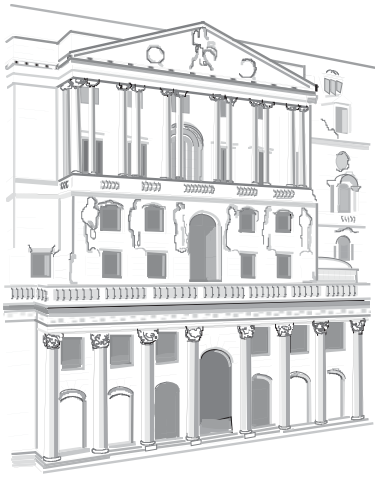
# Bank of England Quarterly Bulletin

Mercers' Hall, Cheapside: where the Bank began business in 1694



May 1994

Volume 34 Number 2

# Bank of England Quarterly Bulletin

## *Tercentenary issue*

### May 1994




Volume 34 Number 2

# Bank of England publications

## Quarterly Bulletin and Inflation Report

From 1994, copies of the *Bulletin* and *Inflation Report* may be obtained from the Bank as a **combined** package at the following prices:

| | Annual subscription 1994 | Single copies 1994 |
|---|---|---|
| United Kingdom by first class mail(1) | £24.00 | £6.50 |
| *Students, UK only* | *£8.00* | *£2.50* |
| European countries including the Republic of Ireland, by letter services | £30.00 | £8.00 |
| Countries outside Europe: | | |
| Surface mail | £30.00 | £8.00 |
| Air mail: Zone A(2) | £40.00 | £10.25 |
| Zone B(3) | £45.00 | £11.50 |
| Zone C(4) | £47.00 | £12.00 |

The *Inflation Report* is also available separately and can be obtained from the Bank at the following prices:

| | Annual subscription(5) 1994 | Single copies(5) 1994 |
|---|---|---|
| United Kingdom by first class mail(1) | £16.00 | £4.00 |
| *Students, UK only* | *£6.00* | *£2.00* |
| European countries including the Republic of Ireland, by letter services | £19.00 | £4.75 |
| Countries outside Europe: | | |
| Surface mail | £19.00 | £4.75 |
| Air mail: Zone A(2) | £20.00 | £5.00 |
| Zone B(3) | £21.00 | £5.25 |
| Zone C(4) | £22.00 | £5.50 |

Copies of the *Bulletin* issued before 1994 are available separately from the Bank. The 1991, 1992 and 1993 issues can be obtained at the following prices:

| | Annual subscription | Single copies |
|---|---|---|
| United Kingdom by first class mail(1) | £27.00 | £7.50 |
| *Students, UK only* | *£9.00* | *£3.00* |
| European countries including the Republic of Ireland, by letter services | £33.00 | £9.00 |
| Countries outside Europe: | | |
| Surface mail | £33.00 | £9.00 |
| Air mail: Zone A(2) | £43.00 | £11.25 |
| Zone B(3) | £48.00 | £12.50 |
| Zone C(4) | £50.00 | £13.00 |

(1) Subscribers who wish to collect their copy(ies) of the *Bulletin* and/or *Inflation Report* may make arrangements to do so by writing to the address given below. Copies will be available to personal callers at the Bank between 5.00 and 6.00 pm on the day of issue and from 8.30 am on the following day.
(2) North Africa and Middle East.
(3) All other African countries, North and South America and Asian countries other than those in Zone C.
(4) Australasia, Japan, China, The Philippines and Korea.
(5) There is a 25% discount if five copies or more are purchased.

Readers who wish to become regular subscribers, or who wish to purchase single copies, should send to the Bank, at the address given below, the appropriate remittance together with full address details, including the name, or position, of recipients in companies or institutions. **Existing subscribers will be invited to renew their subscriptions automatically**. Copies of the above publications can also be obtained over the counter at the Bank's front entrance or at the Bank Museum in Bartholomew Lane; and copies of the most recent *Inflation Report* are on sale at most good bookshops.

The concessionary rates for the combined *Bulletin*/*Inflation Report* package, the separate *Inflation Report* and pre-1994 issues of the *Bulletin* are noted above in *italics* and are available to **students in the United Kingdom** and also to **secondary schools in the United Kingdom**. Requests for concessionary copies should be accompanied by an explanatory letter: students should provide details of their course and the institution at which they are studying.

The *Bulletin* is also available on microfilm: enquiries from customers in Japan and North and South America should be addressed to University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106, United States of America; customers from all other countries should apply to White Swan House, Godstone, Surrey, RH9 8LW.

Bound volumes of the *Bulletin* for the period 1960 to 1985 (in reprint form for the period 1960 to 1980) can be obtained from Schmidt Periodicals GmbH, Dettendorf, D-8201 Bad Feilnbach 2, Germany, at a price of DM 180.00 per volume or DM 4,100.00 per set.

See page 181 for details of the annual *Statistical Abstract*.

## The gilt market

'Investing in gilts: A guide for the small investor', providing basic information for small investors, and 'British Government Securities: The Market in Gilt-Edged Securities', intended for those with a professional interest in gilts and the gilt market, may be obtained from the Bank of England, PO Box 96, Gloucester, GL1 1YB.

A review of developments in gilts and the gilt market in 1993/94, published in May 1994 and also intended for those with a professional interest, is available from the same address.

## Working Papers

The following ***Working Papers*** have been published in the last eight months:

| No | Title | Author |
|---|---|---|
| 16 | The statistical distribution of short-term Libor rates under two monetary regimes | Bahram Pesaran<br>Gary Robinson |
| 17 | Interest rate control in a model of monetary policy | Spencer Dale<br>Andrew G Haldane |
| 18 | Interest rates and the channels of monetary transmission: some sectoral estimates | Spencer Dale<br>Andrew G Haldane |
| 19 | The effect of futures trading on cash market volatility: evidence from the London stock exchange | Gary Robinson |
| 20 | M0: causes and consequences | F J Breedon<br>P G Fisher |
| 21 | An empirical analysis of M4 in the United Kingdom | P G Fisher<br>J L Vega |

Issued by the Economics Division, Bank of England, London, EC2R 8AH, to which enquiries regarding this *Bulletin* should be addressed. Telephone enquiries may be made to 071-601 4030 and letters should be marked 'for the attention of the Bulletin Group'.

Printed by Burrups Ltd, St Ives plc

ISSN 0005-5166

# The Quarterly Bulletin and Inflation Report

***Inflation Report***
(published separately)

The *Inflation Report* provides a detailed analysis of recent price and cost developments in the UK economy. Inflation on the Government's target measure fell to 2.4% in March, and on the Bank's RPIY measure (which excludes the effect of indirect taxes) to 1.8%. Some short-term measures of inflation have turned upwards. Economic activity continues to recover, with unemployment falling and robust sales growth. Section 6 of the *Report* sets out the Bank's current views on the prospects for inflation over the next two years.

***Operation of monetary policy*** (pages 103–13)

With indications of continued moderate growth without an increase in inflationary pressures, and re-assessing the possible impact of Budget measures in April, interest rates were cut by 1/4% on 8 February. The timing and size of the cut led to a weakening in sterling, in equities and in gilts—whose yields rose more than those of other government bonds in the turbulent international conditions. The Bank's money-market stance was generally neutral; the introduction of the new repo and secured loan facilities helped ease occasional money-market strains in the second half of the quarter.

***The international environment***
(pages 114–22)

The financial conditions affecting the major economies have changed markedly since the start of the year. Higher long-term interest rates will affect the outlook for growth; expectations of the profile of short-term rates over the course of this year have also been revised upwards.

***Financial market developments***
(pages 123–33)

As a result of falling bond prices and adverse market conditions, few straight bonds were issued after January. Many borrowers chose instead to issue floating-rate notes, for which there was investor demand. The turnover in derivative markets rose to record levels in the volatile market conditions.

***Research and analysis***
(pages 134–62)

*Research work published by the Bank is intended to contribute to debate, and is not necessarily a statement of Bank policy.*

***Asset-backed securitisation in the United Kingdom*** (by Ian Twinn of the Bank's Economics Division) examines the factors behind the growth in the UK asset-backed securities market since the first issue in 1985. It analyses the incentives for issuers and investors to participate, and outlines the mechanics of securitisation and the regulatory framework that influences the market. It also considers the advantages of asset-backed securities, and their risks.

***Personal and corporate sector debt*** (by Jennifer Smith and Gabriel Sterne of Economics Division, and Michael Devereux) analyses the influence of debt on the behaviour of firms and households in the recent recession. As well as comparing their levels of debt, it looks at each sector in detail. By supplementing the available sectoral information with an analysis of disaggregated data, it seeks to develop a more accurate picture of the influence of debt on consumer and corporate behaviour.

***Inflation over 300 years*** (by Helen MacFarlane and Paul Mortimer-Lee of Economics Division) looks back over the period since the Bank's foundation, and offers some reflections on the history of inflation—and on how thinking about inflation has developed—since 1694.

***Report***
(pages 163–68)

***The development of a UK real-time gross settlement system*** explains the decision to move to real-time gross settlement arrangements and describes the main features of the new system, which is due to be implemented by the end of 1995.

***Speeches***
(pages 169–80)

In future, it is hoped to include occasional pieces in the *Bulletin* by contributors from outside the Bank. As the first in the series, one of the speeches included in this issue is this year's Roy Bridge Memorial Lecture, delivered by the former Chancellor of the Exchequer, Lord Lawson, on the conduct of economic policy.

# Operation of monetary policy

- *Economic and monetary statistics released in the first quarter indicated continued moderate growth without an increase in inflationary pressures.*
- *Against this background, and re-assessing the possible impact in April of Budget measures that constituted a marked tightening of the fiscal stance, interest rates were lowered by ¼% on 8 February.*
- *The timing and size of the move surprised the markets and led to a weakening in sterling, and in the gilt-edged and equity markets. In turbulent international conditions, there were sharp falls in almost all world bond markets, but gilt yields rose more than yields elsewhere.*
- *The Bank maintained a broadly neutral stance in its official money-market operations. Technical conditions in the money markets tightened in late February and early in March, but the new repo and secured loan facilities helped to ease the strains.*

Monetary policy is based on an assessment of a wide range of indicators. The Bank's current assessment is given in the May *Inflation Report*; this article describes the operation of monetary policy in the first quarter of 1994.

It was announced on 13 April that in future the minutes of the monthly monetary meeting between the Chancellor of the Exchequer and the Governor will be published, with a delay of about six weeks; the minutes of the January, February and March meetings were published at the same time.

## Overview

The first quarter revealed clearer indications of robust growth without immediate inflationary pressures in the United States (but an increased possibility of higher inflation in the longer term), falling inflation and some signs of an end to the recession in Germany, and no real evidence of recovery in Japan; against this international background, economic activity in the United Kingdom continued to recover gradually and inflationary pressures remained subdued. The quarter was also marked by turbulence in both overseas and domestic financial markets.

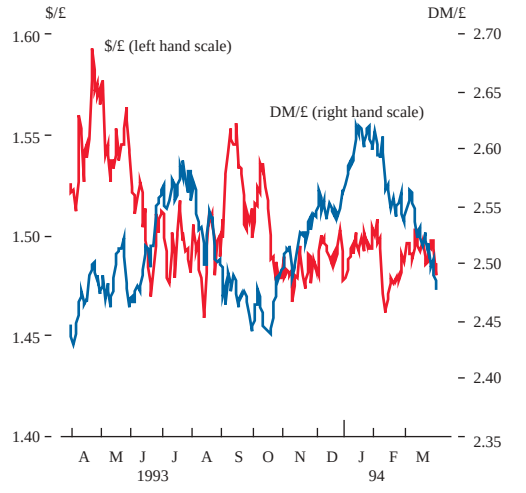
The level of UK inflation at the end of 1993 and in January 1994 was somewhat lower than expected. The underlying measure of inflation (RPIX, which excludes mortgage interest payments) rose only slightly in January, to a 12-month rate of 2.8%. The news on inflation, together with an assessment of the likely impact of the Budget measures, led the Bank to lower its forecast of inflation over the medium term published in February in the *Inflation Report*. The inflation rate in February, which was published on 23 March, was a little higher than market expectations, and there were signs of slightly higher growth in underlying earnings. External influences on inflation were mixed: the price of oil remained low during the quarter (at around $13–14 a barrel), but non-oil commodity prices rose by 6% in sterling terms when account was taken of the pattern of UK commodity imports. Both input and output price increases were contained.

Figures for economic activity suggested a continuing moderate recovery in line with the projections given in the November Budget. The statistics released in January generally confirmed the earlier indications of an improving profile of activity in the fourth quarter, though widespread concern remained that the fiscal adjustment due in April might affect confidence and restrain domestic demand. Retail sales in Q4 were 3.6% higher than a year earlier, and surveys suggested that consumers' confidence to make larger purchases was growing. Manufacturing production rose slightly compared with the third quarter, and was 2.4% higher than a year earlier. According to CBI surveys, the number of manufacturing firms operating below capacity fell between October and January. And although companies had been slow to increase investment during the recovery, there was an increase over the course of 1993, and survey evidence suggested stronger investment intentions at the beginning of this year.

M0 growth remained above its 0%–4% monitoring range during the quarter; the progressive reductions in interest rates in 1992 and 1993 had reduced the cost of holding cash in terms of interest foregone. Data around the start of the year suggested some increase in narrow money growth, but the need to adjust for sizable seasonal variations made this difficult to interpret. M4 growth also picked up over the quarter, but remained in the lower half of its monitoring range. There was weak growth in lending by banks and building societies, but some increase in mortgage demand reflected in a rise in building society commitments. In the property market, house prices fell in December and January, but picked up in February; commercial property prices showed signs of recovery.

Taking all these factors into account, no significant adjustment in the monetary stance was thought necessary. But the subdued picture on inflation at the end of 1993 and in January led the Governor and Chancellor to adopt a 'bias towards easing'. The inflation data, together with its assessment of the Budget, led the Bank to lower its medium-term inflation forecast in February, although the risks with the new forecast were judged to be greater on the upside than the downside. At their February monetary meeting, the Chancellor and Governor agreed that interest rates could be reduced slightly. On 8 February, the Bank accordingly implemented a quarter-point reduction in rates to 5¼%, setting Minimum Lending Rate at that level for the day.

**Sterling exchange rates**




## Foreign exchange markets

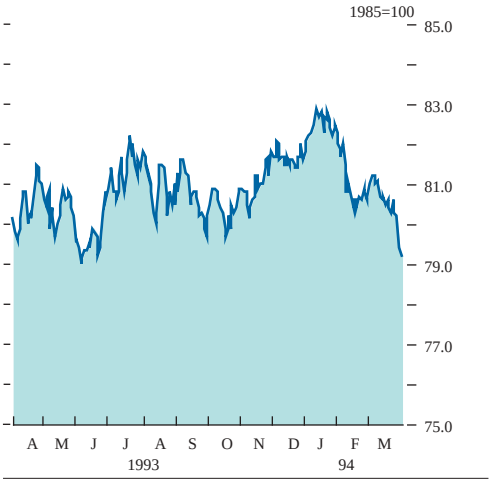
Having appreciated rapidly against the Deutsche Mark over the Christmas period, the dollar began the new year strongly, largely as a result of expectations that interest rate differentials would quickly move in its favour. It soon encountered resistance, however, and traded in a range around DM 1.75 during January and early February, amid market rumours of dollar sales by European central banks. The Bundesbank's decisions to leave its official rates unchanged on 6 and 20 January and on 3 February led the markets to the view that German monetary easing was likely to take place more slowly than they had previously assumed. But underlying sentiment towards the dollar remained positive, as further evidence of the strength of the US recovery emerged—in particular, the indications of very strong GDP growth in the fourth quarter. A better-than-expected improvement in German consumer price inflation also helped the dollar against the Deutsche Mark. Against

the yen, however, the dollar fell back steadily in January, as prospects of a bilateral trade deal seemed to recede.

Intra-ERM exchange rates remained broadly stable throughout the quarter, and several members were able to narrow their interest rate differentials with Germany. However, the Spanish central bank's intervention to assist a troubled financial institution temporarily reduced confidence in the peseta, and the ERM band widened briefly to around 8%.

Sterling also began the new year buoyantly, rising against both the dollar and the Deutsche Mark, and moving up from around 81.5 to around 83.0 in effective terms by mid-January. Statistics showing strong M0 growth and falling unemployment were interpreted as reducing the probability of a cut in interest rates. Sterling's appreciation gained strength as the view that official intervention might be restraining it became less widely-held. But concerns about the unsettled political environment began to weigh on sterling, and it fell quite sharply as weaker-than-expected retail sales data published on 19 January led to renewed expectations of an early interest rate cut.

**Sterling effective index**




In early February, there was a rapid change in conditions in the foreign exchange markets. The timing of the ¼% rise in the US federal funds rate on 4 February surprised the markets and the dollar rose some three pfennigs. It then met bouts of profit-taking as pessimism about the forthcoming US-Japanese trade talks grew, triggering sales of dollars against yen. When this pessimism was confirmed by the failure of the summit on 12–13 February to resolve the trade differences, the dollar fell very sharply towards ¥100, as the market anticipated unilateral US efforts to promote a stronger yen. The dollar recovered some of this ground over the following few weeks, in part as a result of rumours of intervention by the Bank of Japan.

A cut in UK interest rates had been expected by some in the foreign exchange markets before the introduction of the Budget measures in April. Even so, when rates were cut on 8 February, sterling slipped sharply against the dollar and Deutsche Mark, and its effective index fell by 1.0 to around 81. In part, this was because of the proximity of the cut to the US rate increase four days before; the cut's size and timing, given a difficult political background, encouraged expectations of a further cut in the near future. In March, the political environment grew more unsettled and, together with the release of weaker retail sales figures for February and worse-than-expected trade data, this added to sterling's softer tone. Even against a weakening dollar, sterling encountered resistance that prevented it from rising above the $1.50 level.

The dollar steadied briefly after the Bundesbank surprised markets by cutting its discount rate to 5¼% on 17 February. However, its decision to leave the repo rate unchanged was seen as more significant; it suggested to the markets that it would continue its cautious approach to monetary easing, and the dollar resumed its downward trend. The markets were unsettled and volatile throughout this period, however, judging that the rise in US interest rates showed US inflationary pressures to be more serious than previously thought.

The markets' view of the Bundesbank's caution seemed to be confirmed by its series of modest cuts in the repo rate in the first

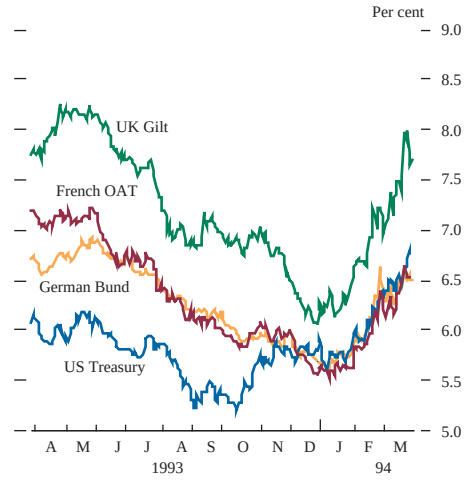
half of March and its decision on 17 March to leave official interest rates unchanged. But when the Federal Reserve effected a further ¼% increase in the federal funds rate on 22 March, the move steadied the exchanges, though the publication of the minutes of the February Federal Open Market Committee suggested that some members had wanted a more rapid initial tightening.

## Developments in the bond markets

### *International markets*

UK government bond markets were strongly influenced by events overseas during the first quarter. Evidence that the US economy had grown strongly in the fourth quarter and concern to pre-empt any consequent inflationary pressure led the Federal Reserve to raise its target federal funds rate by 25 basis points to 3¼% on Friday 4 February; a tightening had been widely expected after comments by the Chairman of the Federal Reserve. The market interpreted these developments as an indication of future inflationary pressures and as confirming the end of the long period of rising bond prices; US bond prices had begun to fall in the autumn, but the Federal Reserve's action accelerated the sell-off.

**Ten-year government bond yields**(a)




(a) Gross redemption yield.

A steep fall in the prices of the US Treasury bonds on the Friday afternoon was followed in other bond and equity markets after the weekend. When the bilateral trade negotiations between the United States and Japan broke down the following weekend (12–13 February), the sharp fall in the dollar against the yen imposed losses on investors who had earlier taken short positions in yen (expecting a trade agreement to obviate the need for yen appreciation to reduce the Japanese current account surplus) and long positions in dollars (expecting a rise in US interest rates relative to those in other industrial countries).

