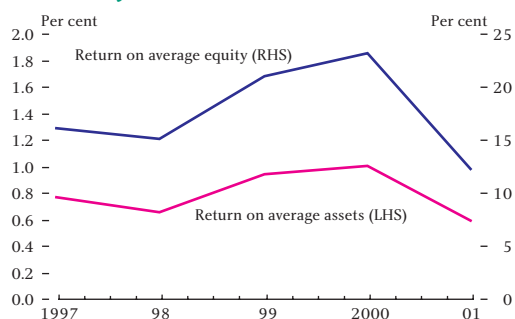
**Chart 107:**  
Concentration of global financial markets



Sources: Dealogic (syndicated loans, bonds and equities), Globalcustody.net (custody), Swapsmonitor (interest rate derivatives) and Bank calculations. Jan. 2001 to Mar. 2002.

35: ABN Amro, Bank of America, Barclays, BNP Paribas, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JP Morgan Chase, Lehman Brothers, Merrill Lynch, Morgan Stanley, Société Générale and UBS. The December Review (p.81) described the, in degree arbitrary, criteria used to determine this peer group.

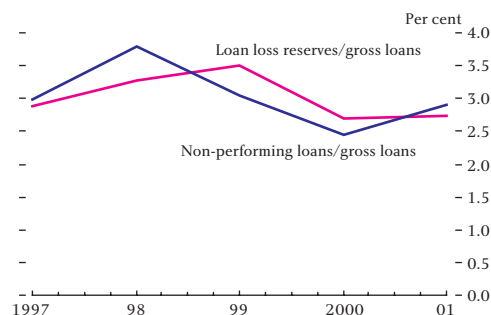
**Chart 108:**  
**Profitability of LCFIs<sup>(a)</sup>**



Sources: Bloomberg and Bank calculations.

(a) Weighted by total assets.

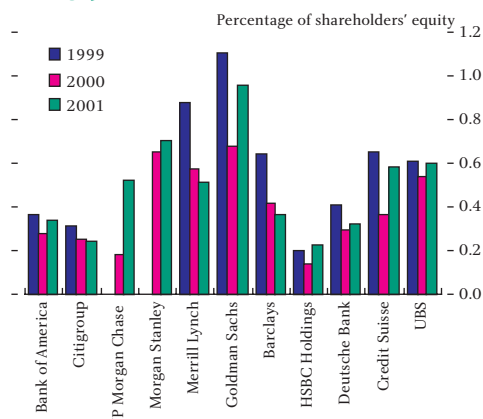
**Chart 109:**  
**LCFI commercial bank loan loss reserves and non-performing loans<sup>(a)</sup>**



Source: Bureau van Dijk Bankscope.

(a) Weighted by total assets.

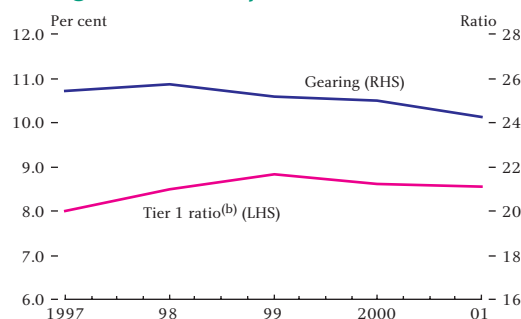
**Chart 110:**  
**LCFIs' average Value-at-Risk (VaR) in trading portfolios<sup>(a)</sup>**



Sources: Annual reports and SEC filings.

(a) VaRs have been standardised to a ten-day holding period and 99% confidence interval.

**Chart 111:**  
**Gearing and Tier 1 capital ratios for LCFIs<sup>(a)</sup>**

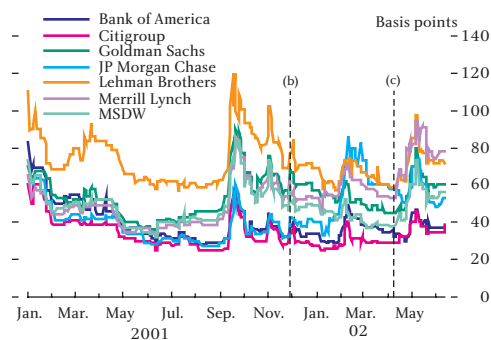


Sources: Bloomberg, Board of Governors of the Federal Reserve System, UBS Annual Report 2001 and Bank calculations.

(a) Weighted by total assets.

(b) LCFI commercial banks only.

**Chart 112:**  
**Five-year senior credit default swap prices for US banks and dealers<sup>(a)</sup>**



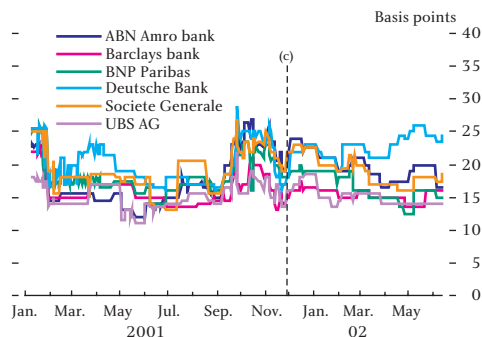
Source: CreditTrade.

(a) Annual premium per US\$10 million, measured as mid-point between last bid and ask quotes.

(b) Dec. 2001 Review.

(c) New York State Attorney General's publication of Merrill Lynch analysts e-mails.

**Chart 113:**  
**Five-year senior credit default swap prices for European banks<sup>(a)(b)</sup>**



Sources: CreditTrade.

(a) Annual premium per US\$10 million, measured as mid-point between last bid and ask quotes.

(b) Consistent data not available for Credit Suisse and HSBC.

(c) Dec. 2001 Review.

accordingly; some of it to pension funds, insurance companies and mutual funds. In spite of increased defaults, the ratio of rating downgrades to upgrades remaining at the highest levels since the early 1990s (Chart 114) and sharp declines in the market value of some bonds, there have been few signs of distress amongst institutional investors. This may be because many have long holding periods and diversified portfolios, and perhaps for some because the risk is borne by household investors rather than by the intermediary itself. Whatever the reasons, there are few signs of institutional investor appetite for credit risk abating. This makes it likely that companies will continue to prefer to raise term debt via the bond markets, often using bank facilities for liquidity insurance, to bridge to capital market financing, or for complex transactions. These activities do, nevertheless, raise some risk management challenges for banks. A selection is discussed below, together with some other credit and market risk issues posed by the current conjuncture or highlighted by recent developments. If not already doing so, firms might usefully cover the issues in stress tests and scenario analysis.

## Credit risk issues

### *Lumpy credit exposures*

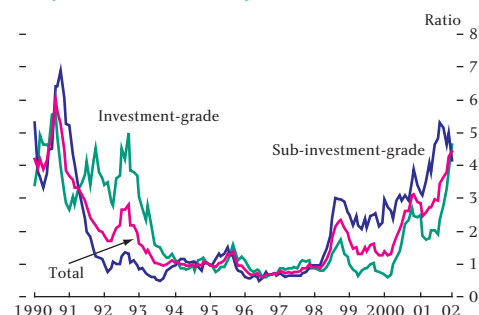
Lumpy exposures can still arise for banks, partly because of the range of dealings with their largest customers, including derivatives, securities underwriting, liquidity lines providing credit enhancement to securitisation programmes, structured transactions etc. Monitoring these exposures – including contingent exposures – on a consolidated basis is challenging but obviously important.

In the period ahead, contacts suggest that vigilance may be needed about the telecom sector which, as discussed in Section I, remains under pressure. Some market participants believe, for example, that relationship banks will be asked to take on bigger exposures as European telecoms seek to finance 3G roll-out plans and refinance existing debt, partly because telecom already comprises a large share of debt markets – in Europe, nearly 25% of the stock of non-financial corporate bonds (Chart 115). Questions also remain about the scale of contingent exposures in the USA and Europe to telecoms, and to other ‘fallen angels’, via undrawn committed facilities.

### *Underpriced committed liquidity facilities*

A number of previous *Reviews* have drawn attention to the underpricing of undrawn committed lines, often provided as a back-stop for commercial paper issuance. Banks continue to offer revolving credit facilities and back-up lines as a ‘loss leader’ for other business. Fees on drawn facilities are said to have increased this year and some banks have been withdrawing facilities if an overall customer relationship is insufficiently profitable. There is some tentative evidence that the cost of undrawn commitments –

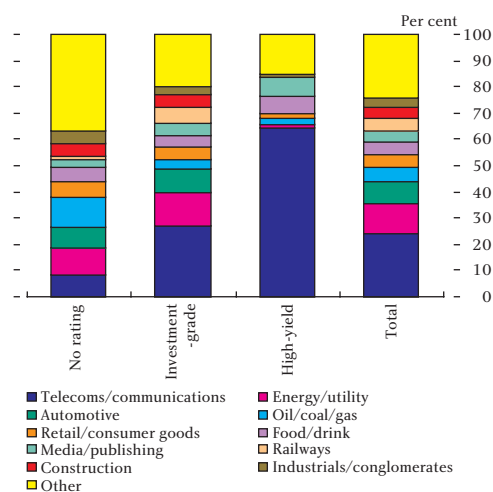
**Chart 114:**  
Downgrade/upgrade ratio for Western European and US corporates<sup>(a)</sup>



Source: Moody's Investors Service.

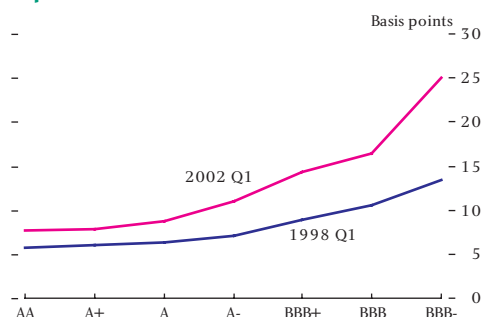
(a) Ratio of total downgrades to total upgrades in previous six months.

**Chart 115:**  
Sectoral breakdown of the stock of outstanding European non-financial corporate bonds



Source: Dealogic

**Chart 116:**  
Price of undrawn commitments for US corporates



Source: Loan Pricing Corporation.

effectively an option on liquidity – has risen modestly (Chart 116), but market contacts suggest that it is still low.

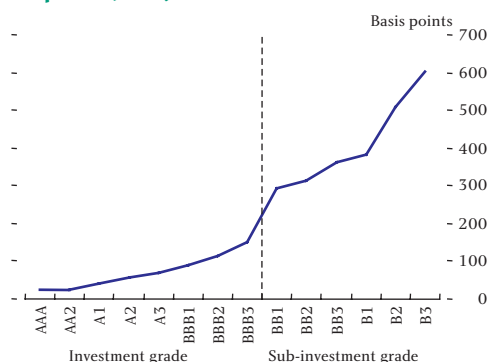
Cross subsidisation of such facilities may well be a rational business strategy for individual banks. But – as with any underpriced good or service – in aggregate the availability of cheap liquidity insurance might have led companies to buy too much, perhaps encouraging them to become excessively reliant on short-term debt and exposing banks to more risk than they might have expected.

#### *Rating-based triggers and ‘wiring’ of credit decision making*

Although undrawn commitments may well still be under-priced, banks are now apparently seeking more demanding covenants, including from lower-rated investment-grade, as well as sub-investment-grade, borrowers. Some attempts to incorporate material adverse change clauses have been resisted – especially for CP back-up lines – on the grounds that liquidity insurance would then prove unavailable when it was needed. More generally, covenants give lenders an opportunity to influence a borrower prior to bankruptcy. But problems can arise if a large part of a company’s debt is subject to covenants linked to the same trigger, particularly if it leads to debt acceleration or other sudden liquidity demands on the borrower, eg via requirements to collateralise derivatives exposures or third party guarantees. Such triggers are one important example of the ‘hard wiring’ of credit decisions to changes in ratings. Others include:

- Limits (perhaps zero) on holding debt rated below a certain threshold in mandates given to fund managers by investors;
- Similar constraints set by rating agencies on certain types of investment vehicles seeking to maintain a high rating for their own debt; and
- Regulatory limits on holdings of debt rated below defined thresholds; for example, those governing US money market mutual funds and US investment institutions.

**Chart 117:**  
Spread between ten-year US industrial bond yields and the ten-year US dollar swap rate, 12 June 2001



Source: Bloomberg.

Pervasive ‘wiring’ of decision-making to ratings in this way could lead to substantial selling following a ratings downgrade and potentially a more brittle financial system overall: an example of individually rational behaviour leading to an undesirable collective outcome. Most ratings-based investment constraints are set at the investment: sub-investment grade boundary. There is an apparent discontinuity at this point in the credit curve for US dollar-denominated industrial bonds (Chart 117).

#### *Credit risk transfer instruments*

Most credit default swaps (CDSs), including those embedded in credit-linked notes and synthetic CDOs, appear to have settled smoothly following the Enron and Argentina credit events. The

International Swaps and Derivatives Association estimates that approximately 800 CDS contracts involving over US\$8 billion in notional principal were outstanding on Enron<sup>36</sup>. Although there have been a few disputes about CDS transactions recently and the global market remains fragmented on account of different US and European definitions of 'restructuring' as a credit event, the market seems to have passed one important test.

Perhaps reflecting this, credit derivatives are being actively used by a growing number of international banks to manage credit risk. Important issues remain, however, about how hedges are accounted for under US Financial Accounting Standard 133 and International Accounting Standard 39. Given the complexity of so-called 'hedge accounting', CDS positions are marked to market whereas loans and undrawn loan commitments are typically not. So if a CDS is bought as a hedge, a bank might report a 'profit' when credit risk increases and a 'loss' when it decreases, in line with the change in the market value of the CDS but clearly not a fair reflection of the bank's overall position and potentially adding to reported earnings' volatility.

Not all credit risk transfer transaction structures proved effective following Enron's collapse. In particular, there is a legal dispute (due to be heard in the US courts in December 2002) about a large (around US\$1 billion) surety bond deal between JP Morgan Chase and a number of insurance companies. Surety bonds – which are broadly akin to an (unfunded) banker's letter of credit – are a longstanding form of performance insurance, which in recent years were occasionally adapted to capital market-type transactions, partly in order for insurers to participate, as they cannot write derivatives in a number of jurisdictions. The use of such insurance contracts for credit risk transfer is said to have declined in recent months, and the range of insurance companies involved to have narrowed, perhaps following withdrawal by some that experimented with capital market-type risk transfer transactions in the late 1990s.

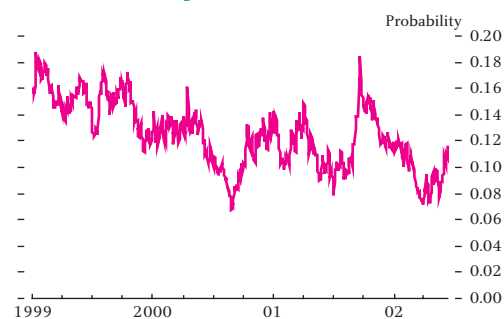
## Market and counterparty risk issues

The outlook for market risk may be affected by the continuing global current account imbalances, corporate and household debt issues, uncertainties about corporate earnings, and EME pressures discussed in Sections I to V.

### Equity market risk

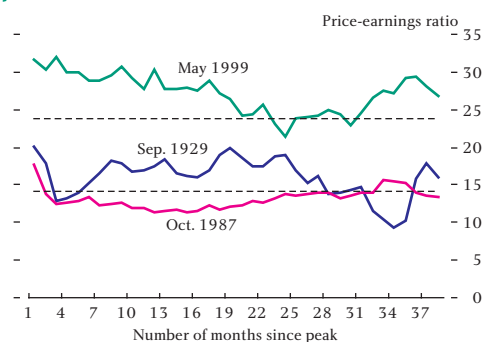
The risk neutral probability of a greater than 20% fall in the S&P 500 index, as implied by options prices, remains lower than at the height of the equity market boom in 1999–2000 (Chart 118). By comparison with historical ratios of equity market values to relevant corporate income flows, however, equity valuations might still appear high. Taking US companies as an

**Chart 118:**  
Implied risk-neutral probability of a 20% fall in the S&P 500 in the next six months



Source: Chicago Mercantile Exchange.

**Chart 119:**  
S&P 500 price-earnings ratio since peaks<sup>(a)(b)</sup>



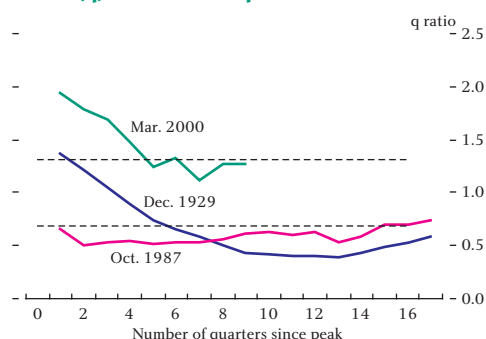
Sources: R. Stiller's website: [www.econ.yale.edu/~shiller](http://www.econ.yale.edu/~shiller), Thomson Financial Datastream and Bank calculations.

(a) Calculated by Thomson Financial Datastream since Feb. 1973 and from Shiller's data before Feb. 1973.

(b) Bottom dashed line is the average since 1900. Top dashed line is the average plus two standard deviations. Net worth equals total assets at replacement cost minus financial liabilities.

36: 'Enron: Corporate Failure, Market Success', ISDA, 17 April 2002, available at [www.isda.org](http://www.isda.org).

**Chart 120:**  
**US corporate sector market value-to-net worth (q) ratio since peaks<sup>(a)</sup>**



Sources: Bureau of Economic Analysis, Board of Governors of the Federal Reserve System: 'Flow of Funds Accounts of the United States', Stephen Wright website: [www.econ.bbk.ac.uk/faculty/wright/](http://www.econ.bbk.ac.uk/faculty/wright/) and Bank calculations.

(a) Bottom dashed line is the average since 1900. Top dashed line is the average plus two standard deviations.

**Table 5:**  
**Equity risk premium and dividend growth rate combinations needed to explain current S&P 500 equity prices<sup>(a)</sup>**

Equity risk premium <sup>(b)</sup>	Dividend growth rate (g) <sup>(c)</sup>
Per cent	Per cent
7	8.34
6	7.36
5	6.37
4	5.39
3	4.40
2	3.42
1	2.43

Sources: Thomson Financial Datastream and Bank calculations.

(a) assuming a constant real-risk free rate of 3%. The arithmetic average real return on US long term government bonds is around 3% for the 1871–1997 period. (Siegel J.J. (1998), 'Stocks for the Long Run', McGraw Hill, New York).

(b) The arithmetic average ex-post US excess return over government bonds is around 7% over the 1926–97 period. Wadhvani argues that an ex-ante average of 4.3% is more reasonable. (Wadhvani, S.B. (1999) 'The US stock market and the global economic crisis', National Institute Economic Review, Jan.).

(c) The US average annual dividend growth rate is 2.2%. However, the US average annual GDP growth rate and earnings growth rate are 3.6% and 3.25% respectively. (See Dec. Review (pp.86)).

example, price/earning ratios and  $q$  (the ratio of market value to net worth at replacement cost) both remain around two standard deviations above the averages over the past century (Charts 119 and 120). Although historical comparisons can be misleading, by this stage following the market peaks in 1929 and 1987, both ratios were close to or below their long-run averages.

Previous Reviews<sup>37</sup> have used the dividend discount model to assess the assumptions apparently underpinning equity valuations. Table 5 shows that, assuming a current cost of equity capital of 7% (comprising expected real interest rates of 3% and an equity risk premium of 4%, figures close to long-run *ex post* averages), current US market valuations would imply an expected real dividend growth rate of over 5% per annum – well above the long-run growth rate of 2.2%. There are several reasons why the long-run *ex post* average might not be an adequate measure of today's *ex ante* risk premium, such as lower costs of portfolio diversification. Also, current dividends may not be a good guide to the expected future distribution of profits to shareholders; for example, investors might expect share buybacks to continue to grow rapidly, although they are unlikely to be regarded as perfect substitutes for dividends. But the possibility remains that risk premia may be unsustainably low or that expectations of future corporate payments to shareholders may be unrealistic. If equity prices were to fall further, this might put further pressure on long-term saving institutions, as discussed in Sections III and VIII.

#### Interest rate risk

In many economies – most notably the US – short-term interest rates remain below plausible ranges for the longer-run equilibrium implied, for example, by long-maturity forward rates. But there is considerable uncertainty about their short-run path. Market participants therefore need to manage the risks associated with possible interest rate rises of uncertain timing and scale. Despite this, simple yield curve plays – borrowing short and lending long to take advantage of upward sloping yield curves – are said by contacts to be fairly widespread.

More complex risk management challenges are faced where contracts contain embedded optionality. As described in Section II (Box 4), such options are a distinctive feature of the US mortgage market. Households in the USA are, in aggregate, massively long an interest rate option arising from the right to prepay mortgages. Given that the financial sector is 'structurally short', it seems unlikely that everyone is fully hedged against the so-called 'negative convexity' risk that the prepayment option creates for holders of mortgage-backed securities and mortgage-servicing rights (Chart 121 and Box 7). Various

37: Box 3, June 1999 Review (pp 19-20) and Box 1, June 2001 Review (pp 36-37).

instruments – notably swaptions (Section I, Box 1) – are used to distribute the associated short ‘volatility’ position risk around the financial system, but full cover could be achieved only by buying optionality back from the household sector. The large and increasing issuance of US dollar-denominated callable bonds, particularly by the US Agencies, goes some way to achieve this (Charts 122 and 123). But if the yield curve were to move sharply, dynamic hedging by highly-leveraged financial institutions might potentially cause market interest rates to overshoot, perhaps especially at long maturities, as happened in spring 1994<sup>38</sup>. This may be relevant for firms’ management of interest rate risk even where they are not directly involved in the mortgage financing markets.

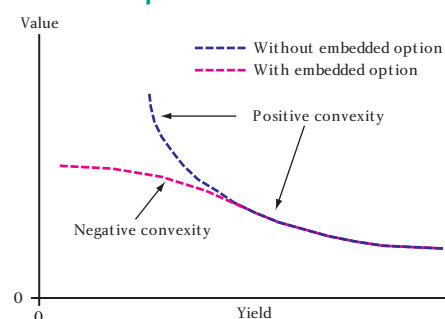
With a few exceptions (eg Denmark), European households are not holders of mortgage prepayment options, so European mortgage lenders typically do not carry the same structural ‘short’ interest rate volatility position. As discussed in Section III, however, another part of the European financial system – insurance companies – do *de facto* write options in large size, by guaranteeing a minimum return on savings and deferred annuity pension products. Some – notably Danish savings institutions in 2001 – have sought to purchase swaptions in order to hedge the risk of further falls in interest rates. But consistent with long-maturity euro swaption implied volatilities remaining lower than in other currencies (Chart 8, Section I), a widespread view amongst practitioners is that long-term saving institutions outside the USA have not generally hedged the interest rate risk on these guaranteed-return products. If they were to do so on a large scale over a short time period, there might conceivably be material moves in yield curves.

#### ‘Wrong way’ risk

The credit risk associated with market risk positions is perhaps most intractable in the presence of so-called ‘wrong way risk’: essentially when a counterparty’s credit is likely to be impaired in precisely the circumstances in which a position moves ‘into the money’. An example is provided by the put option programmes written by large companies a few years ago, which enabled intermediaries to obtain ‘long’ equity volatility positions, so that *inter alia* the market value of their options positions would rise if equity markets fell sharply. With hindsight, purchases of deeply out-of-the-money put options written by companies on their own shares may have left intermediaries exposed to ‘wrong way’ risk: such options would have value only if the company’s future prospects had deteriorated sharply, potentially impairing their capacity to pay.

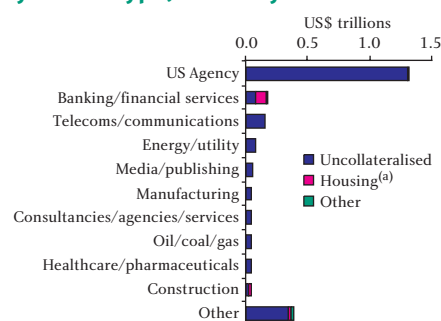
Another, possibly current example, described in Section IV, may arise from the use which Japanese banks apparently make of the

**Chart 121:**  
**Value of a bond with and without an embedded option**



Source: Based on Exhibit 17-1, Fabozzi (1997).

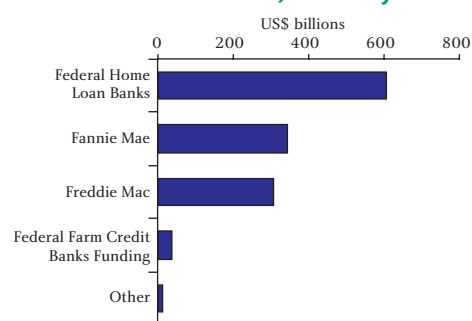
**Chart 122:**  
**Outstanding US domestic callable bonds by issuer type, end-May 2002**



Source: Thomson Financial.

(a) Backed by mortgages, home equity loans and collateralised mortgage obligations.

**Chart 123:**  
**Outstanding US Agency callable bonds in the US domestic market, end-May 2002**



Source: Thomson Financial.

<sup>38</sup> See, for example, ‘Mortgage security hedging and the yield curve’, Fernald, Keane and Mosser, Federal Reserve Bank of New York Quarterly Review, Summer – Fall 1994.

## Box 7: Negative convexity and mortgage prepayment risk

Controlling the risks in a portfolio of US mortgage-backed securities (MBS) requires active management of assets and liabilities, sometimes entailing continuous dealing in markets. For an asset-holder, fixed-rate mortgages with an option for the borrower to prepay, and therefore MBS and mortgage servicing rights, have a property known as 'negative convexity'. Normal fixed-rate bonds have 'positive convexity', meaning that the price of a bond rises a little more when yields fall by a small amount than it falls when yields rise by the same amount. For a MBS, the opposite holds over a certain yield range (Chart 121), as its value reflects a combination of a standard fixed-rate bond and a written call option on the level of interest rates. More precisely, convexity is defined as the second derivative of the bond price  $p$  with respect to its yield  $y$ , normalised by the price, and is the coefficient of the second term in the Taylor series approximation of relative changes in the price of the bond,  $\Delta p/p$ , as a function of changes in its yield,  $\Delta y$ :<sup>1</sup>

$$\Delta p/p(y) = -\text{modified duration}(y) \cdot \Delta y + \frac{1}{2} \text{convexity}(y) \cdot (\Delta y)^2 \quad (1)$$

For options, a measure of convexity is defined somewhat differently, and referred to as 'gamma', but it is a similar concept. A short bond-option position – as for example in a holding of US-mortgage backed securities – has negative gamma, which gives a negative contribution to the value of the option whether the yield of the underlying contract rises or falls a little. Gamma is largest in magnitude when an option is at-the-money, falling to zero for far in – or out-of-the-money options. Gamma is defined as the second derivative of the option value  $c$  with respect to the price  $S$  of the underlying contract, and is the coefficient of the second term in the Taylor series approximation (with delta being the coefficient of the first term) of changes in the value of the option,  $\Delta c$ , as a function of changes in the price of the underlying contract,  $\Delta S$ :

$$\Delta c(S) = \text{delta}(S) \cdot \Delta S + \frac{1}{2} \text{gamma}(S) \cdot (\Delta S)^2 \quad (2)$$

The convexity of a portfolio of prepayable mortgages with value  $V=p+c$  (with  $c$  being negative for the short

option positions for sufficiently low yields), can be defined as the second derivative of its value  $V$  with respect to the bond yield  $y$ , normalised by  $V$ , in analogy to equation (1) (replacing  $p$  by  $V$  in that equation). For a given yield, the convexity of the portfolio is therefore a linear combination of the positive convexity of the bonds and the negative gamma of the options. It has positive convexity at sufficiently high yields, where the bonds' small and positive convexity dominates that of the portfolio, outweighing the option's gamma, which is close to zero if the option is far out-of-the-money. By contrast, it has negative convexity at sufficiently low yields, where the options are closer to being at-the-money, so that their negative gamma is largest in magnitude, outweighing the smaller positive convexity of the bonds. For a given yield  $y$  and small change in yield  $\Delta y$ , the convexity of the portfolio can be approximated by a discrete approximation to the second derivative of  $V$  with respect to  $y$ :<sup>1</sup>

$$\text{Convexity}(y; \Delta y) = \frac{V(y + \Delta y) + V(y - \Delta y) - 2V(y)}{V(y) \cdot (\Delta y)^2} \quad (3)$$

Investors in MBS can hedge their short bond-option positions against movements in interest rates dynamically or statically. A dynamic strategy might involve initially buying US Treasuries and then, in the event of interest rates falling, buying more US Treasuries or purchasing receive-fixed interest rate swaps. Conversely, as interest rates rise, re-balancing the delta-hedge involves selling US Treasuries or paying fixed in interest rate swaps. A so-called static hedge (also called gamma hedging) involves buying interest rate options such as swaptions (see Box 1, Section I), with a positive and approximately offsetting gamma to the short option position embedded in a MBS holding. This reduces the need to re-balance the delta-hedge as interest rates – and therefore delta and the value of the options – change. But the market risk entailed by the embedded option has been passed to the swaption writer, who may dynamically hedge in the swaps market. If undertaken on a sufficiently large scale, dynamic hedging activity might cause the movement in government bond yields and/or swap rates to be more pronounced temporarily than otherwise.

1: See F. Fabozzi (1997), 'Fixed income mathematics', Mc Graw-Hill, 3rd edition.

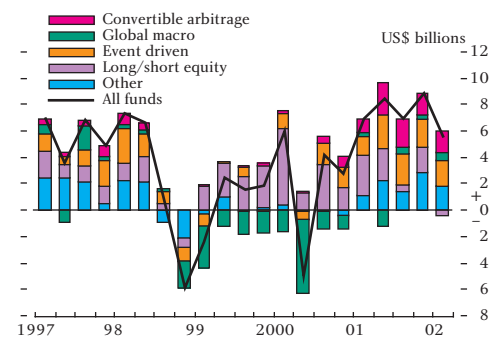
foreign exchange forward and swap markets to raise US dollar funding: eg exchanging yen for US dollars spot and simultaneously agreeing to reverse the transaction at a forward date, sometimes at maturities over one year. More such transactions now use collateral support agreements, with Japanese government bonds typically given to cover any mark-to-market exposure. Counterparties could, nevertheless, be exposed to potential 'wrong way' risk if the Japanese banking system were to experience further distress at the same time as a large depreciation of the yen and/or rise in JGB yields triggered by any increased worries about Japan generally. Although low probability events, such 'wrong way' risks need to be encompassed in banks' scenario analysis and stress testing.

#### *Hedge funds, funds of funds and principal guarantees*

Financing hedge funds is also a business line where counterparty credit risk and market risk interact. Flows into hedge funds remained strong in 2002 Q1 (Chart 124), despite declining from record levels in 2001 Q4. The rapid growth since mid-2000 may have led to decreasing returns on some strategies; for example convertible bond arbitrage (see the June 2001 *Review*, Box 5, page 73). Market contacts, however, believe that generally funds have not been seeking significantly more leverage in order to maintain returns. Leverage is said to remain well below the levels of 1998. There are, nevertheless, some suggestions of attempts to 'trade' higher leverage in return for greater transparency about positions and risk management; and that a somewhat wider group of hedge funds is being excused initial margin requirements, while being covered by 'variation margin' procedures. Many intermediaries will also now take into account historical covariances across a fund's whole trading activities rather than setting margin levels independently for each product. This is likely to mean lower margin requirements overall.