Changes in yields in European markets have recently been increasingly correlated with those in US Treasury bond markets; last summer, American investors aggressively bought European bonds, as US yields fell quickly across the yield curve. This increased integration may have had a short-term role in price developments. As one element—and though their importance is sometimes overstated (see the box in the article on financial market developments for details)—the activities of mutual funds and leveraged funds contributed to the contagious effect of the fall in US bonds. Many had taken long positions in European bonds in the expectation of further falls in interest rates, after the widening of the ERM bands in August 1993. But the pace of monetary easing in Europe slowed in the first quarter and these holders of government securities were disappointed. Some funds are also known to have suffered large losses in the currency markets following the yen's sharp appreciation on 14 February; in some cases, funds governed by stop-loss limits had to close positions to limit their losses on a particular trade, or to provide funds to cover earlier losses in other markets (including foreign exchange). This added to the downward pressure on bond prices, which were also affected by the prospect of increased bond supply in several countries needed to finance larger public borrowing requirements.

In early March, European bond markets were further affected by the publication of German M3 figures for January. The size of the annualised increase over the Q4 base (more than 20%), and worries

over possible strike action in Germany, suggested that the pace of interest rates reductions there (and so elsewhere in Europe) would be slow. European bond markets began to move lower and, combined with losses on the sharp move in the dollar-yen exchange rate, events gave rise to widespread rumours of serious financial losses among some leveraged funds, which added further to the general level of volatility.

A second 1/4% increase in the federal funds rate on 22 March stabilised conditions temporarily, but speculation towards the end of March that US employment figures would indicate continuing strong growth prompted concern that the monetary tightening already introduced would not be enough to check inflationary pressures.

### *Domestic markets*

For much of February and March, the gilt market and sterling were strongly influenced by developments in international financial markets. Gilts, however, weakened by more than the European average: ten-year gilt yields rose by 114 basis points between 3 February (just before the first US rate rise) and 31 March, compared with rises of 38 basis points in Germany and 62 in France. Larger-than-average rises were also experienced by other countries whose gains in monetary policy credibility have been recent (such as Canada and Sweden).

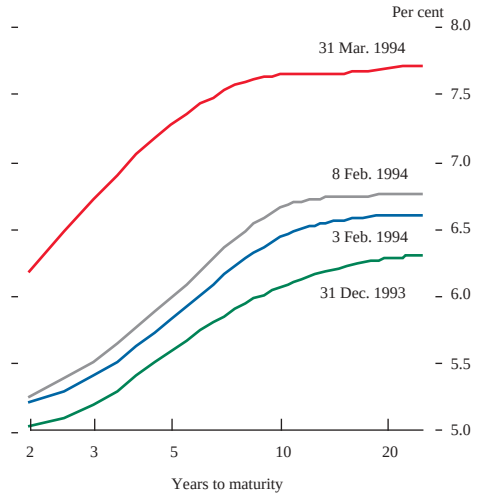
Markets had discounted a UK interest rate cut at some stage in the early months of 1994. They were, however, surprised by its precise timing on 8 February, shortly after a quarter-point rise in the federal funds rate and in the light of the cautionary note in the Bank's February *Inflation Report*. This suggested that because expectations had yet to adjust to the fall in inflation over the previous two years, the chances of inflation overshooting the central projection were greater than those of an undershoot.

Some market participants took the view that a further quarter-point cut might be made to offset the impact of the fiscal tightening due to take effect in April. This belief contributed to falls in sterling and in some gilt prices following the cut; the speculation subsequently strengthened, following favourable indicators on inflation published in late February and data suggesting a weakening in the pace of recovery.

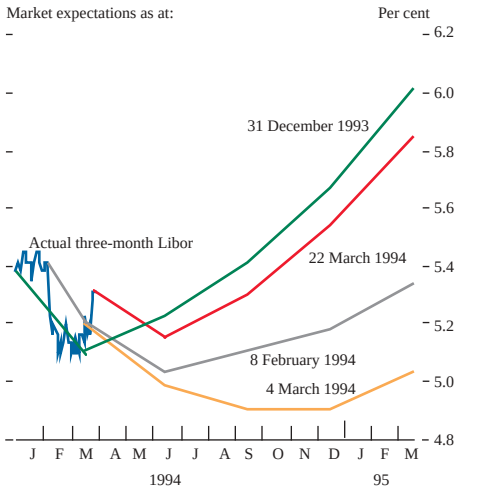
Market expectations of a further rate cut gradually declined, as gilts and sterling remained vulnerable in turbulent international financial markets. The figures for inflation in February, published on 23 March, showed a fall in the twelve-month headline rate from 2.5% to 2.4%, but the market focused on the monthly rise of 0.6% and the underlying annual rate of 2.8%, which exceeded its expectations of around 2.5%. There was also concern at the increase in the annual rate of earnings growth from 3% to 3 1/4%.

At the same time, there was little sign that economic activity was being inhibited by the impending tax increases. Although consumer confidence declined in February and March, survey evidence suggested that industrial confidence was picking up and export orders were growing. Unemployment resumed its downward trend in February, after an unexpected rise in January.

**Par yield curves for British government stocks**




**Sterling interest rate expectations**(a)



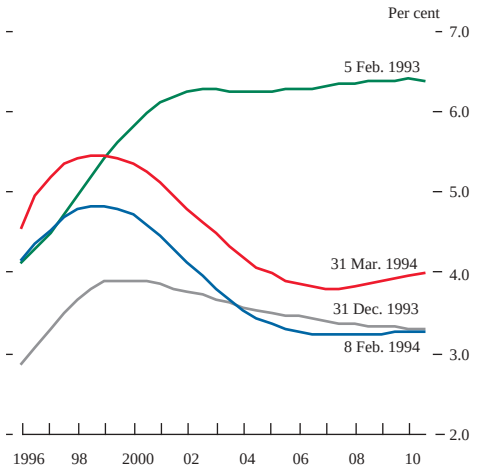

(a) Three-month Libor implied by short sterling futures contracts.

## Table A
## Interest rates, gilt yields and exchange rates; selected dates[a]

| | Interest rates (per cent per annum) | | | | | Gilt yields [b] (per cent per annum) | | | | Exchange rates | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sterling interbank rates[c] | | | | Short sterling future [d] | Conventionals | | | Index-Linked | | | |
| 1994 | 1 month | 3 months | 6 months | 12 months | 3 months | Short | Medium | Long | Long | ERI | $/£ | DM/£ |
| 4 January | 5 7/16 | 5 3/8 | 5 1/4 | 5 3/16 | 5.25 | 5.79 | 6.26 | 6.52 | 2.95 | 82.0 | 1.4778 | 2.5726 |
| 7 February | 5 7/16 | 5 13/32 | 5 3/8 | 5 3/8 | 5.41 | 6.00 | 6.56 | 6.77 | 3.10 | 81.9 | 1.4813 | 2.6080 |
| 8 February | 5 7/32 | 5 7/32 | 5 3/16 | 6 3/16 | 5.20 | 5.92 | 6.59 | 6.81 | 3.11 | 82.1 | 1.4846 | 2.6113 |
| 24 February | 5 5/32 | 5 3/16 | 5 7/32 | 5 5/16 | 5.20 | 6.52 | 7.05 | 7.29 | 3.35 | 80.9 | 1.4980 | 2.5606 |
| 3 March | 5 1/16 | 5 3/32 | 5 3/32 | 5 9/32 | 5.13 | 6.53 | 7.15 | 7.30 | 3.38 | 81.1 | 1.4850 | 2.5538 |
| 7 March | 5 1/8 | 5 3/32 | 5 3/32 | 5 7/32 | 5.07 | 6.35 | 6.91 | 7.12 | 3.29 | 81.2 | 1.4875 | 2.5646 |
| 16 March | 5 1/8 | 5 1/8 | 5 1/8 | 5 9/32 | 5.13 | 6.64 | 7.21 | 7.43 | 3.35 | 80.6 | 1.4893 | 2.5254 |
| 31 March | 5 7/32 | 5 5/16 | 5 13/32 | 5 11/16 | 5.47 | 7.08 | 7.48 | 7.68 | 3.46 | 79.3 | 1.4841 | 2.4804 |

(a) Close-of-business middle-market rates in London.
(b) Gross redemption yield. Representative stocks: short—6% Treasury 1999; medium—6 3/4% Treasury 2004A; long—8% Treasury 2013; index-linked—2 1/2% Index-Linked Treasury 2016 (real yield assuming 5% inflation).
(c) Middle-market rates.
(d) Implied future rate: until 24 February the March contract, thereafter the June contract.

### Implied inflation term structure[a]




(a) Expectations of the 12-month change in the RPI in future years derived from the differential between yields on conventional and index-linked stocks. See the August 1993 *Quarterly Bulletin*, page 322, for further explanation.

Although retail sales fell by 0.5% in February, this followed a strong rise of 0.9% in January, and they were still 2.5% higher than a year earlier. By the end of the quarter, the short sterling futures contract indicated that the next change in rates was thought more likely to be an increase than a further cut, and that the market expected rates to rise progressively in the rest of 1994 and through 1995.

In February, the adverse factors affecting international bond markets led yields on both conventional and index-linked gilts to rise significantly. In March as global market conditions continued to be volatile, conventional gilts underperformed other European markets—the spread between the ten-year gilt and the German Bund widened by around 30 basis points (see chart on page 106). Index-linked yields, however, did not rise with conventional gilt yields, but to a large extent stabilised—with the 2 1/2% 2016 gilt yield rising from 3.35% to 3.46%.

## Official money-market operations

For most of the quarter, the Bank adopted a broadly neutral stance in its money-market operations. There were brief periods of speculation about an interest rate cut in January, most notably after the release of the December RPI and retail sales data on 19 January, when the three-month rate implied by the futures contract for March fell from 5.31% to 5.17%. The next day, the Bank declined to offer an early round of assistance, despite a money-market shortage of £1.2 billion. The market's reaction allowed the Bank to resume a broadly neutral stance.

The Bank reduced interest rates by 1/4% on 8 February by setting the Minimum Lending Rate at 5 1/4%. The 1/4% reduction in the Bank's bill dealing rates was the first change of this size since November 1984. A move of 1/4% was thought appropriate in view of the balance of risks; 25 basis-point changes in official interest rates are quite common in other industrialised countries with comparable levels of inflation and interest rates. Following the cut, bank base rates were reduced by 1/4%, but only a small number of mortgage lenders responded with an immediate reduction in their mortgage rates.

Although the market had been expecting a cut in official rates at some point in the early months of 1994, its precise timing and size

## The repo and secured loan facilities

On 12 January, the Bank announced new permanent repo and secured loan facilities to replace the temporary facilities which, since September 1992, had been made available to the large banks, gilt-edged market-makers and the ten largest building societies. The new facilities allow financial institutions, as before, to obtain funds from the Bank through the sale and repurchase (repo) of gilts, or through loans secured against government-guaranteed export and shipbuilding credit.

The new facilities incorporate several important new features. Operations are now carried out on a regular timetable: counterparties are invited to apply on the Wednesdays after the first and third Mondays of each month for funds to be made available the following day. They may apply for funds until the next or next-but-one rollover date, that is normally for two or four weeks. The interest rate charged is the yield equivalent to the Bank's discount rate for band 2 (15 to 33-day) commercial bills. The facilities are available to discount houses for the first time; and the limit on the amount of funds for which banks and building societies can apply has been lifted.

Since their introduction, there has been a greater use of the new facilities: on the first occasion they were made available, £4 billion were provided compared with £3.2 billion on the last occasion that the temporary facilities were offered. At the end of the quarter, £4.4 billion of assistance was being provided through the facilities.

### Funds provided through repo facilities

£ millions

| Date | Total funds provided | Total outstanding | *of which maturing at* | |
|---|---|---|---|---|
| | | | Next rollover | Next-but-one |
| 20 Jan. | 3,979 | 3,979 | 3,842 | 137 |
| 10 Feb. | 3,667 | 3,804 | 2,621 | 1,183 |
| 24 Feb. | 2,194 | 3,377 | 3,358 | 19 |
| 10 Mar | 4,500 | 4,519 | 4,129 | 390 |
| 24 Mar. | 3,979 | 4,369 | 4,191 | 178 |

The Bank made it clear in its consultations before introducing the new facilities that in due course it would wish to undertake its gilt repo operations under a Master Agreement, signed with each counterparty and incorporating margin arrangements. After further consultation with the market, the legal agreement was introduced with effect from 20 April. The repo facility is now available to all members of the UK banking sector, discount houses, GEMMs and building societies. The Bank is prepared to repo the non-sterling marketable debt of HM Government as well as gilts.

### Table B
### Influences on the cash position of the money market

£ billions; *not seasonally adjusted*
Increase in bankers' balances(+)

| | 1993/94 | 1994 | | |
|---|---|---|---|---|
| | Apr.–Dec. | Jan. | Feb. | Mar. |
| **Factors affecting the market's cash position** | | | | |
| Under/overfunding (+/-)(a) | -12.2 | -3.8 | +3.8 | +9.2 |
| Other public sector net borrowing from banks and building societies(-)(b) | +2.4 | +1.1 | +0.3 | -1.9 |
| *of which, local authorities' deposits with banks and building societies*(+) | *+2.8* | *+0.8* | *+0.6* | *-2.0* |
| Currency circulation(-) | -3.4 | +2.7 | -0.1 | -2.1 |
| Other | +5.7 | -0.5 | -2.4 | -5.1 |
| **Total** | **-7.5** | **-0.5** | **+1.7** | **+0.1** |
| Increase (+) in the stock of assistance | +6.4 | +0.1 | -1.8 | -0.5 |
| Increase (-) in £ Treasury bills outstanding (c) | +1.0 | +0.4 | +0.2 | +0.1 |
| Increase in bankers' balances at the Bank | — | — | +0.2 | -0.3 |

(a) From 1993/94, central government net debt sales to banks and building societies are included in funding.
(b) From 1993/94, banks' and building societies' transactions in local authorities' and public corporations' listed sterling stocks and bonds are included in funding.
(c) Other than those held outright by the Bank and government accounts but including those purchased by the Bank on a repurchase basis.

had not been fully discounted. Both the March and June short-sterling futures contracts rose by the full extent of the ¼% cut; by the close on 8 February, the June contract discounted a three-month rate of 5.03% (compared with 5.29% the day before), reflecting a widely-held view that a further ¼ point cut was likely by the middle of the year. Speculation intensified during the following week, after the release of data showing a further fall in the underlying rate of inflation in January and a rise in unemployment, and following the Bundesbank's decision on 17 February to cut its discount rate from 5¾% to 5¼%. On 18 February, the June sterling futures contract rose to a level discounting three-month rates of 5% by June. The Bank offered no noon round of assistance that day and no early round the next, and expectations subsequently stabilised.

In late January, technical money-market conditions tightened and for a period of several days bills were not readily forthcoming in the regular operations. On 27 January, the combination of the settlement of the January gilt auction, speculation that the Bundesbank might reduce its official rates and that this would facilitate lower UK rates, and reluctance on the part of several market participants to sell bills before the end of the month led borrowing from the Bank at 2.45 pm to be unusually high, at £915 million.

The new repo and secured loan facilities (see the box) were successfully introduced during the quarter. By adding to the range of instruments that financial institutions can use to obtain funds from the Bank of England, the facilities have increased the

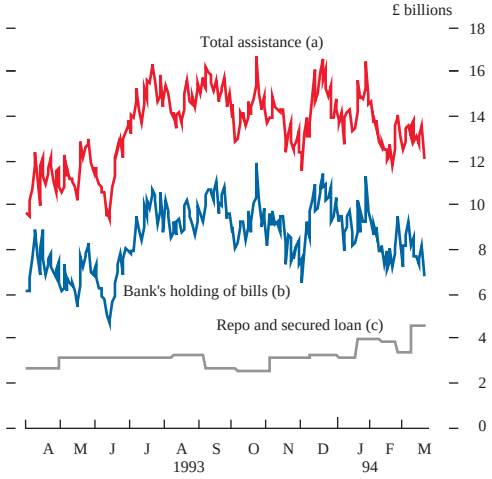
flexibility of operations and helped to smooth money-market conditions.

Daily conditions in the money markets were tighter in the last week of February and the first week of March. A slightly reduced level of assistance was provided through the new repo and secured loan facility at the rollover on 24 February, and bills were in shorter supply than in January and not readily forthcoming in operations. Significant assistance at 2.45 pm was once more needed on several days, including a record £995 million provided on 1 March. The tighter conditions pushed up short-period rates and increased the attractiveness of the funds available through the new repo facility; an additional £1.15 billion was provided at the rollover on 10 March.

The short-sterling futures contracts weakened sharply in late March, and interest rates on cash of more than three months' maturity rose. This followed disappointment at the February RPI data, and coincided with the fall in sterling. Volatility in the gilt market—against the background of the general disturbance in international bond markets—also had a powerful influence, since some holdings of short-maturity gilts were hedged by sales of short sterling futures. But the rise in rates at three-months maturity and beyond had little impact on daily operations; in the last two weeks of the quarter, short-term money-market rates were generally close to the Bank's dealing rate.

Treasury bill tenders were held every Friday for £200 million of 91-day bills—the amount and maturity on offer since 13 August last year. The bills continued to be in high demand; each issue was covered at least three times, although tenders were generally less strongly oversubscribed during March than in the first half of the quarter. The differential in the discount rate between Treasury bills and commercial bills narrowed from about $\frac{1}{8}$% at the beginning of January to as little as $\frac{1}{32}$% in late March. The stock of eligible bills declined during the quarter; following little change in January, there was a marked decline after the end of the main corporation tax paying period.

**Money-market assistance**




(a) Bank of England's holdings of bills, market advances and funds supplied until 19 January 1994 under the temporary facilities; since that date under the repo and secured loan facilities.
(b) Bank of England's holdings of eligible bank, local authority and sterling Treasury bills outright and on a repurchase basis.
(c) Bank of England's holdings of gilt-edged stocks on a repurchase basis, and loans made against export and shipbuilding credit-related paper until 19 January 1994 held under temporary facilities; since that date under the repo and secured loan facilities.

## Gilt-edged funding

Gross official gilt sales of £7.75 billion in the first quarter brought the total amount raised during the financial year to £54.6 billion. In addition, a 50% call on the February auction stock (7% 2001A) was secured for 1994/95. There were a total of 10 gilt auctions in 1993/94.

The gilt market had ended 1993 with a period of exceptional strength. The new year began with a correction, partly reflecting developments overseas, particularly in the US Treasury market; this ruled out tap sales. To maintain the funding programme's momentum, the pattern of auctions was broadly the same as in the previous year. At the auction in late January, the market responded favourably to the announcement of a new stock maturing in 2010. The auction's size, at £2$\frac{3}{4}$ billion, was at the lower end of expectations; this was positively received as a signal that the borrowing already undertaken allowed the pace of funding to be moderated. It contributed to a strong rally when lower-than-expected inflation and PSBR data for December were

## Table C
## Issues of gilt-edged stock

| Stock | Amount issued (£ millions) | Date announced | Date issued | Method of issue | Price at issue (per £100 stock) | Details of payment | Yield (a) at issue | Yield (a) when exhausted | Date exhausted |
|---|---|---|---|---|---|---|---|---|---|
| 6¼% Treasury 2010 | 2,750 | 18. 1. 94 | 27. 1. 94 | Auction | 98.4688(b) | Partly paid(c) | 6.40 (d) | 6.40 | 27. 1. 94 |
| 7% Treasury 2001 'A' | 2,500 | 15. 2. 94 | 24. 2. 94 | Auction | 101.0625(e) | Partly paid(f) | 6.81 (d) | 6.81 | 24. 2. 94 |
| Floating-rate Treasury 1999 | 2,500 | 22. 3. 94 | 31. 3. 94 | Auction | 99.8800(g) | Fully paid | . . (h) | . . | 31. 3. 94 |

. . not applicable.

(a) Gross redemption yield, per cent.
(b) Lowest-accepted price for competitive bids. The non-competitive allotment price was £98.75.
(c) With £48.46875% payable on issue and balance on 14 March.
(d) Yield at lowest-accepted price for competitive bids.
(e) Lowest-accepted price for competitive bids. The non-competitive allotment price was £101.625.
(f) With £51.0625% payable on issue and balance on 11 April.
(g) Lowest-accepted price. There was no non-competitive allotment price. The average price accepted was £99.92.
(h) The rate of interest is reset on a quarterly basis by reference to money-market rates.

announced on 19 January. The auction was satisfactory, with cover slightly lower than the market had expected (at 1.2 times), but a tail (the difference between the average and highest-accepted yield) of only two basis points. Prices in the secondary market consolidated around the auction level.