Funds of funds are now thought to account for around 20% of the US\$500 billion of assets managed by hedge funds, and are predicted by some industry commentators to grow strongly. Market contacts suggest that an increasing number of fund-of-funds products are backed by a principal guarantee from a bank or insurance company, especially in the European market. Principal guarantees of investment products are commonplace but the return on the product has typically been linked to an equity index so that a guarantor can hedge its position in a relatively liquid derivatives market. No such market is available to hedge the return on a fund of hedge funds. Rather, guarantors are said to manage the risk in a number of ways. First, most are thought to set requirements for the fund to be invested in a minimum number of hedge funds following different strategies and styles in order to diversify the overall return. Second, they may seek to lay off risk with other banks or insurance companies. Third, the fund may pay an initial fee, which is invested by the guarantor in zero coupon bonds sufficient to meet some or all of

**Chart 124:**  
**Quarterly flows into hedge funds**



Source: TASS Research.

the guarantee at maturity – although this reduces the expected return on the fund. Alternatively, the guarantor may engage in dynamic strategies, which seem typically to involve selling investments in the fund of funds and switching to risk-free assets, either progressively as the fund's value falls, or in stages as limits – perhaps related to the path followed by a zero coupon bond – are reached.

A question is whether such dynamic 'hedging' – in fact, a stop loss measure – could destabilise markets if, faced with redemptions by guarantors, a large number of funds of funds sought to realise investments in hedge funds at the same time, obliging the hedge funds in turn to liquidate positions just when they were already performing poorly. Like other risk management strategies that rely on sufficient market liquidity to accommodate further selling when prices fall, it is difficult for guarantors (and fund managers) to take fully into account the implications of other firms holding similar positions ('crowded trades'). Potentially this could be another example of individually sensible behaviour leading to an undesirable collective outcome, so that stress tests should take account of market liquidity issues. But contacts believe that the risk is currently mitigated by the diversity of hedge fund strategies, notice periods for hedge fund redemptions, relatively long periods before the guarantees can be called, and the still modest size of this market.

#### *Structured transactions*

Prompted by the Enron episode, attention has recently focused on structured transactions, which typically involve one or more special purpose vehicles (SPVs). From the perspective of financial intermediaries, SPVs seem to fall into three main categories: for own financing or proprietary transactions; managed 'conduits' through which many customers are financed; and for a specific customer's financing or other transactions. Arrangers might have little continuing involvement with some SPVs, particularly those in the third group, unless something goes wrong. Clarity about who is responsible for an SPV – between intermediary and client, and within firms – is important, as is identifying and managing any contingent credit exposures to 'third party' vehicles and financing conduits. Some firms have, therefore, undertaken exercises to monitor more systematically the many SPVs which they have established or to which they have counterparty exposures. As with a number of post-Enron lessons, this is welcome.

## VII UK corporate and personal sectors

Sections I to VI have described developments in the international environment. The implications for the UK's financial system arise directly through the global links discussed earlier, but also through effects on the UK's external balance sheet and via the UK corporate and household sectors. This section turns to these more domestic issues.

### The macroeconomic environment and the UK's external balance sheet

On the latest ONS data, GDP was estimated to be flat in both 2001 Q4 and 2002 Q1, and year-on-year growth halved from 2% to 1% over these six months. But survey evidence and Consensus forecasts point to a renewed pick-up in growth this year, and the modal projection published in the Bank's May 2002 *Inflation Report* envisaged that growth would recover to above-trend rates over the next twelve months.

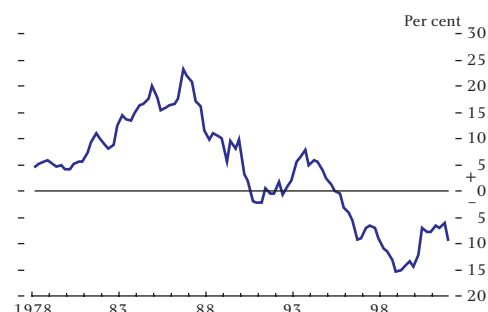
Consumer demand and (to a lesser extent) services output have remained resilient, while net external demand and manufacturing output have continued to be weak. Particularly important for the assessment of financial stability is the stock – or external balance sheet – position. Net external liabilities have risen again recently, to more than 9% of GDP in 2001 Q4 (Chart 125), although there is a large margin of error around short-term changes in these estimates. Around one-third of this rise was accounted for by net flows and the remainder by valuation changes.

The current account deficit is the counterpart to the net balance of the domestic sectors. The financial deficit of the non-bank private sector fell in 2001 Q4, largely accounted for by a reduced deficit of private non-financial companies (PNFCs), so the increase in the external deficit largely reflected the move of the public sector from surplus to deficit (Chart 126).

### The corporate sector

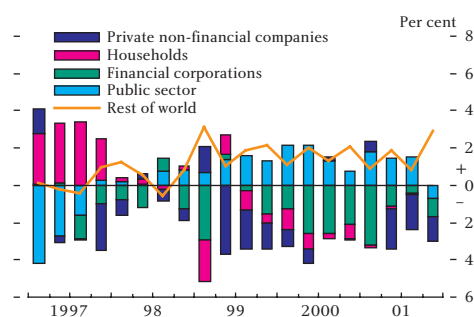
Although it fell back somewhat in 2001 H2, the continuing financial deficit of the corporate sector has been accompanied by a rising debt-to-income ratio (Chart 127), reflecting, in the recent past, mainly reduced profitability. Borrowing from UK-resident banks has slowed since the beginning of 2001, with the annual growth rate falling below 5% in April. Bond finance has, however, been more resilient recently: gross issuance has risen significantly since autumn 2001 and in the three months to May 2002 was almost twice the level of the corresponding period a year earlier. This is consistent with reports that – as elsewhere (see Sections II and VI) – some companies are switching from bank to bond finance in order to lengthen debt maturities and lock in to low long-term nominal interest rates.

**Chart 125:**  
UK net external assets as a percentage of GDP



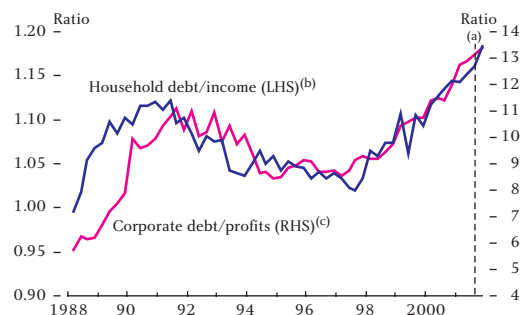
Source: ONS.

**Chart 126:**  
Sectoral financial balances as a percentage of GDP



Source: ONS.

**Chart 127:**  
Corporate debt-to-profits and household debt-to-income ratios



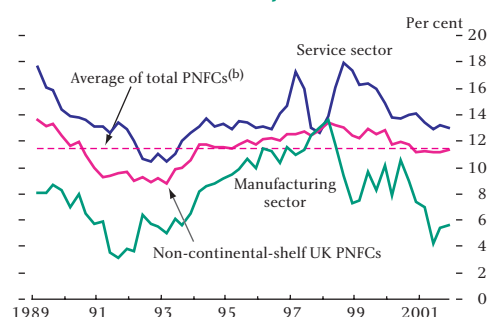
Source: ONS.

(a) Dec. 2001 *Review*.

(b) Gross disposable income, quarterly data.

(c) Gross operating surplus, quarterly data.

**Chart 128:**  
**Net rate of return on capital<sup>(a)</sup>**

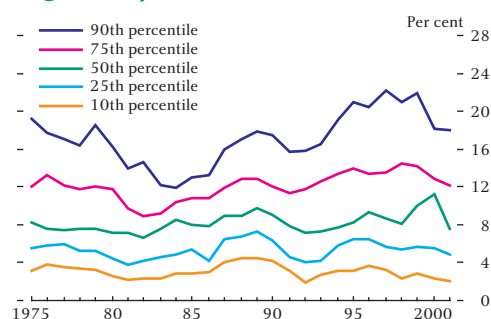


Source: ONS.

(a) Net operating surplus/net capital employed.

(b) Average 1989 Q1 – 2001 Q4.

**Chart 129:**  
**Distribution of weighted operating profit margins of quoted PNFCs<sup>(a)(b)</sup>**

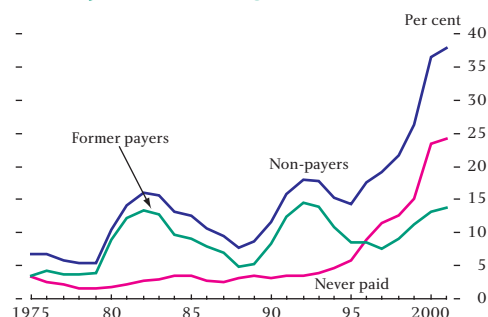


Sources: Thomson Financial Datastream and Bank calculations.

(a) Earnings before interest and taxes divided by turnover, sales weighted.

(b) 2001 data are based on 1,202 accounts.

**Chart 130:**  
**UK companies omitting a dividend<sup>(a)(b)</sup>**



Sources: Thomson Financial Datastream and Bank calculations.

(a) 2001 data are based on 1,202 accounts.

(b) As a percentage of companies' accounts reported.

## Profitability

The slowing economy was associated with a further reduction in corporate sector profitability in 2001 H2, as measured by gross operating surplus in relation to GDP. The net rate of return on capital was unchanged overall, but it fell somewhat in the service sector, while recovering a little from an historically depressed level in manufacturing (Chart 128). Company accounts data<sup>39</sup> suggest a further substantial fall in the profitability of the least profitable companies in 2001, concentrated among smaller companies. These (unweighted) data also show that some 30% of UK quoted companies (again, mainly the smaller ones) made losses in 2001, compared with 28% in 2000 and only around 15% in the early 1990s. Even when weighted by sales, operating profit margins still fell at all points of the distribution (Chart 129).

## Corporate sector adjustment and balance sheet ratios

There are signs that the falls in profitability and increased gearing of recent years have induced adjustments on the part of some companies, designed to strengthen balance sheets<sup>40</sup>. Dividend payments, capital expenditure, inventories and M&A activity (including foreign direct investment) all declined significantly in 2001 Q4, helping to reduce the PNFC financial deficit to 1.3% of GDP from 1.9% of GDP in Q3 (Chart 126). Company accounts reveal that the proportion of companies not paying a dividend in 2001 rose to an historical high of 38% (Chart 130). Although most of these companies have never paid a dividend, the proportion (14%) that have previously paid a dividend – possibly a more significant indicator of balance sheet adjustment – was close to the peaks in the early 1980s and 1990s.

Notwithstanding these adjustments, PNFCs' capital gearing increased further in 2001 H2. Indebtedness relative to the capital stock measured at replacement cost is at a 30-year high, while gearing relative to capital measured at current market valuations has reached the levels of the early 1990s, although it fell back slightly in Q4 (Chart 131).

Other indicators, however, paint a stronger picture. Liquidity has risen a little on most measures (Chart 132). Income gearing remains modest and, reflecting official interest rate reductions, fell during 2001 Q4 (Chart 131). Evidence from company accounts data suggests that the income gearing of the quartile of profitable companies with the highest income gearing remains well below the levels during the recessions of the early 1980s and early 1990s, although it rose somewhat in 2001 (Chart 133).

39: Data for 2001 are based on a sample of some 1,202 quoted companies that have thus far reported results for the year to end-2001.

40: See the Box on page 90 of the December *Review* for an account of the ways in which companies may adjust their balance sheets in the face of adverse developments.

### Defaults and insolvency risk

Any build-up of pressure on individual companies is not evident in corporate sector defaults. If anything, given the slowdown in GDP growth and debt increases over recent years, the aggregate rate of corporate liquidations has remained surprisingly low over the past two years – perhaps reflecting low income gearing<sup>41</sup>. But administrations rose significantly towards the end of last year, which may herald some increase in corporate liquidations later this year. This is also suggested by the April 2002 Euler Trade Indemnity survey, which indicated that bad debts rose in 2002 Q1, with policyholder claims climbing to an eight-year high. According to industry contacts, there has been some continued tightening in trade credit insurance terms and conditions, reflecting concerns over rising credit risk and increased premium rates charged by reinsurers after 11 September (see Section VI). Data from Dun and Bradstreet showed a rise of 9.5% in total business failures (including unincorporated businesses) in Q1, although the rate of company insolvency recorded in the DTI statistics (covering only incorporated companies) remained unchanged.

Company accounts data show that just under 6% of the most heavily geared UK companies also recorded low profitability and low liquidity in 2001, slightly higher than in 2000 but around half the percentage in 1999<sup>42</sup>. These disaggregated statistics suggest that there is a small subset of companies that face rather higher risks of failure than may be apparent from the aggregate indicators.

### Sectoral developments

The more vulnerable companies tend to be concentrated in particular sectors of the economy. The manufacturing sector has been under substantial pressure given the slowdown in the world economy and sterling's earlier strength against the euro. Signs of adjustment have been especially marked in this sector; indeed, manufacturing companies have made net repayments to UK-resident banks in each of the past six quarters.

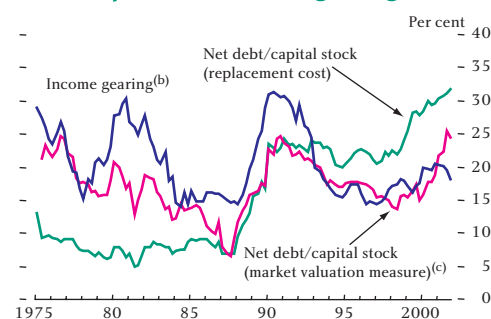
TMT companies have also exhibited continuing weakness, reflected in a particularly sharp fall in output in the electrical/optical and information, communication and technology (ICT) sectors (19% in the year to April 2002). The more established UK telecoms operators have sought to restructure their balance sheets, but the resulting cutbacks in capital expenditure have put further pressure on smaller telecoms firms, such as Marconi, Colt Telecom and Telewest.

41: See the article by Gertjan Vlieghe, 'Corporate Liquidations in the UK', in the June 2001 *Financial Stability Review*; and the Box on page 71 of the December 2000 *Review*.

42: For the purposes of this comparison, the most heavily geared companies are defined as those in the top quintile of companies ranked by capital gearing at replacement cost; and the least profitable and least liquid firms are defined as those in the bottom quintiles of firms ranked by operating profit margin and cash ratio respectively.

**Chart 131:**

### PNFCs' capital and income gearing<sup>(a)</sup>



Sources: ONS and Bank of England.

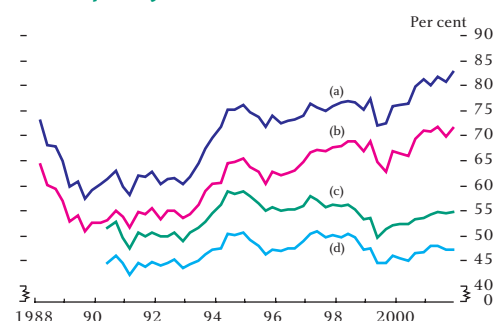
(a) Data are seasonally adjusted.

(b) Interest payments divided by pre-tax profits.

(c) PNFCs' net debt divided by the sum of the net debt and market value of equity.

**Chart 132:**

### PNFC liquidity



Sources: ONS and Bank calculations.

(a) Defined as all currency deposits, money market instruments (MMIs) and bond assets held, divided by all currency short-term bank and building society borrowing and MMIs issued.

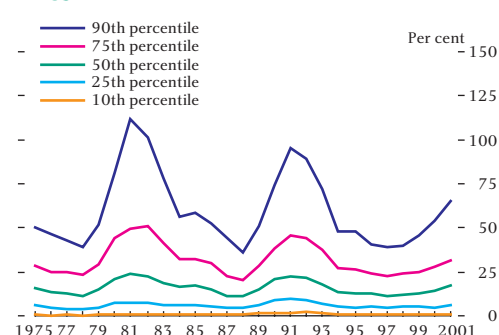
(b) As (a) excluding holdings of MMIs and bonds.

(c) As (a) including bond liabilities.

(d) As (b) including bond liabilities.

**Chart 133:**

### Distribution of income gearing of quoted PNFCs<sup>(a)(b)</sup>

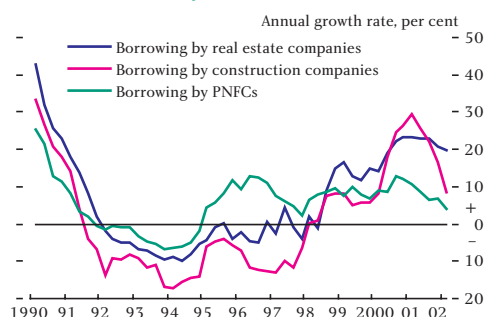


Sources: Thomson Financial Datastream and Bank calculations.

(a) 2001 data are based on 1,202 accounts.

(b) Income gearing calculated for profit-making firms only.

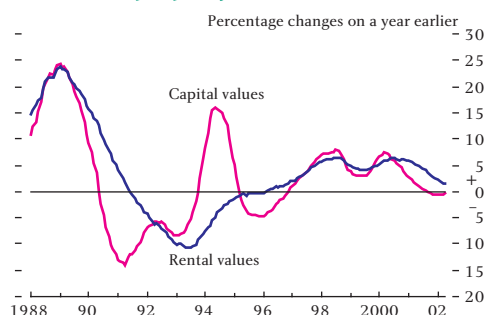
**Chart 134:**  
**Bank borrowing by real estate companies, construction companies and PNFCs<sup>(a)</sup>**



Source: Bank of England.

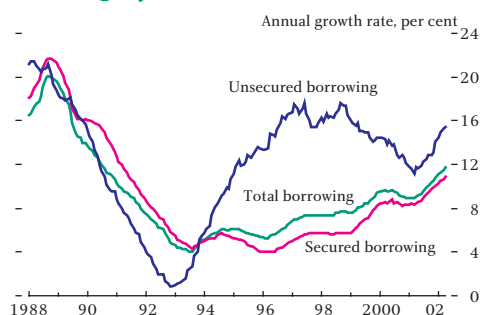
(a) Borrowing by PNFCs includes banks' holdings of securities, but borrowing by real estate and construction companies does not.

**Chart 135:**  
**Capital values and rental values in the commercial property market**



Source: Investment Property Databank.

**Chart 136:**  
**Borrowing by individuals<sup>(a)</sup>**



Source: Bank of England.

(a) Data are seasonally adjusted.

Bond spreads of telecoms firms have accordingly risen further since the December Review, and over half of rating downgrades in 2002 to date (some 18 in total) involved these companies.

### Commercial property

The other main source of risk in the corporate sector remains the commercial property market. Bank lending to real estate companies, most of which is for commercial property, grew at around 20% per annum or more in each of the seven quarters to 2002 Q1 (Chart 134), a period when growth of capital and rental values has been falling (Chart 135).

Discussions at the Bank's Property Forum<sup>43</sup> tentatively suggest that part of the increased bank borrowing may have been for refurbishment or conversion, rather than new development. Recent survey evidence suggests that lending is predominantly for investment property, rather than development, purposes<sup>44</sup>. Refinancing arrangements in support of sale and leaseback transactions, which transfer debt to property investment companies from other parts of the corporate sector, have also been common. A preference for debt rather than equity finance has been manifested in the number of leveraged public-to-private deals. This continues a longer-term trend – the number of quoted property companies has fallen from around 130 to just over 70 over the past decade. Those that remain generally trade at a significant discount to net asset value, so debt is often their only realistic source of capital. Taking into account lending by non-bank financial institutions and securitised debt, DTZ Research<sup>45</sup> estimates that total debt outstanding to the commercial property sector was £105 billion at the beginning of 2002, well above the peak of the early 1990s in both nominal and real terms. But there is little sign as yet of any material increase in property-related defaults by borrowers or losses for banks (see Section VIII).

### Pension obligations

In addition to coping with a period of weaker demand and output growth, many companies have also been affected by low asset returns – particularly on equity – given their defined benefit pension obligations to past and current employees. For companies whose market capitalisation has shrunk over the years, this can be a material issue, particularly if in the past they had a large workforce and thus guarantee the obligations to be met from a large pension fund. While much of the public debate has centred on FRS 17, Box 8 explores the nature of – and downside risks from – financial contracts represented by defined

43: For background on the Property Forum, see the Box on page 72 of the November 1999 Review.

44: Discussed in 'The UK Commercial Property Lending Market 2001: Research Findings', De Montfort University, May 2002.

45: DTZ Research, 'Bank lending to UK Property Companies, 2002 Q1'.

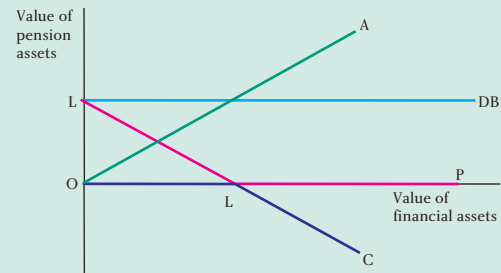
# Box 8: The risk in company-sponsored defined benefit pension schemes

Defined benefit (DB) pension schemes promise to pay members guaranteed pensions based typically on final salary and years of service. Such obligations are met out of pension funds invested in a range of assets, with the sponsoring company making up any shortfall in the fund. The risks to the sponsoring company include the possibility that pensioners will live longer than expected and that asset returns will prove inadequate. The main risk to the members is that, in those circumstances, the sponsoring company will also be unable to meet its obligations in full. The downside and upside risks to the corporate sponsor can be analysed in terms of long maturity options<sup>1</sup>.

Suppose that the present value of the scheme's liabilities is known for certain ( $L$ ) but that the financial assets are uncertain. The value of the liabilities is, then, independent of the scheme's assets and is illustrated in Chart A by the horizontal blue line. The value of the assets is shown by the upward sloping green line ( $OA$ ). If the value of the fund turns out to be greater than  $L$ , the employer keeps the excess value in the same way as if it had purchased a call option from the employees at strike price  $L$ . If the value of the fund turns out to be less than  $L$ , the employer is obliged to make up the difference as if it had written a put option purchased by the employee with strike price  $L$ . Thus the DB pension can be seen as being made up of the underlying assets of the fund plus a put option written by the employer and a call option written by the employee.

One way of broadly assessing the risks in DB pension schemes is to value these implicit options. By way of illustration, the standard Black-Scholes option pricing formula is used here to value the implicit put option in a set of stylised DB schemes of varying maturity and risk where the present values of the assets and liabilities of the fund are equal to £100 (Table A). The table demonstrates that the downside risk to a sponsor – and, hence, the cost of purchasing an option that would cover that risk – increases with the duration of the guaranteed return and with the volatility of the assets in the fund. By the same token, a sponsor's upside risk – the value of the implicit call option – increases with the same factors. The main point of the analysis is that DB schemes involve very long maturity optionality. The debate around FRS 17 is about how to reflect the expected value of pension schemes in company accounts, but not about the upside and downside risks on which this Box focuses.

**Chart A:**  
**The option composition of a defined benefit scheme<sup>(a)</sup>**



Source: Blake, D. (1998).

(a) The figure shows how the guaranteed return on a DB pension scheme (LDB) could be replicated by holding the underlying assets of the scheme (OA), plus a put option at strike price  $L$  (LLP), less a call option written at the same strike price (OLC).

**Table A:**  
**Value of the put option for different portfolios and maturities<sup>(a)(b)</sup>**

Proportion in equity (Per cent)	Time to maturity (years)							
	1	2	5	10	15	20	25	30
100	8.0	11.3	17.7	24.8	30.2	34.5	38.3	41.6
75	6.0	8.4	13.3	18.6	22.6	25.9	28.7	31.2
50	4.0	5.6	8.9	12.4	15.1	17.3	19.2	20.8
25	2.0	2.8	4.4	6.2	7.5	8.6	9.6	10.4
5	0.4	0.6	0.9	1.2	1.5	1.7	1.9	2.1

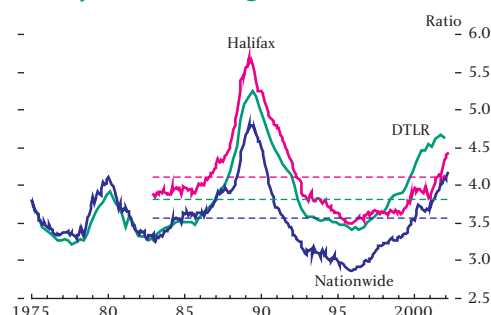
Source: Bank calculations.

(a) For these calculations; Black-Scholes pricing equations have been used (see Hull, JC (2000) "Options, Futures & Other Derivatives", Prentice-Hall Inc.).

(b) The gilt yield curve is used to obtain the risk-free rates for each maturity and a volatility of 20% is assumed for equity (this is the historical volatility of UK one-year equity returns over the past 100 years).

1: See Blake, D. (1998) 'Pension Schemes as Options on Pension Fund Assets: Implications for Pension Fund Management' *Insurance: Mathematics and Economics* 23, pp 263-86.

**Chart 137:**  
**House price-to-earnings ratio<sup>(a)(b)</sup>**

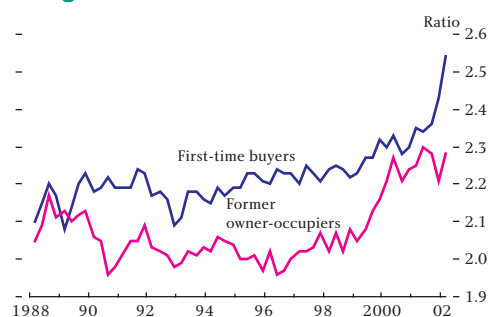


Sources: Nationwide, DTLR, Halifax, ONS and Bank calculations.

(a) House prices divided by ONS whole economy earnings, seasonally adjusted.

(b) Dashed lines indicate the respective averages from the start of each series.

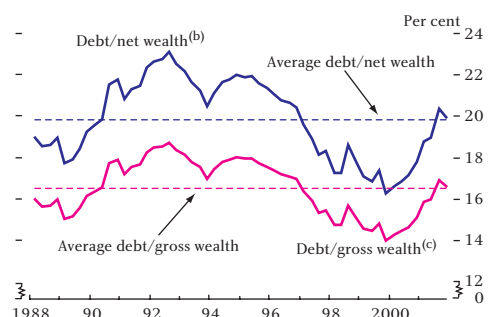
**Chart 138:**  
**Average advance-to-income ratio<sup>(a)</sup>**



Source: Council of Mortgage Lenders.

(a) Data prior to 1992 are for building societies; thereafter they include all lenders.

**Chart 139:**  
**Household sector capital gearing<sup>(a)</sup>**



Sources: ONS and Bank of England.

(a) Averages 1988 Q1 – 2001 Q4.

(b) Total liabilities as a percentage of the sum of net financial assets and housing wealth.

(c) Total liabilities as a percentage of the sum of total financial assets and housing wealth.

benefit pension commitments. The risk in banks' corporate sector loan portfolios may be affected if those companies already under financial pressure were, following unexpectedly adverse asset price returns and extended pensioner longevity, to face large deficits on their pension schemes. In a sample of 57 FTSE-100 companies that have so far produced data on net liabilities under FRS 17 assumptions, a majority of firms had pension fund deficits at their most recent reporting date. But for two-thirds of them the deficit was less than 10% of pension fund assets and less than 2% of market capitalisation. As discussed in Section II, there have been similar developments in the USA.

## The household sector

Notwithstanding unusually rapid income growth last year (just over 5%), the household debt-to-income ratio was at a record level (1.183) at end-December (Chart 127). Since then, borrowing has continued to accelerate, reaching an annual growth rate of 12% in April, the fastest for over 11 years (Chart 136). Robust mortgage borrowing has been associated with the strength of real disposable incomes, intense competition between lenders, low official interest rates, and a rapid increase of house prices. Both the Halifax and Nationwide measures of house prices rose by around 18% in the year to May. House price-earnings ratios have risen rapidly over the past five years on all three of the main measures, and are now well above their historical averages, if still in varying degrees below their 1989 peaks (Chart 137). Loan-to-income ratios for first-time buyers (but not former owner-occupiers) have increased substantially over the past two years, and are now at an historically high level (Chart 138). The distribution shows a significant rise in the proportion of both first-time buyers and former owner-occupiers with high income multiples (above three): from 23.0% and 24.4% respectively in 2001 Q1 to 33.3% and 29.2% in 2002 Q1. Average loan-to-value ratios, by contrast, have risen only slightly recently, following falls between 1995 and 2001 (see Section VIII).

Remortgaging activity has increased as borrowers have taken advantage of discounts and lower fixed rates available from lenders. This has facilitated mortgage equity withdrawal, which reached 4% of personal income in 2001 Q4, compared with a peak of 8.5% in 1988 Q3. Buy-to-let market borrowing has also grown robustly, although it still represents only a very small proportion of the total mortgage market – around 2.5% in 2001 H2 according to the Council of Mortgage Lenders.

Unsecured borrowing rose by around 15% in the year to April (Chart 136), and now accounts for just under 20% of total household debt, compared with around 16% in 1990. The recent renewed acceleration of unsecured borrowing may have been driven partly by competitive conditions – credit card rates have fallen relative to the repo rate since December, and more UK

lenders have expanded into the so-called 'near-prime' sector (see Section VIII).

#### Balance sheet robustness

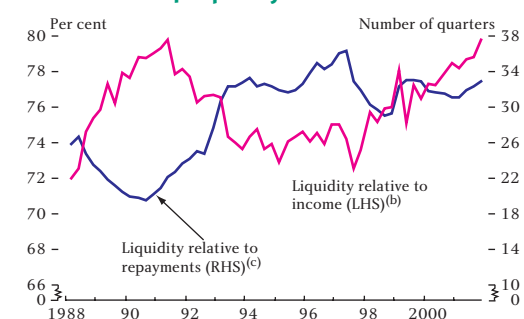
At an aggregate level, household debt is not, however, historically high relative to wealth (Chart 139), in part due to the rise in house prices. Income gearing ratios have fallen further since the *December Review*, and remain well below the peaks of the early 1990s (Chart A in Box 9). This reflects the combination of low nominal interest rates and buoyant household incomes. As discussed in Box 9, however, interpreting these data is not straightforward.

Modest income gearing ratios suggest that the household sector is not under immediate pressure. Given the macroeconomic conditions envisaged in the *May Inflation Report*, this is most likely to continue to be the case. But risks have increased since the *December Review*. With higher debt outstanding, households are now potentially more vulnerable to two types of risk: sharp falls in real incomes associated with any material deterioration in labour market conditions; or an unexpectedly large rise in interest rates. Adjustment to these risks, should they crystallise, could be made more difficult if they were accompanied by sharp falls in wealth, reflecting any marked correction in either or both house or equity prices (see above and Section VI respectively).

Any necessary adjustment would be eased if households have built up a cushion of savings, particularly of liquid assets. Holdings of liquid assets have, in fact, risen in recent years relative to disposable income and are well above the levels of the early 1990s relative to regular debt-servicing commitments<sup>46</sup> (Chart 140). Household bank deposits have for a while been rising rapidly: nearly 8½% in the year to April 2002, partly reflecting equity market uncertainty and weak unit trust sales.

Overall, the household sector was in rough financial balance in 2001 H2. There is an interesting contrast with 1989/90, when the household sector as a whole returned to financial balance after a period of net deficit. Whereas in the early 1990s households cut spending and the elimination of the deficit was associated with a reduction in borrowing growth, the current position is characterised by households still borrowing heavily but, in aggregate, accumulating financial assets (Chart 141). Aggregate data cannot reveal whether the heavily borrowing households are the same as those acquiring liquid assets – for example for precautionary motives, or because of equity market uncertainty, as discussed above. This underlines the importance of disaggregated analysis, given that the risks associated with the

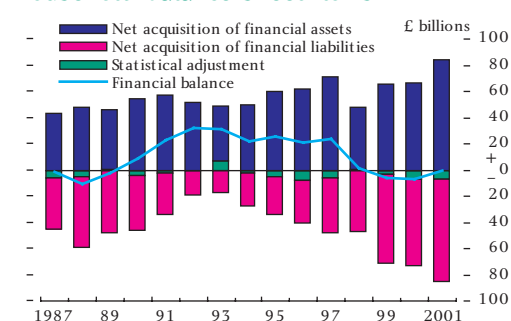
**Chart 140:**  
**Household M4 liquidity measures<sup>(a)</sup>**



Source: ONS and Bank of England.

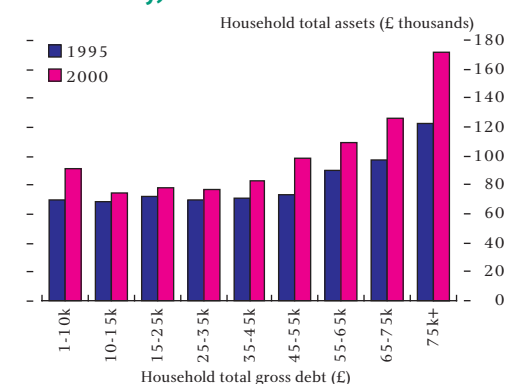
- (a) Liquid assets are defined as household M4 holdings.
- (b) Liquid assets divided by household disposable income.
- (c) Liquid assets divided by quarterly interest payments and regular mortgage principal repayments.

**Chart 141:**  
**Household balance sheet flows**



Sources: ONS and Bank.

**Chart 142:**  
**Average total assets at different levels of household indebtedness (mortgage holders only)**



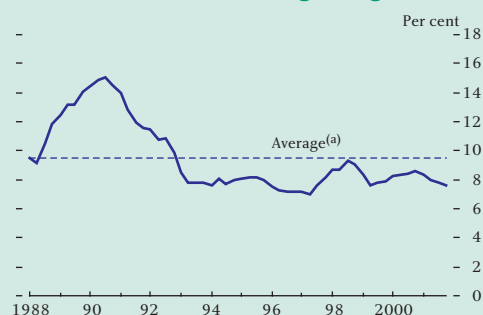
Sources: BHPS and Bank calculations.

<sup>46</sup> Regular commitments are defined here as debt interest payments plus regular mortgage principal repayments (excluding regular payments into endowment mortgage policies, which are allocated to savings in the national accounts).

## Box 9: Measures of household sector income gearing

**Chart A:**

### Household sector income gearing<sup>(a)</sup>



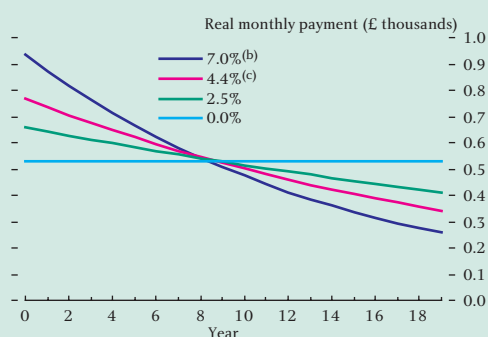
Source: ONS.

(a) Income gearing is total household interest payments as a percentage of total household disposable income.

(b) Average 1988 Q1 – 2001 Q4.

**Chart B:**

### Real value of monthly mortgage payments under different assumptions about inflation<sup>(a)</sup>



Sources: ONS and Bank calculations.

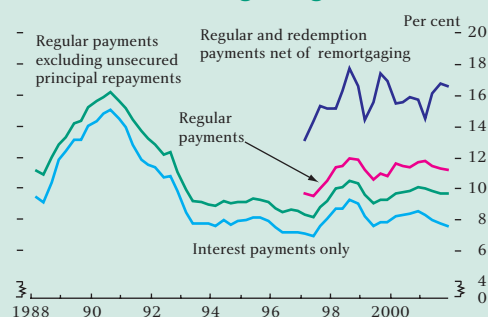
(a) Repayments of a £100,000 loan at a 2.5% real mortgage rate over 20 years.

(b) Average inflation rate 1980 – 89.

(c) Average inflation rate 1990 – 97 Q1.

**Chart C:**

### Measures of income gearing



Sources: ONS, NOP Financial Research Survey and Bank calculations.

The standard measure of household sector income gearing (Chart A) has two main limitations. First, it does not capture the sensitivity of the time profile of the *real* debt-servicing burden to different inflation regimes. Chart B illustrates the difference in the annual profile of *real* mortgage repayments for a hypothetical mortgage, at a given real interest rate, under different assumptions about inflation. Under the current low inflation environment, the initial burden of servicing a mortgage is lower than during past periods of high inflation. But, other things being equal, it will not fall away to the same extent. That might encourage more loan demand, while creating uncertainty about any longer-term risks.

Second, the standard measure of income gearing excludes repayments of principal. Adjustments might be made for three kinds of mortgage principal repayment: regular repayments on capital repayment mortgages<sup>1</sup>; redemption repayments; and lump-sum repayments. Data are available on regular principal repayments on building society mortgages back to 1987. The corresponding series for bank mortgages is available from only 1997 Q4, but can be extended back by making crude assumptions about the proportion of principal repayments in total secured loans extended by banks. The Financial Research Survey can be used to calculate regular principal repayments on unsecured debt<sup>2</sup>, albeit only from 1997. These adjustments raise income gearing by up to four percentage points, although the profile over time appears little changed (the red line in Chart C).

There is less justification for including lump-sum and redemption principal repayments. The former are typically made voluntarily by households with sufficient resources to pay down mortgages early. The latter are typically made on expiry of a mortgage, but will also include voluntary terminations of mortgages that form part of remortgaging activity. But other redemption repayments – for example shortfalls on endowment mortgages – represent an obligation on households and arguably could be included in a measure of income gearing. It is possible to derive an adjusted series for mortgage redemption repayments by deducting the proportion attributable to remortgaging the same property, using data (from 1993 only) available from the Council of Mortgage Lenders. When added to the adjusted measure of income gearing, the resulting series (the dark blue line in Chart C) shows no particular trend since 1997, but was more than twice the level of the standard measure in 2001 Q4.

1: Regular contributions to endowment policies should also be included, but these are treated as saving in the national accounts.

2: This excludes credit card principal repayments, which are difficult to identify.

rapid growth of debt may be lower if it is concentrated among higher-wealth or higher-income households.

#### Disaggregated data

Evidence from the latest (2000) British Household Panel Survey (BHPS)<sup>47</sup> suggests that debt may, in fact, be concentrated among such households. For mortgage holders, the most indebted surveyed households (by gross liabilities) had the highest levels of gross assets in 2000 (Chart 142). The role of housing is very significant in interpreting these data. Although the most indebted households also had the highest levels of net assets in 2000, they had the highest levels of net financial liabilities as well (Chart 143). At the level of house prices prevailing in 2000, positive net housing equity more than offset total debt for most households.

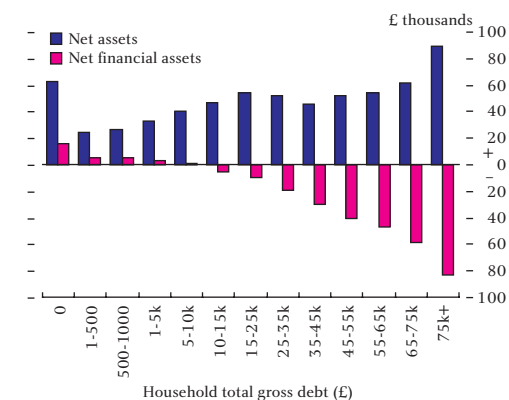
A second, suggestive, BHPS finding is that debt-income ratios were highest and, from 1995 to 2000, grew most rapidly among the lowest-income (and youngest) of mortgage-holding households (Table 6). These households also accumulated unsecured debt most rapidly. Furthermore, unsecured debt rose substantially in relation to incomes for nearly all household income groups (Table 7). On the face of it, the proportionately greater build-up of debt by the lowest-income and youngest age groups might increase risks to the household sector, given that BHPS data also indicate that these households are more vulnerable to financial shocks and spells of unemployment.

#### Arrears and defaults

With capital and income gearing close to or below post-1988 average levels, there is little sign of any imminent risk of a significant increase in defaults by the household sector. Mortgage arrears have continued to fall and personal bankruptcies remain stable, reflecting low unemployment, low official interest rates and buoyant incomes. Judging from past patterns, any financing pressures would be likely to show up initially in the unsecured debt and especially credit card markets. Credit card arrears and write-offs have been rising since 1995 (Chart 158, Section VIII), possibly owing something to increased credit card penetration among lower-income households. But there is little sign in the recent past of any substantial pick up in the rate of increase of credit card defaults.

**Chart 143:**

**Average net assets at different levels of household indebtedness in 2000**



Sources: BHPS and Bank calculations.

**Table 6:**

**Household debt as a percentage of household income, for mortgage holders only**

	1995	2000	Percentage change
<b>Household income (£)</b>			
Up to 11,499	334.5	426.5	27.5
11,500 – 17,499	208.8	200.0	-4.2
17,500 – 24,999	156.2	182.3	16.7
25,000 – 34,999	132.6	145.5	9.7
35,000 – 49,999	119.8	128.4	7.2
50,000 +	105.3	106.5	1.1
<b>Age of household head</b>			
16 – 20	170.0	239.1	40.6
21 – 24	190.2	181.8	-4.4
25 – 34	171.5	171.5	0.0
35 – 44	143.1	151.6	5.9
45 – 54	110.7	102.5	-7.4
55 – 64	85.7	92.6	8.1
65 +	83.3	102.3	22.8

Sources: BHPS and Bank calculations.

**Table 7:**

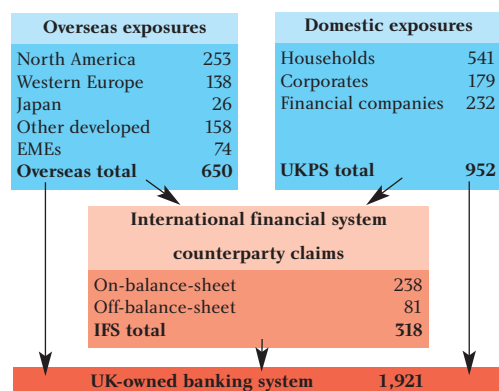
**Household unsecured debt as a percentage of household income**

	1995	2000	Percentage change
<b>Household income (£)</b>			
Up to 11,499	4.8	9.6	100.0
11,500 – 17,499	6.9	7.7	11.6
17,500 – 24,999	7.7	10.7	39.0
25,000 – 34,999	7.5	10.6	41.3
35,000 – 49,999	6.5	10.5	61.5
50,000 +	5.0	7.5	50.0
<b>Age of household head</b>			
16 – 20	9.8	33.7	243.9
21 – 24	12.9	20.8	61.2
25 – 34	8.7	13.8	58.6
35 – 44	7.3	11.1	52.1
45 – 54	6.4	8.1	26.6
55 – 64	4.3	5.7	32.6
65 +	1.3	2.0	53.8

Sources: BHPS and Bank calculations.

47: The BHPS is an annual survey of households in Britain, conducted since 1991. The sample design is based on a nationally representative sample of adult members in around 5,500 households in 1991. The original sample members are re-surveyed each year.

**Chart 144:**  
**UK-owned banks' exposures at**  
**end-December 2001<sup>(a)(b)</sup>**

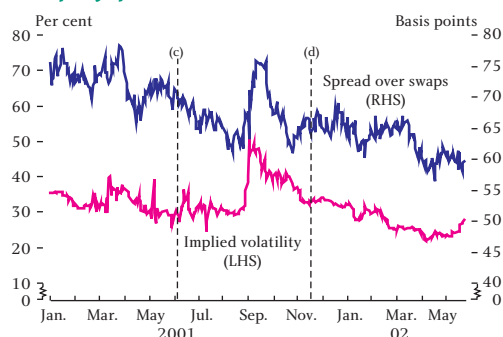


Sources: Bank of England and FSA regulatory returns.

(a) Exposures as a percentage of Tier 1 capital.

(b) Overseas exposures have been risk-transfer adjusted, see p47 Dec. 2001 *Review* for definition.

**Chart 145:**  
**UK commercial banks' bond spreads over**  
**swaps<sup>(a)</sup> and implied volatility of options**  
**on equity prices<sup>(b)</sup>**



Source: Bloomberg.

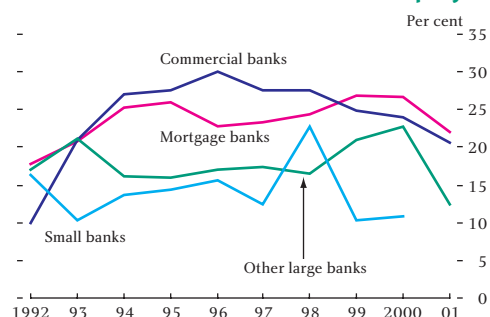
(a) Spreads of 10 year subordinated bonds over swap rates.

(b) The bank population is Barclays, HSBC, Lloyds TSB and Royal Bank of Scotland. Weighted by total assets.

(c) Jun. 2001 *Review*.

(d) Dec. 2001 *Review*.

**Chart 146:**  
**UK-owned banks' mean return on equity<sup>(a)</sup>**



Sources: Bureau van Dijk Bankscope and published accounts.

(a) Pre-tax profits expressed as a percentage of the book value of equity.

## VIII The UK banking system

Since the December *Review*, the environment in which UK financial institutions are operating has changed in a number of ways. Fears of a sharp economic downturn have abated, although risks remain from global imbalances and continued rapid debt accumulation in the domestic household sector. The international banking system has proved resilient, but some possible risk management lessons have been highlighted. Following the structure of the diagram in the Introduction, Chart 144<sup>48</sup> shows the exposure of UK-owned banks to the areas analysed in Sections I to VII. This Section examines those exposures and the banking system's robustness.

### Capital and profitability

Market indicators (Chart 145) suggest the deterioration in the economic environment during last year had no material impact on the perceived risk attached to the major UK banks<sup>49</sup>, reflecting, at least in part, their continued strong financial performance. Results for 2001, published in February and March, showed that their gross income increased by 12% on the previous year, despite continued competitive pressure on margins, notably in the mortgage market. Costs rose by 11%, in part due to business restructuring, and there was a sharp rise (over 60%) in bad debt provisions, though from a low level. As a result, pre-tax profits fell slightly, as did return on equity (Chart 146), but the profitability of the large UK commercial and mortgage banks<sup>50</sup> remained favourable against both historical and international benchmarks.

Similarly, notwithstanding lower retained earnings, the major banks' Tier 1 capital ratios<sup>51</sup> stabilised in 2001, following a slight decline over recent years reflecting deduction of goodwill associated with acquisitions (Chart 147). This stabilisation is welcome, as only high-quality capital (equity and reserves) can absorb losses and so contribute to the robustness of the banking system. In recent years, there have been two material developments in the *composition* of overall capital. First, the major

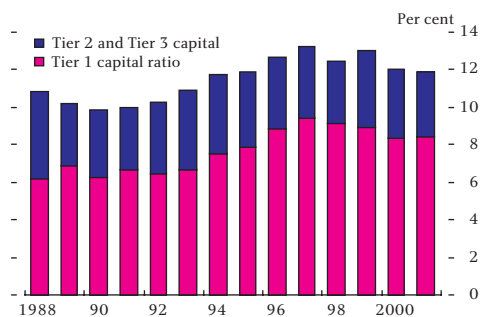
48: Chart 144 and, where stated, other charts in this section incorporate data from regulatory returns collected by the Bank of England as agent for the Financial Services Authority (FSA). The data are aggregated by the Bank and the FSA bears no responsibility for the accuracy of the results. Time series data derived on this basis are not break-adjusted and reporting dates may differ between individual banks. For further details on the use of regulatory data for financial stability analysis see the article by Gracie and Logan in this *Review*.

49: Except where stated 'major UK banks' refers to Abbey National, Alliance & Leicester, Barclays, Bradford & Bingley, HBOS, HSBC (Midland/HSBC Bank to 1993 and subsequently HSBC Holdings), Lloyds TSB, Northern Rock and Royal Bank of Scotland.

50: For the Bank's approach to peer group analysis, see Box 6 on pp.84-5 of the December 2000 *Review*. The peer groups are now as follows. *Mortgage banks*: Abbey National, Alliance & Leicester, Bradford & Bingley, HBOS and Northern Rock. *Commercial banks*: Barclays, Co-operative Bank, HSBC Holdings, Lloyds TSB, Royal Bank of Scotland and Standard Chartered. *Other large UK-owned*: 3i, Close Brothers, Lazard's, NM Rothschild, Schroder & Co, and Singer & Friedlander. *Small UK-owned banks*: all other UK-owned institutions. *Foreign-owned peer groups* are based on parent-group nationality. The peer groups are composed dynamically, ie they change over time as banks enter and exit the UK banking sector, or change ownership.

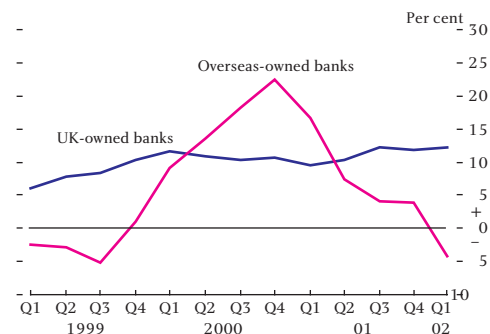
51: Tier 1 capital is share capital, reserves and minority interests minus goodwill.

**Chart 147:**  
**Major UK banks' capitalisation**



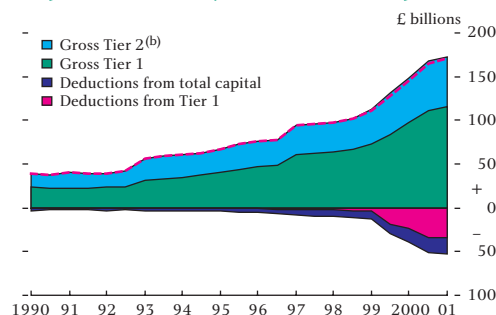
Sources: Published accounts, BBA and Bureau Van Dijk Bankscope.

**Chart 150:**  
**Annual growth in UK-resident banks' lending to the UK private sector**



Source: Bank of England.

**Chart 148:**  
**Components of major UK banks' capital<sup>(a)</sup>**

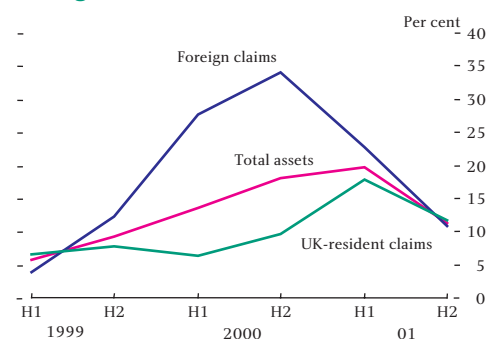


Source: FSA regulatory returns.

(a) Excluding Northern Rock.

(b) Dotted line shows Tier 2 net of deductions for excess general provisions and subordinated debt.

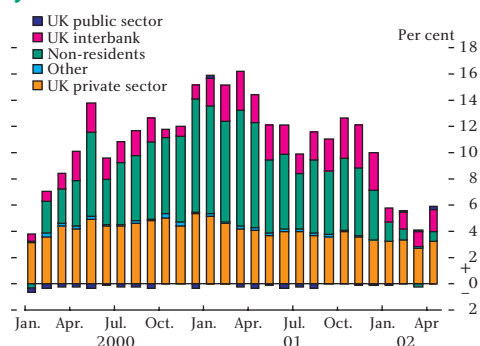
**Chart 151:**  
**Major UK banks' annual consolidated asset growth<sup>(a)</sup>**



Sources: FSA regulatory returns and Bank of England.

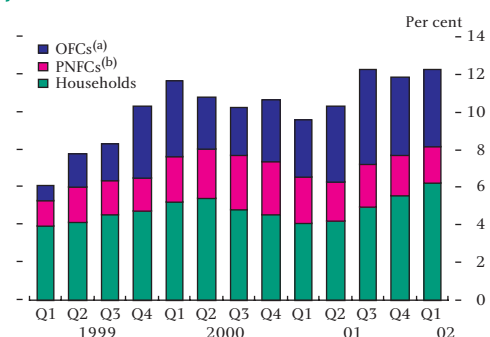
(a) Includes Standard Chartered and the Co-operative Bank.

**Chart 149:**  
**Contributions to annual growth in lending by UK-resident banks**



Source: Bank of England.

**Chart 152:**  
**Contributions to annual growth in UK-owned banks' lending to the UK private sector**

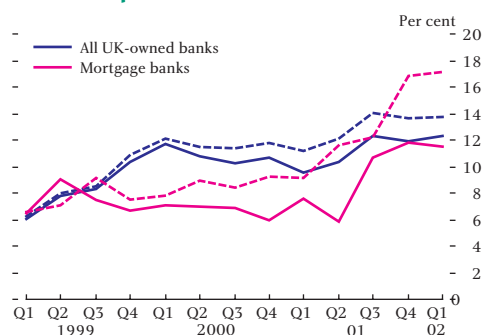


Source: Bank of England.

(a) Other financial companies.

(b) Private non-financial companies.

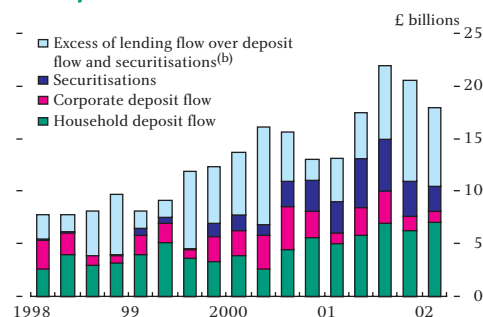
**Chart 153:**  
Annual growth in UK-owned banks' lending to the UK private sector<sup>(a)</sup>



Source: Bank of England.

(a) Dotted lines show growth rates with securitisations added back in.

**Chart 154:**  
UK funding of UK-owned banks' lending to UK corporates and households<sup>(a)</sup>

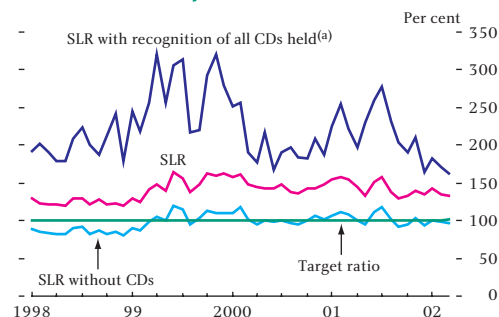


Source: Bank of England.

(a) Two-quarter moving averages of monthly flows.

(b) Lending includes securitised assets.

**Chart 155:**  
Sterling stock liquidity ratio with/without certificates of deposit



Source: FSA regulatory returns.

(a) CDs subject to the 15% regulatory discount.

UK banks have issued Tier 2 capital, largely subordinated debt which now amounts to around 38% of Tier 1<sup>52</sup>. Second, reflecting the development of bancassurance operations, there have been increased deductions from *total* capital of investments in insurance subsidiaries<sup>53</sup> (Chart 148). Both developments need to be taken into account in assessing the quality of capital ratios.

## Asset growth, funding and liquidity management

Since the end of last year, the UK-resident banking system's asset growth has slowed sharply (Chart 149), reflecting reduced lending by the UK branches and subsidiaries of *foreign-owned* banks, both in the wholesale market and to the UK private sector (Chart 150). To some extent this is due to the sectoral pattern of lending, given that foreign banks' business is concentrated in the corporate and financial sectors, where demand for credit has weakened substantially.

Growth in *UK-owned*<sup>54</sup> bank groups' consolidated assets also slowed in 2001 H2, with weaker wholesale market activity and interbank lending contributing to slower growth in both domestic and especially foreign claims (Chart 151). In contrast to foreign-owned banks, UK-owned banks' lending to the UK private sector continued to grow rapidly in 2001, and this has continued into this year, driven by lending to households (Chart 152). The associated asset growth would have been stronger still – about 14% in the year to 2002 Q1 – but for securitisations, primarily of mortgages (Chart 153).

Funding has continued to benefit from the strength of household deposits (Section VII), especially into instant access savings accounts. Nevertheless, retail lending has grown more, and UK-owned banks have therefore made greater use of wholesale funding to support growth in their retail loan portfolios (Chart 154).

The growth of household deposits since last autumn contributed to an increase in the stock of high-quality liquid assets that the major UK banks are required to hold to back their short-term sterling liabilities<sup>55</sup> – a ratio that the Bank follows closely as part of its money market and payment system surveillance. The stock-liquidity ratio (SLR), including allowable certificates of deposit (CDs), has remained a comfortable margin above the

52: The Basel regulatory limit is 50%.

53: Investments in insurance and other subsidiaries that cannot be consolidated line by line are deducted from total capital. Any increase in the value of a subsidiary – for example embedded value in an insurance company – will be included in Tier 1 and increase allowable Tier 2 capital.

54: The distinction between UK-owned and UK-resident banks, its significance for UK financial stability analysis, and the sources and limitations of available data are discussed in the article by Gracie and Logan in this *Review*.

55: The Sterling Stock Liquidity Regime requires some retail banks to hold high-quality liquid assets – generally those available for discount with the Bank of England – at least equivalent to their net wholesale outflow over five days (minus CDs discounted at 15%, up to a maximum 50% of the net wholesale outflow) plus 5% of their gross retail liabilities.

required level. Excluding CDs, stock liquidity is still around 100% of the requirement (Chart 155). This is welcome: holdings of CDs could aid liquidity management in the face of idiosyncratic liquidity strains at a bank, but – as ‘inside’ rather than ‘outside’ assets – might not help to absorb strains in the banking system as a whole.

## Credit risk

Despite the weaker economic environment, any deterioration to date in *asset quality* appears to have been modest. Provisions and write-offs have remained relatively low as a percentage of loans outstanding, while provisions cover (of non-performing loans) appears comfortable (Chart 156). Although losses were affected by specific events, such as the collapse of Enron and developments in Argentina, Bank contacts suggest that loan portfolios have if anything generally performed better over the past year than lenders had expected. It is perhaps not surprising that loan loss experience in the retail sector has not deteriorated substantially to date given both the reductions in nominal interest rates over the past year and the relatively low level of unemployment.

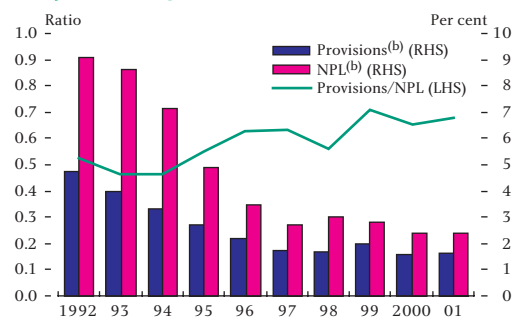
### Domestic exposures

The continued growth of *retail lending* primarily reflects the renewed strength of mortgage lending, although unsecured lending (including on credit cards) has also accelerated (Chart 157) and now accounts for a historically high share of the banks’ retail exposures (nearly 20%). The mortgage banks’ unsecured lending has grown particularly rapidly as they continue to diversify.

The ability of the household sector to service its rapidly rising debt – over 90% of which is held by UK-owned banks, equivalent to over five times their Tier 1 capital (Chart 144) – is discussed in Section VII. From the banks’ perspective, there has been little evidence of significant strain to date. Although provisions against retail exposures increased in absolute terms in 2001, this seems to have been primarily due to strong growth in the outstanding stock of loans rather than an increased rate of delinquencies. Published data suggest mortgage arrears are close to historic lows and, although increased penetration of credit cards has been associated with some increase in write-offs in recent years (Chart 158), the overall performance of retail portfolios has remained good.

This position could, of course, change if economic conditions were to deteriorate substantially. In the mortgage market, first time buyer loan-to-income multiples have continued to rise (Chart 138, Section VII) and any increase in defaults would be more likely to be reflected in loan losses if the current level of house prices proved unsustainable – especially given the increased tendency over the last decade for lenders to self-insure potential losses (Box 10). The fall in recent years in the

**Chart 156:**  
Major UK banks’ ratio of provisions to non-performing loans<sup>(a)</sup>

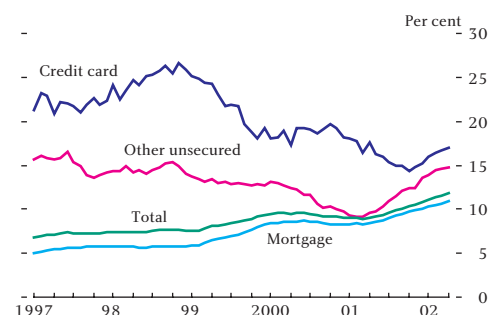


Sources: Bureau van Dijk Bankscope and published accounts.

(a) Including Standard Chartered and excluding Bradford and Bingley, Northern Rock, Alliance and Leicester and, for 1992, Abbey National. Midland/HSBC Bank to 1995, subsequently HSBC Holdings.

(b) Provisions and NPLs as a percentage of customer loans.

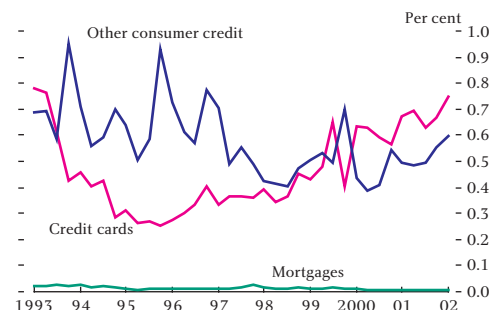
**Chart 157:**  
Annual growth of total borrowing by individuals<sup>(a)</sup>



Source: Bank of England.

(a) Lending by banks, building societies, retailers, other specialist lenders, and other lenders.

**Chart 158:**  
UK banking sector write-offs and other revaluations on loans to individuals<sup>(a)</sup>



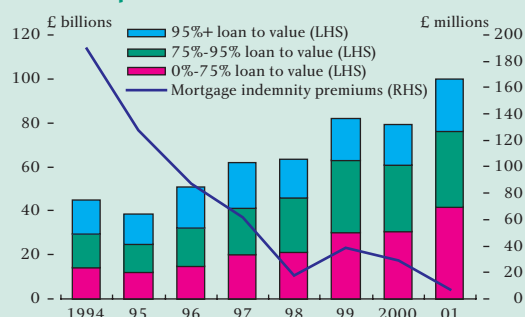
Source: Bank of England.

(a) Quarterly default rate as a percentage of balances.

## Box 10: Mortgage insurance

In evaluating the potential vulnerability of the bank and building society sector to losses on mortgage (and other) lending, analysis in this and previous *Reviews* focuses on, first, the ability of borrowers to service debt – and thus the likelihood of defaults – and, second, lenders' management of inherent credit risk on their loan portfolios, including in the case of mortgage lending the use of loan-to-value ratios to mitigate potential losses in the event of default. In practice, the risks are not confined to lenders. The existence of *mortgage payment protection insurance* (MPPI), for example, limits lenders' exposure to losses by reducing the likelihood of borrower default, effectively transferring risk to the insurance sector (to the extent that policies sold are not supplied by lenders' own insurance arms). Recent survey evidence suggests that about 23% of borrowers at the end of 2001 had taken out MPPI, including 36% of those taking out new loans in the second half of 2001<sup>1</sup>. Similarly, lenders have typically insured at least some part of the losses that they do incur on their mortgage portfolios, traditionally through *mortgage indemnity guarantee* (MIG) insurance.

**Chart A:**  
**Mortgage indemnity premiums<sup>(a)</sup> and loans for house purchase<sup>(b)</sup>**



Sources: CML and ABI.

(a) Premiums paid to UK-resident insurance companies. 2001 data are provisional.

(b) Gross advances for house purchase.

Until the housing market recession of the early 1990s the major lenders<sup>2</sup> typically used MIG policies to insure against losses on their higher LTV (75% plus) mortgage lending<sup>3</sup>. Historically claims had been extremely low, but sharply higher unemployment and an unprecedented fall in nominal house prices left insurers exposed to losses on such policies which industry estimates have put at £3–4 billion. The response of insurers was to increase premiums substantially (by perhaps 50%–75%, in some cases effectively withdrawing from the market), whilst policy terms were changed to introduce caps on losses, co-insurance clauses and tighter conditions on lending criteria. The use of MIG policies by lenders has declined sharply as a result (Chart A), the major mortgage lenders increasingly choosing to self-insure against potential losses, typically by using their own 'captive' insurance companies.

Some form of reinsurance, such as an excess of loss policy, is still frequently used by lenders to insure against losses over a fixed limit ('catastrophe losses'). But although lack of data makes the extent of remaining risk transfer difficult to gauge, it seems likely that it is substantially lower than at the time of the early 1990s housing market recession. Lenders are therefore more directly exposed, although contacts suggest that the low level of losses on mortgage portfolios in recent years (during which time reserves have built up in 'captives') has left the industry well positioned to absorb any deterioration in loan performance.