Market conditions were, however, much more turbulent in February after the ¼% rise in the federal funds rate. After the reception given to the ¼% reduction in UK rates and the volatility in international markets, the announcement of an auction in February on the usual schedule was welcomed as a sign of stability. The individual stock chosen, 7% Treasury Stock 2001, also met with approval since it allowed a large and liquid benchmark in the seven-year maturity to be created. Conventional gilts, particularly at the long end, weakened in the run-up to the auction despite positive indicators on both UK and US inflation. In the event, it was covered 1.48 times, but with a longer tail (six basis points) than for any auction since June 1993, indicating an unusually high degree of market uncertainty about the right market level. In a period of a few days, similar government bond auctions in Italy and Japan were likewise thinly covered, and the Spanish authorities declined all bids at two of their auctions.

Gilt prices continued to fall in March, and weakened more than government bonds in other major European markets. On the days of unusually sharp falls in February and March, the Bank bought small amounts of stock from the market-makers, at or below market prices, in order to assist them in their market-making function by enabling them to manage their books and unwind cross positions. Prices in the index-linked sector stabilised more quickly than in conventional gilts, and the Bank took the opportunity to exhaust the outstanding tranchettes of three index-linked Treasury stocks (4⅝% 1998, 2½% 2013 and 4⅛% 2030).

The Bank's announcement on 18 March that the stock in the auction on 30 March would be a floating-rate gilt was well-received; the market took the view that this would allow the authorities to maintain the momentum of the funding programme while extending the range of instruments available. £2½ billion of the new stock was issued. The issue will mature in 1999, and the coupon will be fixed in accordance with the prevailing level of the London interbank bid rate (LIBID) minus ⅛%. Coupons will be paid four times a year—in contrast to the usual six-month coupons paid on conventional gilts—to take advantage of the depth and liquidity of the interbank market at the three-month maturity. The coupons are fixed according to the LIBID rates reported to the Bank by the

# Annual remit for the Bank's operations in the gilt market[1]

The Chancellor of the Exchequer has decided to set an annual remit for the Bank of England's operations in the gilt market to clarify the division of responsibilities between the Treasury and the Bank, and to explain the Government's intentions to the markets. The remit will be published before the start of each financial year.

The Government aims each year to sell enough gilts and National Savings products fully to fund the PSBR, maturing debt that needs to be refinanced, and any net increase in the foreign exchange reserves. There is no change to the Government's funding policy as set out in last November's Medium Term Financial Strategy.

The Treasury is responsible for all borrowing for the National Loans Fund, under the terms of the National Loans Act 1968. The Bank of England has long been the Government's adviser and agent in the gilt market, where the bulk of these funding operations are carried out.

The Chancellor will also give the Bank guidelines for the detailed operation of its remit. In the past, individual decisions on funding were taken after discussion between Treasury Ministers and officials, and the Bank of England. In future, any operations that the Bank proposes which fall within the remit and the guidelines will normally be approved by Treasury officials. The Bank will provide a monthly report to Treasury Ministers on its progress, and there will be regular review meetings between the Treasury, the Bank and the Department for National Savings.

## The remit for 1994/95

### *Funding requirement*

As set out in the November 1993 Financial Statement and Budget report, the Government will continue to operate a full-fund policy.

The PSBR for 1994/95 was forecast in the Budget to be £38 billion. Some £9 billion of gilts are expected to mature in market hands and need to be refinanced. Maturing and withdrawn National Savings products will be netted off the National Savings contribution to funding, rather than included in the funding requirement. It is not possible at this stage accurately to forecast net changes over the year in the foreign currency reserves, so these will be assumed to remain unchanged on balance. Any overfunding in 1993/94 will reduce the funding requirement in 1994/95, and any underfunding increase it. The funding outturn for 1993/94 is not yet known.

The funding requirement for 1994/95 is currently forecast to be around £47 billion, adjusted for any over or underfunding carried forward from 1993/94, and subject to any changes in the reserves.

### *National Savings*

The net contribution of National Savings to funding (including accrued interest) is assumed to be around £3½ billion. This is not a target, but an estimate based on experience in previous years and forecasts for 1994/95.

### *Other debt sales*

Net sales of government debt instruments other than gilts and National Savings are expected to make a negligible contribution to funding.

### *Sales of gilts to banks and building societies*

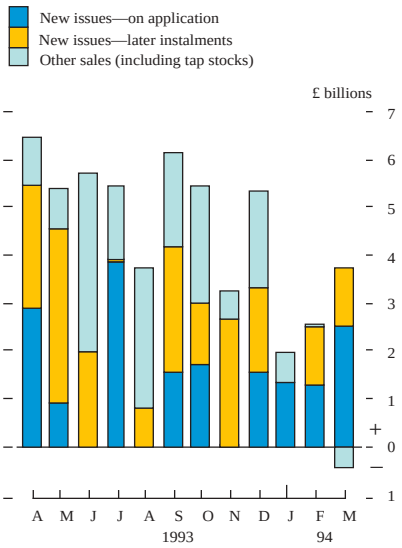
As announced at Budget time, the sales of gilts to banks and building societies in 1992/93 will be taken into account before the end of 1994/95. These amount to £6.8 billion.

### *Quantity of gilt sales*

The Bank of England will aim to meet the remainder of the funding requirement by selling gilts to the private sector on the Government's behalf. On the basis of the Budget forecast, this

(1) The annual remit and the Bank's market notice were published on 17 March. The PSBR in 1993/94 was £46 billion; there was overfunding (net of the underfunding carried forward from 1992/93) of £2.3 billion. The requirement for gilt sales in 1994/95 will, as a consequence, be reduced by that amount.

## Gross official sales of gilt-edged stock




20 banks with the largest outstanding eligible liabilities on the 31 December immediately preceding the relevant interest determination date. The issue was expected to be particularly attractive to wholesale participants; with this in mind, the minimum bid size was set at £50,000 rather than the usual £1,000 and there was no non-competitive bidding process. The auction was very well covered (2.28 times) at an average price of £99.92 per £100, despite the exceptionally-turbulent conditions in the gilt market. The success of the auction contributed to a rally in the conventional market at the end of the month, partly reflecting a view in the market that it would be possible to add further issues of the floating-rate gilt during 1994/95.

The progress towards the 1993/94 funding target made during the buoyant market conditions in the second half of 1993 enabled the authorities to reduce the pace of funding in the more difficult market conditions in early 1994. Although there were three auctions during the quarter, there were no new 'tap' issues; sufficient gilt issues were made during 1993 to enable 'full funding'

means selling approximately £37 billion of gilts, adjusted for any under or overfunding carried forward from 1993/94, and any change in the reserves.

*Pace of funding*

The Bank should aim to sell at a broadly even pace through the year.

*Methods of sale*

Auctions will continue to form the backbone of gilt-edged funding. They will be held at broadly monthly intervals, each normally on the last Wednesday of a calendar month. Each auction should be between £2–4 billion of stock. The remainder of gilt sales may be made by *ad hoc* taps and tenders.

*Review*

This remit may be reviewed and, if appropriate, revised by HM Treasury from time to time. Revisions will be published.

**Bank of England market notice**

The Bank of England released a separate market notice setting out how it intends to conduct sales of gilt-edged stock in 1994/95:

*Gilt-edged funding 1994/95*

This market notice sets out how the Bank intends to conduct sales of gilt-edged stock in the year ahead, consistently with the remit set by the Chancellor, published today.

The Chancellor's remit confirms that the Government intends to continue to pursue the full-fund policy as previously defined. On the basis of the funding arithmetic set out in the remit, the implied gross sales of gilt-edged stock will be around £37 billion, subject to adjustment for any over or underfunding carried forward from 1993/94 and any change in the reserves.

Funding will be pursued at a broadly even pace through the year. The Bank will continue to deploy the full range of selling techniques and funding instruments, including index-linked. Thus the Bank will continue with the mixed approach to gilt-edged sales which has worked well in the past few years, combining a programme of auctions with official sales of stock 'on tap' in the secondary market. The main features of this approach are as follows.

As the Chancellor's remit explains, gilt-edged auctions will continue to provide the backbone of funding. As in 1993/94, auctions will continue to be held at broadly monthly intervals, each normally on the last Wednesday of a calendar month, though as hitherto flexibility will be retained to vary the timing of auctions where appropriate in the light of events. The size of individual auctions will be in the range of £2–4 billion.

The stock will be auctioned on a bid-price basis, open to all-comers without commission, with provision for non-competitive bids of up to £500,000. The stocks offered, which may extend over the full maturity range, may be new stocks or additional tranches of existing stocks and may be in either fully or partly-paid form.

The timetable for auctions will remain unchanged. Thus the first auction announcement, of the date of an auction together with an indication of the broad maturity range, will be made not less than ten days beforehand; the second announcement providing full details will be given not less than seven days ahead of an auction.

The authorities will continue generally to refrain from issuing stock of a similar type or maturity to the auction stock for a reasonable period after the auction, and will only do so if there is evident market demand for further such stock.

The programme of auctions will continue to be supplemented by sales of stock by the Bank 'on tap' on the secondary market through its day-to-day operations with the gilt-edged market-makers. 'Tap' sales may take the form of sales of existing stock from official holdings or of packages of tranchettes (or a single, larger tranche) of newly-created stock.

The Bank also has available the option of offering stock by minimum price tender, underwritten by the authorities at a minimum tender price, though use of this technique is likely to be infrequent given the continuing programme of auctions.

## Table D
## Official transactions in gilt-edged stocks

£ billions: *not seasonally adjusted*

| | 1993/94 (a) | | | |
|---|---|---|---|---|
| | Apr.–Dec. | Jan. | Feb. | Mar. |
| Gross official sales (+)(b) | 46.8 | 2.0 | 2.6 | 3.2 |
| Redemptions and net official purchases of stock within a year of maturity(-) | -3.9 | — | -1.3 | -0.4 |
| Net official sales (c) | 43.0 | 2.0 | 1.2 | 2.7 |
| *of which, net purchases by:* | | | | |
| Banks (c) | 5.7 | 1.0 | -0.3 | 0.1 |
| Building societies (c) | 1.2 | 0.3 | 0.4 | -0.5 |
| Overseas sector | 14.6 | 1.2 | 1.5 | 0.2 |
| M4 private sector (c) | 21.4 | -0.5 | -0.3 | 2.7 |

(a) Later instalments are included in the month when they fall due, not in the month when the sale is secured.
(b) Gross official sales of gilt-edged stocks are defined as official sales of stock with over one year to maturity net of official purchases of stock with over one year to maturity apart from transactions under purchase and resale agreements.
(c) Excluding transactions under purchase and resale agreements.

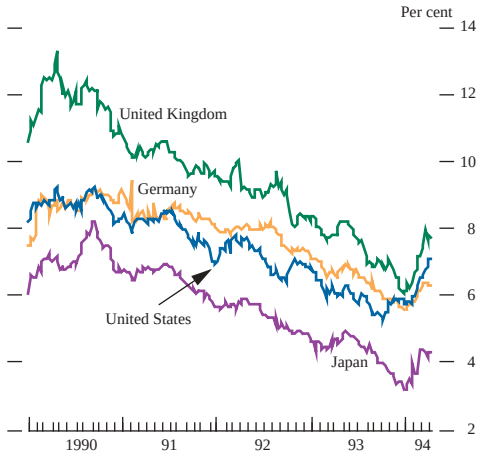
(as set out in the November 1993 Budget) to be completed slightly before the end of the financial year. By the end of the quarter, overfunding in 1993/94 net of underfunding carried over from 1992/93 totalled £2.3 billion—the 1994/95 funding requirement will be reduced by this amount.

Following HM Treasury's announcement last December, the Bank has been repaying tranches of the ECU 5 billion revolving bank credit arranged in September 1992. Repayments amounting to the equivalent of $5.8 billion were made between December and April, as tranches of the credit reached their rollover dates. Nearly $1.7 billion of these were financed from the reserves, with the remainder—just over $4 billion—met from the forward purchase of foreign exchange set aside for the purpose. The revolving credit facility, which had an original maturity of three years, has now been cancelled.

# The international environment

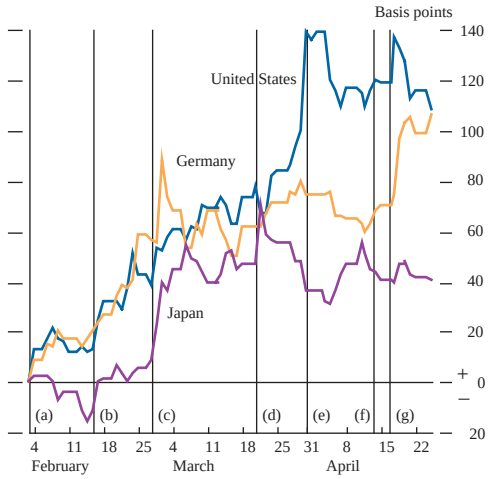
*Financial conditions in the major economies have changed markedly in recent months. Bond yields have risen and in most countries the expected profiles for short-term rates over the course of this year have been revised upwards. This article examines these developments and assesses their significance and implications for economic activity and inflation.*

**Chart 1**
**Nominal bond yields**(a)




(a) Ten-year.

**Chart 2**
**Changes in ten-year bond yields since 3 February**




(a), (d) and (g) Federal Reserve increases in federal funds rate.
(b) and (f) Bundesbank official rate cuts.
(c) Revised US GDP figures.
(e) US March employment figures.

### *Long-term interest rates have risen*

The downward trend in bond yields, which began in late 1990, persisted until the autumn of last year in the United States and until early in 1994 in the other major economies (see Chart 1). Between the end of 1990 and the end of last year, ten-year yields fell by over two percentage points in the United States (though they had already turned upwards by the end of 1994) and by between three and four percentage points in Japan and the continental European countries.

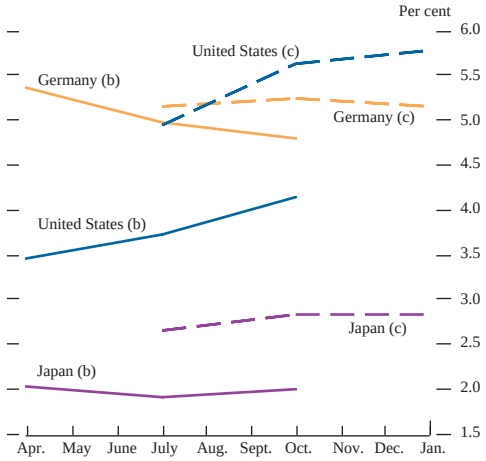
Bond yields moved sharply higher in February in all the major economies. In several countries (though not Japan), the initial rise followed the increase in the US federal funds rate in February. Further rises followed the publication of figures showing rapid M3 growth in January in Germany and revised fourth-quarter GDP figures for the United States released at the end of February. The firming of yields continued in March, though the size of the increases differed across countries. Over the two and a half months to mid-April, ten-year yields rose by well over 100 basis points in North America and the United Kingdom, while the rise in Germany was smaller and that in Japan was less than 50 basis points.

The rise in bond yields in February was partly associated with sales, particularly of US securities, by institutional investors including leveraged funds (see the article on the operation of monetary policy on pages 103–13). But although such activity is likely to have had some impact on short-run price developments, it cannot explain the longer-lasting shift in yields that has taken place. The explanation for this is more likely to lie in a re-assessment of the outlook for inflation—albeit from a starting-point in which yields may have 'overshot' during 1993. The rise in yields in Japan (where the prospect of a rise in inflation is particularly remote) was attributed partly to the expected consequences of fiscal stimulus there for the budget deficit.

By late April, monetary conditions in the United States had been tightened with three successive rises of 25 basis points in the federal funds rate. Although a tightening in US policy had been expected, markets revised their view of the future trend of short-term interest rates in the United States so that these were expected to be above 5½% by the end of 1994. The expected profile for short-term rates through the year was around 150 basis points higher than three months earlier (see Chart 2). Markets were therefore discounting larger future rises in US rates than previously.

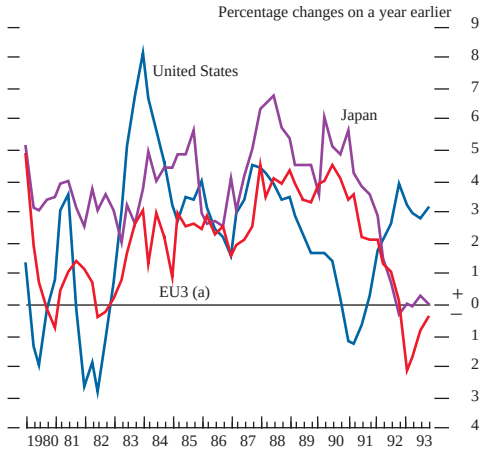
In the other industrial countries, short-term interest rates continued to move downwards in the first four months of the year. In

**Chart 3**
**Implied three-month forward rates**(a)



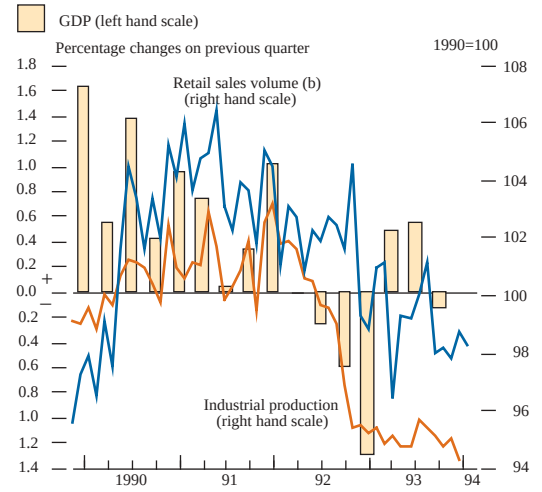

(a) Implied path of three-month eurocurrency rates from Libors.
(b) As at 28 January.
(c) As at 26 April.

**Chart 4**
**GDP growth**




(a) GDP-weighted average of France, Germany and Italy.

**Chart 5**
**EU3: indicators of activity**(a)




(a) GDP-weighted average of France, Germany and Italy (Italian Q4 1993 figure Bank estimate).
(b) Excludes Italy.

Germany, the discount rate was reduced by 75 basis points between February and mid-April, and the repo rate fell by over 40 basis points between early December and mid-April. Short-term interest rates also fell gradually in France. Markets nevertheless revised upwards their expectations for the profile of European interest rates through the rest of the year. Interest rates were expected to fall more slowly throughout this year and by less overall than was the case in December. The revision was largely a reflection of the disappointing figures for monetary growth in Germany in the first few months of the year and concerns that this, together with the tightening in the United States, might constrain the pace at which easing could occur—despite the fact that inflationary pressures continue to recede. Short-term interest rates were expected to fall in Germany to just over 5% by the end of the year, but this was a slower easing than had previously been expected. In Japan too, the profile for interest rates was revised up and by late April some rise was expected over the year.

### *Higher long-term interest rates will affect the outlook for growth*

Although long-term interest rates have risen generally, short-term rates have moved in opposite directions in the United States and Europe. Possible reasons for the general (though differentiated) rises in long-term rates are considered later. One immediate consequence, however, is that higher long-term rates may dampen activity in all of the major economies, which are still in very different cyclical positions.

Activity is gradually picking up in the industrialised world as a whole; GDP growth this year in the Group of Seven (G7) countries is likely to exceed last year's 1¼%. Inflationary pressures are generally still mild. In most of the major countries, substantial and widening gaps still exist between actual and potential output.

In the fourth quarter of last year, growth in the major six overseas economies was 0.7%—much the same as in the preceding quarter. As previously, the average figure concealed markedly different performances in individual countries. Revised figures for the United States showed that growth was 7% (at an annual rate) in the fourth quarter and 3% in 1993 as a whole. The indicators suggest that growth in the first quarter was lower, but still robust; industrial production has been rising since early in 1991 and its three-month growth rate rose to above 2% in January and February. Capacity utilisation—at over 80%—is at its highest since 1989, and non-farm employment rose by 1.2 million in the six months to April. For 1994 as a whole, growth in the United States may exceed 3½%, with consumer spending and business investment likely to account for most of the growth in domestic demand. As export growth picks up, the contribution of net trade to growth may be around zero—in contrast with the past year when it was strongly negative.

Activity in continental Europe has now passed its trough but remains weak. GDP in Germany fell by 0.7% in the fourth quarter, with domestic demand showing little sign of recovery. Consumption and business investment in Germany are likely to remain subdued this year as real disposable incomes shrink to an extent that will offset a fall in the saving ratio, and industrial confidence remains subdued. Some stimulus is likely from the government sector and from net exports as the recent loss of competitiveness is partly reversed; nevertheless, growth may not

**Table A**
**Contributions to Japanese GDP growth**

Percentage points

| | 1992 | 1993 | | | |
|---|---|---|---|---|---|
| | Year | Year | Q2 | Q3 | Q4 |
| Consumption | 1.0 | 0.6 | -0.4 | 0.3 | 0.4 |
| Investment | -1.2 | -1.6 | -0.5 | — | -0.6 |
| Government expenditure | 1.1 | 1.4 | 0.4 | 0.1 | 0.2 |
| Stockbuilding | -0.5 | -0.1 | 0.3 | -0.2 | — |
| Domestic demand | 0.4 | 0.3 | -0.1 | 0.2 | — |
| Net trade | 0.8 | -0.3 | -0.5 | 0.1 | -0.6 |
| **GDP** | **1.2** | **0.1** | **-0.5** | **0.3** | **-0.6** |

Note: quarterly contributions are relative to the previous quarter.