1: Council of Mortgage Lenders (CML)/Association of British Insurers (ABI) Press Release, April 2002. Estimates suggest that take-up has increased modestly over recent years, following restrictions on available state support (Income Support for Mortgage Interest) in 1995 and initiatives by lenders and insurers to implement minimum standards for MPPI products.

2: Then mostly building societies.

3: Claims against MIG were generated when the sale of a possessed property (and other security) generated a shortfall calculated as loss of principal and unpaid interest following sale, less the loss which would have been made if the loan had been at 'normal' LTV plus costs incurred on sale. Although high LTV borrowers would typically be charged a fee, this was not directly linked to the MIG premium paid by the lender to the insurer (and many lenders have abandoned such fees in recent years regardless of their insurance arrangements). For details on the structure of traditional MIG products, see Douetil, DJ, (1994) 'The interrelationship between the Mortgage and Insurance Industries in the United Kingdom' *Housing Policy Debate*, Volume 5, Issue 3.

proportion of new loans accounted for by high loan-to-value (LTV) advances offers lenders protection, although there has apparently been some recent increase in the share of loans accounted for by advances in excess of 100% LTV (Chart 159).

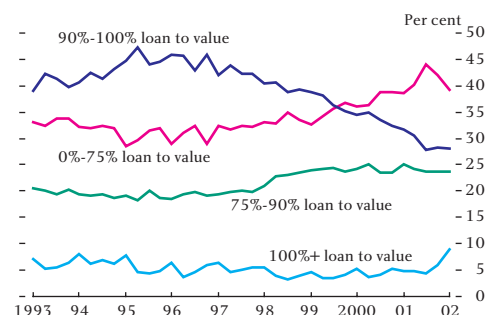
Risk management of unsecured portfolios may, in principle, have been aided by increased use of risk-based pricing. The extension of banks' lending into lower quality (so-called 'near-prime') sectors of the market need not in itself be a source of concern, provided appropriate weight is given to both increased risk and, given scarcity of data, greater uncertainty in estimating potential losses.

As discussed in Section VII, growth in banks' lending to UK-resident *non-financial companies* – exposures to which account for over 175% of UK-owned banks' Tier 1 capital (Chart 144) – continued to slacken in the first few months of this year. In part, this has reflected some deceleration in UK-owned banks' lending, from growth of nearly 15% in 2000 Q4 to 10% in 2002 Q1. Lending by overseas banks in London to non-financial companies has, however, slowed particularly sharply (Chart 160); their loans outstanding in 2002 Q1 were about 3% lower than a year earlier. This might conceivably reflect a general retrenchment, since foreign banks' lending has been weak relative to UK-owned banks across the corporate sector (Chart 161). It may also have been influenced by weak demand in the wholesale market for corporate loans, in contrast to a more active domestic mid-corporate market, where the UK-owned banks are relatively strong.

The pattern of domestic corporate sector lending seems to reflect the economic imbalances described in the May (and earlier) *Inflation Reports*. Thus, loan exposures to manufacturing companies have continued to shrink, whilst lending to some parts of the services sector – eg transportation, and hotels and restaurants – has been growing strongly (Chart 161). Lending to the UK *commercial property sector* has similarly remained robust, with growth accounted for mainly by those UK-owned lenders with the largest property portfolios (Chart 162), thus contributing to an increasing concentration in exposures<sup>56</sup>. In contrast, lending by German banks' UK offices, previously active in this sector, has slowed since the first half of 2001, perhaps in part due to conditions in domestic German banking markets.

Although survey evidence<sup>57</sup> suggests that lenders' commercial property portfolios are currently performing well, with problem loans running at low levels, the growth in property companies' debt increases their exposure to any adverse change in the

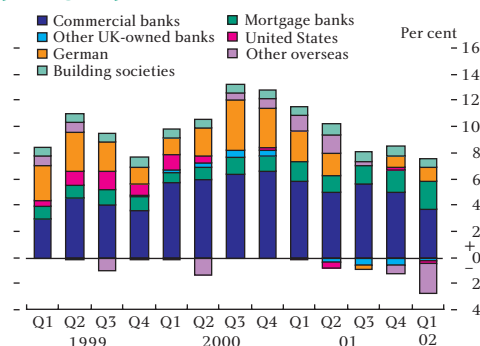
**Chart 159:**  
Percentage of total mortgage lending<sup>(a)</sup> by LTV band



Source: CML.

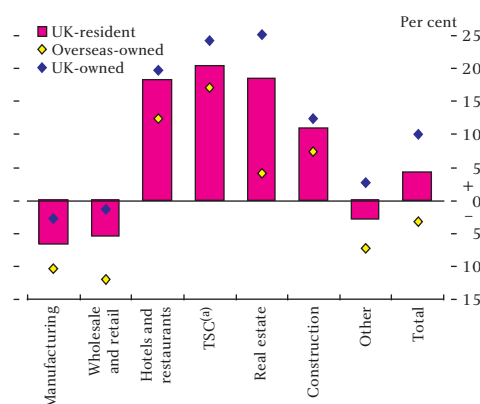
(a) Gross advances for house purchase.

**Chart 160:**  
Contributions to annual growth of bank and building society PNFC assets, by peer group



Source: Bank of England.

**Chart 161:**  
Annual growth in UK-resident banks' lending to UK-resident industries at 2002 Q1



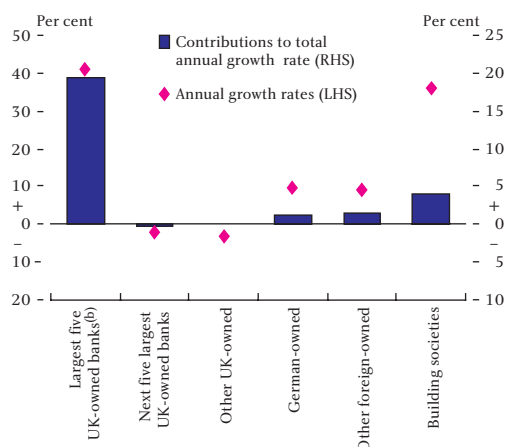
Source: Bank of England.

(a) Transport, storage and communications. This includes telecom service providers.

56: The five largest lenders accounted for about 55% of bank and building society commercial property loans as at end-2001, compared with about 40% at end-1997, though much of this increase is due to mergers and acquisitions in the banking sector.

57: 'The UK Commercial Property Lending Market 2001: Research Findings', De Montfort University, May 2002.

**Chart 162:**  
**Lending to the commercial property sector at end 2001<sup>(a)</sup>**

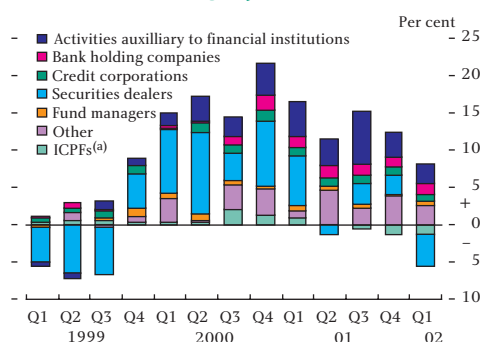


Sources: Bank of England and FSA regulatory returns.

(a) For building societies, lending to companies and unincorporated businesses secured on land.

(b) Five largest by property loans outstanding.

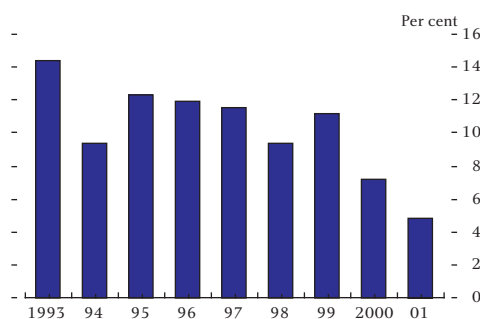
**Chart 163:**  
**Contributions to growth of UK-resident banks' OFC lending by sub-sector**



Source: Bank of England.

(a) Insurance companies and pension funds.

**Chart 164:**  
**Free-asset ratio for UK life insurers<sup>(a)(b)</sup>**



Sources: Standard & Poor's and Bank calculations.

(a) A sample of UK-resident life insurers, representing 70% of the industry's total assets in 2000.

(b) For the sample, the ratio of total net assets admitted for regulatory purposes (after deductions of reserves for liabilities and the required margin of solvency) to total gross admissible assets.

economic environment. But as discussed in Section VII, outside the residential sector, lending for new developments seems to remain limited and buildings are generally said to be pre-let.

Growth in UK-resident bank lending to *financial* companies also slowed substantially in the year to 2002 Q1. Although this was primarily due to reduced lending to securities dealers (Chart 163), reflecting a general reduction in wholesale market activity (see below), lending to insurance companies and pension funds also fell by 19% over the period, due to a decline in lending by overseas banks. Pressures on the insurance sector remain. For non-life insurers, these stem from the reduction in capital caused by potential losses arising from 11 September, and the need to improve underwriting results in the light of falling investment returns. Due to the high proportion of their assets invested in equities, life insurance companies – and therefore, in degree, bancassurance groups – are adversely affected by falling equity markets, as discussed in the *December Review*. One measure of life insurance companies' financial strength – the free-asset ratio – has been falling for several years (to 4.8% in 2001 – Chart 164). They remain vulnerable to further equity market falls and market conditions could conceivably be exacerbated if they were forced sellers. But the *direct* potential exposure of the banking system as a whole from *credit* risk is limited given that lending to insurance companies and pension funds accounts for only just over 2% of exposures to financial and non-financial companies. (The insurance sector is actually a net depositor with the banking system.)

Overall, in spite of the deterioration in the global economic environment, the quality of the major UK banks' corporate portfolios appears to have remained satisfactory. Some worsening in loan performance has been evident, with a slight increase in non-performing loans and provisions as a proportion of loan balances in 2001. Bankers report that a further rise in bad debts may crystallise before the position improves, and some sectors, notably telecoms, remain a particular source of concern, as discussed in Sections I and VI. On the whole, however, problems to date seem to have been concentrated on a relatively small number of large companies, with little indication of a more widespread deterioration affecting mid-corporate and small business lending.

As a result, the major UK banks do not appear to have initiated any *generalised* tightening in lending criteria on their corporate loans: indeed contacts report continuing competitive pressures in the mid-corporate market to narrow lending spreads. There seems, however, to have been a selective tightening in terms and conditions on lending to some companies in specific sectors such as telecoms, manufacturing, and also insurance, where some banks are reported to be looking to reduce exposures.

## Overseas exposures

Overseas exposures account for about 40% of the consolidated on-balance-sheet claims of UK-owned banks, or around 650% of their Tier 1 capital (Chart 144). Growth in foreign claims slowed during 2001, primarily due to slower growth in cross-border lending<sup>58</sup> (Chart 165) and, in particular, a decline in lending to banks overseas. Growth in credit exposures through local offices has remained strong, however, increasing by 15% in the year to 2001 Q4. In part this is due to acquisitions of banks in the US, where over 40% of the stock of UK-owned banks' local currency claims are now situated. But it also reflects a longer-term structural shift towards local lending, which is especially apparent in UK banks' emerging market economy (EME) exposures (Chart 166). As discussed in Sections V and VI, this trend is not confined to UK banks: some of the implications for risk management are reviewed in Section V.

After allowing for risk transfers<sup>59</sup>, UK-owned banks' foreign claims rose by nearly 6% in US dollar terms in the six months to 2001 Q4, two-thirds of which was attributable to an increase in US exposures (Chart 167). The cross-border component of claims on the US declined (by 7.5%), however, largely because of a fall in the value of portfolio investments. Losses on security holdings in the US were reflected in the major UK banks' results, and provisions also increased against loans to the US private sector. In their 2001 reports and accounts, UK banks noted some deterioration in credit quality in the US, although the scale and spread of loan losses was so far limited. Exposures to the rest of Europe and Japan were discussed in Sections III and IV.

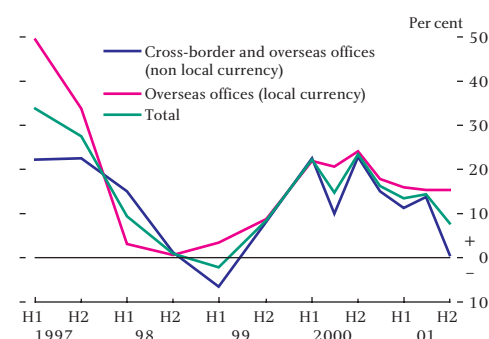
Whilst exposures to Hong Kong fell by about 7% during the second half of 2001, UK banks nevertheless increased provisions against lending there, primarily on retail business. This reflected higher volumes, a weak economic environment and changes to local bankruptcy laws.

UK-owned banks' claims on EMEs were little changed overall during 2001 (Chart 167) but exposures to Argentina and Brazil fell by 19% and 12% respectively over the second half of the year. UK banks' provisions against Argentine exposures rose substantially (by over £900 million), to cover identified losses on sovereign debt, the 'pesification' of dollar-denominated assets and liabilities, and substantially increased risks to the banks' local operations. With little evidence to date of contagion to other countries, the direct impact of events in Argentina is likely to remain limited, although the episode inevitably raises questions about whether banks with a local presence in EMEs

58: Cross-border claims include local claims in foreign currency. For details see Box 10, page 103 in the December 2001 *Review*.

59: Risk transfers are reported for claims on branches of banks whose head office is in another country or that are explicitly guaranteed by a resident of another country. They do not apply to any other credit risk mitigation techniques, eg credit derivatives.

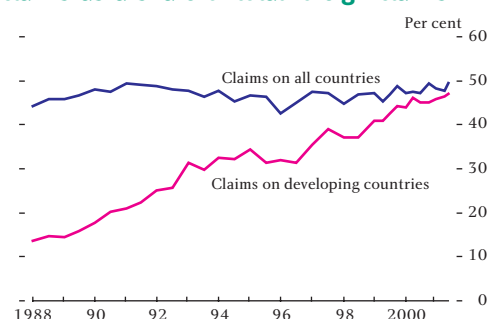
**Chart 165:**  
**Annual growth in UK-owned banks' foreign claims<sup>(a)</sup>**



Source: Bank of England.

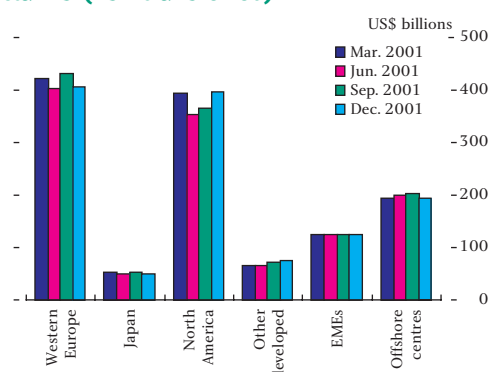
(a) In US dollar terms.

**Chart 166:**  
**UK-owned banks' local offices' local currency claims as a share of total foreign claims**



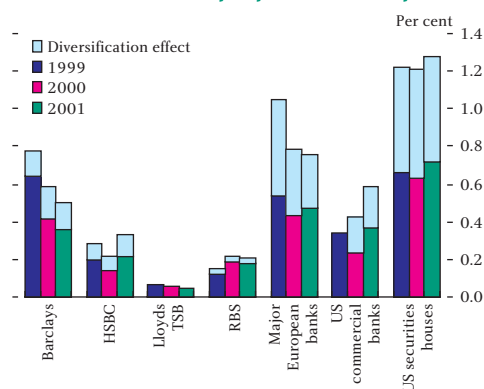
Source: Bank of England.

**Chart 167:**  
**UK-owned banks' total consolidated foreign claims (risk-transferred)**



Source: Bank of England.

**Chart 168:**  
**Value-at-Risk as a proportion of capital<sup>(a)(b)</sup>**

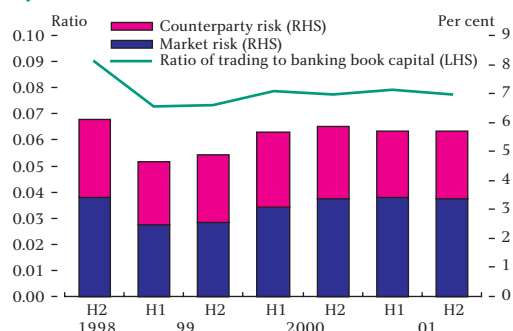


Source: Published accounts.

(a) Published VaRs adjusted for comparability purposes to a ten-day holding period and a 99% confidence interval. For composition of groups, see footnote 13. 'Capital' is total shareholder funds.

(b) The diversification effect represents the benefit of aggregation of VaR across risk classes. If the correlation coefficient between risk classes is less than one, total VaR is lower than their sum.

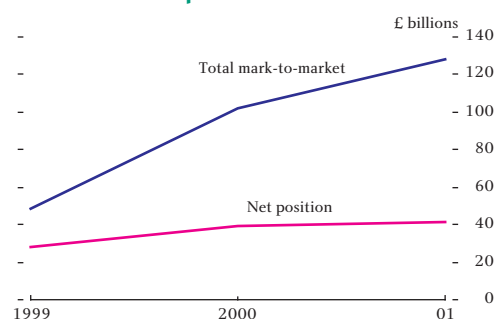
**Chart 169:**  
**Major UK banks' trading book capital requirements as a proportion of Tier 1 capital<sup>(a)</sup>**



Source: FSA regulatory returns.

(a) Includes Standard Chartered.

**Chart 170:**  
**Impact of risk mitigation techniques on OTC derivatives positions<sup>(a)</sup>**



Source: Published accounts.

(a) For Abbey National, Barclays, HSBC, Lloyds TSB, Royal Bank of Scotland and Standard Chartered.

can protect themselves effectively against actions by local sovereign authorities (Section V).

## Market and financial system counterparty risk

As measured by trading book Value-at-Risk, the UK banks are typically less exposed to market risk than other internationally active banks and securities firms in the US and Europe (Chart 168)<sup>60</sup>. As shown in Chart 144, however, they do have credit exposures to the international financial system amounting to over 300% of their Tier 1 capital at end-2001. These comprise exposures from off-balance-sheet 'over-the-counter' (OTC) derivative business as well as on-balance sheet loan exposures.

The notional value of OTC derivative exposures and resulting counterparty exposures of the major UK banks has increased since the *December Review*. These counterparty exposures account for a significant part of their trading book capital requirements, though overall capital requirements for the trading book remain small relative to the banking book (Chart 169).

In common with other participants in these markets (Section VI), UK banks are increasingly in a position to mitigate these kinds of exposures via close-out netting agreements and margin arrangements (Chart 170). The use of central counterparty arrangements has also grown; indeed the London Clearing House (LCH) has extended its central counterparty facilities to an increasing number of OTC products (Chart 175, Section IX). Whilst reducing bilateral derivatives-related exposures between banks and other dealers, the growth of LCH's activities has increased the importance to the system of its risk management architecture – in 2001 LCH cleared trades with a notional value of £105 trillion for its 157 members.

The scale of the major UK banks' OTC counterparty credit exposures, as reported in published accounts, is much smaller than their on-balance-sheet lending to wholesale market participants, largely other banks but also securities dealers (Chart 171). The latter's borrowing from the UK banking system has slowed over the past year, probably on account of reduced market activity and contraction in dealers' balance sheets. As in other sectors, the decline in lending has been driven by overseas banks, in this case particularly US lenders (Chart 172). In contrast, growth in UK-owned banks' lending to securities dealers has strengthened. Market anecdote suggests that exposures are typically on a secured basis and short-term, although post-Enron there has apparently been some increased demand for longer-term committed facilities.

60: In Chart 168, 'Major European banks' are Credit Suisse, Deutsche Bank, BNP Paribas and UBS. 'US securities houses' are Goldman Sachs, Merrill Lynch and Morgan Stanley. (Data on the diversification effect is not available for Morgan Stanley in 1999.) 'US commercial banks' are Bank of America, Citigroup and JP Morgan Chase (combined VaR for JP Morgan and Chase Manhattan is not available prior to 2000).

## Box 11: UK banks' interbank lending

Unsecured interbank lending via London's markets with UK and overseas banks amounts to around £1 trillion or about 25% of lending by UK-resident banks. Even if exposures between group entities were netted out, banks' consolidated interbank lending exposures are large.

In the *sterling* market, unsecured lending accounts for the majority of interbank lending (even more so with the inclusion of certificates of deposit) (Chart A). Reflecting the credit risk entailed, maturities are generally short (less than a month) and have been getting shorter in recent years. There has been some increase in secured lending and forthcoming UK infrastructure changes (eg the London Clearing House's clearing of gilt repo – see Section IX) are expected to further this. The use of repo is more widespread in the US but has been available for longer.

Sterling unsecured lending is, however, a relatively small element (about one third) within the total unsecured UK interbank market (Table A). *Foreign currency*-denominated business, notably dollar and euro, accounts for over two-thirds of total interbank unsecured lending, reflecting London's role as an international financial centre, with a variety of participants active within the market. Global consolidation in the banking sector has increased concentration within the interbank market over recent years but activity remains reasonably spread (Table A).

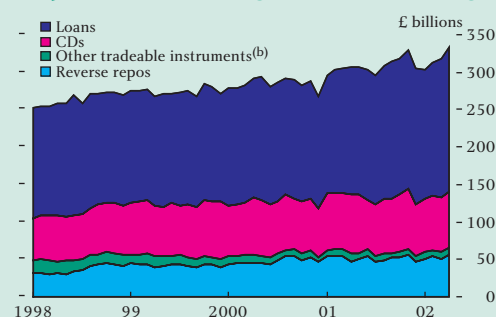
Overseas banks are an important part of the London interbank market: 22 of the top 30 interbank lenders are overseas banks (see also Box 5, Section III). And lending to banks abroad outweighs lending within the UK, particularly for foreign banks. A considerable amount of foreign banks' overseas lending is directed to their home-country banking sector (Chart B).

UK-owned banks dominate the sterling interbank lending market and many of the large UK retail banks use the interbank market to obtain wholesale funding to supplement their retail deposit base. (Chart 154 shows the growing disparity between retail lending and deposits.) The smaller UK-owned banks use unsecured interbank lending (and CDs – which form a sizeable part of their assets) to place surplus liquidity. Most are net lenders, though in aggregate these banks represent only a very small part of the market.

Unsecured interbank lending is relatively costly in terms of balance sheet consumption: off-balance-sheet instruments are increasingly used for taking and/or hedging interest rate risk; and many banks have been reducing unsecured interbank exposures. Interbank lending does, however, continue to represent a significant link between international institutions and is thus an important part of the Bank's financial stability surveillance.

Chart A:

Components of sterling interbank lending<sup>(a)</sup>



Source: Bank of England.

(a) Sterling lending by UK-resident banks to other UK-resident banks.

(b) Commercial paper and bank bills.

Table A :

Distribution of UK unsecured interbank lending at end-2001<sup>(a)</sup>

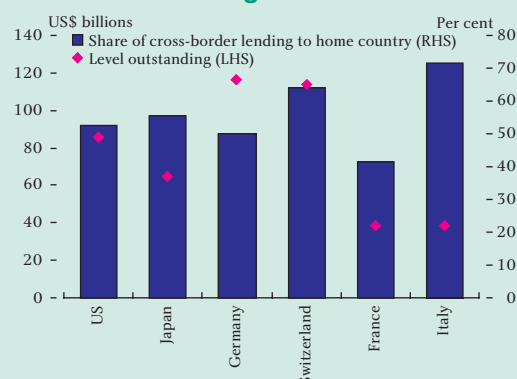
	Sterling	Foreign currency	Total
Total lending (£ billions)	281	688	968
of which (per cent)			
Top 10	57	43	43
Next 20	22	27	27
Next 350	21	30	30

Source: Bank of England.

(a) Unsecured interbank loans and advances from UK-resident banks to banks in the UK and overseas.

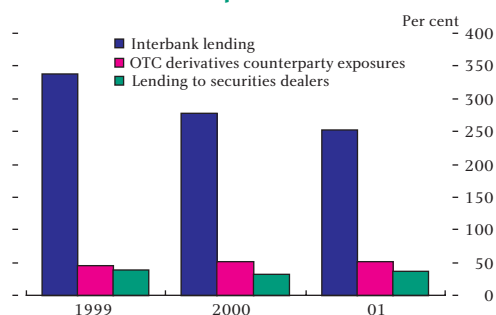
Chart B:

Percentage of cross-border interbank lending by foreign owned banks in the UK to their home banking sector



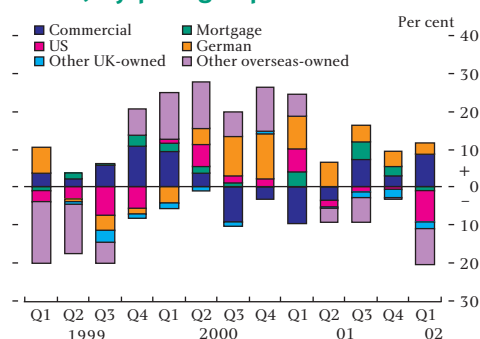
Source: Bank of England.

**Chart 171:**  
Major UK banks' interbank exposures  
relative to Tier 1 capital



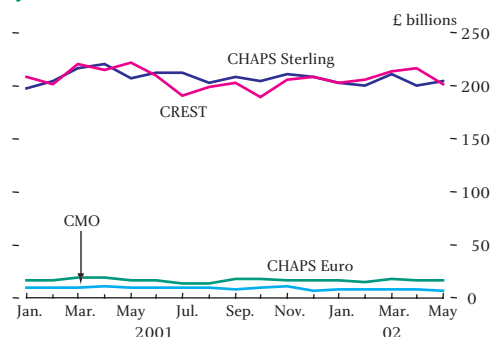
Source: Published accounts.

**Chart 172:**  
Contributions to annual growth of  
UK-resident banks' lending to securities  
dealers, by peer group



Source: Bank of England.

**Chart 173:**  
Daily average<sup>(a)</sup> payments through CHAPS  
Sterling, CHAPS Euro<sup>(b)</sup>, CREST and CMO  
by value



Sources: CREST and APACS.

(a) Daily average is taken over a period of a month.

(b) Domestic payments only.

Interbank business gives rise to much the largest financial system exposure run by the major UK banks, though exposures relative to capital have declined in recent years (Chart 171). This may partly reflect consolidation in the banking sector. Some banks have also sought to reduce exposures in order to use their balance sheets and capital more efficiently. To the extent that interbank exposures are unsecured, they represent one possible source of contagion if any major problems were to afflict the banking system. Banks can, however, choose to contain such exposures by lending for short maturities, or on a secured basis, for example through repo. (See Box 11 for a description of UK banks' interbank lending.)

Another source of credit exposure – often intraday – amongst banks and between banks and their customers arises from the payment services inherent in bank operations. The values transferred through the UK's main domestic payment systems are very large (Chart 173): daily traffic in the main sterling wholesale payment system, CHAPS, amounts to around 230% of the major UK banks' Tier 1 capital.

System design can eliminate exposures between system participants: for example, real-time gross settlement has removed exposures between settlement banks in both CHAPS and CREST, in contrast to the Central Moneymarkets Office (CMO), which still entails daylight credit exposures for settlement banks. But such benefits are limited to system members. Where direct participation in a system is not widespread, the integrity of the payments and credit system as a whole relies to a greater extent on effective risk management by settlement banks, since they need to measure, monitor and control their exposures to customers, including to those banks which are not settlement banks. The impact of this 'tiering' in the payment system (CHAPS Sterling, for example, has twelve direct members and 390 indirect members) is one aspect considered in the Bank's oversight of payments systems (Box 12).

Although these exposures normally occur intraday, problems within the system, as for example when CREST settlement was disrupted on 18 April by a software error, or in a customer's money management, can result in intraday exposures becoming large overnight exposures.

## Box 12: Oversight of payment systems

The Bank's oversight of payment systems – outlined in a paper published in November 2000<sup>1</sup> – is integral to its financial stability surveillance, alongside its monitoring of money and credit markets and of the banking system as a whole.

Since the November 2000 paper, work has concentrated on the UK high value payment system for sterling and euro, CHAPS, and on CREST, the Central Moneymarkets Office (CMO) and the London Clearing House, where the Bank has a specific oversight role in respect of their embedded payments mechanisms, in addition to its more general financial stability interests in these key parts of UK wholesale market infrastructure. In addition, the Bank has taken a close interest in BACS, the UK's most heavily used retail payment system. The Cheque and Credit Clearing and LINK have been addressed to a lesser extent, as the values they transfer are relatively small. Primary responsibility for managing risk lies with system operators, but the Bank aims to establish that operators have taken reasonable steps to ensure the robustness of their systems. The Bank also seeks to understand the structure and operation of card payment schemes but does not review in any detail the implementation of their risk management approaches.

The 'Core Principles'<sup>2</sup> established by the Basel Committee on Payment and Settlement Systems are used as a benchmark against which to assess the effectiveness of system architecture and risk management. Although aimed at systemically important payment systems, the principles – on governance, legal soundness, financial and settlement risk, security and operational reliability, access rules and efficiency – also provide a useful basis for analysing systems which may not pose a financial sector systemic risk but which are important to the economy.

Contact with UK systems is based on regular bilateral meetings at chief executive level, supported by *ad hoc* contact as necessary, and by discussions with member banks. Analysis is largely desk-based. The Bank does not seek to supplant the judgment of system

operators, or banks' management, and neither inspects nor shadows day-to-day operations as part of its oversight – though it does have a clear insight into the operational effectiveness of the main clearings through its roles as member and provider, as the banking system's bank, of final settlement facilities.

The Bank is also involved in the international co-operative oversight of the Continuous Linked Settlement project and of SWIFT; the Federal Reserve Bank of New York and the National Bank of Belgium, respectively, lead this work.

### CHAPS, CREST, CMO and BACS

The Bank believes that CHAPS meets, or very nearly meets, all the key standards in the 'Core Principles'. Legal, financial and operational risks are all addressed effectively. To the extent that issues have been identified, corrective action is planned.

Likewise, CREST meets, or very nearly meets, all the relevant equivalent standards for securities settlement systems. A major advance was the introduction, in November 2001, of real-time settlement between CREST settlement banks across accounts at the Bank of England, as discussed in the *December Review*. That eliminated the previous huge intraday exposures between the settlement banks.

In contrast, whilst CMO provides an efficient mechanism to transfer securities by book-entry, it lacks any form of delivery-versus-payment for users, and entails daylight credit exposures for settlement banks. Work is under way to eliminate these payment exposures via the integration of money market instruments into CREST. Completion of the required technical and legal changes is expected in 2003.

Overall, day-to-day operations in BACS are sound. The Bank has emphasised the need for additional work in relation to the clarity and completeness of BACS' risk management rules, and has endorsed the need for changes to improve its network technology. Key work programmes are in place to address these issues; the Bank is following them closely.

1: Reproduced in the December 2000 *Review*.

2: 'Core Principles for Systemically Important Payment Systems: Report of the Task Force on Payment System Principles and Practices', Bank for International Settlements, January 2001 ([www.bis.org](http://www.bis.org)).

## IX Developments in the financial infrastructure

This section looks at some key developments affecting the resilience of the financial system. Some other developments are listed in Box 13 at the end and are not discussed in detail here.

### International financial system: global markets and systems

#### *US corporate governance and disclosure practices*

Open and effective governance is an essential foundation for effective corporate and financial risk management. On 7 March 2002, in the wake of the Enron episode, the Bush administration proposed a ten-point plan to reform federal rules regulating US corporate governance and accounting<sup>61</sup>. The plan aims to promote the provision of timely and transparent information to investors, to make corporate officers more accountable, and to promote a more independent audit system. The rules would be enforced by the US Securities and Exchange Commission (SEC). A number of recommendations in the plan – including most of the corporate governance proposals – have already been incorporated in the Corporate and Auditing Accountability, Responsibility and Transparency Act, which passed the House of Representatives on 24 April 2002 and is currently before the Senate.