**Chart 6**
**Nominal effective exchange rates**

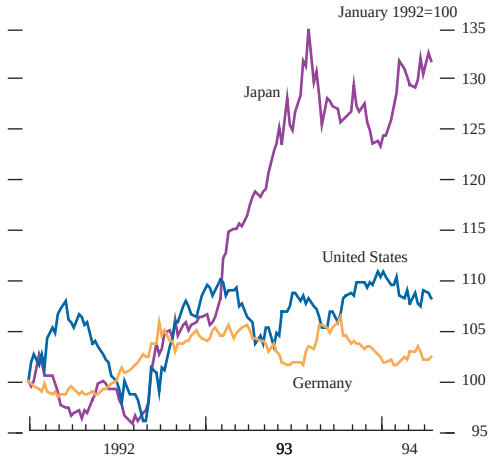
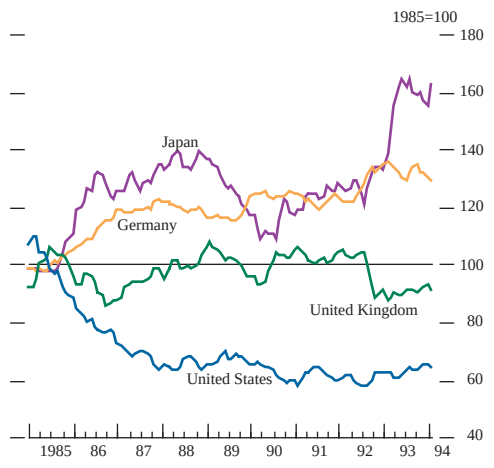



**Chart 7**
**Real effective exchange rates**(a)




Source: IMF.

(a) Calculated using relative unit labour costs.

exceed 1%. Output rose by 0.2% in France in the fourth quarter—somewhat above expectations—and by 0.8% in Italy. Domestic demand is likely to prove stronger in France than in Germany over the coming year, but a deteriorating trade position may depress activity, restraining GDP growth overall to around 1½%. In aggregate, growth in the three major continental economies is likely to be around 1% (compared with a fall of almost 1½% last year). The outlook for growth would have been higher but for the recent increases in long-term interest rates; long-term rates are generally thought to be of particular significance to spending decisions in continental Europe.

Japan also seems poised for a gradual, and perhaps fragile, recovery. GDP fell by 0.6% in the fourth quarter. This was wholly accounted for by a fall in net exports: Japan's trade surplus shrank to around 2¾% of GDP by the end of last year, compared with 3¾% in the first quarter. Domestic demand was flat although, as in the previous quarter, personal sector spending contributed positively to GDP growth. The response of consumers to February's fiscal package—which included cuts in income tax amounting to ¥5.2 trillion in 1994—will have an important influence on the timing and extent of recovery. The continued weakness of the business sector and the loss of competitiveness mean that other components of GDP will remain weak and growth in 1994 may be around 1%. Among the most important ramifications of the recent political changes in Japan will be their effect on trade relations with the United States. This has been the most significant determinant of the exchange rate, and thence competitiveness.

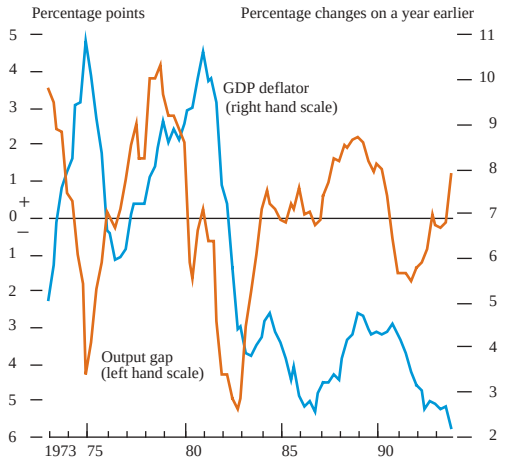
The outlook for consumer spending—which accounts for around 60% of GDP in the major economies—will have an important bearing on the speed of recovery, particularly in Germany and Japan. Recent personal sector behaviour in the major economies is examined in the box on pages 118–19.

The extent to which the recent developments in financial markets affect future activity depends in part on the behaviour of exchange rates and hence competitiveness. The increase in US short-term interest rates might have been expected to strengthen the dollar. This did not occur, however, partly because continuing trade tensions with Japan boosted the yen against the dollar and partly because interest rate expectations in Europe firmed. Chart 7 gives a longer-run perspective on this issue. US competitiveness has improved slightly since 1989, largely as a consequence of the depreciation of the dollar (relative labour costs have been fairly stable). In Japan and Germany though, significant losses of competitiveness have occurred, largely as a result of rises in nominal exchange rates. These may be reversed as monetary policy in the United States is progressively tightened, but there is little sign of this as yet.

### *Inflation outside the United States is still falling*

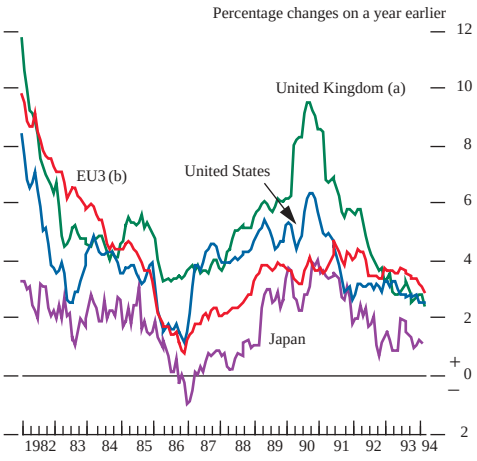
The still-diverse pattern of activity in the major economies will continue to govern short-run inflation trends. Inflation is of most immediate concern in the United States and this has prompted the successive rises in the federal funds rate. Consumer price inflation was at an annual rate of 2.5% in the first two months of the year—lower than at the end of last year. 'Core' inflation (which excludes energy and food prices) was slightly higher but had also fallen.

**Chart 8**
**United States: GDP deflator and output gap**(a)




(a) Gap between actual and Bank estimate of potential output.

**Chart 9**
**Consumer price inflation**




(a) RPI excluding mortgage interest payments.
(b) GDP-weighted average of Germany, France and Italy.

**Table B**
**Unit labour costs in manufacturing**

Percentage change on previous year

| | 1991 | 1992 | 1993 |
|---|---|---|---|
| Canada | -2.6 | -2.2 | -2.9 |
| France | 2.1 | 0.5 | 1.5 |
| Germany | 4.3 | 4.8 | 1.4 |
| Italy | 13.4 | 5.5 | 4.2 |
| Japan | 4.4 | 8.7 | 4.5 |
| United States | 1.3 | -1.0 | -1.9 |

Source: Bank estimates.

But the prices of some materials are rising and annual increases in manufacturing earnings have risen from 2½% in 1992 and 1993 to over 3% so far this year. So far, these price pressures have been offset by rising productivity—so that unit wage costs are still falling—and by weak oil prices; producer output prices are still barely rising.

The outlook, though, is less reassuring. Although the rate seen in Q4 was exceptional, growth in recent quarters—and in prospect—is almost certainly in excess of growth in productive potential. The point at which this may translate into rising inflation depends on the size of any residual output gap (about which there is no certainty) and the effect of policy tightening on activity and expectations. Chart 8 shows one estimate of the US output gap and annual changes in the GDP deflator, and suggests some correlation between changes in output growth relative to potential and subsequent changes in inflation. Although it remains far from certain when inflation will rise, or the extent of the policy tightening required to forestall this, it is perhaps not surprising that financial markets have become more sensitive both to the significance of policy tightening and to any sign that inflationary pressures are building up.

According to survey evidence, expectations of US inflation turned sharply upwards in the early part of the year. The National Association of Purchasing Managers' index of commodity price expectations increased from 51 to 67 between December and February, the largest rise since the Iraqi invasion of Kuwait in 1990. Other major surveys saw similar increases. It is not clear, however, whether these survey results add significantly new forward-looking information about price expectations, or merely reflect past changes—such as rises in commodity prices.

In Japan, consumer prices rose by 1.1% in the year to February, but widespread and largely unrecorded discounting means that a wide range of prices are falling and the official figure probably overstates actual inflation. Price pressures in continental Europe are also weak; real earnings are likely to fall this year in Germany and Italy, and to be flat in France. There are output gaps in France and Italy, perhaps of the order of 4%–5%. Inflation in Germany is likely to fall throughout the year, as price rises in the relatively sheltered services and rent sectors continue to moderate. Consumer price inflation there may fall to 2¾% by the end of the year.

### *There is little to suggest a sharp rise in inflation in the longer term*

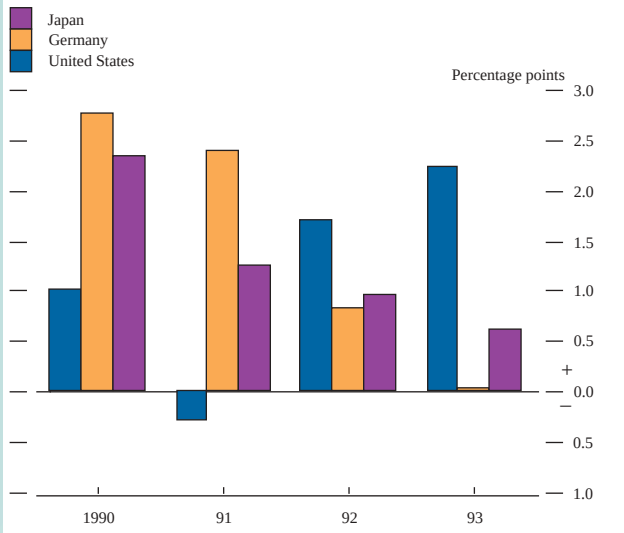
Although the likely effect of higher long-term interest rates on activity is clear (if hard to quantify), interpretation of what bond-market developments imply for market expectations in the longer term is less straightforward.

The rises in bond yields were initially prompted by the long-awaited tightening of policy in the United States in response to concerns about potential inflation. It is not immediately obvious why this tightening should have been transmitted to other countries—particularly in the absence of immediate inflation concerns elsewhere. Foreign exchange markets have for the most part been relatively stable, so that the rise in short and long-term interest rates in countries outside the United States is, in large measure, to be explained by developments in each country. By late April, the dollar had depreciated since the start of the year—it weakened sharply against the yen when trade talks broke down between the

# Recent developments in the household sector

The US economy has grown by almost 11% since the trough of its recession in 1991 Q1. The recovery has been largely driven by consumer activity (see Chart A): consumption contributed seven percentage points to growth over the period; only more recently has strong business investment growth helped the expansion. In continental Europe and Japan, consumption growth was much weaker in 1993. This box examines the role of the household sector in the US recovery, and considers whether recoveries in continental Europe and Japan are likely also to be consumer-led.

**Chart A**
**Contribution of consumption to GDP growth in the G3**

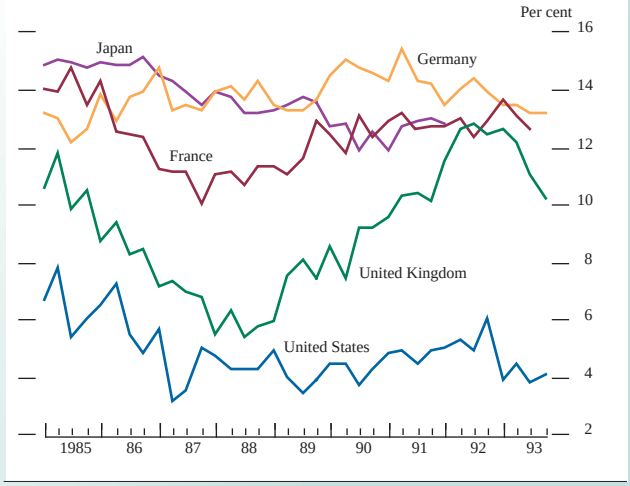



In the United States, consumption fell in 1991, as a result of a half percentage point rise in the saving ratio (see Chart B) and flat real personal disposable income. The saving ratio rose a further half point in 1992 but, with a recovery in personal incomes, this only moderated the rise in consumption. Consumption was then boosted last year as the saving ratio returned to its pre-recession level. Two main factors influenced the changes in the saving ratio: consumer confidence, and movements in household wealth and gearing.

On both the most widely quoted measures, US consumer confidence declined markedly in 1990, to well below its average levels for the mid-1980s (see Chart C). The initial decline coincided with the Gulf conflict, although the economy had by that time slowed markedly without a significant fall in consumer confidence. Confidence appeared to recover several times in 1991 and 1992, only to fall again; these movements coincided with the so-called 'triple-dip' in US GDP. After a final dip in the middle of 1993, consumer confidence now appears to have recovered to its pre-recession levels.

Changes in consumption relative to income (changes in the saving ratio) appear to have been correlated with changes in consumer confidence over recent years. And measures of consumer confidence seem to contain information not contained in other determinants of consumption—such as employment, earnings and interest rates. The fall in confidence may, for example, capture uncertainty about future employment, as well as the actual weakness of employment. The recovery seems to have been under way for three years before this uncertainty was allayed and confidence returned to its pre-recession level.

**Chart B**
**G5 saving ratios**




The other main influence on saving decisions was financial restructuring by the household sector. It is difficult to gauge how important this was in determining the depth of the US recession. By the end of the 1980s, levels of household debt—on a number of measures of capital and income gearing(1)—were at or near historical peaks; capital gearing, for example, reached almost 20% in 1990. Low inflation since then has meant there has only been a small fall in the real value of debt. But the increase in saving allowed a slight fall in the capital-gearing ratio: the ratio fell by half a

(1) Capital gearing is defined as household sector financial liabilities as a percentage of net wealth (including tangible assets). Income gearing is defined as gross interest payments as a percentage of personal disposable income.

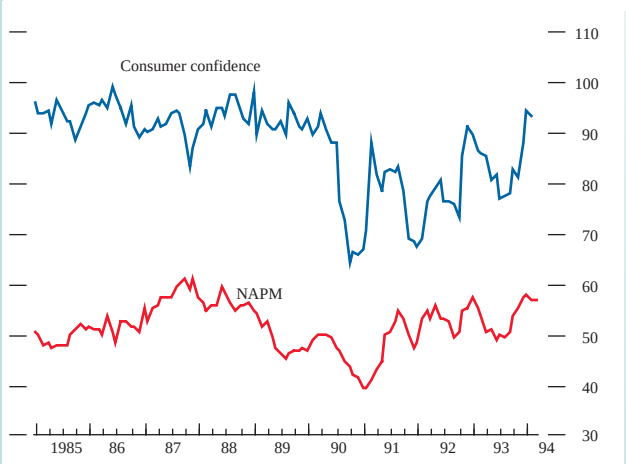
percentage point between 1990 and 1991. And falls in interest rates helped to reduce income gearing; some refinancing of fixed-rate debt at lower interest rates also contributed to this reduction.

More recently, the fall in the saving ratio in 1993 has been associated with an increase in capital gearing to over 19%; it is now approaching the level of its 1990 peak. And although many households have locked into low interest rates, the recent rise in both short and long rates makes it likely that income gearing will start to rise again. It is unclear, however, to what extent this will hold back consumption.

Levels of residential investment provide further evidence of the strength of the personal sector recovery in the United States. Residential investment, at 1987 prices, grew by 16% in 1992 and a further 9% in 1993; this was sufficient to restore investment to its 1989 level. Despite anecdotal evidence that house prices are not very buoyant, the residential investment deflator has been rising by over 4% a year—its fastest rate since 1988.

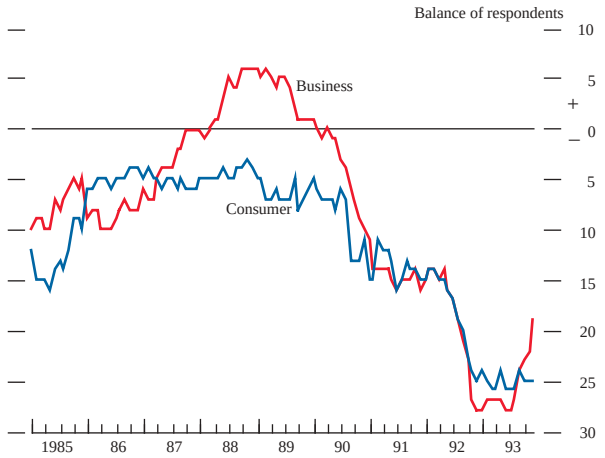
In continental Europe, the pattern is not so clear—though this may partly reflect different cyclical positions. To date, there has been no significant rise in French or German saving ratios since the start of the decade. Indeed, as Chart B shows, the German saving ratio has fallen and so tended to support consumption growth. But at the same time, there has been a sharp fall in consumer confidence in Europe (see Chart D) which has not yet been reversed. As the recovery proceeds, there may be an improvement in consumer confidence, but this may not be reflected in a fall in the saving ratio.

**Chart C**
**US consumer confidence[a] and the NAPM[b]**




(a) University of Michigan index of consumer sentiment; 1966=100.
(b) National Association of Purchasing Management index; per cent.

**Chart D**
**European consumer and business confidence**




Source: European Economy.

Compared with the United States, the household sector has had less of a role, and the corporate sector more, in explaining the depth of the recession in continental Europe. Business confidence has been more volatile than consumer confidence—it fell to a lower level from a higher starting-point, but has recovered recently. But this increase may prove short-lived, if the present round of industrial restructuring results in lower employment which acts to keep consumer confidence down.

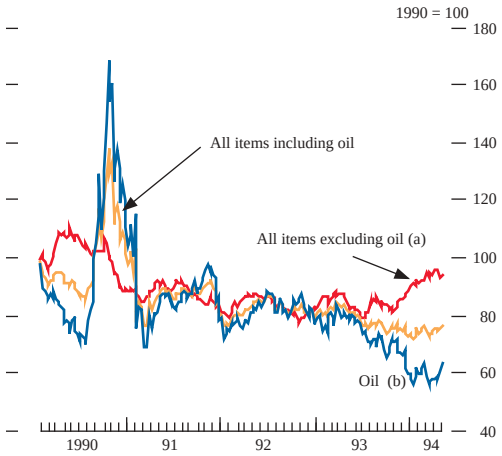
There is little to suggest that levels of household debt have significantly impeded growth in the major continental European economies; so with saving ratios generally well above US levels, a spontaneous rise in consumption cannot be ruled out. Given all the evidence, however, recovery seems less likely to be led by the household sector than by the corporate sector, which suggests that a strong recovery in 1994 is unlikely.

In Japan as in continental Europe, the recession has been heavily influenced by developments in the corporate sector and, as Chart A shows, consumption provided a small contribution to GDP growth in 1993. From the limited data available on households' income and expenditure, the saving ratio appears to have risen in 1993. The tax cuts due to take effect in June and December may give a boost to consumption, but with low confidence and depleted real wealth it is likely that a significant proportion of the proceeds will be saved rather than spent.

United States and Japan. It had also fallen against the Deutsche Mark. This ran counter to short-term interest rate trends, but partly reflected a growing market judgment that German interest rates would now be cut more slowly than previously thought. Within Europe, the major currencies were broadly stable, as countries sought to maintain stable, intra-European parities by cutting short rates gradually.

Although it is hard to see any immediate domestic impulse to inflation in any of the major economies outside the United States, the recent developments in financial markets may reflect a re-assessment either of the outlook for influences on inflation that are common to all countries, or of trends in individual countries in the longer term. This may represent a correction of earlier views (reflected in the prolonged bond market rally) that were too sanguine about future inflation. There is little direct evidence on the extent to which the rise in bond yields reflects higher inflation expectations in the longer term; the United Kingdom is unusual in having both conventional and index-linked government bonds at a range of maturities, which allow inferences to be drawn about inflation expectations (for more detail see the May *Inflation Report*); but comparable data exist only, and to a limited extent, for Canada. They suggest that there has been some increase in medium-term inflation expectations and some rise in real long-term rates.

**Chart 10**
**SDR commodity indices**

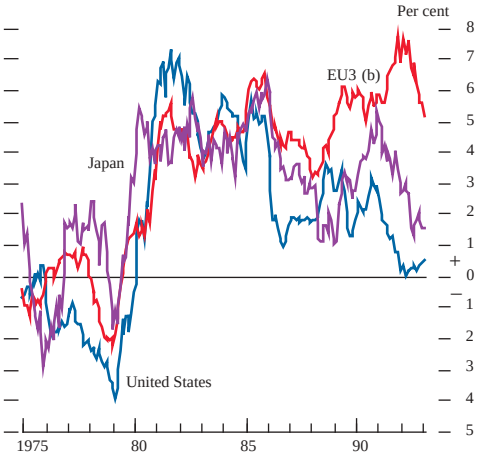



(a) Source: Economist.
(b) As measured by close-dated Brent crude.

One possible source of future inflationary pressure common to all major countries is a rise in non-oil commodity prices, which are sensitive to global demand. These prices have increased in recent months (though the effect on input prices has been largely offset by weak oil prices). Non-oil commodity prices rose by around 7% (in SDR terms) in the year to mid-April, with marked increases in the food and agricultural non-food sectors. Prices have generally responded to supply concerns—either poor crops (in the case of cocoa and cotton) or announced production cuts (coffee). Timber prices have also risen, though this has been in response to increased US housing demand. Oil prices, by contrast, have been on a downward trend since mid-1992 (despite some pick-up around mid-April); they fell by around 16% over the year, and are at their lowest level in real terms since 1988. This is largely a consequence of oversupply in oil-producing countries and is likely to be having a depressing effect on current inflation. In 1980, a fall in oil prices of 50% was associated with a fall in inflation in the G7 of around one and a half percentage points. The recent oil-price fall has been smaller, but though its impact may be less it is still likely to be significant. Oil and non-oil commodity prices may begin to rise gradually as recovery in the major economies is consolidated, but there is no reason at present to expect sharp rises even in the medium term. The trend in real commodity prices has been downward for several years.

It is therefore difficult to find ‘news’ in recent developments which could have prompted a common rise in inflation expectations, other than the tightening of policy in the United States itself. To the extent that there have been persisting increases in longer-term inflation expectations, it is plausible that the extent of the revisions may reflect a re-assessment of the monetary authorities’ anti-inflationary credibility, set against the high level of optimism at the turn of the year. This may account for the different sizes of increase in long rates in different currencies seen in recent months:

**Chart 11**
**Real short-term interest rates**(a)




(a) Three-month interest rates, compounded and deflated by CPI inflation in the year ahead.
(b) GDP-weighted average of France, Germany and Italy.

**Chart 12**
**United States: three-month Treasury bill rates and CPI inflation**

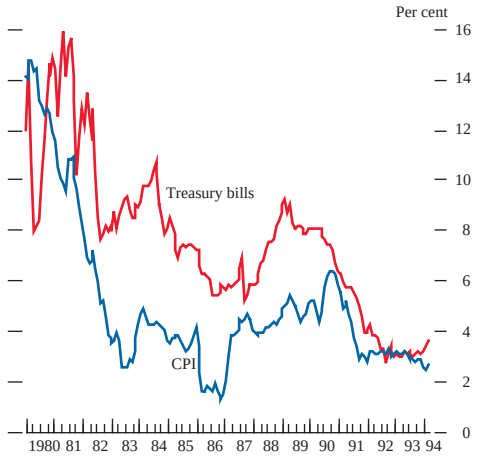
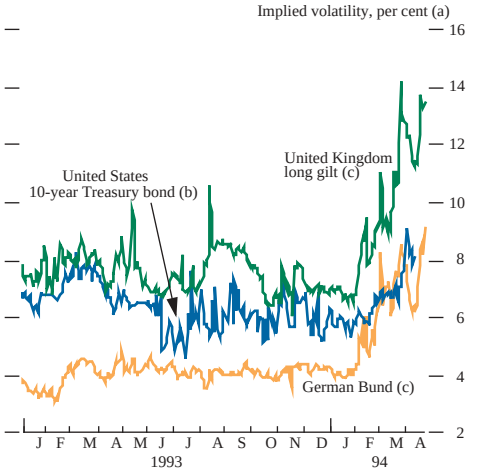



**Chart 13**
**Implied bond market volatility**




(a) Annualised daily standard deviation of continuously compounded returns.
(b) Source: CBOT.
(c) Source: LIFFE.

the countries that appear most recently to have gained credibility have been among those to have experienced the sharpest rises in yields since February.

### *There is still uncertainty about the future course of monetary policy in several countries*

Even where markets are confident that the anti-inflationary objectives of policy will be met in the longer term, however, there may be some uncertainty about the future course of policy that will be needed in order to achieve this. The absence in some countries of simple and unambiguous intermediate goals may make interpretation and prediction of policy measures difficult—particularly around turning-points. This may have contributed to recent uncertainty in financial markets, though it is hard to see it as the cause of a sustained rise in long-term rates.

A turning-point for US monetary policy has clearly been reached; implied forward rates and plausible inflation forecasts suggest that real rates may be between 2% and 3% by the end of the year—a level in line with past experience (Chart 12). The recent tightening followed a period in which the stance of US monetary policy had been particularly accommodating. In the previous three episodes in which the Federal Reserve has tightened policy, it has done so by at least one percentage point within nine months of the low-point in interest rates being reached. This time, the federal funds rate was at its 3% low for more than two years. US real interest rates are still unusually low for this point in the cycle and it is not yet clear what the full effects of this long period of accommodation will be.

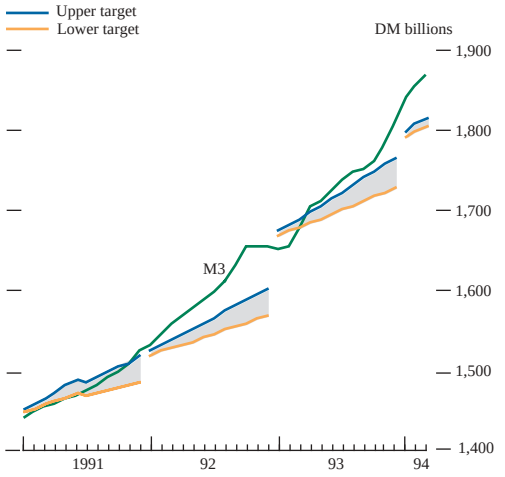
Despite the circumstances of the recent tightening, uncertainty in US bond markets—as measured by the implied volatility of bond prices—increased relatively little over the three months to mid-April (Chart 13). In the past, long rates have initially risen in line with short rates when the stance of policy has been tightened; but over the full period of tightening, long rates have risen less and the yield curve has flattened.

There have been, however, much sharper increases in the implied volatilities of bond prices in other currencies (as Chart 13 shows for the United Kingdom and Germany)—particularly those for which the turning-point in policy may not have been reached. This may reflect some market uncertainty about the framework for monetary policy—the nature and extent of the authorities' response to any future rise in inflation—as well as about the future inflationary environment itself.

For German interest rates, the turning-point still seems some way off, as activity remains weak and there is little prospect of a rise in inflation. In formulating monetary policy, the Bundesbank is having to weigh recent rapid monetary growth against the evidence of receding inflationary pressure. M3 has been distorted by a variety of end-year and taxation effects. These are largely temporary, but it remains unclear how reliable M3 is as a guide to future interest rate decisions. The successive cuts in discount rate since February illustrate that M3's usefulness in this role has diminished—at least for the time being.

Similar problems are affecting the interpretation of monetary aggregates in other countries. As a result of distortions at around the turn of the year, the stock of broad money in France was below

**Chart 14**
**Germany: M3 outturns and target ranges**(a)




(a) Bank of England estimates.

the level of a year earlier. Even allowing for these distortions, growth in broad money was very modest. The recent cautious easing of policy, though, indicates that monetary policy in France continues to reflect developments in Germany closely.

In Japan, where monetary growth is not regarded as a reliable guide to inflationary pressure, the turning-point in policy is also a considerable way off, and it remains difficult to gauge the timing and extent of any eventual tightening. In Canada where—as in the United Kingdom—formal targets have been set for inflation, markets may have difficulty in judging the future course of interest rates—particularly around turning-points. This is quite independent of the credibility or otherwise of the ultimate objective of policy.

# Financial market developments

- *US government bond prices fell sharply during the first quarter of 1994, as the market reacted to the Federal Reserve's monetary tightening. Despite countries being at different points in the economic cycle, European bond prices responded by also moving lower.*

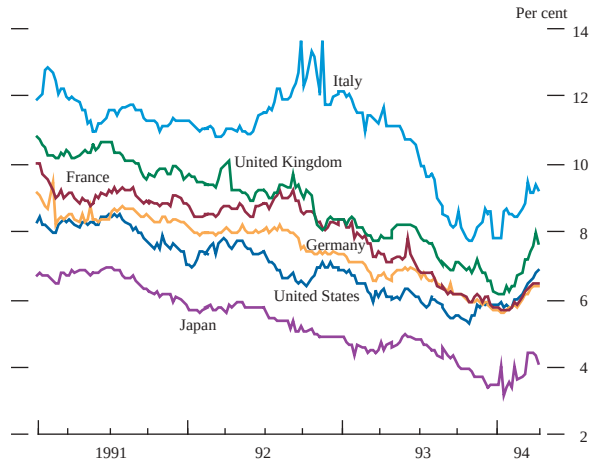
- *As a result of falling bond prices and adverse market conditions, few straight bonds were issued after January. Many borrowers chose instead to issue floating-rate notes, which met demand from investors wishing to take a defensive market view.*

- *In the highly volatile market conditions, turnover on derivative exchanges rose to record levels.*

## Overview

Bond markets around the world fell sharply during the first quarter of 1994. The prices of US government bonds had been falling gradually since October, but the Federal Reserve's decision to raise its federal funds rate by 25 basis points on 4 February precipitated a further, sharper drop in prices. This fall was closely paralleled in Europe and Japan, ending bond market rallies that had begun in 1990 and had reduced nominal yields to their lowest for over a decade (see Chart 1).

**Chart 1**
**Ten-year government bond yield**




Source: Bloomberg.

Despite this background, issues of international bonds during the quarter totalled $136 billion, only 8% less than the record for a single quarter set in 1993 Q1 (see Table A). The majority of issues, however, took place in January: volatile and falling markets dissuaded many issuers from coming to market during February and March. Of those issues that did take place during the latter part of the quarter, many were in floating-rate or equity-related form, in an attempt to reduce the cost of issuing and meet demand from investors wishing to take a defensive market view. The switch away from straight bonds was clearest in the US dollar sector, where almost half of the bonds issued were floating-rate notes (FRNs). Falling bond prices also led investors to re-assess the risks of holding less liquid instruments and, as a consequence, the prices of bonds issued by non-OECD entities fell further than those of their OECD counterparts, discouraging new issues by the former.

The worldwide response to the US interest rate rise highlighted the continuing integration of world capital markets. Explanations of the general upward movement in international bond markets, despite countries being at different points in the economic cycle, are considered in the

**Table A**
**Total financing activity:(a) international markets by sector**

$ billions; by announcement date

| | 1992 Year | 1993 Year | 1993 Q1 | 1993 Q2 | 1993 Q3 | 1993 Q4 | 1994 Q1 |
|---|---|---|---|---|---|---|---|
| **International bond issues** | | | | | | | |
| Straights | 281.5 | 375.7 | 122.9 | 88.0 | 82.2 | 82.6 | 76.8 |
| Equity-related | 24.0 | 39.6 | 8.7 | 8.3 | 10.6 | 12.0 | 20.7 |
| *of which:* | | | | | | | |
| *Warrants* | *18.3* | *20.8* | *6.2* | *3.7* | *5.5* | *5.3* | *8.2* |
| *Convertibles* | *5.7* | *18.8* | *2.4* | *4.6* | *5.1* | *6.8* | *12.5* |
| Floating-rate notes | 43.2 | 68.5 | 15.6 | 13.6 | 19.0 | 20.3 | 38.7 |
| Bonds with non-equity warrants (currency, gold, debt) | 1.2 | 1.5 | 0.8 | 0.4 | 0.2 | 0.1 | 0.1 |
| **Total** | **349.9** | **485.4** | **147.9** | **110.3** | **112.0** | **115.1** | **136.2** |
| **Credit facilities** (announcements) | | | | | | | |
| Euronote facilities | 113.2 | 117.4 | 15.5 | 14.9 | 31.1 | 55.9 | 35.7 |
| *of which:* | | | | | | | |
| *CP* | *21.5* | *24.2* | *5.7* | *3.4* | *2.9* | *12.2* | *3.9* |
| *MTNs* | *90.8* | *92.7* | *9.8* | *11.2* | *28.1* | *43.6* | *31.9* |
| *NIFs/RUFs* | *0.9* | *0.5* | — | *0.3* | *0.1* | *0.1* | — |
| Syndicated credits | 221.4 | 221.2 | 42.1 | 69.4 | 54.7 | 55.0 | 52.0 |
| **Total** | **334.6** | **338.6** | **57.6** | **84.3** | **85.8** | **110.9** | **87.7** |
| Memo: amounts outstanding | | | | | | | |
| All international | | | | | | | |
| Bonds(b) | 1,686.4 | 1,847.9 | 1,741.8 | 1,774.9 | 1,843.6 | 1,847.9 | 1,980.8 |
| Euronotes(c) | 173.1 | 255.8 | 182.6 | 199.3 | 234.6 | 255.8 | 289.8 |
| *of which, EMTNs* | *61.4* | *146.6* | *77.8* | *94.8* | *124.6* | *146.6* | *177.9* |

(a) Maturities of one year and over. The table includes euro and foreign issues and publicised placements. Issues which repackage existing bond issues are not included. Figures may not add to totals because of rounding. Bond total includes issues from MTN programmes.
(b) BIS-adjusted figures, including currency adjustment. Includes issues of fixed-rate bonds and floating-rate notes.
(c) Euroclear figures.

reviews of the operation of monetary policy and the international environment in this *Bulletin*. A number of particular factors that influenced individual markets are, however, considered below.

In the United States, although the Federal Reserve presented its increase in the federal funds rate in early February as a pre-emptive move against inflation, the markets saw it as a confirmation of the authorities' perceptions of potential inflationary pressures, and yields on US Treasuries rose. Stronger-than-expected GDP figures and the Federal Reserve's further tightening on 22 March were followed by further rises in bond yields.

In Japan, yields had begun rising in mid-January, triggered by uncertainty over the outcome of the political reform bill and reflecting growing concerns over the increased supply of bonds that would be needed to fund the expansionary fiscal package. Public sector bond issues in 1993/94 substantially exceeded earlier expectations, and volumes of issues are expected to rise further in 1994/95. At the same time, deregulation of the domestic yen bond market had encouraged an increase in corporate bond issues, exacerbating the oversupply.

In Germany, disappointing money-supply figures and concerns that the Deutsche Mark might be vulnerable in an environment of rising US rates suggested that interest rates might not fall as fast as the market had anticipated. With a slower reduction in German rates, the markets judged that the pace of interest rate reductions in other European countries would also be held back. Having already discounted favourable short-term interest rate expectations, European bond markets may have become overvalued (nominal yields had fallen to historic lows). With US interest rates on a upward trend, and highly volatile and uncertain conditions in European bond markets, a reappraisal of the risks of potential inflation may have reinforced the bond-market falls that were already taking place.

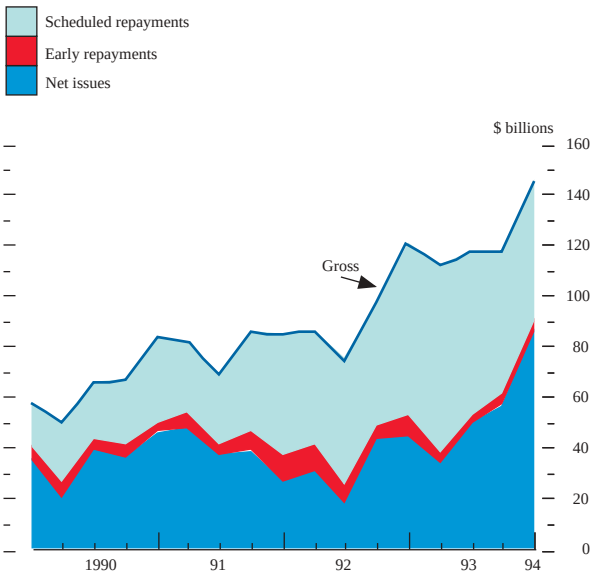
The decline in bond prices may also have been exacerbated, in the short term, by technical factors. Given that the three-year rally in European bond prices was coming to an end, many investors—not least leveraged funds (see the box on page 125)—sought to hedge or unwind long bond positions which had been held on the premise of continuing rises in prices. Much of the initial activity took place in the futures markets, where record turnover in the government bond contracts on LIFFE, Paris's MATIF and Frankfurt's DTB coincided with substantial price falls and calls for additional margin. These additional margin calls, together with the falling value of much of the collateral being used to finance outstanding long positions, may in turn have exacerbated pressures on some investors (such as the more highly geared leveraged funds) to sell their remaining long bond positions.

Prices were volatile in all the main equity markets too, as investors reacted to the rise in US short-term interest rates and the falling bond markets worldwide. Buoyed in January by high levels of economic growth, prices of US equities subsequently fell throughout the rest of the quarter. After rises early in the quarter, European equity markets also fell, as investors reduced their expectations of the scope in the short term for further falls in European interest rates. In contrast, Japanese equity prices rose, encouraged by resolution of the problems over the political reform bill and by strong foreign investment.

## International bond markets

Despite the market volatility, $136 billion was raised through international bond issues during the first quarter of 1994. This was close to the record total in the same quarter in 1993, and with redemptions of $58 billion, the net amount issued during the quarter was a record $78 billion (see Chart 2). Such a high quarterly total was achieved despite adverse market conditions as a result of the strength of borrowing in January, when $70 billion was raised by issuers keen to take advantage of historically-low yields. The subsequent market turbulence led to a marked slowdown in new issues in February and March. Of those borrowers that did come to market later in the quarter, many chose to issue FRNs or equity-related debt, rather than fixed-income bonds.

**Chart 2**
**International bond issues**(a)




Source: Bank of England ICMS database and BIS.

(a) Measured at date of completion rather than announcement, and therefore differing slightly from the figures given elsewhere in this article.

As at the beginning of 1993, a large volume of international bond issues were made by national and regional governments in the first quarter of 1994 (see Chart 3). They raised a total of $24 billion, almost half in floating-rate form; some governments, including the United Kingdom's, issued floating-rate debt in their domestic markets as well. European banks were also heavy borrowers in the international market, issuing almost $30 billion in the quarter. The majority of this was done in January, as banks

# Hedge, or leveraged, funds

There is no precise definition of a 'hedge' fund; the term is used loosely to refer to an investment fund structured so as to be exempt from investor protection requirements and thus able to follow a flexible investment strategy. The funds' trading strategies typically involve taking both long and short positions, as well as leveraging those positions. Positions are very often not hedged; 'leveraged fund' is therefore a more accurate term. Leverage (or gearing) can be achieved by borrowing (either unsecured or against a fund's existing assets, perhaps using sale and repurchase agreements) and investing the proceeds, as well as by trading in derivative products. By leveraging in this way, the return on funds' positions becomes more sensitive to marginal movements in the prices of the assets concerned.

Leveraged funds have been the focus of much attention in recent months, and the lack of generally-available information on them has led to speculation about their activities. Central banks and regulators have also naturally been interested in them. Their concerns have not centred on investor protection, since the funds' high minimum investment levels mean that they only attract wealthy individuals and institutional investors, who should be able to look after their own interests. Rather they have been concerned to assess whether leveraged funds could have a disruptive impact on markets which might in turn affect other market participants, and whether their business is handled prudently by their counterparties.

The lack of transparency in leveraged funds' activities makes it difficult to reach a firm conclusion about their potential impact on markets. Anecdotal evidence suggests that they do affect markets, though their impact may have been somewhat overstated. Leveraged funds were active during the recent bond market downturn; but even if they were all highly geared their role is unlikely to have been as influential as some have suggested, given the small size of their capital relative to the market as a whole. The perceived importance of leveraged funds may instead be attributable to the status that some of the major fund managers now seem to have in the market.

The Bank has raised with the institutions it supervises the question of their exposure to leveraged funds. In general, banks judge that the funds provide them with adequate information; lack of information is not seen to be an obstacle to assessing counterparty risk. The larger funds also seem to have established long-term relationships with specific counterparties, whom they are willing to pay well for the ability to trade rapidly and in size. There has been strong competition for this business between those banks and securities houses able to take it on. This competition may have led to a temporary lowering of standards in assessing and protecting against counterparty risk, for example by taking adequate collateral. But the recent market volatility may have led counterparties to correct this.

## *Size and structure*

Information on leveraged funds as a whole is sketchy, and needs to be treated with care. Conservative estimates nevertheless indicate that there are around 800 leveraged funds worldwide, handling investment funds of at least $45 billion. The funds vary enormously in size; a handful of the largest (and best-known) account for perhaps half of the total. Although the majority of leveraged funds are still aimed towards US markets and investors, leveraged fund activity is growing in Europe and may continue to do so. As in the United States, growth in Europe is likely to be based offshore, because of restrictions on investments for onshore funds. The typical investors in leveraged funds still largely appear to be rich individuals, but the funds' active asset management style is likely to prove increasingly attractive to institutional investors.