Both the National Association of Securities Dealers (NASD), on 5 June 2002, and the New York Stock Exchange (NYSE), on 6 June 2002, have proposed new rules to improve corporate governance and disclosure practices of companies listed on NASDAQ and NYSE respectively<sup>62</sup>. Both sets of proposals would require that company boards have a majority of independent directors and expand both the role of such directors and the authority of audit committees.

#### *Incentives for investment analysts*

A number of recent developments have prompted concern, underlined by the collapse of Enron, about the possibility of, and the lack of transparency about, conflicts of interest relating to investment research, when the analysts either work for firms that have investment banking relationships with an issuer or already have the issuer's shares on their own books.

On 8 May 2002, the SEC approved changes drawn up by the NYSE and NASD to address such conflicts. *Inter alia*, the new rules require institutions to disclose both the distribution of their ratings (eg among 'buy', 'sell' and 'hold') and investment banking relationships with rated firms, and to increase segregation between their research and investment banking

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61: See [www.whitehouse.gov/news/releases/2002/03/20020307.html](http://www.whitehouse.gov/news/releases/2002/03/20020307.html).

62: For details, see [www.nyse.com/press/NT00565884.html](http://www.nyse.com/press/NT00565884.html) and [www.nasdaqnews.com/news/pr2002/ne\\_section02\\_121.html](http://www.nasdaqnews.com/news/pr2002/ne_section02_121.html).

functions (eg compensation for analysts cannot be linked to specific investment banking transactions)<sup>63</sup>. Further rules may result from a formal SEC inquiry into market practices, which was announced on 25 April 2002<sup>64</sup>. Some investment banks have also replicated changes agreed by Merrill Lynch in its 21 May 2002 settlement<sup>65</sup> of the investigation by the New York State attorney general into potential conflicts of interest involving its equity analysts (the investigation now covers more institutions).

Other countries' authorities have taken broadly similar measures. For example, on 10 April 2002, the Conseil des Marchés Financiers in France implemented a code requiring disclosure of factors liable to limit analysts' independence and procedures to detect potential conflicts of interest<sup>66</sup>.

#### *Central counterparty clearing of energy markets*

Enron was a major participant in both the over-the-counter (OTC) and regulated energy markets, and operated a large electronic trading platform, EnronOnline, in which it was a market maker. Its collapse served to emphasise the importance of effectively managing counterparty risk in new markets. The introduction of a central counterparty (CCP) is one way of doing so, although it may not be suitable for all markets.

Even before the Enron collapse, the London Clearing House (LCH) had agreed to provide a CCP for the IntercontinentalExchange, the US-based commodities trading system. This was implemented on 18 March 2002. At this early stage, the service covers only West Texas Intermediate crude oil and US natural gas contracts, but others will be added over time. Moreover, the clearing houses of both the New York Mercantile Exchange and the Frankfurt-based European Energy Exchange have subsequently expanded their CCP service to include OTC transactions.

#### *Expansion of LCH's SwapClear and RepoClear products*

On 10 June 2002, LCH expanded to 30 years the tenor of US dollar, sterling, euro and yen interest rate swaps for which it will act as CCP. It also added swaps denominated in Swiss francs (up to a ten year tenor). At May 2002, the number of outstanding swaps trades cleared by its SwapClear service stood at just over 23,500, and the notional value had increased to more than US\$3 trillion. With the introduction of the extended tenor capability, new backloads of existing trades are due during July. SwapClear's standardised processes may be improving the efficiency of users' back office procedures. Around 80% of swap

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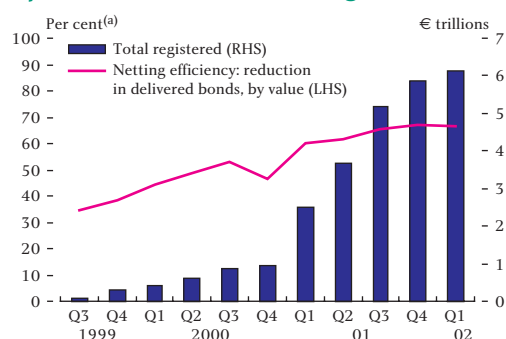
63: See [www.sec.gov/news/press/2002-63.htm](http://www.sec.gov/news/press/2002-63.htm).

64: See [www.sec.gov/news/press/2002-56.htm](http://www.sec.gov/news/press/2002-56.htm).

65: See [www.ml.com/about/press\\_release/05212002-1\\_ag\\_agreement\\_pr.htm](http://www.ml.com/about/press_release/05212002-1_ag_agreement_pr.htm).

66: See [www.cmf-france.org/docshtml/reglt/decisgen/DG200201.html](http://www.cmf-france.org/docshtml/reglt/decisgen/DG200201.html).

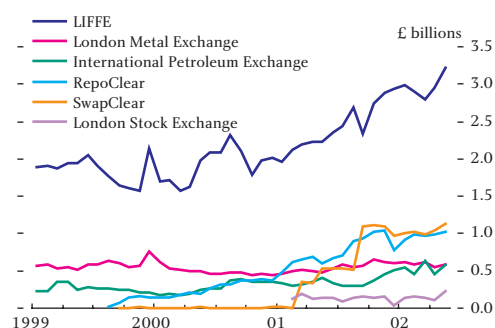
**Chart 174:**  
**RepoClear volumes and netting ratio**



Source: London Clearing House.

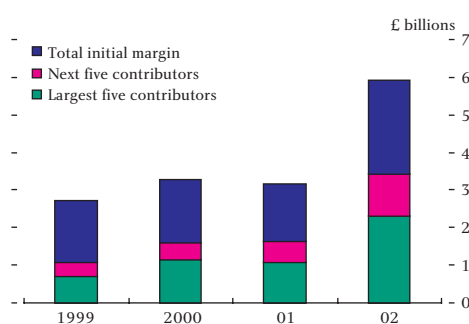
(a) Per cent reduction in delivery requirements.

**Chart 175:**  
**Initial margin required by LCH for each cleared market at end-month**



Source: London Clearing House.

**Chart 176:**  
**Initial margin required by LCH: distribution across institutions<sup>(a)(b)</sup>**



Source: London Clearing House.

(a) Distribution at the beginning of each year.

(b) Some institutions and their subsidiaries hold multiple clearing memberships at LCH. These have been consolidated.

trades cleared by LCH are now confirmed between counterparties (and cleared) within a day of the trade, which represents a significant improvement on previous industry practice.

In April, LCH also expanded its RepoClear service, with the inclusion of Irish, Finnish and Portuguese government bonds. Chart 174 shows RepoClear volumes and how the effectiveness of netting has increased as RepoClear has expanded. LCH plans to include shortly UK government bond (gilt) trades, including transactions executed on the BrokerTec bond trading platform. The growing importance of LCH's RepoClear service – and similarly SwapClear – is illustrated by the rapid growth, particularly during 2001, in the initial margin which members have to deposit with LCH to reflect the risk that LCH takes on when acting as CCP to their trades (Chart 175). The continued expansion of RepoClear and SwapClear could also change further the distribution of margin across clearing members (Chart 176).

#### *Changes in the ownership of Europe's market infrastructure*

In April 2002, Deutsche Börse, a leading proponent of vertical integration, gained approval from shareholders in Clearstream, the international securities settlement system, to purchase the 50% stake in Clearstream that it did not already own. The purchase will create a vertical structure spanning trading, clearing and settlement. A possible advantage of such vertical structures is a 'straight through' service that could reduce costs for investors and reduce operational risk through automation. There is a risk, however, that vertical integration of systems serving particular markets prevents competition and reduces the transparency of costs at each stage of the process. Moreover, because clearing and settlement infrastructure underpins the safety and efficiency of the markets it serves, the governance arrangements of any systems must ensure that risk management is given due weight and that developments for the good of financial markets as a whole are not impeded by sectional interests.

#### *International Accounting Standards for insurers*

At present, there is no International Accounting Standard for insurance contracts. The International Accounting Standards Board (IASB) began issuing preliminary chapters for a Draft Statement of Principles (DSOP) on insurance contracts in November 2001. The DSOP advocates the use of option pricing models to measure cash flows that contain option-like characteristics (eg interest rate guarantees), although the IASB does not intend to give detailed guidance on their valuation. In principle, the new standard should improve the measurement of insurers' assets and liabilities, including those relating to the complex, option-like products issued by many life companies.

#### *New EU Directives amending insurers' solvency margins*

On 20 March 2002, two new Directives entered into force for EU life and non-life insurers, aimed at strengthening parts of their solvency margin requirements, and so at increasing their resilience to financial shocks. The minimum amounts of capital required will be substantially increased, and are to be inflation-indexed using the European (all Member States) index of consumer prices. Non-life insurers' solvency margins will also rise; and for categories of non-life business which have a particularly volatile risk profile (marine liability, aviation liability and general liability), the required margin will increase by 50%. Regulatory bodies will have increased powers to intervene early (eg to take remedial action where policyholders' interests are threatened but the solvency margin has not yet been breached), and to apply more stringent rules on solvency. The Directives must be adopted by 20 September 2003, and will apply from 1 January 2004, unless Member States allow insurers to use a transitional period of five to seven years from entry into force to implement the Directives.

#### *US banks' capital treatment of investment in non-financial companies*

On 1 April 2002, US bank regulators (the Office of the Comptroller of the Currency, the Federal Reserve System, and the Federal Deposit Insurance Corporation) introduced new minimum capital requirements for equity investments in non-financial companies. The rule is of particular relevance to banks' venture capital activities. Deductions will be made from consolidated Tier 1 capital equal to a proportion of non-financial equity investments that rises as the overall level of such investments increases relative to capital. That such investments generally involve greater risk than traditional bank lending was illustrated by the large losses suffered by several US banks' venture capital arms in 2001 (see Box 3, Section II).

#### *SWIFT and Global Crossing*

SWIFT, the international financial messaging network on which many national and international payments and securities systems depend, has responded to the financial difficulties affecting its key network provider. In February 2001, SWIFT subcontracted its physical telecommunications networks to the Global Crossing (GC) group of companies. As part of the subcontracting agreement, SWIFT sold to GC both its main X.25 network, and its smaller secure Internet Protocol (IP) network (SIPN). The agreement also provided for GC to create and operate a new global IP network for SWIFT, based on SIPN. During 2001, GC experienced increasing financial difficulties and, in late January 2002, many of the companies in the GC group filed for Chapter 11 bankruptcy protection in the US Courts. On 2 April, SWIFT announced that it would re-acquire its networks, as allowed for in the subcontracting agreement. SWIFT also announced a new IP network strategy, under which it will

expand and enhance its SIPN to become the backbone of a new global IP network.

In an environment where such outsourcing arrangements are becoming increasingly common, SWIFT's experience highlights the importance, particularly for infrastructure providers, of having robust and effective procedures for monitoring and terminating outsourcing arrangements, in both the short- and medium-term.

## **International financial system: emerging market economies**

### *Improving crisis resolution arrangements*

The international community is working on ways to assist countries to resolve crises. As set out on 20 April 2002 in both the Action Plan adopted by the G7 Finance Ministers and Central Bank Governors<sup>67</sup> and the Communiqué of the International Monetary and Financial Committee<sup>68</sup>, this work is directed at providing members and markets with greater clarity and predictability about the decisions the IMF will take in a crisis and about the basis for those decisions. This should in turn provide private sector lenders with a clearer framework against which to make their sovereign lending decisions in the future. Key items on the current crisis resolution work programme are:

- *debt sustainability analysis* – aimed at assessing more systematically the sustainability of a country's public and external debt positions.
- *a clearer policy on access to IMF funding* – to reduce uncertainty about the size of IMF programme lending and the circumstances in which it is provided.
- *clearer sovereign debt restructuring procedures* – to facilitate restructuring of sovereign debt if it is considered unsustainable. One proposal is to make more systematic use of collective action clauses. Another is a sovereign restructuring mechanism that might require new international treaties, changes in national legislation, or amendments of the Articles of Agreement of the IMF.
- *IMF lending into arrears* – involving greater clarity not just about the quantum of lending but also about the conditions attached to it, and about the respective roles of the IMF, private creditors and the sovereign debtor in promoting rapid restoration of debt sustainability and a return to a durable growth path.

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67: [www.treas.gov/press/releases/po3015.htm](http://www.treas.gov/press/releases/po3015.htm).

68: [www.imf.org/external/np/cm/2002/042002.htm](http://www.imf.org/external/np/cm/2002/042002.htm).

## UK domestic financial system

### *Business continuity planning*

Following the events of 11 September 2001, the Bank of England, HM Treasury and the Financial Services Authority (FSA) have been working together with other public and private bodies to help co-ordinate business continuity planning within the UK's financial sector. A joint website on the UK financial sector's continuity planning, [www.financialsectorcontinuity.gov.uk](http://www.financialsectorcontinuity.gov.uk), was launched on 29 April 2002 to provide an overview of who is doing what in this area and help interested parties find further information<sup>69</sup>. Much of the planning, inevitably, has to remain confidential; the financial authorities have themselves established a framework to help them to respond effectively to significant disruption of infrastructure that could threaten financial stability.

### *Settlement netting on London Stock Exchange*

On 26 February 2001, LCH implemented a CCP for the London Stock Exchange. Its main business covers trades executed on the SETS trading system (the order book for the most liquid securities), but it also covers SEAQ Crosses (which match orders in certain securities not traded via SETS). Anecdotal evidence from market users attributes at least part of the recent increases in SETS volumes to the introduction of the CCP. The second phase of the project, which provides optional netting of trades ahead of settlement, will be implemented for trades undertaken from 1 July 2002 onwards. The introduction of settlement netting should allow investors to reduce back-office costs and settlement risks.

### *FSA review of liquidity policy*

Liquidity risk is the risk that a firm, though solvent, is unable to meet its obligations as they fall due. It is vital to financial stability that this risk is monitored, managed and controlled in banks and other financial institutions. This is especially important for banks, given that they undertake significant maturity transformation, and in view of their role in payment systems<sup>70</sup>. The UK FSA is undertaking a comprehensive review of policy for liquidity risk for the banks, securities dealers and other firms that it regulates. It published a consultation paper on systems and controls for the management of liquidity in March<sup>71</sup>, on which the Bank had commented in draft, and is expected to issue a second consultation paper on quantitative requirements in the first part of next year. The intention is that the systems and controls requirements will be implemented in 2004, with the quantitative requirements being adopted subsequently.

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69: See Box 6 on page 76 of the December 2001 *Financial Stability Review*.

70: See Chaplin, G, Emblow, A, and Michael, I (2000), 'Banking system liquidity: developments and issues', *Bank of England Financial Stability Review*, December.

71: 'Liquidity risk in the Integrated Prudential Sourcebook: Systems and Controls chapter', FSA Consultation Paper 128.

The FSA's policy on systems and controls mainly takes the form of guidance, but three areas are identified for particular attention: the setting of internal limits, scenario and stress testing, and contingency funding plans. At present, quantitative requirements for banks are applied through two different UK regulatory regimes. The Sterling Stock Liquidity Regime requires major retail banks to hold a stock of highly liquid instruments – essentially those eligible in the Bank of England's operations – equivalent to five days of net wholesale outflows, plus an estimate of retail outflows under stressed conditions. All other banks are subject to a mismatch regime, which places limits on imbalances between inflows and outflows of liquidity in specified time buckets<sup>72</sup>. Under current rules, securities firms are encouraged to hold liquid assets by deducting illiquid assets from capital.

The FSA is examining the possibility of a more unified framework that, at the same time, recognises variations in liability structure and access to liquidity across different types of firm. To encourage higher risk management standards, the new regime may include some incentive to adopt more sophisticated approaches to liquidity management. Given the importance of liquidity requirements for its open market operations, the functioning of payment systems and financial stability more generally, the Bank has been closely involved in discussions with the FSA regarding the design of the new requirements.

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72: These regulatory regimes were described in detail in the December 2000 *Review* article.

## Box 13: Other developments in the financial infrastructure

Initiative	Progress	Stability Significance
<b>International crisis management contact list</b>	<b>Launched in March 2002.</b> The Financial Stability Forum has established a secure database of contact details, including central banks, supervisory/regulatory agencies and government finance and treasury departments.	Simplifies international co-ordination in response to financial crises.
<b>Modification of UK Minimum Funding Requirement (MFR) regulations</b>	<b>Effective from 19 March 2002.</b> Miscellaneous measures including an extension of the deficit reduction period for underfunded pension schemes and a slightly less conservative calculation of regulatory pension liabilities. The Government intends to introduce a scheme-specific replacement of the MFR, as proposed by the 2001 Myners Review.	On balance, the interim modifications ease slightly the MFR's financial burden on companies operating defined benefit pension plans.
<b>Cross-margining agreement between two US CCPs</b>	<b>Implemented on 12 April.</b> Clearing members of both the Chicago Mercantile Exchange (CME) and the Government Securities Clearing Corporation (GSCC) can cross-margin activity in US Government bonds against Eurodollar contracts. This reduces the aggregate initial margin that firms are required to post with the two CCPs in relation to these trades, reflecting offsetting risks in clearing members' portfolios.	As such agreements reduce the financial resources of CCPs, they should be permitted only where the behavioural relationships between offsetting positions are well established.
<b>Credit event definition in European credit default swap (CDS) contracts</b>	<b>Removal of two credit events from standard CDS contracts on 15 April.</b> The European credit derivatives market has followed the US market in removing Obligation Acceleration and Repudiation/Moratorium, which many market participants felt were not appropriate for corporate debt. However, US and European documentation is not harmonised fully.	Greater harmonisation of CDS documentation should facilitate growth of the market, which may help to disperse credit risk through the financial system.
<b>Emerging Market Creditors Association (EMCA) creditors' rights working group</b>	<b>Model covenants for new sovereign debt issues published on 3 May.</b> Motivated by a concern that covenants originally intended to protect investors have become too porous. EMCA's proposals allow, inter alia, for majority voting to change the terms of bond issues but only with agreement of 95% by value of the holders of an issue. Most bonds issued under New York law currently require unanimity.	EMCA's proposals usefully set out some private sector views on the appropriate design of collective action clauses.
<b>Continuous Linked Settlement Bank</b>	<b>Live trialling started on 24 May 2002.</b> Full live operations of this system to reduce settlement risk in the foreign exchange markets are expected to start in 2002 Q3.	Elimination of principal risk between counterparties for eligible foreign exchange transactions.
<b>Private sector co-ordination of work on crisis prevention and resolution issues</b>	<b>Joint letter sent on 5 June.</b> Six key private sector organisations—EMTA (formerly the Emerging Markets Traders Association), the Institute of International Finance, the International Primary Market Association, the Bond Market Association, the Securities Industry Association and the EMCA – sent a joint letter to the Finance Ministers and Central Bank Governors of the G7 countries. The letter supports the use of collective action clauses (CACs) in sovereign debt contracts, provided it is part of a broader policy framework that includes efforts to further strengthen crisis prevention and creditor rights.	This may encourage issuers to use CACs.



# UK bank exposures:

## data sources and financial stability analysis

Andrew Gracie and Andrew Logan, Financial Industry and Regulation Division, Bank of England

In recent years there has been an increasing effort – in the UK and elsewhere – to assess financial stability risks at the level of the system as a whole. A crucial element is the analysis of banking exposures and the robustness of banks to adverse shocks. In the UK, as in other countries, there is no single source of data explicitly designed for financial stability analysis at the level of the system. This article reviews the data sources that are available and how they are employed in the Bank’s analysis to help the reader of the Financial Stability Review understand the data underlying the Bank’s published assessments of the UK banking sector.

**THE BANK RELIES** on three main sources of information on on-balance-sheet exposures: the money and banking statistics, the data on cross-border exposures published by the Bank for International Settlements, and regulatory data. Each can be used to explore particular aspects of UK banks’ exposures and, taken together, to assess the risks facing the UK banking system. Their distinctive provenance does, however, give rise to substantial practical problems in bringing them together.

### Data sources

The origins of the three main sources of balance sheet data for the UK banking sector are quite distinct:

- (a) money and banking statistics: collected by the Bank and used to produce the monetary aggregates and to feed into UK National Accounts (for convenience, hereafter referred to as ‘monetary data’);
- (b) data on international liabilities and claims: ‘BIS’ data collected by the Bank and published in the International Banking Statistics compiled by the Bank for International Settlements (BIS), and originally to monitor international capital flows; and
- (c) regulatory data: collected by the Bank on behalf of the Financial Services Authority (FSA) and used by the FSA for prudential regulation and to assess the capital adequacy of individual UK banks.

The relationship between these different sources can, nevertheless, be laid out clearly:

**Table 1:**  
**Relationship between sources of balance sheet data for UK banks<sup>(a)(b)(c)</sup>**

	Reporting population (banks)	Exposures to:		Total consolidated balance sheet
		UK-residents	Non-residents	
<b>Monetary</b>				
UK-owned banks	98	1,262	348	–
Foreign banks	294	652	1,165	–
<b>BIS – locational</b>				
UK-owned banks	45	–	333	–
Foreign banks	246	–	1,157	–
<b>Regulatory</b>				
UK-owned banks	55	n/a <sup>(d)</sup>	n/a	2,057
Foreign banks	89	n/a <sup>(d)</sup>	n/a	332
<b>BIS – consolidated</b>				
UK-owned banks	21	–	791	–

Sources: Bank of England and FSA regulatory returns.

(a) Amounts are shown in £ billions at end-December 2001 (except for regulatory data at 2001 H2).

(b) Data above the dotted line show the assets of UK-resident banks on an unconsolidated basis.

(c) Data below the dotted line show the assets of UK-owned banks and the UK-incorporated subsidiaries of foreign banks on a consolidated basis.

(d) No breakdown available.

The most important differences are scope and consolidation. In terms of scope, only the regulatory data include the entire global balance sheet of UK-owned banks; the monetary data include only assets booked in UK offices and the BIS data capture only lending overseas. Similarly, the regulatory data are consolidated, covering not only overseas offices of the UK banks but all group companies and netting out intra-group transactions, whereas the monetary data are unconsolidated, with data reported individually for each bank within a group, including lending to other group companies<sup>1</sup>. The BIS data are compiled and published on both a consolidated and an unconsolidated basis.

1: Regulatory data are also collected on an unconsolidated basis for individual banks.

Table 2:

Information available on the balance sheet assets of UK-resident banks from monetary data at end-December 2001<sup>(a)</sup>

Split by:	Monetary data							
(a) Residence	UK-resident						Non-resident	
(b) Sector	Households	PNFCs	OFCs	Public sector	Other	MFIs	Non-resident	Total assets
UK-owned	510	170	214	10	62	295	348	1,610
	32%	11%	13%	1%	4%	18%	22%	
Foreign-owned	40	115	179	7	74	236	1,165	1,817
	2%	6%	10%	0%	4%	13%	64%	

(c) Currency	Sterling		Foreign currency		
UK-owned	1,166		444		1,610
	72%		28%		
Foreign-owned	429		1,387		1,817
	24%		76%		

(d) Instrument	Loans		Securities		Other	
UK-owned	1,321		223		66	1,610
	82%		14%		4%	
Foreign-owned	1,479		264		74	1,817
	81%		15%		4%	

Source: Bank of England.

(a) Figures show the assets of UK-resident banks' in £ billions at end-December 2001.

The monetary data measure banking activity in the UK. The breakdown of assets by National Accounts sectors can be used to trace sectoral concentrations in lending and so to assess the impact on banks of changes in the financial position of, say, the household and corporate sectors. For this purpose, the inclusion of the UK branches and subsidiaries of foreign banks is important, given the contribution they make (53%) to total UK-resident banking system assets. Foreign banks are active participants in the London interbank market, and the monetary data reveal the scale of their exposures. Because the data are unconsolidated, however, exposures are inflated by intra-group transactions. In some contexts, it is useful to see these transactions, for example, in looking at the degree to which foreign banks use the London market for funding. The regulatory data, on the other hand, provide a consolidated picture. This has clear advantages in netting off intra-group transactions and including exposures booked overseas as well as in the UK; but less detailed information is available on sectoral exposures. The regulatory balance sheet return is designed mainly to allow the FSA to calculate the capital adequacy of individual institutions and as such the data are not always well adapted to providing information relevant to analysis of the stability of the system as a whole. The BIS data

offer some information on UK banks' exposures overseas. In unconsolidated form this is consistent with the monetary data, showing lending overseas by UK-resident banks; in consolidated form it is comparable to the regulatory data but a number of issues arise in the reconciliation.

### Monetary data

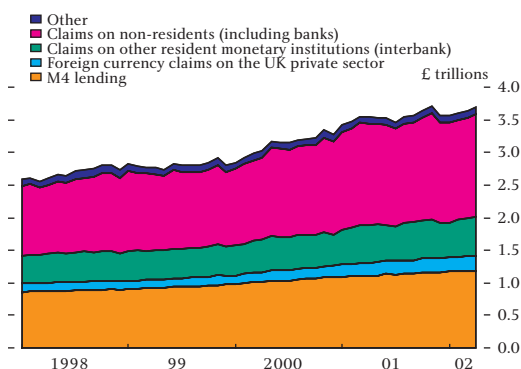
In order to compile the monetary data, balance sheet information is collected from all UK-resident monetary and financial institutions (MFIs), in most cases monthly but quarterly for smaller institutions (which account for 1% of total assets)<sup>2</sup>. Data are broken down according to the National Accounts sectors (Table 2). Thus assets and liabilities are subdivided between UK-residents and non-residents; within UK-residents, between MFIs, public and private sectors; and within the non-bank private sector, among households, private non-financial corporations (PNFCs) and other financial corporations (OFCs). A more detailed breakdown of lending by industrial sector is provided quarterly<sup>3</sup>. No similar sectoral breakdowns are available for lending to non-residents given that, in the context of the National Accounts, there is no requirement for any such sub-division.

2: MFIs comprise the Banking Department and Issue Department of the Bank of England, all other banks resident in the UK and building societies. Monetary data for building societies are collected by the FSA and sent, in aggregate, to the Bank. The FSA also collects data from building societies for regulatory purposes, requesting a slightly different lending breakdown.

3: The British Bankers' Association also publish monthly data for the Major British Banking Groups (MBBG) on their balance sheets, sterling lending (including by industrial sector) and deposits, and their lending to individuals.

The traditional purpose of the monetary data has been the monitoring of growth in a number of monetary and credit aggregates – for example M4, which represents MFIs' sterling deposits from the UK private sector<sup>4</sup>, and its counterparts, notably 'M4 lending' (sterling lending by MFIs to the UK private sector). M4 and M4 lending each represent, however, only about a third of MFIs' total liabilities and assets respectively (Chart 1)<sup>5</sup>. The difference is accounted for by foreign currency business with UK non-banks, but more importantly by inter-bank and cross-border business, all of which are included in the full MFI balance sheet<sup>6</sup>. While exposures within the banking sector to non-residents or in foreign currency are of less relevance for monetary policy, this version of the UK-resident banking system balance sheet, including the breakdowns by sector, currency and instrument, is the most useful for financial stability analysis.

**Chart 1:**  
**Relationship between M4 lending and the UK-resident monetary system's total assets**



Source: Bank of England.

The scale of lending to non-residents and the other MFIs, and of lending in foreign currency, emphasise the importance of London as an international financial centre and the need to monitor links between the UK and overseas financial systems. UK-owned banks account for under half of UK-resident banks' total assets (47%). Foreign-owned banks – mainly those from countries which themselves have major financial centres, including Germany (13%), United States (9%), Switzerland (8%), France (4%), Japan (4%) and the Netherlands (4%) – account for the rest. Many of them are part of

so-called large and complex financial institutions (LCFIs), which given the scale of their business and their involvement in a wide range of different markets, are a particular focus for system surveillance (see Section VI of the *Financial Stability Conjunctionure and Outlook*). Most of the foreign banks' exposures (around 75%) are concentrated in wholesale markets, especially in lending to non-residents or other MFIs.

The breakdown by instrument provides another way of looking at the composition of banks' assets and liabilities, illustrating, for example, the degree to which banks lend secured via the repo market or unsecured, the degree to which banks are reliant for funding on retail or wholesale deposits or longer-term instruments, and the degree to which banks lend to companies directly or by holding securities.

Using the monetary data in aggregate will show overall lending growth and identify sectors where lending is growing particularly strongly. However, in monitoring financial stability it is often not enough to look at average or aggregate data but to look at the distribution as a whole (to identify banks that stand out from the rest of the population) or at groups of banks with common characteristics. An obvious distinction is between UK-owned and foreign banks, but beyond this it is useful to allocate banks to peer groups, foreign banks according to their country of origin and UK-owned banks according to balance sheet size and the nature of their business. The Bank's use of peer groups is described on page 84 of the December 2000 *Review*. Peer group analysis helps not only to identify the banks underlying changes in the aggregate balance sheet but also to guard against overlooking trends among smaller institutions that would make little contribution to aggregate growth<sup>7</sup>. Peer groups also provide a useful tool to analyse the degree to which different groups of banks have interbank exposures.

Peer group analysis using the monetary statistics data helps to identify sectoral concentrations in lending for particular types of banks. Table 3 shows the distribution of UK-resident banks' assets by peer group and by sector and Table 4 shows each

4: Bank of England (1987) introduces the monetary aggregate, M4.

5: See Tables A2.1 to A4.6 of *Monetary and Financial Statistics*.

6: Docker and Willoughby (1999) describe the construction of the MFI balance sheets and their relationship with M4.

7: A significant threat to UK financial stability originated within this sector on two previous occasions (the secondary banking crisis in 1973-75 and the small banks crisis of the early 1990s – see Logan (2000)).

**Table 3:**  
**UK-resident banks' assets by sector at end-December 2001<sup>(a)</sup>**

Peer group	UKPS <sup>(b)</sup>			MFIs	Non-residents	Other <sup>(c)</sup>	Total	Peer group total as a share of total assets (%)
	Households	OFCs	PNFCs					
Commercial banks	237	154	124	170	235	56	977	29
Mortgage banks	253	57	40	117	108	15	590	17
Other UK-owned banks	19	3	5	9	5	2	43	1
US	14	27	15	46	181	12	294	9
German	0	60	31	60	283	18	452	13
Swiss	0	42	7	26	204	8	288	8
Other foreign-owned banks	26	50	62	104	497	44	783	23
Total	550	393	285	532	1,513	154	3,427	100
Sector total as a share of total assets (%)	16	11	8	16	44	4	100	

Source: Bank of England.

(a) In £ billions.

(b) UK private sector.

(c) Other includes public sector and other unallocated assets (eg fixed assets).

component as a percentage of the row and column totals. As Table 4 makes clear, UK banks remain dominant in lending to households (over 90% of total) and PNFCs (over 60% of total)<sup>8</sup>, while lending to these sectors still represents a large proportion of these banks' assets. Peer group analysis can be especially useful when applied to data on the industrial breakdown of lending (showing lending to OFCs and PNFCs by sub-sector) and the breakdown of household lending between mortgages, credit cards and other unsecured lending (Table 5)<sup>9</sup>. The industrial sub-sectors are broadly the same as those used in the National Accounts, which means that the pattern of lending can be tracked against sectoral economic variables<sup>10</sup>. Analysis at this level of disaggregation is important in monitoring exposures to sectors such as commercial real estate, which have historically represented a particular risk to financial stability in the United Kingdom and elsewhere (see Section VII of the Conjuncture and Outlook).

Finally, the different breakdowns in combination allow a deeper analysis of the balance sheet data, although this falls short of providing a full multi-factor decomposition. For example, while lending to OFCs represents 11% of the balance sheet assets of UK-resident banks at end-December 2001, the industrial breakdown of lending shows that 40% of their loans to OFCs are to securities dealers (or, as Chart 2 shows, 11% of their domestic loan book). The instrument breakdown shows that most are via repo; the currency breakdown that most are in foreign

**Table 4:**  
**Distribution of total assets by peer group and sector at end-December 2001<sup>(a)(b)</sup>**

Peer group	UKPS <sup>(c)</sup>			MFIs	Non-residents	Other <sup>(e)</sup>	
	HH <sup>(d)</sup>	OFCs	PNFCs				
Commercial banks	43 24	39 16	44 13	32 17	16 24	37 6	100
Mortgage banks	46 43	15 10	14 7	22 20	7 18	10 3	100
Other UK-owned banks	3 44	1 7	2 13	2 21	0 11	1 4	100
US	3 5	7 9	5 5	9 16	12 61	8 4	100
German	0 0	15 13	11 7	11 13	19 63	12 4	100
Swiss	0 0	11 15	2 2	5 9	13 71	5 3	100
Other foreign-owned banks	5 3	13 6	22 8	19 13	33 64	28 6	100
Total	100	100	100	100	100	100	

Source: Bank of England.

(a) Percentages in pink reflect share of lending to each sector from each peer group.

(b) Percentages in blue reflect share of each peer group's lending to each sector.

(c) UK private sector.

(d) Households.

(e) Other includes public sector and other unallocated assets (eg fixed assets).

currency; and the peer groups that most of the lending is through German, Swiss, US and UK commercial banks.

The monetary data do, however, have a number of limitations. The industrial breakdown includes only lending and not holdings of securities. While some data on undrawn commitments and facility utilisation are included, other contingent liabilities such as guarantees are not. This applies to the monetary data more generally, which include little information on off-balance-sheet instruments, for example on counterparty exposures under derivative contracts. The most significant problems with the monetary

8: Although in terms of assessing overall gearing in these sectors, lending by finance houses and other non-bank lenders would need to be taken into account.

9: See Tables A5.1 to A5.6 of *Monetary and Financial Statistics*.

10: See Table C1.2 of *Monetary and Financial Statistics*.

**Table 5:****Distribution of lending by peer group to selected sub-sectors at end-December 2001<sup>(a)</sup>**

Peer groups:	Households:			OFCs:				PNFCs:				
	Mortgage	Credit card	Other unsecured	Security dealers	ICPFS <sup>(b)</sup>	Leasing	Other	Real estate <sup>(c)</sup>	Manufacturing	Wholesale and retail	TSC <sup>(d)</sup>	Other
Commercial banks	39	55	57	20	27	54	42	45	42	55	34	52
Mortgage banks	55	12	21	5	6	27	17	26	8	9	10	11
Other UK-owned banks	2	13	6	0	1	2	0	1	1	1	1	2
US	0	17	10	12	16	2	5	1	10	9	11	5
German	0	0	0	22	21	5	16	11	9	4	14	8
Swiss	0	0	0	21	18	0	8	1	2	1	2	1
Other overseas-owned banks	4	2	5	20	11	10	12	16	28	22	29	22
Total (£ billions)	407	36	73	125	16	36	137	85	58	36	23	57

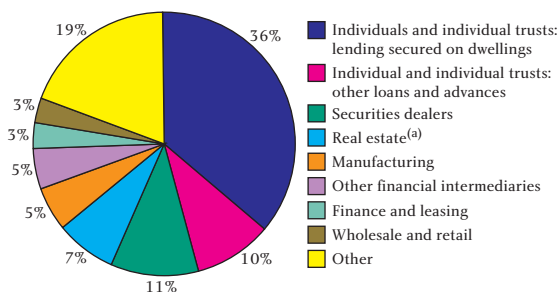
Source: Bank of England.

(a) Percentage by peer group of total sub-sector lending. Final row shows total sub-sector lending in £ billions at end-December 2001. Definitions of sub-sectors are based on the ONS Standard Industrial Classification (SIC) of 1992 (see notes to Table C1.2 of *Monetary and Financial Statistics*).

(b) Insurance companies and pension funds.

(c) Real estate combines the commercial property and construction sub-sectors.

(d) Transport, storage and communication.

**Chart 2:****Sectoral breakdown of UK-resident banks' domestic lending at end-December 2001**

Source: Bank of England.

(a) Real estate combines the commercial property and construction sub-sectors.

data from a financial stability point of view arise, however, from their being unconsolidated. Individual banks' assets include lending to other group companies: to other UK-resident group banks in the data for lending to banks; to branches and subsidiaries overseas in data for non-resident lending; and to related non-banks in data for lending to OFCs and PNFCs. For larger, more complex, groups and those with significant operations overseas, intra-group lending can represent a significant share of reported assets. Most fundamentally, the (unconsolidated) monetary data only include the UK-based business of UK banks. A number of UK-owned banks have a significant proportion of their operations in foreign branches or subsidiaries

and are thus as much vulnerable to shocks overseas as in the United Kingdom. BIS data on external claims are particularly useful for measuring these exposures, especially the consolidated data, which in contrast to the monetary data capture all overseas claims of UK-owned banks, whether booked in the United Kingdom or in offices overseas.

**BIS data**

For the analysis of overseas exposures, the most useful data are probably those collected by the Bank for the BIS international banking statistics<sup>11</sup>. Data on overseas assets and liabilities are collected quarterly both on an unconsolidated basis from all UK-resident banks ('locational' data) and on a consolidated basis from UK-owned banks (consolidated data).

The *locational* data show the cross-border assets and liabilities with non-residents booked in UK-resident bank offices (Table 6). The reporting population is therefore essentially the same as for the monetary data (although 101 banks whose non-resident assets and liabilities fall below a minimum threshold are excluded). Given the primary purpose of the locational data has been the measurement of international capital flows, the main breakdown of the data is by country of residence of the borrower or depositor. 216 countries are recognised in all plus several multilateral financial institutions<sup>12</sup>. In addition, the data are also split by currency and, in a limited way, by counterparty

11: For detailed information on the construction of the BIS statistics see BIS (2000) and Committee on the Global Financial System (CGFS) (2000). Wharmby (2000) provides an overview. Box 2 in the *Financial Stability Conjecture and Outlook* of the December Review and Wooldridge (2001) show how the BIS statistics can be used for financial stability analysis.

12: See Tables C3.1 to C3.4 of *Monetary and Financial Statistics*.

**Table 6:**  
Information available on the external claims of UK-resident banks from BIS locational data at end-December 2001<sup>(a)</sup>

Split by: (a) Borrower country	BIS – locational				Total assets
	Developed	Offshore	Developing	Other	
UK-owned	271	35	19	8	333
	81%	10%	6%	2%	
Foreign-owned	982	106	54	16	1,157
	85%	9%	5%	1%	

(b) Borrower type	Banks	Non-banks	
UK-owned	177	156	333
	53%	47%	
Foreign-owned	762	395	1,157
	66%	34%	

(c) Currency	US dollar	Euro	Sterling	Yen	Other	
UK-owned	164	101	38	15	15	333
	49%	30%	12%	5%	5%	
Foreign-owned	495	367	120	85	90	1,157
	43%	32%	10%	7%	8%	

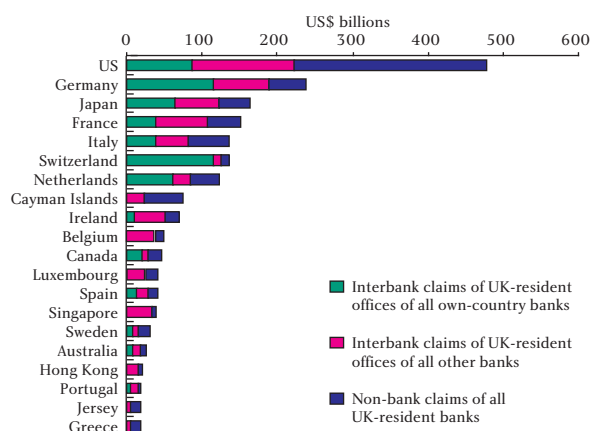
Source: Bank of England.

(a) Figures show the external claims of UK-resident banks in £ billions at end-December 2001.

between banks and non-banks<sup>13</sup>. Data are separately available on the split between connected and other banks. The counterparty breakdown reveals that not only is most of the lending to banks, but that over two thirds is to connected banks. The locational data can be used to show the geographical distribution of external claims and the degree to which banks from different countries are exposed to their home banking systems (Chart 3). Almost all the lending is in foreign currency (44% in US dollars, 31% in euro), with only 11% in sterling.

The BIS publishes locational data for 30 countries besides the UK (known collectively as the BIS reporting area). Comparison with other countries shows the relative importance of London's role as an international financial centre. At end-December 2001, UK-resident banks held about 20% of total reported external claims, almost double the figure for banks resident in Japan (10%) and Germany (9%), which had the second and third largest shares. The extent of these exposures has implications for UK financial stability and partly explains the attention paid in the Bank's analysis to identifying disturbances in overseas financial systems and the routes by which they might be transmitted to the UK.

**Chart 3:**  
External claims of UK-resident bank offices by country of residence of borrower at end-December 2001



Source: Bank of England.

The BIS consolidated banking statistics are designed to measure the international liabilities and credit exposures of banks by home country of the group parent rather than location of the particular borrowing or lending entity<sup>14</sup>. The data therefore include not only lending by UK offices but also branches and subsidiaries overseas, consolidated to exclude intra-group transactions. Given the scale of UK-owned banks' operations overseas, the consolidated data give a better measure of the risk represented by overseas exposures.

As with the locational data, one purpose of the consolidated data is to show the distribution of exposures according to the country of the borrower. Exposures are broken down between cross-border claims including the claims of local offices in foreign currency, and claims by local offices in local currency<sup>15</sup>. The distinction is intended to provide some measure of the borrower's vulnerability to a capital account crisis. A further breakdown (Table 7) is available for cross-border claims by type of asset (between loans and investments), by counterparty (between banks, public sector and non-bank private sector) and by residual maturity.

The BIS consolidated data also provide information on 'risk transfers' either in reallocating cross-border claims on branches from the country of location of the branch to the country of location of the parent

13: Claims on Central Monetary Institutions (CMIs) also identified but are not material.

14: See Table C4.1 of *Monetary and Financial Statistics*.

15: Data are also reported on local currency liabilities in local offices.

**Table 7:**  
**Information available on the external claims of**  
**UK-owned bank groups from BIS consolidated data at**  
**end-December 2001<sup>(a)</sup>**

Split by: (a) Borrower country	BIS – consolidated				Total assets
	Developed	Offshore	Developing	Other	
UK-owned	541 68%	150 19%	89 11%	12 2%	791

(b) Cross-border versus local	Cross-border <sup>(b)</sup>	Local <sup>(c)</sup>	
UK-owned	391 49%	400 51%	791

(c) Instrument	Loans	Portfolio
UK-owned	237 61%	154 39%

(d) Borrower type	Banks	Public	Non-bank private sector
UK-owned	164 42%	62 16%	166 42%

Gross risk transfers
135

Source: Bank of England.

(a) Figures show the external claims of UK-owned bank groups in £ billions at end-December 2001.

(b) Cross-border includes local claims in foreign currency.

(c) Local shows local claims in local currency.

bank, or, where claims are explicitly guaranteed, to the country of the guarantor<sup>16</sup>. The range of risk transfer instruments included is not, however, comprehensive and varies across the BIS reporting area. For example, in many countries, including the UK, new instruments like credit derivatives are not included.

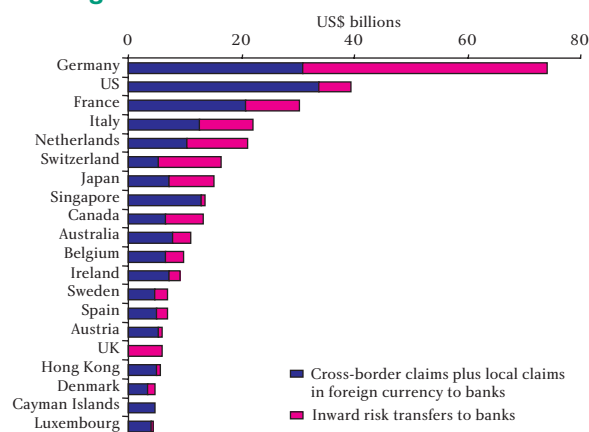
For UK-owned banks, developed countries account for 68% of total overseas claims (at end-December 2001), with United States, Hong Kong, France and Germany representing more than 50% between them (see Box 10 in the December 2001 Review). Much of this is local-currency-denominated lending, which has expanded rapidly during the past decade, often through acquisitions, and now makes up the majority of overseas exposures (see Box 11 in the *Financial Stability Conjecture and Outlook*). There is, however, wide variation from country to country: for example, local currency claims represent over 80% of UK-owned banks' exposures to Hong Kong, but only 16% of exposures to Germany. The financial stability implications will differ somewhat depending on whether claims are cross-border, local in foreign currency or local in local currency (see Section V of

the *Financial Stability Conjecture and Outlook*). For example, cross-border claims may be vulnerable to capital controls and, where they are to non-banks, are likely to be to larger corporate borrowers with access to international wholesale markets. By contrast, local assets are likely to include exposures to smaller corporate and retail customers, although no counterparty breakdown is provided for local currency lending.

The breakdown of cross-border claims shows that exposures to banks and non-banks are of a similar magnitude (42% each), the remainder being exposures to the public sector (largely holdings of government securities) (Table 7). Again proportions vary between countries. For example, while 71% of UK-owned banks' cross-border claims on Germany are exposures to banks, 56% of exposures to the United States are to non-banks.

Risk transfer can have a significant influence on the pattern of international exposures. One effect is to increase exposures to countries that have large international banks with extensive overseas branch networks (Chart 4). For example, after risk transfer, UK-owned banks' exposures to Germany rise by US\$47 billions and the proportion represented by exposures to German banks increased from 71% to 82%.

**Chart 4:**  
**UK-owned bank groups' cross-border claims on banks**  
**including risk transfers at end-December 2001**



Source: Bank of England.

16: This applies equally to lending to the subsidiaries of banks. Unless an explicit guarantee is provided by the parent bank, exposures to subsidiaries are reported according to the country of the subsidiary, not of the parent.

While the BIS consolidated international banking statistics provide the best source of data on UK-owned banks' international exposures, there are nevertheless a number of drawbacks. The consolidation does not extend to non-bank subsidiaries. Overseas exposures may thus, after all, include some intra-group lending. The lack of a counterparty breakdown for local lending in local currency makes it impossible to build up a comprehensive measure of overseas exposures by counterparty. Similarly, risk transfer is only captured for cross-border and foreign-currency-denominated local lending but not local currency local lending and, as pointed out above, is in any case incomplete in terms of the instruments that are recognised. In 2004, procedures will be enhanced to address some of these shortcomings, following the recommendations of a Committee on the Global Financial System working group on international banking statistics (see CGFS (2000)).

### FSA regulatory returns

A third source of data is the regulatory returns collected by the Bank on behalf of the FSA. Balance sheet data to monitor capital adequacy are collected from UK-incorporated banks with deposit-taking permission under Financial Services and Markets Act 2001.

Given the primary purpose of the balance sheet return is to calculate capital ratios, the structure of the data is heavily influenced by the requirements of the 1988 Basel Accord and the 1996 Market Risk Amendment. Thus assets are broken down between the so-called 'banking book' and 'trading book' (overall 81% and 19% of assets respectively) and, within them, by broad risk-weighting categories according to the type of counterparty or obligor risk (Table 8). Similarly, on the liabilities side, the main focus is on capital-type instruments, broken down into Tier 1, 2 and 3 and their constituent parts. Assets and capital are then combined in the risk asset ratio (capital relative to risk-weighted assets). Additional information is included in appendices on provisions against bad and doubtful debts, capital requirements for market risk and for counterparty claims under derivative contracts.

In contrast to the monetary and BIS locational statistics, the data cover the entire balance sheet and

**Table 8:**

**Information available on the balance sheets of UK-owned bank groups from regulatory data at 2001 H2<sup>(a)</sup>**

Split by:		Regulatory data				Total Assets
(a) Instrument		Loans	Investments	Cash and transit items	Other	
UK-owned		1,355	305	40	357	2,057
		66%	15%	2%	17%	

(b) Borrower type	Residential mortgages	Public sector	Banks	Other	2,057
UK-owned	483	132	316	1,126	
	23%	6%	15%	55%	

(c) Risk weight	Risk weighting categories <sup>(b)</sup>				
UK-owned	0%	10%	20%	50%	100%
	509	52	404	500	708
	23%	2%	19%	23%	33%

Off-balance-sheet					
(d) Off-balance-sheet items	Transaction-related contingents	Trade-related contingents	Commitments under 1 year	Guarantees over 1 year	OTC counterparty claims
UK-owned	35	8	415	9	63

Source: FSA regulatory returns.

(a) Figures show UK-owned bank groups' assets in £ billion at 2001 H2.

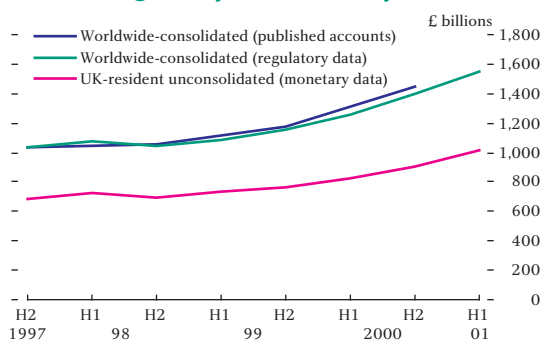
(b) Figures between the dashed lines are for banking book only, including off-balance-sheet items.

include assets and liabilities booked in offices both in the United Kingdom and overseas. From a financial stability perspective, this should in principle provide the best picture of aggregate balance sheet developments for UK-owned banks. Extensive information is also provided on off-balance-sheet positions, commitments and contingent liabilities. Given the focus on capital adequacy, however, only a limited breakdown of the data is provided between different instruments, counterparties and sectors (and usually only where these are subject to different risk weights), and none by country or currency. In addition, aggregation<sup>17</sup> of the regulatory data is often difficult, partly because they were not designed for aggregation. Individual banks have different reporting cycles and, where appropriate and bilaterally agreed with their regulator, had been given various reporting concessions prior to the FSMA 2001 that are grandfathered under that legislation. This in particular applies to the treatment of subsidiaries and other related companies in consolidated returns. While bank subsidiaries will generally be fully consolidated, the treatment of non-bank subsidiaries will depend on the nature of the subsidiary and on any regulatory capital regime to which it is subject, and may in some cases differ from the consolidation treatment for published accounts. For example, investments in insurance and non-financial subsidiaries are deducted from capital, rather than being consolidated into group assets and liabilities

17: Data from regulatory returns have been aggregated by the Bank of England and the FSA bears no responsibility for the accuracy of the results.

line by line. This can be seen by comparing total assets for UK commercial banks in regulatory returns with published accounts<sup>18</sup> (Chart 5). Total assets based on published accounts are larger where assets for non-financial subsidiaries have been consolidated. While in aggregate the difference is small (3% in 2000 H2), the difference is larger in groups where insurance subsidiaries make up a significant part of the consolidated balance sheet.

**Chart 5:**  
**Total assets of UK-commercial banks using published accounts, regulatory and monetary data**



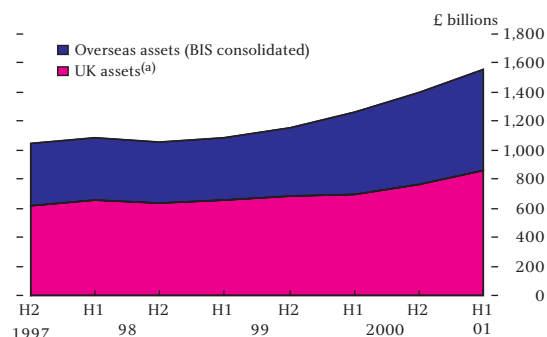
Sources: Bank of England, FSA regulatory returns and published accounts.

### Reconciliation of the data sources

As this article has indicated, the individual data sources have a number of shortcomings, but these can be overcome to some extent by judicious use of the sources in combination. This is not straightforward, however, given differences in consolidation and coverage.

Easiest to combine are the regulatory and BIS consolidated data. While not identical, the consolidation is sufficiently similar to use the data to derive a split between UK and overseas exposures (Chart 6). Overseas exposures represent around 45% of UK commercial banks' total global on-balance-sheet assets, reinforcing the importance of monitoring overseas vulnerabilities in the Bank's financial stability analysis. It is also possible to analyse the geographical distribution of exposures in terms of the balance sheet as a whole. For example, exposures to emerging market economies are only 6% of the total assets of UK commercial banks (though obviously this varies widely between banks).

**Chart 6:**  
**UK commercial banks' UK and overseas assets using regulatory and BIS consolidated data**



Sources: Bank of England and FSA regulatory returns.

(a) UK assets derived from difference between total assets in regulatory data and overseas assets in BIS consolidated data.

Similar analysis is, perhaps surprisingly, more difficult for UK exposures, given that the monetary data are unconsolidated. This is more of a problem for intra-group lending to other banks, and so for interpreting interbank exposures data, than for other sectors. Intra-group transactions have no impact on household lending and minimal impact on lending to PNFCs. However the impact of intra-group transactions on lending to both OFCs (to the extent that UK commercial banks provide funding for securities, leasing and trading subsidiaries) and to banks is likely to be significant. Even including lending to OFCs and MFIs, however, and contrary to what might have been expected, total claims on UK residents from monetary data are less than total UK exposures inferred from regulatory returns and BIS consolidated returns (Table 9). The difference may relate to lending to UK-residents by UK commercial banks from offices overseas, for example from offshore centres. But further analysis is impossible from the data available.

Starting from the consolidated balance sheet data in regulatory returns, it is nonetheless possible to make some use of BIS and monetary data to provide a more detailed breakdown of geographical and sectoral exposures for financial stability analysis, even if the numbers do not reconcile completely. However, there are a number of caveats:

<sup>18</sup>: Commercial banks have been used in part because they represent the greater part of total assets for UK-owned banks but also because they are responsible for most of the UK-owned banks' overseas exposure. They are thus useful in highlighting differences between data sources.

**Table 9:**

**Reconciliation between regulatory, monetary and BIS consolidated data at 2001 H2<sup>(a)</sup>**

Split by: (a) Borrower country	Regulatory								Total assets
UK Commercial banks	UK					Overseas			
						BIS-consolidated			
						Developed	Offshore	Developing	Other
	797					441	141	85	9
	54%					30%	10%	6%	1%

(b) Sector	Monetary					Residual	BIS-consolidated				Total assets
UK Commercial banks	Households	PNFCs	OFCs	MFIs	Other		Banks	Public	Non-bank	Local	
	237	124	154	170	48	63	130	52	128	368	1,473
	16%	8%	10%	12%	3%	4%	9%	4%	9%	25%	

Sources: Bank of England and FSA regulatory returns.

(a) Figures are shown in £ billions at end-December 2001 (except for regulatory data at 2001 H2.)

- the split of lending between UK and overseas offices can only be inferred;
- relying on monetary data to analyse the sectoral breakdown of lending within the UK can only be done on the assumption that lending from UK-resident banks' overseas operations to UK-resident borrowers is not material;
- at the same time, using unconsolidated monetary data for sectoral analysis may exaggerate exposures to particular sectors, in particular to OFCs and MFIs (though using a combination of regulatory and BIS consolidated data, UK interbank lending can be inferred);
- BIS consolidated data provide only a limited sector breakdown for cross-border lending and currently none for local lending in local currency;
- exposures to individual borrowers are not consolidated in either monetary data or BIS consolidated data; and
- beyond disclosures by individual banks in published accounts, there is no means to assess sectoral exposures in the balance sheet as a whole.

It would be difficult to address these shortcomings without the development of a new source of data for financial stability analysis that measured banks' consolidated exposures on both the lender and the borrower side. Unconsolidated data would still, however, be relevant for banks in terms of monitoring intra-group flows and the activity of UK-resident foreign banks and for borrowing companies in terms of monitoring the geographical distribution of exposures.

## Conclusion

Without a data source designed specifically for financial stability analysis, there are unsurprisingly a number of questions that cannot be satisfactorily answered using the data that are available. But some reasonable approximations are possible in many cases. In assessing system resilience, the primary focus is on consolidated data that exclude intra-group transactions and allow an overall comparison of the scale and distribution of the UK banking sector's exposures against its capital. But unconsolidated data in the UK monetary sector statistics are also useful, for sectoral loan exposures, and for the analysis of foreign banks' activity in the United Kingdom and the resulting links to financial systems overseas. The Bank has therefore developed an approach that combines consolidated BIS and regulatory data with unconsolidated monetary data. The relationship between the different bodies of data is complex and, even where they can to some extent be combined, differences make detailed analysis of consolidated exposures difficult. This is a particular problem in assessing sectoral exposures where borrowers are part of international groups active in several different countries or sectors. The data available for financial stability analysis are a subject of international debate, particularly in the context of the IMF's work on Financial Soundness Indicators (FSIs)<sup>19</sup>. This article has indicated, that, within that debate, questions of how to combine data from existing sources, or even whether to develop new sources, might be as important as the specification of the FSIs themselves.

19: FSIs are aggregate measures of financial fragility developed by the IMF. See IMF(2002).

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# Bank provisioning:

## the UK experience

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Bank provisions – made in recognition of a deterioration in loan quality – can have a significant impact on banks' earnings and capital. This article examines the factors that may, in the past, have influenced provisioning by the major UK banks. It suggests that macroeconomic conditions played a particularly important role. Bank-specific factors such as the sectoral concentration of debt, especially if in risky sectors, such as commercial property, were also influential.

**PROVISIONS ARE TYPICALLY** one of the first quantitative indicators of a deterioration in loan quality and, at the same time, a key contributor to fluctuations in bank earnings and capital. Understanding provisioning policy is therefore important in assessing financial stability.

This article discusses the factors which have influenced provisioning by the major UK banks. It suggests that there is a strong inverse relationship between provisions and Gross Domestic Product (GDP) growth, and considers the possible relationship with bank profitability, capital and lending<sup>1</sup>.

The formal empirical research<sup>2</sup> described in this article is part of the Bank's ongoing work programme to develop more quantitative assessments of risks to financial stability in the UK. It complements the Bank's modelling work on UK corporate and household sector fragility reported in previous FSR articles<sup>3</sup> by exploring how these link to banks' own financial health.

### Provisions, credit risk and the macroeconomy

It is helpful, in assessing the interaction between the macroeconomy, loan-loss provisions and write-offs, to

clarify how the last two relate to credit risk – the risk that a borrower will be unable to meet obligations when they fall due.

Lenders will – or should – assess credit risk when they make loans, and should seek to protect themselves from potential losses, both expected and unexpected<sup>4</sup>. A bank will seek to recover expected losses through the margin charged to the borrower. It will also hold capital to ensure that, up to some confidence level, it can cover losses beyond the expected level. The cost of holding this additional capital should also be reflected in the price charged to the borrower.

Borrowers' ability to service debt changes over time, particularly in response to changes in economic conditions. During macroeconomic upswings, borrowers' ability to repay debt tends to increase and as a result loan defaults are likely to fall. Conversely, during recessions, loan defaults are likely to increase<sup>5</sup>. But loan losses may not be realised until an economic downturn even though the risk of such losses can increase during an economic upturn, as the likelihood of a future downturn grows (see Borio et al (2001))<sup>6</sup>.

1: For a comprehensive survey of the various factors affecting credit cycles, see Borio, Furfine and Lowe (2001).

2: See Pain (2002).

3: See, for example, Benito, Whitley and Young (2001) and Vlieghe (2001).

4: Formally, expected loss is the mean loss anticipated over a particular period, whereas the unexpected loss is a loss that differs from this expectation.

5: Since the value of collateral on loans usually falls in recessions and rises in booms, loss given default is also likely to be procyclical (see Altman, Resti and Sironi (2002) for recent evidence).

6: More formally, if output is mean reverting around its trend and is partly predictable, the conditional probability of a downturn increases the more that output rises above trend.

## Box 1: Provisions and bank fragility

Provisions for loan losses are normally made only after a default event has occurred rather than when the risk is taken on. This suggests that provisions are likely to be a good quantitative measure of *realised* credit risk (although not of future losses embedded in the loan book). The empirical evidence suggests that UK bank provisions rise in recessions. However, the impact of an increase in loan defaults (and therefore provisions) on bank fragility depends on whether banks take anticipatory measures to withstand the credit losses before they are realised.

Banks might build up a capital cushion either through widening margins or by retaining more profits earned during periods when provisions are low. These funds could then be drawn down when large provisions are made. Although capital would grow more slowly, or even fall, it would do so from a higher initial level<sup>1</sup>. In this case, although there would be a deterioration in realised credit quality, banks would have already protected themselves against this contingency and bank fragility would not have increased. On the other hand, if banks have not previously built up capital to cover these potential

losses, provisions will reduce profits and possibly reduce capital below what is prudent given the existing risks in the loan book. Therefore, the potential impact of provisions on bank stability needs to be assessed in conjunction with the pattern of (pre-provision) earnings and capital.

Can banks anticipate future credit losses and take the appropriate precautionary action? A key factor influencing borrower default is likely to be the strength of overall economic activity. Historically, economies have enjoyed periods of prolonged economic growth interrupted by temporary periods of recession. If such fluctuations are, at least partly, predictable, banks could assess the impact of future macroeconomic conditions on their loan quality and build up the necessary reserves in 'boom' periods to cushion against higher realised losses in economic downturns. But to the extent that changes in aggregate economic activity occur randomly, and are therefore unpredictable, banks may be vulnerable to incurring large unexpected losses if and when recessions develop.

1: Therefore, in interpreting banks' capital adequacy at any point, account would need to be taken of such changes in the profile of provisions and write-offs over time.

If banks were able continually to re-price (or otherwise alter) the terms of their loans, they could adjust their margins to reflect changes in expected loss. In practice, continuous loan re-pricing would be costly and often may not be legally possible. It may also be counterproductive, for example, because increasing borrowers' interest burden in an economic downturn may increase the probability of default.

As discussed in Box 1, the impact of an increase in provisions on bank fragility depends on how far banks have built up equity buffers to cope with credit losses. To the extent that they are surprised by the size of losses, and margins cannot be adjusted, their capital may come under pressure. In these circumstances, a

marked increase in provisions may be a signal of heightened bank vulnerability.

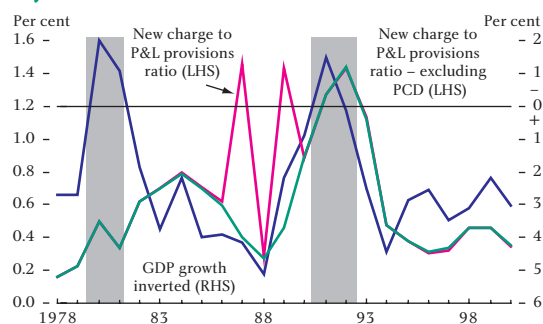
In principle, provisions should be forward-looking. However, accounting conventions in the UK (as in most other countries) mean that only realised losses are normally recognised in banks' books<sup>7</sup>. As a result, loan-loss provisions tend to be close to actual write-offs – they include unexpected losses as well as the realisation of expected losses.

Chart 1 plots the annual growth in GDP against the *average* new provision charge (as a percentage of loans) for the major UK banks over the 1978–2000 period<sup>8</sup>; and Chart 2 compares net write-offs with provisions (both as a percentage of loans). In the late 1980s a

7: For a discussion of historical cost accounting versus fair value accounting see Jackson and Lodge (2000).

8: The banks considered correspond broadly to the British Bankers Association's (BBA) Major British Banking Groups (MBBG). Specifically, the banks are: Abbey National, Alliance & Leicester, Barclays, Bank of Scotland (BoS), Halifax, Lloyds-TSB, Midland, NatWest, Northern Rock, Royal Bank of Scotland (RBS) and Standard Chartered. In 1992, HSBC banking group acquired Midland but continued to report separate annual accounts for Midland albeit under the new name, HSBC Bank PLC. Figures for Midland for the period after 1992 relate to HSBC Bank PLC.

**Chart 1:**  
**Provisions<sup>(a)</sup> and annual GDP<sup>(b)</sup> growth – average for major UK banks**

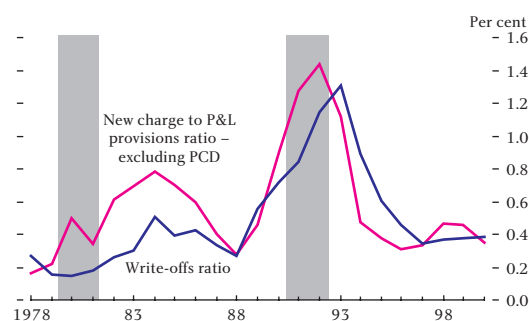


Sources: BBA statistical abstract, published accounts and ONS.