Typically, a leveraged fund is established by a trader, or a small group of traders, with a proven track record at a well-known institution or on the floor of an exchange. Traders are attracted to setting up their own funds by the independence it brings and by the prospect of high performance fees (typically at least 15%–20% of profits). As the size of the fund grows, the number of traders may increase, but investment decisions usually remain in the hands of a few key individuals. Traders' reputations are crucial, both in gaining capital for the fund and in providing justification for their performance fees.

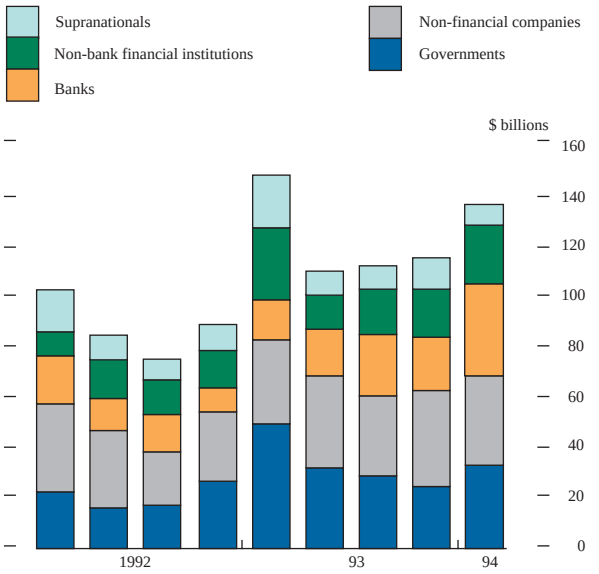
## *Trading strategies*

Leveraged funds, unlike most other asset managers, tend to aim for a total rate of return rather than gauging their performance against a benchmark. Their trading strategies differ enormously, from a market-neutral approach (typically based on quantitative methods and arbitrage techniques) to investing according to long-term fundamentals which may involve significant position-taking. The smaller funds appear to be largely quantitatively based; they may leverage by up to 40 times or more—generally through the use of exchange-traded futures contracts—and probably have relatively short-term investment horizons.

Larger leveraged funds tend to take a longer-term view (some larger funds require investors to commit their capital for three years or more). In taking these longer-term positions, larger funds also seem to resort less to leverage. They may obtain leverage through a combination of secured and unsecured borrowing, sale and repurchase agreements (repos) and margin-based derivative transactions. The possible leverage available to a fund will therefore depend, among other factors, on the collateral and margin requirements imposed by its counterparties.

Leveraged funds are active in financial markets across the globe, and funds' activities may involve complex cross-product and cross-currency trades. Few other investors—apart from the proprietary trading desks of their counterparties—undertake such broad cross-market and multi-instrument trades. Larger funds, however, tend to concentrate their trading in the more liquid markets so as to be able to take (and liquidate) major positions. The size of individual transactions undertaken by the larger leveraged funds can sometimes be very large indeed—up to several billion dollars. During 1993, total turnover in European government bond markets—and in particular repo business—increased rapidly and this may well have been due in part to the long positions taken by leveraged funds.

## Chart 3
## Borrowers in the international bond market

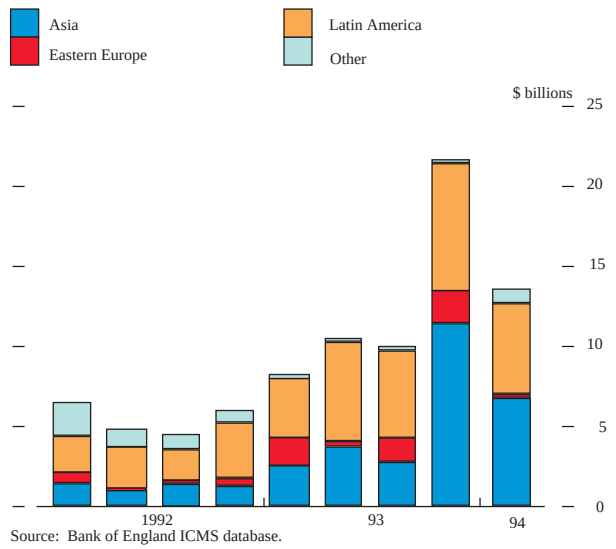



Source: Bank of England ICMS database.

made use of the low cost of capital to restructure their balance sheets and to take advantage of improving lending opportunities.

With prices generally falling, investors became increasingly reluctant to purchase illiquid lower-rated debt. The prices of Latin American Brady bonds in particular fell sharply—the spread of Mexican and Argentine bonds over US Treasuries widened by around 250 and 350 basis points respectively. Issues by non-OECD borrowers fell back to $14 billion in the first quarter (see Chart 4), down from $22 billion in the final quarter of 1993. High demand for capital from non-OECD borrowers suggests, however, that they will be keen to resume issuing when more settled market conditions return.

## Chart 4
## International bond issues by non-OECD borrowers




Source: Bank of England ICMS database.

In the first quarter, global bond issues[1] totalled $9 billion. For the most part, they were major issues in one of the more liquid currencies made by borrowers with prime credit ratings. There were, however, a number of smaller issues, and the range of currencies of issue was widened further to include the Finnish markka, Swedish kroner, Ecu and Danish krone. These smaller deals were, however, structured as eurobonds with additional SEC registrations and, without linked settlement systems, they therefore lacked some of the attributes that had characterised earlier global bonds.

### *Currency sectors*

In the first quarter, US dollar-denominated issues accounted for 24% of all fixed-rate issues in the international bond markets—a lower proportion than the average in recent years (see Table B). They were concentrated in January: issuers had been keen to lock into historically-low funding costs, but with both short and long-term interest rates rising in the United States, they were less enthusiastic about issuing during the latter part of the quarter. And with short-term interest rates expected to rise further (by the end of the quarter the implied three-month rate for end-1994 was 5.3%), US dollar issuers may continue to favour the floating-rate sector in the coming months.

## Table B
## Currency composition of fixed-rate bond issues[a]

Percentage of total issues announced

| | 1992 | 1993 | | | | 1994 |
|---|---|---|---|---|---|---|
| Currency denomination | Year | Year | Q2 | Q3 | Q4 | Q1 |
| US dollar | 32 | 30 | 33 | 29 | 28 | 24 |
| Deutsche Mark | 11 | 13 | 7 | 13 | 16 | 13 |
| French franc | 8 | 11 | 15 | 8 | 12 | 13 |
| Sterling | 6 | 8 | 10 | 8 | 6 | 12 |
| Yen | 14 | 13 | 9 | 16 | 16 | 8 |
| Italian lira | 2 | 3 | 5 | 4 | 2 | 6 |
| Canadian dollar | 6 | 8 | 5 | 8 | 5 | 5 |
| Ecu | 7 | 3 | 2 | 2 | 2 | 4 |
| Swiss franc | 5 | 5 | 5 | 6 | 5 | 2 |
| Other | 9 | 6 | 9 | 6 | 8 | 13 |
| **Total** | **100** | **100** | **100** | **100** | **100** | **100** |

(a) Excluding equity-related issues.

The share of fixed-rate bonds denominated in European currencies was high—almost 60%—reflecting the fact that bond prices continued to rise in these markets until February. As the quarter continued, demand for new issues of straight bonds weakened, particularly in the Deutsche Mark sector, where there were few issues after the announcement of a 20% (annualised) increase in M3 in January. The abolition of the queuing procedure, under which borrowers had previously needed the Bank of Italy's permission before a launch, prompted an increase in lira issues; in January alone, issues in eurolire were equal to a quarter of the total issued in 1993. The quarter also saw the first foreign drachma issue, launched by the European Investment Bank (EIB) in the domestic Greek bond market.

Issues in the euroyen and samurai[2] markets accounted for only 8% of fixed-rate bonds issued in the first three months

(1) Global bonds are issued simultaneously in the European, US and Far Eastern markets, and can be settled in both domestic and international clearing systems.
(2) A samurai bond is a bond issued in the Japanese domestic market by a foreign issuer.

of the year, a sharp fall on recent quarters. Most of these international yen issues came in January, immediately following the abolition of the 90-day 'seasoning' period[1] for issues by public sector entities. Concerns about oversupply and uncertainty over the passage of the political reform bill subsequently deterred many prospective issuers.

New issues totalling £9 billion were made in the sterling debt markets in the first quarter. January and early February were particularly active, as borrowers took advantage of record low funding rates and investors bought in the hope that yields would continue to decline. Overseas interest was also encouraged by the rally of sterling; in mid-January it reached its highest level since 1992 against the Deutsche Mark. But the volume of new sterling issues fell back sharply in March, when only five issues totalling £750 million were made. Much of the paper issued during February and March was said to have remained with lead managers and syndicate members, as investors remained cautious.

Continuing the trend seen in 1993, banks and building societies were the most active borrowers in the first quarter, accounting for over 60% of the total. Major issues (raising £500 million each) were brought by the Halifax, Abbey National, Royal Bank of Scotland and Barclays, and the EIB was able to launch a £400 million 10-year bond priced at the same yield as the 10-year gilt. In January, British Gas extended the maturity of the eurosterling yield curve when it launched the first ever 50-year eurosterling issue, raising £200 million priced to yield 50 basis points over the 8¾% 2017 gilt.

The UK local authority bond market showed signs of a revival following clarification, under section 43(2) of the Housing and Local Government Act (1989), of the conditions under which local authorities are allowed to issue registered debt securities. Three councils issued partly-paid 25-year sterling bonds totalling £280 million, and a further three made a joint issue for £85 million using a special-purpose vehicle.

Turnover in the Ecu bond and money markets rose during the first quarter, despite the volatile conditions in individual European currency markets; the composite nature of Ecu securities offers exposure to a range of European markets with reduced currency risk. During the quarter, the Bank continued to hold its regular monthly Ecu Treasury Bill auctions. A tender was also held on 19 April to reopen the 1997 Ecu Treasury Note which was launched in January of this year.

The monthly Ecu Treasury Bill auctions continued to be oversubscribed at all three maturities on offer, with issues being more than twice covered at each auction, at levels up to 20 basis points below the Ecu six-month Libid. ECU 200 million of one-month, ECU 500 million of three-month and ECU 300 million of six-month bills were on offer at each tender. Secondary market turnover in these instruments fell to ECU 1 billion during December, but rose to ECU 2.4 billion during March reflecting more stable conditions in European money markets. There are currently ECU 3.5 billion Treasury bills outstanding across all maturities.

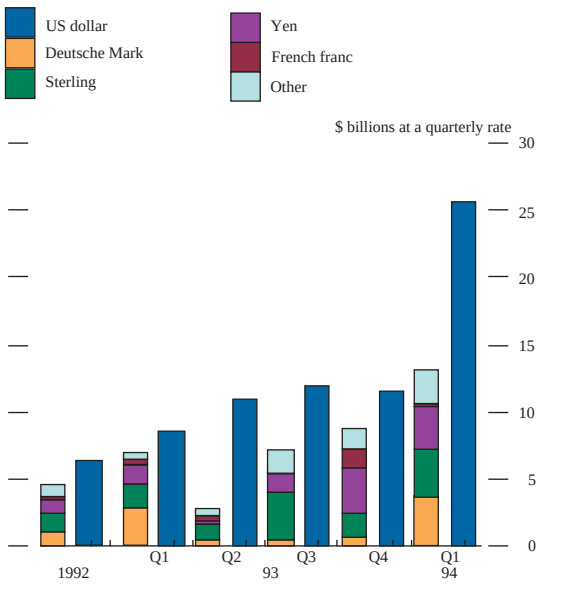
At the tender reopening HMG's Ecu Treasury Note maturing in January 1997 (the third three-year Note in the series), ECU 500 million was sold; the auction was almost four times covered. Bids were allotted at yields in a tight range of 6.30% to 6.34%, a few basis points through the theoretical composite basket. The oversubscription at the tender reflects the benchmark status of the debt in the Ecu market. Liquidity in the outstanding 1995 and 1996 Notes has been good, with turnover remaining at around ECU 2 billion a month over the last quarter.

Among the United Kingdom's other foreign currency debt, the DM 5.5 billion five-year and $3 billion ten-year bonds, launched in 1992 to complete HMG's ECU 10 billion currency borrowing programme, continued to be liquid and remained among the most actively traded Eurobond issues settled through Euroclear and Cedel.

### *Floating-rate notes*

Issues of floating-rate notes (FRNs) rose substantially in the first quarter (see Chart 5). At $39 billion, they constituted over a quarter of total bond issues. The substantial increase in the volume of issues—particularly in short-dated maturities—was stimulated by demand from investors who regarded FRNs as a defensive instrument in an environment

**Chart 5**
**Currency composition of floating-rate issues**




Source: Bank of England ICMS database.

(1) Euroyen bonds could not be sold to Japanese domestic investors for a period of 90 days after issue, although issuers regularly sought to circumvent this rule by 'warehousing' bonds: registering investor interest on the day of issue but only delivering the bonds after 90 days. Issues by public sector entities became exempt from these 90-day 'seasoning' restrictions with effect from 1 January.

of generally-rising interest rates. In such a context, FRNs retain their capital value better than straight bond issues since their coupons, rather than their prices, move in response to rising short-term interest rates. From the issuer's viewpoint, in volatile and falling market conditions FRNs are easier to price and to distribute. Several government borrowers were among those issuing international FRNs, with Sweden's $3 billion issue the largest ever in the sector.

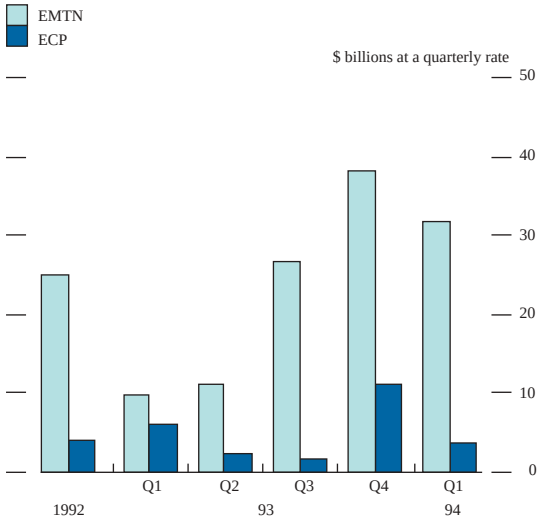
Floating-rate note issues featured prominently in the sterling bond market, as the growing weakness of the market deterred issuers and underwriters alike from committing themselves to fixed-rate offerings. Demand came from investors uncertain about what would happen to interest rates both here and abroad. Seven FRN issues were brought totalling almost £1.5 billion, including a £500 million deal by the Halifax Building Society (following its fixed-rate issue of the same size in January). In the floating-rate mortgage-backed sector, UCB, the mortgage subsidiary of Compagnie Bancaire, also raised £500 million—the largest sterling offering of its type.

Once bond markets had turned down, there was a decline in the demand for reverse, collared and step-up recovery FRNs, which had been popular in the latter half of 1993: if short-term interest rates are rising, such structures are more likely to limit returns than to improve them. As a result, during the quarter only a tenth of FRN issues were structured. During January, however, a number of borrowers issued a new structured product, the 'range' or 'corridor' FRN. These short-maturity (one or two-year) notes offered a significant yield premium over conventional FRNs for those investors willing to take a position on the likelihood that short-term interest rates (or, in one case, exchange rates) would stay within a certain range. If that happens, holders of range FRNs receive a higher coupon than would be available on a conventional FRN from the same issuer; no interest accrues, however, on days when the interest rate is outside the range. Range FRNs allow top-rated borrowers to issue at rates well below Libor by swapping into what are, in effect, conventional Libor-based funds. $2 billion of range FRNs were issued in January, with most taking a position on 3-month dollar Libor remaining below 4% in the first half of 1994, and below 6% until end-1995. With three-month dollar Libor reaching 3 7/8% by the end of March, it is possible that investors may have misjudged the risks inherent in these instruments.

### *Euromedium-term notes and eurocommercial paper*

Issues of euromedium-term notes (EMTNs) totalled $31 billion in the first quarter; announcements of new programmes also remained strong at $32 billion (see Chart 6), though half of this was accounted for by just two programmes. The Kingdom of Sweden launched a $10 billion programme to replace one arranged during the 1992 European currency crisis and to give it greater flexibility in its forthcoming debt issues. The World Bank announced a $5 billion global MTN programme for issuing structured debt, highlighting the degree to which even large MTN programmes can be used to target specific investors. Structured issues can, however, be subject to extreme illiquidity, if the embedded swaps and options move far out-of-the-money. The World Bank programme seeks to overcome this by requiring dealers to quote daily prices for all issues from the programme and by boosting liquidity by continuously offering to exchange structured bonds for ordinary FRNs.

**Chart 6**
**EMTN and ECP programme announcements**




Source: Bank of England ICMS database.

Eurocommercial paper (ECP) programmes, by contrast, were much weaker; only $4 billion of new programmes were announced, and the stock of ECP outstanding was little higher than in the fourth quarter of 1993.

### *Equity-related bonds*

Issues of equity-related bonds totalled $21 billion in the first quarter, their highest level since early 1989. The fall in the prices of straight bonds encouraged many investors to look for higher returns from bonds offering exposure to the equity market, and especially the Japanese market. In the Swiss franc warrant sector, for instance, coupons fell to as low as 0.25%, suggesting that investors were focusing primarily on the equity component of issues. OECD borrowers increased their share of equity-related issues significantly, to almost 80%.

The bulk of the growth was in convertibles rather than in bonds with attached warrants, and much of the convertible debt was issued by UK and French entities. European borrowers generally prefer convertible bonds which, in contrast to bonds with warrants attached, have conversion rights that are not detachable and so cannot be traded separately. In addition, Japanese borrowers were encouraged by the relative strength of the Nikkei index to issue bonds with equity warrants; they raised $9 billion, the largest amount since 1991.

### *Syndicated credits activity*

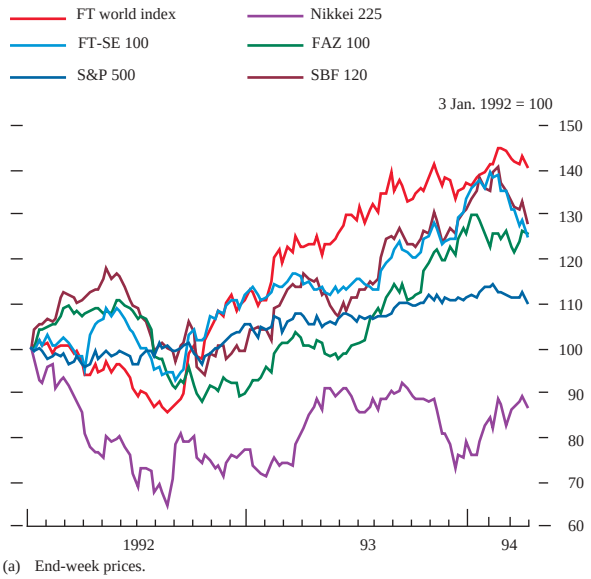
The prospects for syndicated credit activity in 1994 seem better than in recent years. Among the positive influences are: stronger corporate activity in the developed world; increasing market access for non-OECD borrowers; a revival in mergers-and-acquisition activity in the United States; and continued refinancing of earlier borrowing.

New syndicated credits facilities totalling $52 billion were announced in the first quarter of 1994, a total little different from that in the fourth quarter of 1993. Non-financial companies remained the principal borrowers, accounting for four fifths of the total. Two factors largely explain the continuing high level of lending: refinancing and the activity of Asian borrowers. A quarter of the syndicated credits could be identified as refinancing of existing loans—almost all by US, UK and Irish entities keen to replace earlier loans on more advantageous terms. And Asian entities—primarily Thai and Indonesian borrowers—increased their borrowing to $11 billion.

## Equity markets

After rises early in the quarter, prices fell in all the major equity markets except Japan (see Chart 7). The falls were triggered primarily by the rises in US short-term interest rates and fears that cuts in European interest rates would prove to be more gradual than expected. During the quarter as a whole, the FT-Actuaries world index fell 1.6% in local currency terms, with weakness in the European markets only partly offset by the strength of the Japanese and other Asian markets. Buoyed initially by the continuing strength of the economic recovery, US equity prices rose modestly during January before falling in the rest of the quarter; the S&P 500 ended the quarter down 4.2%. The Nikkei 225 index's performance was closely linked to the passage of the political reform bill in Japan. Encouraged by resolution of the problems surrounding the bill and by strong foreign investment, it peaked in mid-March at 20,677, before falling to 19,559 at the end of the quarter—a rise of 12% since the end of last year.

**Chart 7**
**Equity indices**(a)

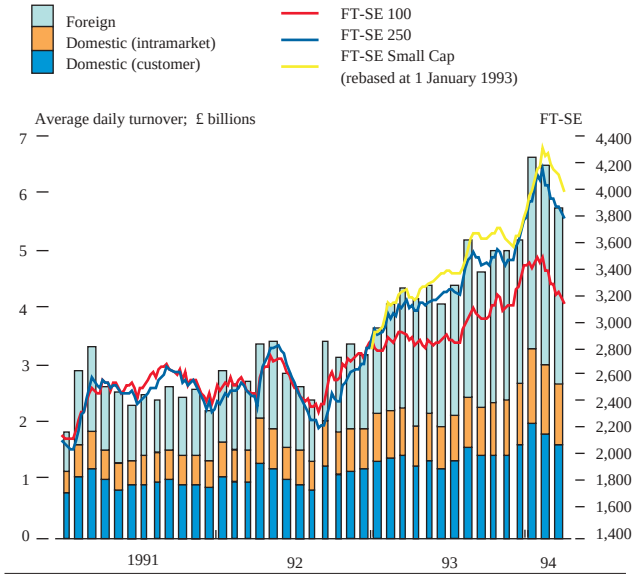



(a) End-week prices.

In the United Kingdom, the FT-SE 100 rose to a record high of 3,520 at the beginning of February, encouraged by falling bond yields and hopes of further interest rate cuts. When faced instead by rising long-term rates and a reduced prospect of further cuts in short-term rates, it fell by over 12% from its peak, to end the quarter at 3,086.

In volatile market conditions, secondary market turnover in UK equities reached record levels (see Chart 8). Daily turnover averaged £3 billion—20% up on 1993 Q4—of which customer business formed £1.7 billion. Turnover on SEAQI also far exceeded the record levels of the previous quarter; daily turnover in the overseas equities traded in London averaged £3.3 billion during the quarter, 27% up on 1993 Q4.

**Chart 8**
**Equity turnover and prices on the London Stock Exchange**




Despite the falling equity prices, there was a high volume of new sterling issues throughout the quarter. 165 ordinary share issues were announced, seeking to raise £5.2 billion; the favoured issue method was placings. This may have been encouraged by a revision to the Stock Exchange's listing rules in December 1993, which raised the thresholds on the maximum number of shares that could be placed, rather than having to be offered for sale or subscription.

An increased number of construction and property-related companies came to the market, as confidence about the property sector grew. The stream of new investment trust issues seen over the last year or so also continued; the largest was the Mercury European Privatisation Trust issue, which achieved its target figure of £575 million—the largest ever launch of a UK investment trust. Another substantial offering was made by the Kleinwort European Privatisation Investment Trust, which raised £500 million.

## CREST—the first phase completed

The publication of a final group of papers on 3 May concluded the first phase of the CREST project. The project team, together with the CREST Steering Committee (which represents a wide range of market expertise), has now delivered to the equity industry a workable and accepted design for an equity settlement system to replace the current Talisman system. As part of the process, on 18 July the London Stock Exchange will move to a system of rolling settlement ten business days after trades take place (T+10); this will be followed, in early 1995, by a move to T+5 rolling settlement.

The Bank established the CREST project team last August to take forward the recommendations of the Securities Settlement Task Force (which was set up to consider the best way forward for UK equity settlement following the failure of TAURUS). The Task Force had recommended that:

- the Bank should within nine months prepare a detailed design for a new electronic book-entry settlement system—CREST;
- the fortnightly account should be replaced in July 1994 by T+10 rolling settlement;
- rolling settlement should move to T+5 early in 1995; and
- CREST should become operational two to three years after completion of the detailed design.

The first of these recommendations has been met, and clear progress is being made towards the other three. Given the momentum established by the project team, the Bank believes that the move to T+5 rolling settlement should take place well before the introduction of CREST, which it expects to be implemented on time.

### *CREST: the first phase*

In February, the project team published a substantial paper describing the system which, in the Bank's judgment, is needed to meet the industry's business requirements. This followed a period of intensive consultation with all areas of the industry. The paper set out the design which the Bank was prepared to develop into a fully tested computer system, provided there was adequate market support for CREST.

The project team has therefore been assessing the level of support. It has done this partly in the context of seeking external funding for the project's next stage. The Bank does not intend to own or operate CREST, since it believes that it should be a utility service and would best be owned by its users. In the Bank's eyes, ownership should be broadly based to preclude dominance by any sector or single organisation within the industry.

The team has been discussing these ideas with a range of potential owners, and has drawn up a set of heads of agreement with those who have expressed interest in owning a share of CREST. These will form the basis of the articles of the company that will own CREST—known as CRESTCO. So far 48 institutions—including banks, institutional investors, registrars, market-makers, brokers and the London Stock Exchange—have committed themselves in principle to providing finance for the next stage of CREST. The Bank will also participate at the outset. CRESTCO itself will be established in the late summer.

Commitments on ownership are in part contingent on the outcome of an independent audit of the project team's work, particularly its information technology aspects. During March and April, a team from Price Waterhouse addressed three aspects of this work:

- how closely the design of the computer system related to the business requirements;
- the cost and time estimates for the development of the software; and
- whether the security measures proposed for the communications links and for the operation of CREST itself were adequate.

The auditors' summary report was published with the other papers on 3 May. In brief, the auditors drew attention to a range of unfinished business, reflecting the early stage of the project, but found the procedures in place acceptable at the current stage. A further audit of cost estimates and the timetable will take place in September.

Important progress has also been made on the legal changes which will be necessary before CREST can become operational. In March, the Treasury published a paper which described the scope and likely content of the regulations that it would make under section 207 of the 1989 Companies Act to enable securities to be held in dematerialised form within CREST and transferred without physical documents of transfer. Legal title will still be conferred only when shares are registered in the new owner's name, and so the legal changes required are fairly minor.

### *Relations with investors and companies*

The Bank has been at pains to preserve and, if possible, improve the position of small, retail investors. First, it has introduced the concept of sponsored membership: an individual, trust or firm will be able to be a *member* of CREST without having to operate that membership; another CREST participant will, as *sponsor*, do so for them. This will allow investors who make frequent transactions to take full advantage of electronic settlement, while keeping their names on company registers and thus being full members of the companies in which they invest. Sponsored members will be reliant on the honesty and competence of their sponsors; and so will therefore need to exercise care in their choice of sponsor.

Investors who rarely trade will probably prefer to continue using certificates. The CREST design will allow them to transact much as they do now, and it is unlikely that their costs will be higher than today. It is important that using certificates should remain a genuine option, since CREST's legal infrastructure is based on the principle that investors will retain a free choice whether to use it. Market-makers will therefore need to be prepared to offer reasonable prices on deals using longer-dated rolling settlement, particularly once CREST is fully operational and the bulk of the wholesale market has moved to two or three-day rolling settlement.

Some investors will choose to use CREST via a nominee rather than be sponsored members, which will offer the same reduced costs and improved security. The introduction of CREST may thus increase the use of nominees. But investors who use nominees are not full members of the companies in which they invest: they cannot participate fully in the companies' affairs, and may not have full and timely access to company information and benefits. Many customers of nominees are content with this; but some would like to improve their position. With the Bank's support, ProShare has been investigating the demand for improvement, and how it might be satisfied using a voluntary code of practice.

### *Rolling settlement*

The team has also been working closely with the staff of the London Stock Exchange to prepare for rolling settlement. At present, all transactions executed on the Stock Exchange over a two-week account period are settled on a single day six working days after the end of that account. When rolling settlement is introduced, each day's transactions will be settled a fixed number of days later. So, from 18 July, trades will settle ten working days after they have been struck.

The move to T+10 settlement presents a number of operational challenges. In the Bank's view, however, with adequate preparation all areas of the industry should be able to meet those challenges. But the further transition to T+5, using the present systems with their reliance on movement of paper, will pose a much greater challenge—even for the wholesale market.

There are three key areas where current practices will need to be changed: the stage between trade and settlement, particularly the time it takes for institutional investors to pass instructions to their custodian banks; the management of certificates by investors who trade frequently and the time it takes for registrars to return certificates to investors; and the operation of stock borrowing and lending. It seems likely that, by streamlining current practices and changing some procedures, industry participants will be able to make improvements in the first two of these.

The issues raised by stock borrowing may not be resolved so easily. Access to efficient stock borrowing arrangements is essential to allow market-makers to provide deep and liquid markets in UK equities. Adjustment to T+5 is therefore likely to require some changes to systems to allow greater flexibility. These questions continue to be examined by the market and the Stock Exchange.

For the retail investor, T+10 settlement should not pose any insuperable problems; existing postal and cheque-clearing systems provide enough scope to settle at the market standard. But investors dependent on these services will have difficulty in managing T+5 settlement, so many may continue to use ten-day settlement. T+5 will, however, be easier for those prepared to allow their broker or bank to manage their securities and cash for them.

Against this background, the CREST Steering Committee and the Bank have strongly encouraged the Stock Exchange and the equity industry to commit themselves to making the transition to T+5 as early as possible in 1995. A decision in principle will need to be taken this year in the light of experience with T+10 settlement.

### *CREST: the next phase*

The project team has now begun work to develop the broadly defined design into a working computer system. Its IT design staff are specifying the system to the level of detail required for the software to be written; coding will then begin in the late autumn.

In the meantime, the business team is addressing outstanding issues with representatives of the equity industry. These discussions are not reopening the design of the system, but considering how participants will use it. The team will also continue discussions with the Treasury, the Inland Revenue, the SIB, the Stock Exchange and various other regulators to define their requirements more closely.

The Bank's task is to produce tested software by the end of 1995, which it can then hand over to the owners of CRESTCO. The owners will assume control of project strategy in areas such as the choice of operator, the tariff structure and pricing policy. They will also decide how to implement live operations. The Bank will, at the owners' request, continue to provide support for these activities.

The owners will reach these decisions through a board of directors. While remaining non-partisan, the composition of the board should reflect that of the owners; CREST will exist as a service to the industry and its board should reflect that function.

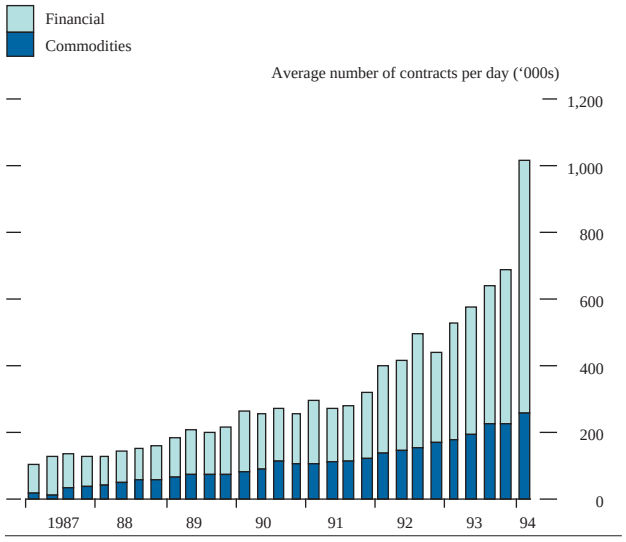
The Bank's role in this phase of the project is clear: to deliver the software by the end of 1995, and to provide strategic continuity until the owners of CRESTCO are in a position to take this forward. It will also supply some continuing software support. But it remains committed to the principle that CREST should be a development owned and run by the industry.

In February, the London Stock Exchange issued a code of conduct on the dissemination of price-sensitive information. The code is voluntary, and the Exchange will publicly censure parties that contravene it only if it has overwhelming evidence of misbehaviour. The code offers guidance to companies on how to plan investor communication; it encourages them to talk to their industry regulators about what information might be price-sensitive and to brief employees on what to say to market analysts. Quarterly reporting is not made compulsory, but companies are advised to communicate regularly with the market in order to avoid unexpected price shocks.

## Derivative exchanges

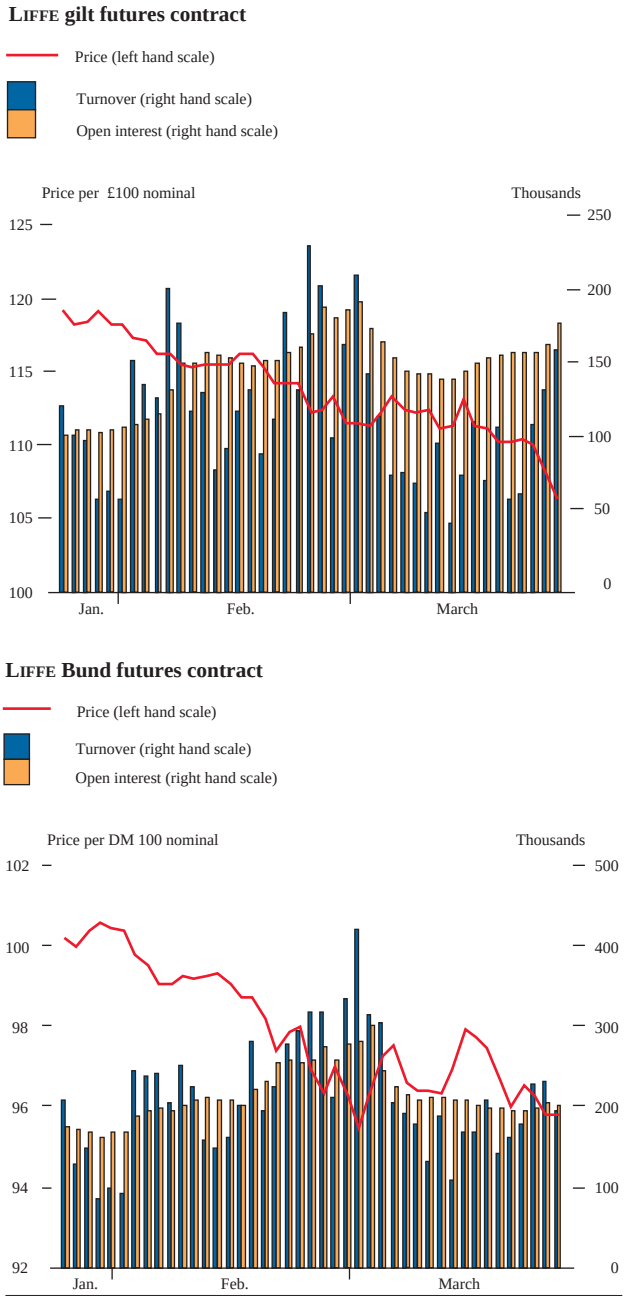
London's derivative exchanges showed impressive growth on the record turnover achieved at the end of 1993 (see Chart 9). Much of this was accounted for by LIFFE, where global financial uncertainty led to a record quarter; turnover was nearly 38% up on the previous record set in 1993 Q4.

### Chart 9
### Turnover in London's derivatives markets




The increase in volumes occurred mainly in European bond contracts, although the FT-SE 100 contract was also affected. Market volatility caused exchanges worldwide either to call for extra margin payments or to suspend trading for a period as circuit breakers were triggered. The volatility on LIFFE caused the London Clearing House to make additional margin calls on 2 March totalling £470 million on the FT-SE 100 and UK, German and Italian government bond contracts. On the same day, MATIF halted trading for two hours in Europe's most highly-traded contract, its 10-year government bond future (the Notionnel), when the size of its price fall triggered a suspension.(1) MATIF also made additional margin calls that day, and in Frankfurt the DTB increased margin requirements on its government bond and stock-index futures contracts. The Chicago exchanges

### Chart 10
### Turnover in LIFFE's gilt and Bund futures contracts




also experienced record volumes—on 4 February, the Chicago Mercantile Exchange experienced the busiest day in futures history, trading 2.4 million contracts.

The very high levels of turnover on LIFFE, together with the increased levels of open interest (see Chart 10)—particularly around the end of February—demonstrated the importance of futures markets to investors wishing to hedge their positions during a period when the underlying cash markets are volatile and illiquid. Although LIFFE has provisions in its rules allowing price-fluctuation and position limits to be set, only one such limit is currently in force.(2) So, in

(1) At the time, if the price of the contract fell by 250 basis points, trading was suspended for two hours. If it subsequently fell by a further 250 basis points on the same day, trading was suspended until the following day. Similar circuit breakers applied for rises of 250 basis points.
(2) Trading in the Japanese government bond future is halted for an hour if its price moves more than 100 basis points away from that day's closing price on the Tokyo Stock Exchange.

contrast to MATIF, trading on LIFFE continued uninterrupted throughout the period. Following the recent market turbulence, MATIF widened its allowable price movements before a suspension is triggered from 250 to 300 basis points.

During February, FT-SE 250 futures contracts were launched on both LIFFE and OMLX.(1) Competition between the two exchanges in these contracts will provide fuel for the current debate over whether the future of exchange-traded derivatives is in automated trading or the traditional open-outcry method. OMLX launched its contract on 4 February on its 'CLICK' automated system followed, on 25 February, by LIFFE's launch of the same contract on its trading floor. Neither exchange has yet managed to generate substantial volumes of business.

(1) The London sister exchange of OM Stockholm, a Swedish securities and derivatives exchange.

# Asset-backed securitisation in the United Kingdom

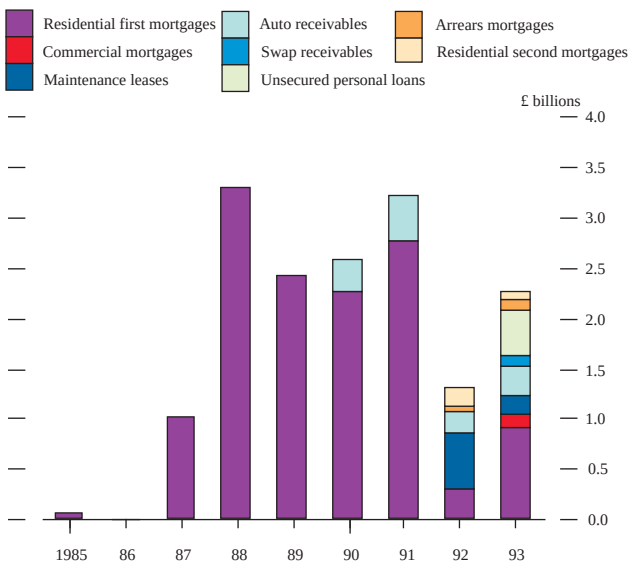
By C Ian Twinn of the Bank's Economics Division.

*Since the first issue in 1985, the UK asset-backed securities market has grown to become the second largest in the world after that in the United States. This article examines the factors behind the market's development to date and assesses its prospects. It analyses the incentives for issuers and investors to participate, and outlines the mechanics of securitisation and the regulatory framework that influences the market. It also considers the advantages of—and the risks inherent in—asset-backed securities.*

The first asset-backed security issues(1) were made in the United States during the 1970s. But it was not until 1985 that the technique was used in the United Kingdom. Even now, only a small proportion of total UK lending has been securitised: by the end of December 1993, 94 issues with a principal value of £16 billion had been made (compared with about £640 billion worth of lending by banks and building societies alone). Despite this, and some years of uneven growth (see Charts 1 and 2), the UK market is now the second largest in the world and is growing rapidly.

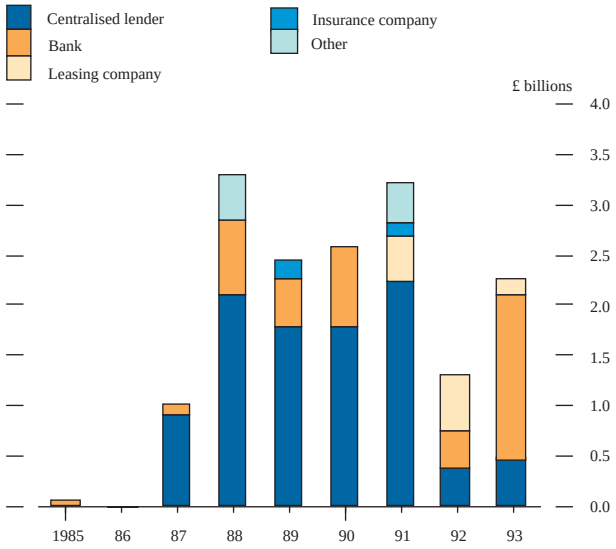
An asset-backed security (ABS) is a tradable instrument supported by a pool of loans (or other receivables, such as leasing proceeds). The interest and principal payments on the loans provide the cash flow needed to pay interest to the holder and to redeem the security when it matures. One of the main attractions of securitisation is that it allows a lending institution, such as a bank, to remove the assets from its balance sheet (provided that the terms of the issue satisfy supervisory requirements on non-recourse to the originator). Since turning a group of loans into an asset-backed security transforms them into a form in which they can be sold to investors and traded in a secondary market, securitisation also increases the range of funding sources available to the original lending institution, and adds marketability to assets which might otherwise have little liquidity.