(a) New provisions charge in the P&L account as a percentage of total loans and advances to customers.

(b) Shaded areas represent periods of UK recession.

**Chart 2:**  
**Provisions<sup>(a)</sup> and write-offs<sup>(b)</sup> – average for major UK banks<sup>(c)</sup>**



Sources: BBA statistical abstract and published accounts.

(a) New provisions charge in the P&L account as a percentage of total loans and advances to customers.

(b) Write-offs (net of recoveries) as a percentage of total loans and advances to customers.

(c) Shaded areas represent periods of UK recession.

number of the major UK banks made large provisions against loans to emerging markets, unrelated to domestic macroeconomic conditions and the charts therefore show separate series for provisions including and excluding problem country debt (PCD) – see Box 2 for discussion of the impact of the 1980s emerging market debt crisis on the major UK banks.

A number of points are illustrated by the charts. There is a strong negative relationship between provisions, especially excluding those related to PCD, and UK GDP growth<sup>9</sup>, although more so in the late 1980s/early 1990s than a decade earlier. Provisioning appears to broadly coincide with the cycle while write-offs follow with a lag (see Table 1).

**Table 1:**  
**Correlation between major UK banks' average provisions and write-off ratios and lagged annual GDP growth ( $\Delta$ GDP) 1978–2000**

	$\Delta$ GDP <sub>t-3</sub>	$\Delta$ GDP <sub>t-2</sub>	$\Delta$ GDP <sub>t-1</sub>	$\Delta$ GDP <sub>t</sub>
New provisions charge ratio	0.07	-0.08	-0.08	-0.18**
New provisions charge ratio (excluding PCD provisions)	-0.02	-0.37**	-0.44**	-0.39**
Write-offs ratio	-0.17**	-0.32**	-0.27**	-0.10

Sources: Published accounts and Bank calculations.

\*\* Implies significant at the 5% level.

There is also a strong correlation between provisions and future write-offs (net of recoveries). Chart 2 indicates that the lags are probably around two years on average, and in the same phase of the economic cycle.

The extent of likely losses in a recession may, however, have been underestimated when the loans were made. Herring (1999) suggests that during good times banks may underestimate the likelihood of high loss, low probability events ('disaster myopia'). They may put too much weight on the *current* economic environment and too little on the possibility of changes in economic conditions in the future. Competitive pressures could compound the problem. Banks which are myopic may appear to be making abnormal returns, which would attract equally myopic new entrants and thus erode these returns. And, banks which are not myopic may be forced to reduce their lending rates to remain competitive. Therefore, any under-pricing of prospective credit risk would increase the quantity and reduce the average quality of loans during the economic upswing at the cost of increasing provisions and write-offs in any subsequent downturn.

Since provisions are a deduction from profits, this cyclicity in provisions may contribute to procyclicality in bank earnings. The rest of this article analyses in more detail the relationship between provisions and the macroeconomy by looking at data for individual banks. A number of other factors which may affect provisioning are also considered.

### UK banks' provisions

Loan defaults in the banking system will depend on common factors affecting all banks, such as the performance of the economy, as well as idiosyncratic risks specific to individual banks, such as those

<sup>9</sup>: Similar evidence is found for other countries: see, for example, Borio et al (2001) and Banque de France (2001).

## Box 2: The impact of the early 1980s emerging market debt crisis on the major UK commercial banks' provisioning

International bank lending to developing countries rose sharply during the 1970s. By the end of the decade, commercial banks – including the major UK ones – had taken over from governments and multilateral institutions as the largest group of creditors to the highly indebted emerging market countries. They held around 70% of the debt compared with around 30% in 1970<sup>1</sup>. The sharp tightening of US monetary policy in the late 1970s and the ensuing US recession depressed commodity prices and slowed the growth in world trade. Against that background, Mexico suspended payments of interest and principal in 1982. Similar actions by other countries in Latin America (and elsewhere) followed.

The impact of the crisis was initially contained by official intervention. The International Monetary Fund (IMF) provided funds and encouraged creditors to provide new loans and reschedule debts. Moreover, following the so-called Baker initiative<sup>2</sup>, a number of market-based financial instruments were developed which reduced banks' debt exposure. In particular, debt-for-equity swaps, whereby the creditor received local currency in settlement of the debt and re-invested in claims on real assets of the debtor country, were introduced. Estimates suggest that, by 1989, the 15 countries named in the Baker initiative had reduced their bank debt by around 13% through such re-financing.

However, over this period, interest arrears continued to increase. Brazil announced a moratorium on interest payments in February 1987. Subsequently a number of banks made substantial provisions against this debt<sup>3</sup>. Among the major UK commercial banks, Barclays, Lloyds, Midland, NatWest and Standard Chartered all made large bad-debt charges against profits in 1987.

In March 1989, Nicholas Brady, then US Treasury Secretary, announced new proposals to deal with the debt crisis. The Brady initiative shifted the policy emphasis towards debt and debt service reduction, supported by official resources from governments and multilateral institutions. A number of financial instruments (so-called Brady bonds) were created which enabled banks to 'sell

off' some of their developing country problem loans to developing countries. However, in the first negotiations to take place within the Brady framework, between Mexico and the commercial banks, it became clear that the available official resources would be insufficient to support the scale of debt reduction originally envisaged. Consequently in 1989 a number of banks, including the major UK commercial banks, raised provisions still further.

Table A shows the stock of provisions made by UK commercial banks against problem country debt (PCD). All of the UK commercial banks held provisions amounting to at least 50% of their exposures to these countries during the period 1987–1992 and in some cases such provisions were nearer 80%. Some of these provisions were later removed as exposures were sold, and some were released as asset quality improved. But part of these provisions were subsequently written off against PCD.

**Table A:**  
**Evolution of major UK commercial banks' loan-loss provisions against PCD**

Stock of provisions against PCD in £ millions <sup>(a)</sup> :	1987	88	89	90	91	92
Barclays	825 (29)	854 (31)	1,580 (62)	869 (68)	603 (46)	662 (45)
Bank of Scotland	43.6 (33)	42.9 (38)	41.8 (75)	30 (78)	29.9 (77)	38 (81)
Lloyds	1,333 (34)	1,274 (34)	3,050 (72)	2,807 (73)	2,805 (83)	2,124 (77)
Midland	1,206 (29)	1,363 (33)	2,173 (50)	1,224 (67)	126 (63)	820 (48)
NatWest	830 (35)	861 (75)	1,237 (62)	348 (26)	67	
Royal Bank of Scotland	105 (32)	108 (36)	186 (75)	31 (79)		
Standard Chartered	618 (25)	620 (27)	860 (43)	577	473 (39)	523 (39)

Sources: Published accounts and Bank calculations.

(a) Percentage of PCD exposures in brackets.

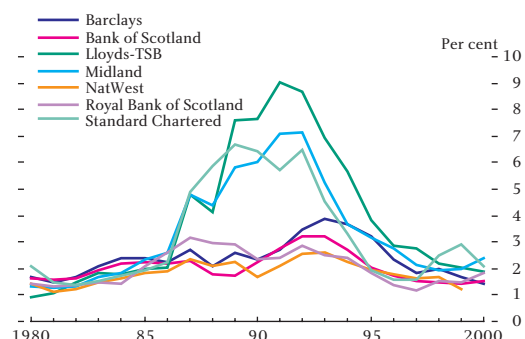
For most of the major UK commercial banks, the process of unwinding/writing off PCD provisions was largely complete by the mid-1990s. However, in the case of Lloyds, some PCD provisions still remained on the balance sheet at the end of 2000.

1: Figures quoted from 'Midland Group Financial Review' (1989).

2: In 1985, James Baker, the US Treasury Secretary, proposed that growth oriented reforms should be adopted, supported by an increase in lending from both official institutions and banks, to address the debt crisis. The hope was that developing countries would, over time, grow out of their debt burden.

3: The trigger event was the decision in May 1987 by the US bank Citicorp to significantly increase its provisions against its developing country loans.

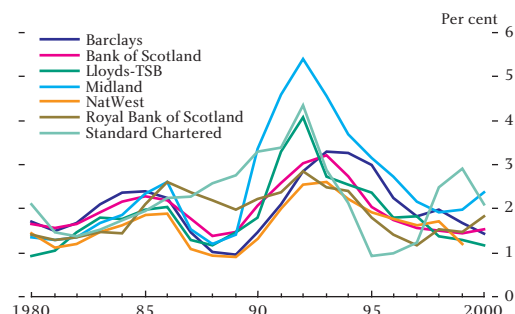
**Chart 3:**  
**Stock-of-provisions-to-loans ratio<sup>(a)</sup> – UK commercial banks**



Sources: BBA statistical abstract and published accounts.

(a) Stock of loan-loss provisions as a percentage of total loans and advances to customers. The latter is measured gross – ie before provisions are deducted.

**Chart 4:**  
**Stock-of-provisions-to-loans ratio<sup>(a)</sup> (excluding PCD provisions) – UK commercial banks**



Sources: BBA statistical abstract and published accounts.

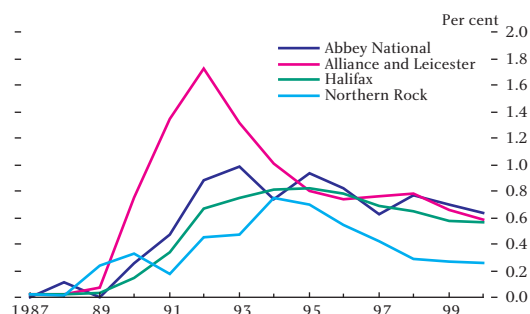
(a) Stock of loan-loss provisions as a percentage of total loans and advances to customers. The latter is measured gross – ie before provisions are deducted.

reflecting, for example, the composition of its particular loan portfolio.

Charts 3 and 4 show the stock<sup>10</sup> of loan loss provisions as a share of total loans (the provisions ratio) for each of the major UK commercial banks since 1980, including and excluding PCD. Chart 5 shows the same data for the main mortgage banks<sup>11</sup>. Although there has been some broadening in the business activities of the mortgage banks since demutualisation, culminating in the recent merger of Halifax with the Bank of Scotland, the distinction between the two groups remains helpful. Lending secured on residential property still accounts for

around 80% of mortgage banks' total domestic loans and advances compared with around 30% for commercial banks. Given the low level of risk typically associated with secured residential mortgage lending, the average overall provisions ratio of the mortgage banks was only 0.6% over the 1987–2000 period, compared with 3.2% for the commercial banks (2.2% excluding PCD).

**Chart 5:**  
**Stock-of-provisions-to-loans ratio<sup>(a)</sup> – UK mortgage banks**



Sources: BBA statistical abstract and published accounts.

(a) Stock of loan-loss provisions as a percentage of total loans and advances to customers. The latter is measured gross – ie before provisions are deducted.

Broadly speaking over the period, the provisions ratios for all the major commercial and mortgage banks moved closely together. Most banks increased their provisions substantially in the early 1990s – a period of UK recession – and reduced them in the mid-1990s when the macroeconomic environment was more benign. Midland, Lloyds-TSB and Standard Chartered, however, made large provisions in the late 1980s, and their peak provisions ratios in the early 1990s were much higher than those of other banks, reflecting exposures to Latin America. Excluding such effects, the countercyclical movement of provisioning across UK banks is even more obvious (see Chart 4).

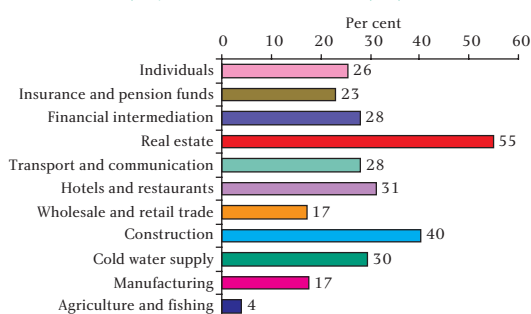
There are a number of reasons why provisions might have risen more in the early 1990s recession than a decade earlier. First, corporate and household debt increased significantly during the 1980s. Between December 1979 and December 1989, the stock of M4 lending to households and Private Non-Financial Corporations (PNFCs) rose by 500% and 370%

10: The accounting identity between the new provisions charge and the stock of provisions is: stock of provisions in period (t) = stock of provisions at period (t-1) plus new provisions charge at (t) less write-offs at (t) plus recoveries at (t) plus other adjustments at (t).

11: Data on provisions were collected largely from published annual reports of the major UK banks. Disclosure practices differ between banks but comparable data were obtained for most UK commercial banks back to 1978. For UK mortgage banks, the available data spanned a shorter period – 1986 to 2000. In part this reflects the fact that all of the mortgage banks in the sample were formerly mutually-owned building societies, subject to a different reporting regime to commercial banks.

respectively<sup>12</sup>. This made borrowers more vulnerable to the sharp rise in interest rates in the early 1990s. Second, loan growth was more rapid during the second half of the 1980s than a decade earlier, in response to financial liberalisation. This may also have resulted in loans being granted to riskier customers. Third, loan growth during the late 1980s economic upswing was particularly strong in sectors sensitive to changes in interest rates, such as real estate and construction (Chart 6).

**Chart 6:**  
**Average annual growth in UK banking sector (sterling) lending by industrial category between December 1987 and December 1989<sup>(a)</sup>**



Source: Bank of England.

(a) Real estate includes lending to commercial property companies.

As suggested in Charts 3–5, provisioning ratios vary more across time than across banks. This is confirmed by statistical analysis. The first column in Table 2 shows the extent to which banks' average provisions ratio varied over the 1987–2000 period. The coefficient of variation – the standard deviation in any year from the whole period average – was 0.4 for commercial banks and 0.6 for mortgage banks. In contrast, the variation in provisioning across banks, on average, over the 1987–2000 period was much lower. The coefficient of variation across commercial banks was only 0.2, and 0.3 for mortgage banks (see second column of Table 2). This suggests that over this period the large UK banks' provisions arose more often from shocks hitting the banking sector as a whole than from idiosyncratic risks.

**Table 2:**  
**Coefficient of variation in bank provisions 1987–2000<sup>(a)</sup>**

	Average of bank peer group over time	Across banks, average over time
<b>Stock of provisions/loans</b>		
Commercial banks	0.4	0.2
Mortgage banks	0.6	0.3
<b>New provisions charge/loans</b>		
Commercial banks	0.7	0.1
Mortgage banks	1.1	0.4

Sources: Published accounts and Bank calculations.

(a) Standard deviation divided by mean, excluding PCD.

### Econometric analysis

Using panel regression analysis, Pain (2002) examined a range of potential factors that may have influenced loan-loss provisions by the major UK banks. The advantage of bank-by-bank data is that they allow for the effects of individual bank characteristics on provisions to be investigated. Moreover, increasing the number of observations on banks' provisions should improve estimates of the impact of different factors on banks' credit losses.

The factors analysed to explain bank loan loss provisions were grouped into three types:

*Macroeconomic factors.* As well as UK GDP growth, world GDP growth was included in the analysis in an attempt to capture the international orientation of most of the large UK commercial banks. Measures of borrowers' indebtedness were also considered to capture their vulnerability to macroeconomic shocks. In particular, measures of the income and capital gearing of the household and corporate sectors were used, as well as a measure of the concentration of debt in high-risk firms<sup>13</sup> (see Benito, Whitley and Young (2001) for more details on the construction and interpretation of this measure).

*Asset price shocks.* Higher interest rates are likely to have a direct effect on debt service costs for borrowers and may reduce indirectly borrowers' income and wealth. Similarly, changes in the exchange rate can affect borrowers' financial health. For example, an appreciation may hurt profits of exporting firms or those which compete with imports.

12: The growth rates are based on the break-adjusted stocks of M4 lending which allow, among other things, for changes in the population of M4 institutions.

13: Debt-at-risk,  $DAR_t = \sum_i p_{it} D_{it}$  where  $p_{it}$  is the probability that borrower  $i$  defaults at date  $t$  and  $D_{it}$  is the amount of debt outstanding to borrower  $i$  at that date.

This can be expressed as the product of three components: the average failure rate for a portfolio of loans, the total amount of loans in the portfolio and the concentration of debt among risky borrowers. That is  $DAR_t = \bar{p} D_t I_t$  where  $\bar{p}$  is the average failure rate in the portfolio,  $D_t$  is the aggregate stock of loans outstanding and  $I_t$  is an index of concentration of risk among individual borrowers.

Further, to the extent that real or financial assets are used as collateral on loans, a fall in asset prices would reduce banks' protection against possible loan default. This effect was proxied by property and equity prices.

*Bank specific factors.* A range of these factors was considered. Several studies have found that rapid loan expansion often indicates an increase in risk and results in future bank problems (see, for example, Clair (1992), Keeton (1999), and Logan (2001). More generally, rapid loan growth by the banking system as a whole may be associated with a deterioration in loan quality – in these circumstances, banks may be under competitive pressures to take on, knowingly or otherwise, less creditworthy borrowers.

Again, if credit risk has been factored into banks' margins in earlier periods, this may be a leading indicator of provisions and write-offs. This was found in Keeton and Morris (1988) and Sinkey and Greenwalt (1991); US banks which charged higher interest rates subsequently recorded higher levels of problem loans. In the estimation described below, each bank's interest margin was included as a lagged variable.

Finally, previous studies have shown that provisions in the UK vary markedly across industrial sectors. For example, provisions on loans to commercial property companies and the construction sector have in the past been higher than to most other sectors of the economy (see, for example, Davis (1993)). The shares of a bank's loan book to different industrial sectors were therefore included as possible explanatory variables, alongside a more general measure of sectoral concentration (the Herfindahl index)<sup>14</sup>. The effectiveness of a bank's credit monitoring procedures was proxied by two crude measures – the bank's cost-to-income ratio and the number of staff per domestic branch.

## Econometric results

Separate equations were estimated for two groups: the seven UK commercial banks (1978–2000) and the four UK mortgage banks (1986–2000). The basic estimation strategy was to take the most general form of the equation in terms of the number of both variables and lags, subject to data limitations, and test

down to the most parsimonious form. A number of different specifications were estimated. The provisions ratio was measured both as a stock and a flow variable – the latter being the new provisions charge against profits. Equations were estimated that are more suitable for forecasting purposes, where only lagged values of the explanatory variables and the dependent variable were included, as well as more general specifications that also included contemporaneous variables.

**Table 3:**  
**Preferred pooled equation for the new provisions charge ratio (excluding PCD): UK commercial banks 1978–2000<sup>(a)</sup>**

<b>Dependent variable:</b> New provisions charge ratio ( $PrF_{it}$ ) <sup>(b)</sup>	
<b>Explanatory variable</b>	<b>Coefficient</b>
Constant	-6.30***
<b>Macroeconomic factors</b>	
Annual UK GDP growth ( $\Delta GDP_t$ )	-0.07***
Annual World GDP growth ( $\Delta WGDP_t$ )	-0.08**
Annual M4 lending growth ( $\Delta M4L_{t-3}$ )	0.04***
<b>Asset prices</b>	
Real interest rates ( $RR_{t-1}$ )	0.09***
<b>Bank specific factors</b>	
Share of total sterling lending to domestic commercial property companies ( $PROPSH_{it-1}$ )	0.04***
Herfindahl index of concentration of the domestic loan portfolio ( $HERF_{it-1}$ )	3.30***
<b>Number of observations</b>	<b>146</b>
<b>Test of joint significance of coefficients</b>	Wald $\chi^2$ (7) = 196 Prob > $\chi^2$ = 0.00
<b>R-squared</b>	0.75

Sources: Bank calculations.

(a) The equation was estimated using the Prais-Winsten Generalised Least Squares (GLS) procedure where first-order serially correlated residuals were assumed.

(b) The dependent variable is  $\ln \left[ \frac{PrF_{it}}{(1 - PrF)_{it}} \right]$  where  $\ln$  is the natural logarithm.

The logit transformation was applied to the dependent variable because the new provisions charge ratio typically ranges between 0 and 1.  $i$  refers to the bank,  $t$  to the time period. See Appendix for data definitions.

\*\*\*, \*\* indicates significant at the 1% and 5% significance levels.

One of the preferred specifications for new provisions is shown above in Table 3 (for further details, see Pain (2002)). The equation confirms the importance over the sample period of the domestic economic cycle and suggests that each percentage point decline in annual UK GDP growth ( $\Delta GDP$ ) increased the provisions ratio by around 7%, say from 1% to 1.07% of loans (or from around 13 to 14<sup>1</sup>/<sub>2</sub>% of shareholders' funds). Changes in world growth ( $\Delta WGDP$ ) also seem to affect provisions, emphasising the international orientation of some of the large UK commercial banks.

14: The Herfindahl index measures the extent to which a bank's loans are concentrated in particular sectors. More formally,  $H = \sum s_i^2$  where  $s_i$  is the amount of loans to a particular sector as a share of total loans.

Measures of the average capital and income gearing in the household and corporate sectors were usually not found to be statistically significant; the measure of debt concentration in risky sectors was found to be important in some specifications, but its statistical significance was sensitive to the definition of the real interest rate. Interest rates were found to be important, with a one percentage point rise in the (*ex post*) real interest rate (RR) increasing the provisions ratio in the same year by around 9%<sup>15</sup>.

Turning to the bank specific factors, the share of a bank's loan book accounted for by commercial property companies (PROPSH) affected the size of provisions, with a one percentage point increase in the share resulting in a 4% increase in the new provisions ratio. An increase in the concentration of the loan book (HERF) also increased provisions. Previous increases in the growth of lending by the banking sector as a whole ( $\Delta M4L$ ) were also found to affect future provisioning. This is consistent with the notion that in an environment of rapid lending growth, riskier loans are granted which subsequently lead to higher loan losses.

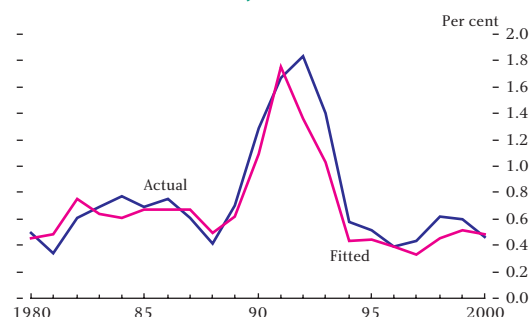
Chart 7 shows the fitted values from the equation in Table 3 against the actual values aggregated over the seven commercial banks. Broadly speaking, the equation tracks the new provisions ratio quite well. In particular, it captures the marked increase in provisions during the recession in the early 1990s and the fall thereafter. To investigate this in more detail, Table 4 shows the contribution of each of the explanatory variables to the actual trough-to-peak rise (1988–1992) and peak-to-trough fall (1992–1996) in the new charge provisions ratio. This shows that it was a combination of declining GDP growth and a tightening in monetary policy following a period of rapid loan growth that mainly explains the marked rise in provisioning in the early 1990s.

### Impact of provisions on earnings and capital

On the basis of the preceding analysis, provisions in the UK appear to have varied inversely with the state of the macroeconomy. An important question is whether this has induced some procyclicality in banks' earnings and capital, perhaps increasing banks' vulnerability to economic downturns.

**Chart 7:**

**New provisions charge ratio (simple average across UK commercial banks) – actual and fitted values<sup>(a)</sup>**



Source: Bank calculations.

(a) The fitted values are constructed by first inverting the logit transformation and then averaging across banks.

**Table 4:**

**Contribution<sup>(a)</sup> of variables to the change in the average new provisions charge ratio (excluding PCD): UK commercial banks**

Percentage points:		
Change in new provisions ratio	1.42	-1.44
<b>Contributions:</b>		
UK GDP growth	0.33	-0.15
World GDP growth	0.21	-0.15
Real interest rates	0.10	-0.12
Share of loans accounted for by property sector	0.13	-0.08
Herfindahl index of industry loan concentration	0.00	0.13
Loan growth of the banking sector (lagged three-years)	0.19	-0.72
Residual	0.46	-0.35

Sources: Published accounts and Bank calculations.

(a) Because a logit transformation is applied to the dependent variable, the contributions are an approximation.

If, for example, banks respond to the rise in earnings and capital during a 'boom' by increasing their lending – perhaps especially likely if they believed that lending had become less risky – provisions should increase in any ensuing downturn, potentially putting capital under pressure<sup>16</sup>. If, on the other hand, they increase dividend payments, it may be difficult to cut dividends again in an economic downturn, again putting pressure on banks' capital and their capacity or willingness to lend<sup>17</sup>. In a recent empirical study of 2,000 UK firms, Benito and Young (2002) found that firms' dividend pay-outs adjusted very slowly following a shock to cash flows.

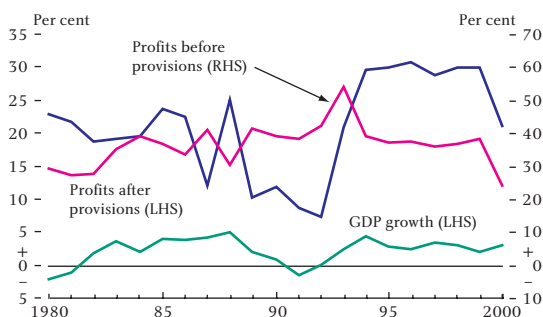
15: No significant effect was found in any of the specifications for equity prices, property prices or the exchange rate.

16: Since lending and assets typically increase each year, slower growth in capital rather than an actual decline might be sufficient to reduce banks' capital ratios.

17: There is, of course, an absolute floor of zero on dividend payments. So if provisions were large enough to cause overall losses (negative profits), then banks' capital would necessarily decline.

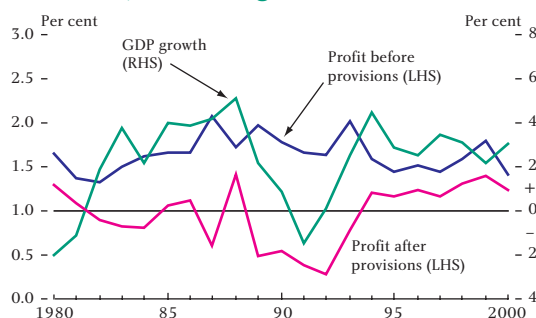
Charts 8 and 9 plot GDP growth against the commercial banks' aggregate profits (before and after deducting provisions) as a percentage of shareholders' funds and total assets respectively. Provisioning not only increases the variability in earnings on both measures but also seems to do so systematically with the economic cycle. To analyse this further, Table 5 shows the correlation of commercial banks' earnings, before and after provisioning, with GDP growth. This suggests strongly that provisioning policy induces procyclicality in banks' earnings.

**Chart 8:**  
**Profits before and after provisions (as a percentage of shareholders' funds) and GDP growth – UK commercial banks**



Sources: BBA statistical abstract, published accounts and ONS.

**Chart 9:**  
**Profits before and after provisions (as a percentage of total assets) and GDP growth – UK commercial banks**



Sources: BBA statistical abstract, published accounts and ONS.

There is also a positive, albeit weaker, correlation between economic growth and both dividends (0.2) and retained profits (0.2). This suggests that the variation in reported bank profits is transmitted partly into retained earnings and partly into dividend payments. But closer inspection of the pattern of dividends suggests that payments to shareholders increased more when profits were rising than they

**Table 5:**  
**Correlation of annual GDP growth and aggregate UK commercial banks' earnings 1978-2000**

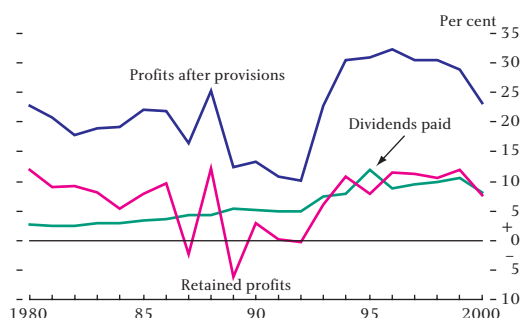
	GDP growth	
	based on return on equity	based on return on assets
Profits before provisioning	0.14	0.08
Profits after provisioning	0.45	0.31
Dividends	0.23	0.23
Retained profits <sup>(a)</sup>	0.21	0.15

Source: Bank calculations.

(a) Typically accounting rules mean that retained profits = profits after provisions less tax on profit on ordinary activities less minority interests less dividends paid. Variations may occur in some years depending on the treatment of extraordinary and exceptional items.

were cut back when profits declined. Between 1987–92, profits (after provisions) fell sharply, due initially to the impact of PCD and then to the domestic recession. But over the same period, dividend payments remained broadly flat. As a result, retained profits were negative in some years (Chart 10) putting pressure on banks' capital. Conversely, the marked recovery of earnings in the first half of the 1990s was only partly reflected in higher retained profits as dividend payments were increased.

**Chart 10:**  
**Pre-tax-profits, dividends paid and retained profit (as a percentage of shareholders' funds) – UK commercial banks**



Sources: BBA statistical abstract and published accounts.

Simple correlation analysis provides some evidence that this cyclicity in retained profits is reflected in changes in banks' regulatory capital. However, there appears to be no contemporaneous correlation between GDP growth and changes in the ratio of capital to risk-weighted assets (see Table 6)<sup>18</sup>. At face value, this suggests that changes in capital (the numerator) and in risk-weighted assets (the denominator) are *both* higher when GDP growth is strong and lower when GDP growth is weak. But it

<sup>18</sup>: Considering a number of developed country banking systems, Borio et al (2001) also find a clearer pattern of cyclicity in profits and capital than in capital ratios.

**Table 6:**  
**Correlation of GDP growth and change in aggregate UK commercial banks' capital 1988-2000**

	GDP growth
Change in:	
Tier 1 <sup>(a)</sup> capital	0.35
Tier 1 plus Tier 2 <sup>(b)</sup> capital	0.20
(Tier 1 plus Tier 2)/total unweighted assets	-0.08
Total regulatory capital/risk-weighted assets	-0.03

Sources: Published accounts and Bank calculations.

(a) Tier 1 comprises equity capital and published reserves from post-tax retained earnings.

(b) Tier 2 refers to supplementary regulatory capital and includes undisclosed reserves, asset revaluation reserves, general provisions, debt/equity capital instruments and subordinated debt.

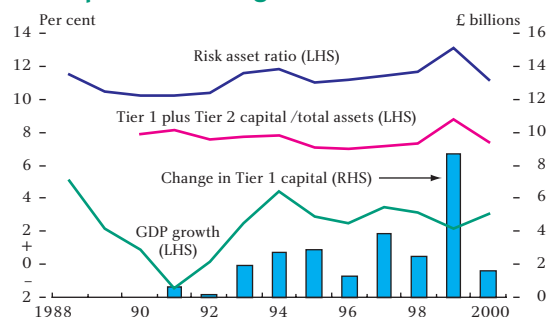
would be misleading to conclude from this that capital constraints in recessions caused slower growth in risk-weighted assets. First, these correlations show averages over time whereas capital constraints would be expected to bite only when capital ratios are abnormally low. Typically, UK banks seem to hold capital somewhat in excess of the regulatory minimum (see Chart 11). Second, interpretation is complicated by the introduction of minimum capital requirements following the Capital Accord in 1988. Independently of macroeconomic fluctuations this might have led banks to build up capital and/or reduce risk-weighted assets. Ediz, Michael and Perraudin (1998) confirm that, over the 1989–1995 period, UK banks with capital closer to their regulatory minimum built up capital more than better-capitalised banks<sup>19</sup>. More generally there are a number of supply and demand factors that can affect bank lending other than the level of banks' capital. In particular, capital constraints would be most likely to bite in recessions, when new provisions are highest. However, the demand for loans is also likely to decline during recessions and banks may reduce loan supply, not because of capital constraints, but because of concerns that credit quality has deteriorated<sup>20</sup>.

## Conclusion

Loan-loss provisions have an important impact on banks' reported profits and on their capital.

Since most borrowers' financial condition deteriorates in economic downturns and improves in recoveries, a similar cycle should be expected in provisions. This is borne out by data showing that there has in the past been a negative correlation

**Chart 11:**  
**Risk asset ratio<sup>(a)</sup>, regulatory capital ratio<sup>(b)</sup>, change in total capital and GDP growth – UK commercial banks**



Sources: FSA, BBA statistical abstract, published accounts and ONS.

(a) Total regulatory capital as a percentage of risk-weighted assets.

(b) Tier 1 plus Tier 2 capital as a percentage of total (unweighted) assets.

between provisions made by the major UK banks as a whole and aggregate output growth. Econometric analysis using bank-specific data confirms that provisions of the large UK commercial banks have depended negatively on GDP growth. Provisions are also found to have increased when UK real interest rates rise and when world economic growth falls. But bank-specific factors also play a role. Provisions are found to have increased with the sectoral concentration of debt, particularly if in risky sectors, such as commercial property. As found in a number of previous studies, fast growth in banking sector lending also results in higher future provisions and losses.

Such formal models can be helpful in attempting to quantify the impact of external factors on bank stability. But it is important to remember that past experience may not always be a good guide to the future. In particular, the change in the UK monetary policy regime may have permanently affected the macroeconomic environment in which UK banks operate. Together with improvements in risk management practices this may mean that banks are now able to cope better with credit risk in their loan portfolios.

Nonetheless, in the past, there is evidence that the cyclicity in provisioning has contributed to the procyclicality of UK banks' reported earnings. In economic upswings, a decline in provisions has boosted banks' reported profits while in recessions

19: The Basel Committee (1999) reports that capital was built up in a number of banking systems in the early 1990s following the introduction of the Basel Accord.

20: There has been a large amount of econometric work, mainly in the United States, on the potential relationship between banks' capital and lending. Overall, the evidence on whether bank capital ratios have constrained loan supply is mixed (see Basel Committee (1999) for a detailed survey).

profits have been reduced. Unless these profits earned in good times are held as a cushion against the bad times, provisioning policy may increase banks' vulnerability to economic downturns.

## Annex: Data definitions and sources

- (i)  $PrFl_{it}$  = New loan-loss provisions charge/(stock of loans and advances to customers + stock of total loan loss provisions).

Source: Banks' annual reports.

- (ii)  $GDP_t$  = UK real GDP at constant factor cost (1995 prices).

Source: ONS, code: YBHH.

- (iii)  $PGDP_t$  = GDP deflator at market prices.

Source: ONS, code: YBGB.

- (iv) BASE = London clearing banks' base rate.

Source: ONS, code: AMIH.

- (v)  $RR_t$  = *ex post* real interest rate calculated as the annual average of  $(1+BASE$  in quarter  $i$ ) divided by  $(1+$  four quarter percentage change in PGDP in quarter  $i+1$ ).

- (vi)  $HERF_{it}$  = Herfindahl index of concentration of the (sterling) loans and advances to the UK private and public sectors. Formally, the index is constructed as:

$$HERF_{it} = \sum_j s_j$$

where  $s_j$  is the share of loans to the  $j$ th sector in total (sterling) loans and advances to the UK private and public sectors.

The sectors were Agriculture, Forestry and Fishing, Energy and Water Supply, Manufacturing, Construction, Garages and Distribution, Hotels and Catering, Transport and Communication, Commercial Property, Financial Intermediation, Household Bridging finance, Loans Secured on Residential Property, and Other loans and advances to individuals. These sectors typically account for around 90% of UK banks' (sterling) loans and advances to the UK private and public sectors.

- (vii)  $PROPSH_{it}$  = (sterling) loans and advances to property companies as a percentage of total UK private and public sector loans and advances by bank  $i$ .

For the mortgage banks, data for the composition of their loan portfolios prior to their demutualisation are based on consolidated balance sheet information reprinted in the Building Societies Association Annual Year Book. Details relate solely to the share of loans secured on residential property in total loans and advances to customers. But for all four banks, this accounted for over 90% of loans and advances in the years prior to conversion to bank status.

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# Spillovers from recent emerging market crises:

## what might account for limited contagion from Argentina?

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The current crisis in Argentina has been notable for the lack of substantial spillovers to other emerging market economies (EMEs), particularly relative to earlier episodes of EME turbulence such as the crisis in Asia in 1997/98. This article considers factors that might account for this change. One is that investors have differentiated more between the crisis economy and other EME credits than during earlier crises, perhaps because of shifts in the composition of the EME investor base and widespread anticipation of the Argentine crisis. Another is that the vulnerability to shocks of those EMEs with close trade and financial ties to Argentina is lower than was the case in previous crises such as Thailand in 1997. Changes in investor behaviour may mean that contagious crises are less likely in the future. However if limited spillovers partly reflect the lower fragility of EMEs closely linked to Argentina, then future problems in other EMEs might still result in contagion.

**SEEMINGLY ISOLATED** crises in Mexico in 1994 and Thailand in 1997 quickly led to problems in other EMEs – including stock market collapses, banking panics, and balance of payments crises. By contrast, spillovers from the current crisis in Argentina have to date been much more limited.

Why do some crises quickly spread elsewhere, while others have a more limited wider impact? Part of the answer may lie in the existence of different channels of crisis propagation. In some cases, problems may spill over to EMEs having close economic or financial ties to the crisis economy. In others, crises can spread more widely without any such obvious linkages, for example because of shifting investor sentiment.

Regardless of the specific channel of shock transmission, the likelihood that spillovers lead to crises elsewhere will depend on structural features of EMEs. For example, macroeconomic or financial vulnerabilities may make EMEs more susceptible to shocks. The behaviour of EME investors can also have an important influence. EME creditors with sound balance sheets may help absorb shocks transmitted from crisis EMEs; conversely, investors with impaired balance sheets may make spillovers more likely. The

nature of the initial crisis matters too. A sudden crisis may be more likely to have adverse impacts elsewhere if it leads to disorderly selling in illiquid markets. A well-anticipated crisis might cause less of a jolt as it may allow investors to rebalance their positions gradually in advance. Anecdotally, all of these factors – stronger balance sheets on the part of EMEs and their creditors and the lack of a surprise – help account for the relatively limited spillovers from the recent Argentine crisis.

This article considers these elements of crisis transmission in greater detail, focusing on the EME crises in Asia in 1997/98 and Argentina now. Previous studies, such as Kaminsky and Reinhart (2000), have suggested that trade and financial ties between Thailand and other Asian EMEs played some role in the spread of problems in the Asia crisis. This article adds to these studies by examining whether weaker trade and financial links from Argentina to other EMEs, and/or lower associated economic fragilities, might explain the more limited spillovers from this crisis. It also considers other factors that have reportedly played a key role in the differing evolution of these crises, including the behaviour of international investors.

## Crisis propagation channels

Previous work, such as Claessens et al (2001), has considered both crisis propagation channels that operate through economic or financial ties between EMEs and those that stem from investor behaviour. In the latter case, problems in one EME might lead investors to revise their views about future investment returns in other EMEs, even if these economies have no clear economic or financial ties to the initial crisis economy. This might reflect perceived economic, financial or even political similarities between other EMEs and the crisis economy. It might also reflect a change in investors' expectations of potential support from the international community in future crisis situations.

Measuring these effects directly is problematic. For this reason, empirical studies of crisis propagation have instead often sought to measure the potential for transmission through easily quantifiable trade and financial channels. These channels also more readily lend themselves to *ex ante* evaluation.

Shocks may spill over via bilateral trade ties. For example, a collapse in the exchange rate of an EME and/or weaker growth may reduce its demand for imports from other EMEs. Developed economies also often import from a range of EMEs and so there may be important indirect trade linkages between EMEs via these economies. For example, a fall in the relative price of exports from a crisis EME because of a collapse in its exchange rate may raise competitiveness and reduce developed-economy demand for products from other EMEs. This may be particularly important when there are substantial overlaps in the composition of EME trade.

A second important set of linkages arises through direct or indirect financial interdependencies. Systematic evidence on direct intra-EME financial linkages is limited. Although these may be important in some cases – such as current links from Argentina to the Uruguayan banking system – the lower degree of financial development in most EMEs suggests that in general direct links are likely to be weak<sup>1</sup>.

Studies of financial relationships between EMEs, such as Van Rijckeghem and Weder (2001), have focused

on indirect linkages via shared developed-economy bank creditors. These 'common creditors' may respond to a loss on their exposure to one EME by reducing their lending to other EMEs. For example, losses may mean the lender needs to replenish liquidity or recapitalise to restore balance sheet health. This is most likely to occur when the initial financial position of the common creditor is relatively poor, or when the loss is unexpected and there is little time to adjust.

These common creditor links may also operate via non-bank investors. Although systematic data on EME capital market exposures by creditor are generally unavailable, aggregate information on investors' exposures may help identify those EMEs most susceptible to spillovers through these channels.

## Emerging market economy vulnerabilities

Studies of leading indicators of crisis, including so-called "early warning systems" (EWS), have focused on the role of EME vulnerabilities<sup>2</sup>. Country-specific fragilities may influence whether the transmission of a shock from one EME leads to a crisis in others. In particular, interactions between propagation channels and specific vulnerabilities can play an important role. Countries with both strong links and high vulnerabilities are more susceptible to spillovers.

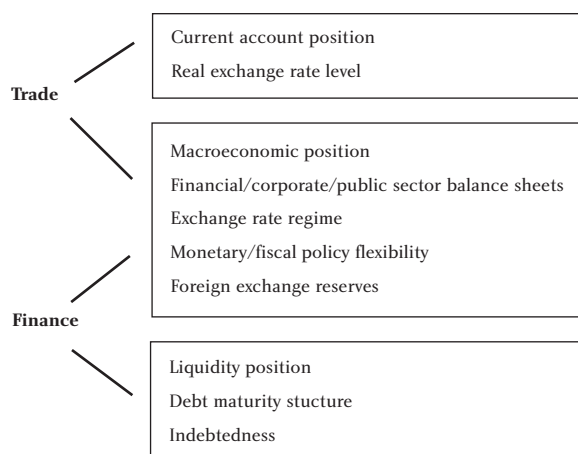
The current account position and the level of the real effective exchange rate are vulnerabilities that could be exposed in countries with strong trade links to crisis EMEs (Diagram 1). For countries with strong financial ties, indicators of financial system fragility – such as liquidity, indebtedness and the maturity structure of obligations – are perhaps the most relevant factors. Vulnerabilities in EME sectoral balance sheets may also affect the transmission of both real and financial shocks.

Domestic policy – particularly the scope for adjustment to shocks through fiscal, monetary and exchange rate policies – can also often influence the impact of transmitted shocks. For example, active and pre-emptive policy responses appear to have had a material impact in reducing spillovers in some countries in previous EME crises, despite relatively

1: Fratzscher (2000, p.13) notes that direct financial linkages are likely to have been relatively unimportant in recent crises since developed economies provide most funds to EMEs.

2: See, for example, Kaminsky et al (1998) and the International Monetary Fund (IMF) review of EWS models in the *Global Financial Stability Report* (2002).

**Diagram 1:**  
**Examples of EME vulnerabilities related to trade or financial spillover channels**



strong pre-crisis ties and apparent vulnerabilities. In the Asian crisis, Corsetti et al (1999) suggest that the Hong Kong authorities' willingness to adjust interest rates sharply helped maintain the currency board in the face of speculative pressures.

Finally non-EME vulnerabilities, for example weaknesses in developed-economy investors' balance sheets, may increase the likelihood that shocks spread to other EMEs. This is discussed in more detail below.

### Case studies – Asia and Argentina

To what extent can we identify in advance countries likely to be hit by spillovers from crisis EMEs?

Following previous studies, this section presents

estimates of readily measurable trade and financial linkages between Thailand – the first to face severe problems in the Asia crisis – and other EMEs with significant involvement in global capital markets<sup>3</sup>. This article adds to earlier studies by examining the extent of these ties in the Argentine crisis. It then examines whether linkages from crisis economies, in conjunction with vulnerabilities of other EMEs, help explain differences in crisis dynamics.

### EME linkages to Thailand and Argentina

Trade channels can be mapped using merchandise trade data from the IMF Direction of Trade Statistics. Previous empirical studies have developed a range of indices from these data. Table 1 presents two measures, showing linkages from Thailand to other EMEs in 1996, the year before the start of the Asian crisis, and from Argentina in 2000.

The first measure focuses on bilateral exports and illustrates the joint importance of these exports for the crisis economy and the other EME. It is calculated as the sum of their bilateral exports divided by the sum of their total exports to all markets. But direct trade is only part of the picture, given that around 60% of developing economy exports go to industrial countries. To calibrate potential indirect trade effects, the second measure in Table 1 gauges overlap between EMEs' trade in third markets (weighted by the relative importance of each market in the total exports of the two EMEs)<sup>4</sup>. The index rises from zero to one as the pattern of shared

**Table 1:**  
**Trade linkage indicators**

	Bilateral trade index		Shared market trade index	
	Thailand: 1996	Argentina: 2000	Thailand: 1996	Argentina: 2000
1	Singapore (7.7%)	Brazil (15.8%)	China (0.94)	Brazil (0.72)
2	Malaysia (3.9%)	South Africa (0.9%)	Malaysia (0.90)	Colombia (0.61)
3	Hong Kong (2.1%)	India (0.9%)	Indonesia (0.90)	India (0.57)
4	Korea (2.0%)	China (0.5%)	Korea (0.89)	Venezuela (0.55)
5	Philippines (1.8%)	Colombia (0.5%)	Hong Kong (0.86)	Korea (0.55)
6	Indonesia (1.6%)	Venezuela (0.4%)	Singapore (0.85)	China (0.54)
7	China (1.5%)	Korea (0.3%)	Philippines (0.83)	South Africa (0.53)
8	India (0.8%)	Thailand (0.3%)	India (0.75)	Thailand (0.52)

Sources: IMF Direction of Trade Statistics and Bank calculations.

3: The 18 countries included in the study are: Argentina, Brazil, China, Colombia, Hong Kong, India, Indonesia, Korea, Malaysia, Mexico, Philippines, Poland, Russia, Singapore, South Africa, Thailand, Turkey and Venezuela. At end-April 2002 countries from this sample had combined weights of 85% and 78% in the JP Morgan Chase & Co Emerging Markets Bond Index (EMBI) Global and the Morgan Stanley Capital International (MSCI) Emerging Markets Free (EMF) equity index respectively. Hong Kong and Singapore are not included in either of these EME indices, but are considered in this study given their trade and financial linkages to EMEs. However, Uruguay, which has experienced some spillovers from problems in Argentina (as discussed in the Emerging Market Economies section earlier in this Review), is not included given its very low weight or omission from these indices.

4: This index was developed by Glick and Rose (1999). In Table 1 it is calculated on the basis of similarity in export shares in eight markets – the European Union, Japan, the United States, developing Europe, developing Africa, developing Asia, developing Middle East and developing Western Hemisphere.

**Table 2:**  
**Common creditor indicators**

Dependence on major common creditor <sup>(a)</sup>		Common creditor index	
	Thailand: 1996	Argentina: 2000	
1	Indonesia (39.3%)	Colombia (23.0%)	Indonesia (0.88)
2	China (32.1%)	Philippines (22.2%)	Korea (0.78)
3	Malaysia (30.8%)	Korea (21.8%)	China (0.75)
4	Singapore (27.4%)	Brazil (21.8%)	Malaysia (0.75)
5	Hong Kong (27.1%)	India (18.6%)	Singapore (0.68)
6	Korea (23.8%)	South Africa (17.6%)	Hong Kong (0.65)
7	India (16.8%)	Mexico (17.5%)	India (0.61)
8	Philippines (10.3%)	Venezuela (15.6%)	Turkey (0.53)
			Argentina: 2000
			Colombia (0.87)
			Brazil (0.85)
			Venezuela (0.76)
			Mexico (0.67)
			Korea (0.63)
			Philippines (0.57)
			Turkey (0.54)
			India (0.52)

Sources: Bank for International Settlements (BIS) and Bank calculations.

(a) Japan is the largest BIS-area bank creditor for Thailand, 1996 Q4 data. United States is the largest creditor for Argentina, 2000 Q4 data. Calculated using BIS foreign claims data.

market export shares between the two countries becomes more similar.

For Thailand in 1996, the bilateral trade measure indicates relatively widespread linkages with other Asian EMEs. By contrast, Argentina had very strong direct trade linkages with Brazil in 2000, but other direct linkages with EMEs were more limited. The shared market trade index indicates that Asian EMEs had the most similar patterns in export destinations to Thailand in 1996. In particular, all four of the other Asian crisis countries (Indonesia, Korea, Malaysia and the Philippines) are included in Thailand's top eight. For Argentina in 2000, similarities in EME export patterns were less apparent, although again Brazil ranked highest on this measure.

Financial linkages via shared developed-economy bank creditors can be illustrated using the foreign claims data from the Bank for International Settlements (BIS)<sup>5</sup>. The primary creditor of the crisis country can be identified (ie the BIS reporting country with the highest share of foreign claims on the crisis economy). The dependence of another EME upon this primary creditor (relative to total BIS-area banks' claims on the EME) can then be calculated (Table 2). This provides a very simple indicator of the potential for spillovers via the main common creditor (which, for example, ignores the financial health of creditors). Such spillover channels may also operate via other bank creditors of the crisis economy. The second index in Table 2 attempts to illustrate this

feature. It measures the similarity of an EME's borrowing pattern to that of the crisis country across all common creditors<sup>6</sup>.

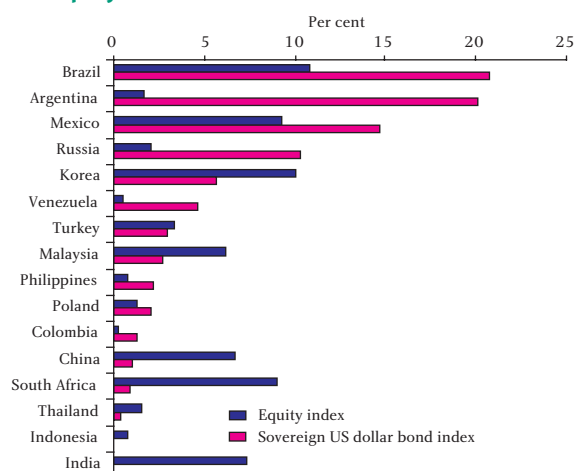
Japanese banks had the highest proportion of total BIS foreign claims on Thailand at end-1996 (51%); and the United States had the highest share of foreign claims on Argentina at end-2000 (27%), slightly ahead of Spain (25%). Japan was a key external bank creditor for a number of other Asian EMEs. US debtors were more geographically dispersed. But overall, dependence was less marked than that of economies on Japan in the Asia crisis. In terms of relative similarity of their bank borrowing patterns to Thailand, Asian EMEs all ranked highly in 1996. This was also true for several Latin American EMEs in the case of Argentina.

Systematic data on non-bank financial holdings, broken down by creditor, are not readily available. However, country weights in widely tracked international equity and bond indices provide one illustration of the relative importance of different EMEs to global investors – and hence the potential for intra-EME linkages via international investors. Latin American EMEs are major players in US dollar sovereign bond markets. Asian EMEs generally have higher relative equity market capitalisation, although this is also significant in Brazil, Mexico and South Africa (Chart 1). Given Thailand's low weight in international equity and bond indices, propagation via capital markets would appear to have been an

5: Box 3 in the December 2001 *Financial Stability Review*, p. 47, outlines the nature of the BIS data and the gaps in its coverage. The foreign claims data include BIS-reporting banks' cross-border claims in all currencies and their foreign affiliates' local claims in both local and foreign currencies.

6: This index was developed by Van Rijckeghem and Weder (2001) and is analogous to the Glick and Rose (1999) trade measure. It ranges from zero to one, with a higher value indicating greater similarity in borrowing patterns. The total claims on an EME used to calculate the index in Table 2 are those of 13 major published reporting BIS common creditors (Belgium, Canada, Finland, France, Germany, Italy, Japan, Netherlands, Spain, Sweden, Switzerland, United Kingdom and United States). This modified approach has been used to overcome problems of breaks in the reporting sample.

**Chart 1:**  
**Emerging market weights in US dollar sovereign bond and equity indices<sup>(a)</sup>**



Sources: MSCI and JP Morgan Chase & Co.

(a) Equity index is MSCI Emerging Markets Free and sovereign US dollar bond index is EMBI Global. Weights as at Jan. 2001 (pre-Argentina crisis).

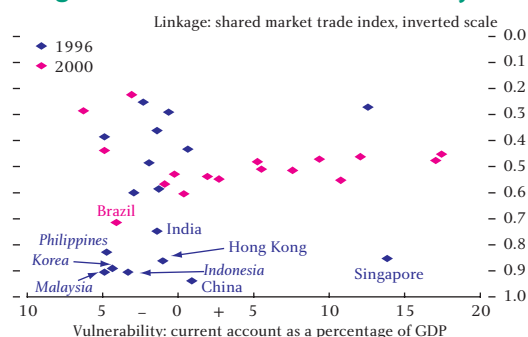
unlikely spillover channel from its crisis to other EMEs. By contrast, Argentina's relatively high weighting in the EME external sovereign bond market prior to its crisis suggested potential for spillovers to other major sovereign external bond debtors such as Brazil, Mexico and Russia<sup>7</sup>.

### EME vulnerabilities in the Asian and Argentine crises

Empirical EWS models typically employ a range of vulnerability and policy flexibility indicators to assess the probability of impending crisis in an EME. These models sometimes incorporate 'contagion' variables which raise the probability of crisis (for given vulnerabilities) if there has been a crisis elsewhere. A more structural approach, which looks explicitly at how specific shocks and linkages can interact with pre-existing vulnerabilities, may provide further insights on variations in crisis dynamics.

Does the evidence suggest that the interaction of trade and financial ties with related vulnerabilities was a contributory factor in the initial spread of the Thai crisis? Charts 2 and 3 present a selection of some key economic and financial ties and associated vulnerabilities for major EMEs. The blue markers in Chart 2 denote the strength of shared market trade linkages to Thailand and the related current account vulnerability of major EMEs in 1996. Similarly, Chart 3 shows EMEs' dependence on bank lending

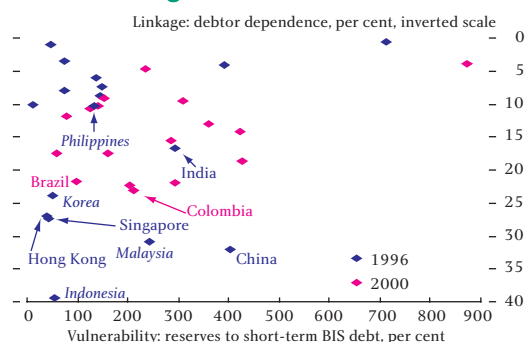
**Chart 2:**  
**Thai and Argentine crises – shared market trade linkage and current account vulnerability<sup>(a)</sup>**



Sources: IMF, IMF Direction of Trade Statistics and Bank calculations.

(a) Asia crisis economies' positions in 1996 indicated in italics.

**Chart 3:**  
**Thai and Argentine crises – dependence on major common creditor linkage and foreign exchange reserve coverage of short-term BIS debt vulnerability<sup>(a)</sup>**



Sources: IMF, BIS and Bank calculations.

(a) Asia crisis economies' positions in 1996 indicated in italics.

from Japan (the major common creditor in the crisis) against their related vulnerability of foreign exchange reserves coverage of short-term foreign currency debt. Economies located closer to the bottom left hand corner of each chart would perhaps be expected to face greater spillovers given the conjunction of a strong linkage and high relevant vulnerability.

These charts suggest that trade and bank linkages, together with vulnerabilities, go some way towards identifying those Asian economies – Indonesia, Korea, Malaysia and the Philippines – that experienced the most severe spillovers from the Thai crisis. They all had both relatively strong trade links with Thailand and large current account deficits. As Corsetti et al (1999) note, many also had managed exchange rate systems and had seen appreciations in their real exchange rate positions prior to crisis. The crisis Asian EMEs also tended to have strong banking sector

7: The value of Argentina's external sovereign bond weighting has since fallen sharply with the move to default (to 1.7 % at 27 May 2002).

dependencies on Japan (Thailand's main BIS-area bank creditor) which may have interacted with generally low reserve coverage of short-term debt.

Other economies were relatively strongly linked to Thailand but were perhaps less vulnerable. For example, China and India had relatively high reserves to short-term debt and were less vulnerable to exchange rate pressures given their capital controls. Singapore, and particularly Hong Kong, which had relatively strong trade and bank creditor ties with Thailand, faced speculative pressure during the crisis but had liquid and well-capitalised financial systems which may have helped them to contain spillovers.

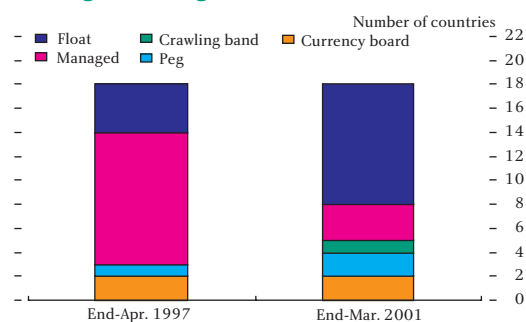
How strong are relationships between trade and banking sector ties and EME vulnerabilities in the current crisis in Argentina? For the examples in Charts 2 and 3, the pink markers indicate that there were relatively fewer instances of EMEs with both close trade or banking linkages to Argentina and related vulnerabilities – EMEs appear less frequently in the lower left portions of the charts. There were some important exceptions. In particular, Brazil appears to have relatively strong ties and vulnerabilities, and perhaps has other linkages to Argentina via shared bond market creditors as already noted. But Brazil and some other strongly linked EMEs have also moved in the direction of more flexible macroeconomic policy regimes, better able to withstand shocks. For example, many EMEs have adopted floating exchange rate regimes that may provide an additional buffer in the event of spillovers (Chart 4).

### Investor behaviour

Analysis of the interactions of trade and banking sector links with vulnerabilities appears to be a useful starting point for assessing the potential for crisis spillovers. But it is only a starting point. It is subject to two types of error: first, it may predict spillovers when none is realised; and, second, it may miss them when they do occur.

One reason for these errors may be that the selection of readily measurable trade and financial ties and vulnerabilities presented here are a subset, albeit an important one, of the full range of linkages and vulnerabilities. In practice, a wider set of vulnerability

**Chart 4:**  
**Exchange rate regimes<sup>(a)</sup>**



Source: IMF.

(a) The 18 EMEs discussed in this article are shown. Peg: conventional fixed peg arrangements other than currency board. Band: pegged exchange rates within horizontal bands. Managed: managed floating with no pre-announced path for the exchange rate. Float: independently floating.

indicators are probably relevant – including less readily measurable indicators of structural reform and balance sheet characteristics. On trade linkages, the potential for product level spillovers is not examined. For financial linkages, intra-EME financial relationships have not been captured and off-balance sheet bank exposures (say via credit default swap markets) are not considered. Furthermore, evidence on the potential for non-bank spillovers via shared creditors is only partial. Although an increasing number of empirical studies have attempted to examine these various additional channels in more detail, further research could provide important insights into the potential for EME crisis spillovers<sup>8</sup>.

Another reason why the analysis above of pre-existing economic and financial linkages and vulnerabilities can only offer a partial explanation of crisis dynamics is that it does not explicitly consider investor behaviour. For example, the financial linkage measures provide information on the scale of investor exposures to EMEs, but do not indicate their actual portfolio behaviour in a crisis. Furthermore investor behaviour may open up spillover channels unrelated to pre-crisis intra-EME economic or financial linkages. For example, a crisis could prompt an investor with no exposure to the crisis EME to reassess its exposure to other EMEs.

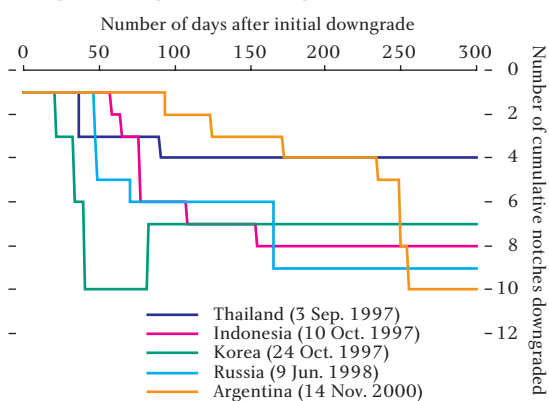
Changes in investor behaviour, along with the lower coincidence of high vulnerabilities and close linkages, may have contributed to the absence of spillovers from the Argentine crisis. What might explain this

8: For example, Froot et al (2000) examine data on portfolio flows into developed and emerging markets, whilst Kaminsky et al (2001) analyse the behaviour of emerging market mutual funds.

shift in behaviour? One argument might be that policy initiatives by both the IMF and EMEs following previous crises have led to improvements in country surveillance. For example, increased EME data dissemination may mean that it is now easier for investors to discriminate between EME credits. Evidence from the dispersion of spreads on internationally traded EME bonds, noted in the December 2001 *Review*, supports the view that investors have differentiated between Argentina and other EME debtors, particularly relative to earlier crisis periods<sup>9</sup>.

Notwithstanding increased differentiation between credits, sudden crises can lead to disorderly selling in thin markets, making spillovers more likely. By contrast, when the probability of crisis rises gradually over time, investors can make adjustments to their portfolios in a more orderly manner. Evidence from the behaviour of spreads and ratings downgrades in various economies in the period around crises (Chart 5) suggests that current events in Argentina were much more widely anticipated than earlier crises, such as those in Russia in 1998 and Korea in 1997.

**Chart 5:**  
**Ratings downgrades during crises<sup>(a)</sup>**



Source: Standard & Poor's.

(a) Indicates cumulative movement during period. Initial downgrade (date in brackets) is the first downgrade in the period leading up to crisis (with previous rating change in all cases over 18 months earlier than this change).

The lack of substantial spillovers from the crisis in Argentina may also reflect a shift in the composition of the EME investor base in recent years. For example, Japan was the main bank creditor of Thailand and other Asian EMEs in 1996, whereas more recently the

United States and Spain were the principal creditors of Argentina. The Spanish and US banking systems in the period leading up to the Argentine crisis appeared to have relatively strong initial financial positions (both rated between B and C+ by Moody's for average financial strength at October 2000)<sup>10</sup>. By contrast, losses on exposures to Thailand may have weakened already poor balance sheet positions of Japanese banks (with an average Moody's financial strength rating of D+ in 1997). Finally, in global capital markets, market anecdote suggests a decline in the involvement of leveraged creditors such as hedge funds. In recent years IMF reports have also pointed to an increased prominence of 'buy-hold' institutional investors in EME capital markets<sup>11</sup>. The former may be forced into liquidating positions with short-term sales in a crisis, for example in order to meet margin calls. By contrast, the latter may be less vulnerable to reduced asset returns because they tend to be less leveraged and have longer horizons.

## Conclusion

Trade and financial ties and associated EME vulnerabilities appear to help explain some of the spread of the crisis in Thailand to other Asian EMEs in 1997/98. In the more recent crisis in Argentina, a lower incidence of EMEs with both strong links to Argentina and high associated vulnerabilities to shocks may go some way towards explaining why the crisis has had a less marked impact elsewhere. Changes in the response of international investors to events in Argentina relative to earlier episodes of EME stress – perhaps reflecting shifts in the EME investor base and the widespread anticipation of the Argentine crisis – have also played an important role.

If shifts in investor behaviour explain the limited spillovers from Argentina, contagious crises may be less likely in the future. However if they partly reflect lower fragilities of EMEs closely linked to Argentina, future EME problems might still result in contagion. Further work disentangling these alternative factors is needed given their very different implications for public policy.

<sup>9</sup>: See Box 3 in the June 2001 *Review*, p. 61.

<sup>10</sup>: Banks rated B display strong intrinsic financial strength, those rated C display adequate intrinsic financial strength and those rated D display modest intrinsic financial strength.

<sup>11</sup>: See IMF International Capital Markets, September 2000, p. 63.

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