**Chart 1**
**ABS issues by type of asset**




Sources: Credit Suisse First Boston (CSFB), Barings.

**Chart 2**
**ABS issues by type of originator**



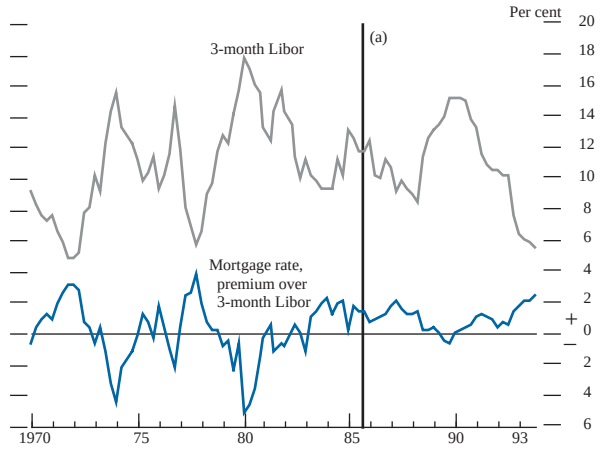

Sources: CSFB, Barings.

In the long term, if ABS issuance continues to increase, it could have far-reaching effects on the structure of lending. Securitisation permits an institution to specialise in one aspect of the lending process. It may also allow new institutions to enter the market and compete against traditional lenders. Both developments could bring substantial benefits to borrowers, reducing the cost of borrowing and increasing the range of choice available.

(1) In this article, the term 'asset-backed securities' includes mortgage-backed securities.

As in the United States, residential mortgages form the basis of many UK ABS issues; as Chart 1 shows, the first UK issues were of mortgage-backed securities and at end-1993 such issues accounted for 81% of the total outstanding. The combination of the financial liberalisation of the early 1980s—which encouraged new entrants into the UK mortgage market—and periods in which wholesale funding costs were significantly below mortgage lending rates (see Chart 3) created profitable opportunities for lenders who did not rely on retail funding sources. Centralised mortgage lenders (CMLs) sprang up, offering innovative products in what had until then been a fairly conservative market; by using direct advertising or intermediaries such as mortgage brokers, they avoided the costs of a branch network. Many intended from the outset to securitise their loans, aiming to make their profit on origination and servicing fees, rather than from holding the loans on their own balance sheets and earning a spread between borrowing and lending rates.

**Chart 3**
**The premium of building societies' average mortgage rate of three-month Libor**




(a) Centralised lenders first established.

Although banks have increasingly acted as originators of issues (at the end of last year, they were responsible for about 26% of the total outstanding), the main originators have been the centralised lenders; they account for about two thirds(1) of the total.

Because it enables banks to remove assets from their balance sheets, securitisation has a significant impact on the lending data collected by the Bank. The way in which securitisations are captured in the statistics collated by the Bank is outlined in the box opposite.

## The attractions of asset-backed securities

There are a number of reasons why originators may find it in their interests to issue asset-backed securities; likewise, a number of factors influence investor interest. The interplay between the two sets of factors will determine both the market's potential size and its rate of growth.

### Securitisation by banks and its effects on the financial statistics

In securitising some of its lending, a bank removes loans from its balance sheet and places them with a special-purpose vehicle (SPV), which finances its holdings by selling asset-backed securities to investors. The effect of such a transfer on the financial statistics is to reduce bank (and so 'bank and building society') lending, and to increase lending by the 'other financial institutions' (OFI) sector, which includes the SPV. The gross amount transferred from the bank's balance sheet (and so the direct impact on bank and building society lending) is known. But some of the securities issued by the SPV may be taken up by banks or building societies, and thus contribute to their aggregate lending; the net impact is difficult to measure.

To date, the most common form of securitisation in the United Kingdom has been the issue of mortgage-backed securities. In order to capture the increase in OFI lending and maintain statistical coverage, the Bank asks any newly-formed mortgage finance vehicle to report its business as a mortgage lender. The figures for total mortgage lending published by the Bank are therefore unaffected by such securitisations (the reduction in bank lending is offset by increased OFI lending).

Banks' securitisation of other assets (personal loans, vehicle hire-purchase receivables, etc) reduce bank and building society lending in a similar way when the assets move off balance sheet. In such cases, the Central Statistical Office is responsible for including the business of the securitisation vehicle in the OFI lending element in the financial accounts.

### *For originators*

Asset-backed securities have two main advantages for an originator: they allow the institution to remove the assets from its balance sheet (provided the relevant risks are transferred to the investors in accordance with supervisory rules) and so free capital for other uses; at the same time, they may allow new sources of funds to be tapped.

A financial institution, such as a bank, can fund its lending from various sources—including retail deposits, the wholesale funds market and using shareholders' funds (reserves and equity), as well as by securitisation. A model of a profit-maximising bank's choice among these options is developed in the Annex. It shows how a change in the cost of one source of funds will affect the cost of securitisation. For example, an increase in the cost of shareholders' funds

(1) Including the National Home Loans Corporation plc as a centralised lender.

will, at the margin, result in an increase in both the absolute quantity of securitisation that takes place and the proportion of total lending that is securitised. These effects reflect one of the main benefits of securitisation; by enabling banks to remove assets from their balance sheets, it allows them to economise on their use of capital.

Other considerations will also influence the supply of asset-backed securities, however. Securitisation allows financial institutions to concentrate on those aspects of the lending process at which they are most efficient. Institutions with a comparative advantage in originating or servicing loans can concentrate on those roles and securitise the assets, selling them to institutions that can raise the necessary funds more efficiently.(1)

ABSs can also be used to manage credit risk. If a bank feels overexposed to a particular borrower, sector or geographical area, it can securitise some of its lending. Securitisation allows the aggregate credit exposure faced by the financial sector to be better distributed, while (if the original lender continues to act as servicer) also allowing relationships between banks and their customers to be maintained.

In this respect, asset-backed securities contrast with some other innovative forms of funding available to bank customers. A number of researchers(2) have argued that the source of the added value of a bank's holding an asset on its balance sheet is the opportunity this gives it to maintain its relationship with—and to continue to monitor—the borrower. Other forms of funding, such as issues of commercial paper, may result in banks losing the ability to monitor customers, particularly those with strong credit ratings (such as large industrial or commercial companies).

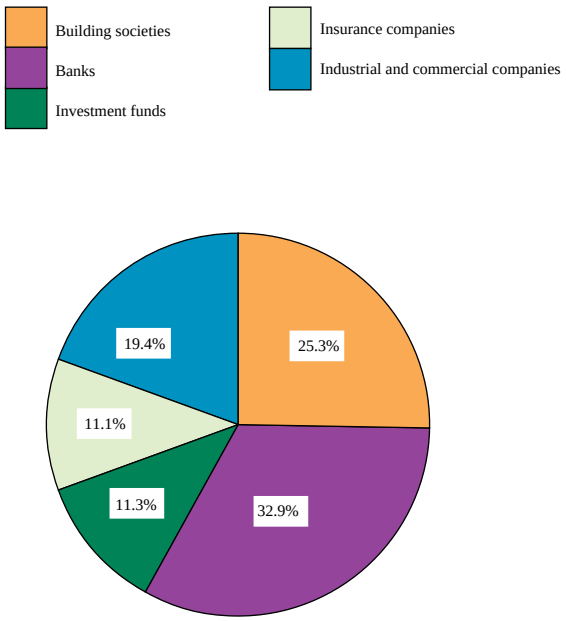
Securitisation may also provide a way for an originator to reduce its maturity mismatches while continuing to earn a steady source of income. Maturity mismatch occurs when an institution makes loans of a different duration from the funds that it uses to finance them. Securitisation allows such a mismatch to be passed on to the investors.(3)

Similarly, securitisation can be used to transfer interest-rate risk—the risk that the lender's spread, between the interest rate received from borrowers and that paid on deposits, may narrow. This risk is most commonly incurred when a lender takes deposits (or makes loans) at a fixed rate and lends out (or takes deposits) at a floating rate. It can also arise, however, if the interest rates being received and paid —though both floating—are related to different bases which do not necessarily change in step. Securitisation is not, however, the only way for a lender to eliminate this risk; other possible solutions (such as the use of swaps) are available.

### *For investors*

Chart 4 gives a breakdown by type of investor of the aggregate of several recent asset-backed issues; it shows that banks, building societies, investment funds, insurance companies, and industrial and commercial companies have all been significant investors in UK ABSs.

**Chart 4**
**Breakdown of investors by type**




Total value of issues in sample: £722 million

Sources: various.

The main attraction of asset-backed securities to investors is the margin that they offer over other highly-rated bonds. Another significant advantage is the opportunity they provide for investors to take on exposure in areas—both geographic and business sector—to which they might otherwise not have ready access. Just as originators may securitise to reduce their exposure to a particular sector, potential investors can use ABSs to diversify their investment portfolios. For a variety of reasons, it may be more attractive for them to purchase an identified pool of assets than to take a direct stake in an institution already involved in the sector.

Asset-backed securities offer a number of other benefits to investors analogous to those they present to originators: they are likely to be more liquid than direct lending, and easier to sell if funding difficulties arise; and depending on how an issue is structured to deal with prepayment risk (see below), they may also make it easier for investors to match the maturities of their assets and liabilities.

(1) See James, C (1988) 'The use of loan sales and standby letters of credit by commercial banks,' *Journal of Monetary Economics, Vol. 22,* pages 395–422.
(2) For example Greenbaum, S I and Thakor, A V (1987), 'Bank funding modes: securitisation versus deposits,' *Journal of Banking and Finance, Vol. 11, No. 3* pages 379–401; Pennachi, G G (1988), 'Loan sales and the cost of bank capital,' *Journal of Finance, Vol. 43, No. 2,* pages 375–96; and James, C *op cit.*
(3) As noted in Lucas, D and McDonald, R L (1987), 'Bank portfolio choice with private information about loan quality: theory and implications for regulation,' *NBER, Working Paper No. 2,421.*

## The mechanics of asset-backed securitisation

The most common structure for UK asset-backed security issues is similar to what is known in the United States as a 'pass through'. As a first step, the originator identifies and separates suitable assets from its portfolio. To minimise the costs of evaluating the issue, assets of similar credit quality and expected repayment calendar are normally chosen. Once pooled, the assets are sold to a special-purpose vehicle (SPV). This provides a legal separation of the assets from the originator. The SPV then issues securities to investors to fund its purchase of the assets, which it holds in a trust on their behalf.

The terms of the issue—including the classes of security and type of coupon—are set following advice from the investment bank managing the issue and from other experts (including credit rating agencies, lawyers and tax advisors). To attract investors, at least one credit rating is normally required; issues also normally include some form of credit enhancement (see below). Once the securities have been issued, the interest and principal payments on the underlying assets are managed by a 'servicer' (usually the originator), with payments being distributed to investors by the SPV through the trust.

ABSs are normally issued as floating-rate notes (FRNs) paying Libor plus a margin as their coupon. Many are structured to include a step-up feature in the interest payments: the interest rate 'steps up' (normally it doubles) after a specified number of years. As loans are repaid, the trustees redeem the securities used to fund them (choosing those to be repaid early by ballot or in one of a number of other ways). Once the proportion of an issue that remains outstanding falls below 10%, the SPV can recall the remaining securities,(1) and refinance outstanding loans with a new issue that includes some additional loans. Investors use the step-up date as a proxy for when this will occur.

A proxy for the expected repayment date is necessary because the maturity of the underlying loans is uncertain. If interest rates on new fixed-rate loans fall, for instance, it may encourage existing fixed-rate borrowers to refinance; their existing loans will be repaid and some of the ABS issue redeemed. There are other influences on the average lifespan of the loans: for example, because people move house the average life of a mortgage is roughly seven years, even though most mortgages have a term of between 20 and 30 years. The rate of prepayment depends on a number of factors—for a mortgage-backed security (MBS), for example, these include the proportion of fixed-rate mortgages and the ages of borrowers. But the nominal maturity of ABSs (normally two years longer than that of the longest-maturity loan in the pool) is generally much longer than the actual maturity.

Issuing asset-backed securities involves a number of costs; most obviously, there is the coupon to be paid on the ABS. In addition, there are the costs involved in the launch of the ABSs. Some of these are one-off fixed costs, such as those incurred by the originator in setting up the necessary systems to identify and manage the assets concerned. Others—such as legal, rating agency and underwriting fees, and the costs of credit enhancement—are incurred with each issue (though they may reduce if issues follow a standard format). These expenses can be significant, especially for new issuers who lack infrastructure and reputation.

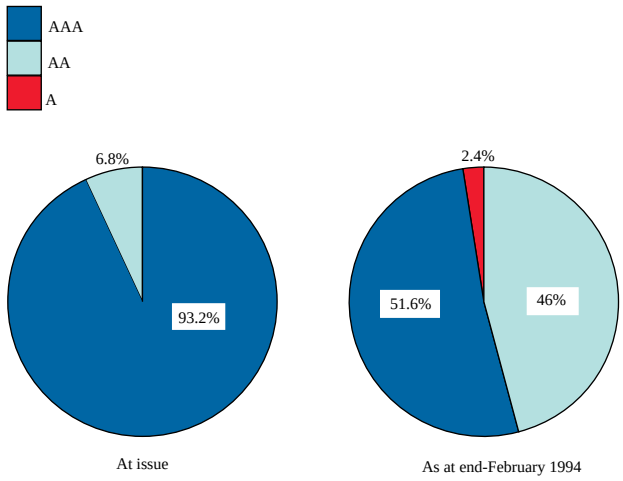
### *Credit enhancement*

Credit enhancement provides a degree of assurance that investors will receive timely coupon and principal payments, even if the principal and interest payments due from the underlying borrowers are not received. One way of explaining credit enhancement is to see it as providing an arbitrage between supervisory and market requirements on a given loan pool. The level of insurance acceptable to the market may be less than that implied by supervisory standards, making enhancement a cheaper option. Enhancement may also be needed to attract investors because they favour investments with lower-risk profiles than those of the underlying asset pool, or because they wish to invest in assets that have the backing of recognised names. Such considerations may be especially important if (as many ABSs are) the issue is of a new or unusual form, or if it involves an unusual type of asset.

Most UK ABS structures have included some form of credit enhancement to boost the credit rating above the level that would have been obtained had the underlying assets been rated. As Chart 5 shows, most issues have been structured to obtain high investment grade ratings, usually triple-A. The degree of credit enhancement required for a particular issue to achieve the desired rating is determined by an assessment of the underlying assets by a rating agency. The box on page 138 describes the factors that rating agencies take into account.

In the United States, credit enhancement is often provided by government-backed agencies, such as the Government

**Chart 5**
**Credit ratings of UK ABSs**




Source: Barings.

(1) Assuming that a clause to this effect is included in the terms of the issue.

## The credit rating of asset-backed securities

To be attractive to investors, asset-backed securities generally require at least one rating from a recognised rating agency. As for other securities, the rating reflects an agency's view of the likelihood that holders of the asset-backed securities will receive full and timely payments. Agencies also advise originators on the level of credit enhancement needed to achieve the target rating for the securities, and so have an important role in the structuring of ABS issues.

Rating agencies concentrate on two key aspects of an asset-backed issue: its *credit standing* and its *liquidity*—that is, its ability to provide full and timely payments to its holders. Their assessment is based on: a detailed analysis of information on the specific loans (or other receivables) to be securitised, normally supplied by the issue's originators; factors specific to the originator that may affect the pool's performance; and more general information about the type of loans involved.

An issue's *credit standing* is usually assessed either by analysing historical data on the underlying loans or by examining the credit strength of those from whom the receivables are due (the obligors). Ideally, the historical data will include information on the specific loans; on similar loans securitised by the same originator and serviced by the same servicer; and on industry-wide information about the class of loan.

When any of these elements is lacking, or when the originator's procedures or business has recently changed (lessening the value of historical information on the pool as a guide to its future performance), rating agencies will be conservative in their assessment of the level of credit enhancement needed to achieve the desired rating. In extreme cases, this may make securitisation unattractive for reasons of cost.

In securitisations of corporate assets, simulation tests on the credit standing of the obligors may be used to assess the credit exposure of the ABS. This technique can be applied to issues when historical data on the specific assets are unavailable, but the creditworthiness of the obligors is known.

Assessing the *liquidity* of asset-backed securities requires in addition that an agency estimate the timing of any possible future losses. This is important because losses occurring early in an issue's life are likely to have a greater impact on a pool's capacity to meet the issue's servicing obligations.

In the specific case of mortgage-backed securities, credit assessment is usually based on a comparison of the pool intended for securitisation with a 'benchmark' pool of mortgages of various loan-to-value (LTV) ratios and levels of mortgage indemnity guarantee (MIG) insurance cover. The credit enhancement required to gain a triple-A rating on an issue backed by the 'benchmark' pool is determined by analysing the likely performance—in terms both of outright defaults and of arrears—of each LTV/MIG group of loans using various economic scenarios. The costs associated with repossession and subsequent sale of a property are included in this calculation. Differences between the composition of the actual pool and the benchmark are then translated into differences in the amount of credit enhancement necessary.

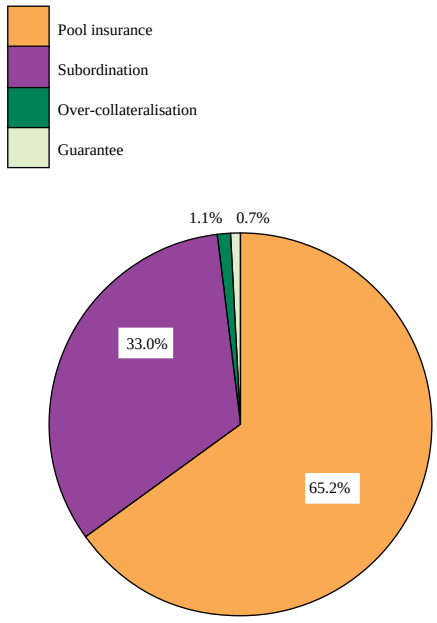
In addition to obvious factors such as LTV ratios and levels of MIG cover, rating agencies also look at the type of mortgages in a pool—whether they are repayment or endowment, fixed or variable rate, at their geographical dispersion or concentration, and at the type of property, the occupancy (eg first or second home) and the purpose of the loan (eg refinancing or second mortgage). The residual maturity of the loans is also important.

Once a security has been rated, its credit standing is monitored until redemption. The rating agencies check how far the original credit enhancement is still available to absorb losses, and update their assessment of the risk of loss in the light of experience of the pool's performance and of macroeconomic trends. The impact of prepayments is also important during this monitoring process. Mortgagors with either surplus cash flow or enough positive equity may prepay, leading their mortgages to be removed from the pool. This may affect the pool's credit standing, since it is likely to mean the removal of the most creditworthy mortgages. Monitoring may—as Chart 5 shows—result in downgrading, if the quality of the asset pool turns out to be lower than was initially expected.

National Mortgage Association (GNMA) which guarantees issues for a fee. Such agencies do not exist in the United Kingdom, however, so enhancement must be obtained in the market. There are a number of methods available, either external to the ABS structure—eg using guarantees from a highly rated institution—or from within the structure itself. Chart 6 shows the relative importance of the main types of enhancement used to back issues.

As it shows, the most common form of credit enhancement has been an insurance contract underwriting the interest and/or principal payments of the underlying asset pool *(pool insurance)*. Although very common among the earliest issues, this technique has fallen out of favour recently, following losses sustained by some of the insurance companies writing it and—in some cases—their downgrading (which led in turn to the ABSs underwritten by them being downgraded, making the technique unpopular with investors).

**Chart 6**
**Credit enhancement techniques used**(a)




Source: CSFB.

(a) Main technique used in supporting issues up to end-1993.

*Irrevocable letters of credit*, written by a financial institution with at least as high a credit rating as that sought for the securities, are a similar technique, except that the risk of default is taken by the financial institution issuing the letter, rather than by an insurance company. Such a letter gives the trustees of the issue the right to trigger a loan from the issuer if the payments received from the underlying assets cannot meet those due on the securities. If it is triggered, the credit is booked as a loan to the SPV.(1) Any subsequent recoveries can be used to repay the loan.

*Cash collateral accounts* are another external credit enhancement technique. In this case, a loan is made to the SPV (usually by the originating bank, to signal its confidence that default will not occur); the money is then deposited with the institution advancing it until needed. The difference between the interest charged on the loan and that paid on the deposit constitutes the institution's fee.(2)

The most common internal credit enhancement technique—a *senior/subordinated structure*—involves splitting the issue into different classes of security, with some classes subordinated in the payment of principal and/or interest. In recent years, this has been the most popular form of enhancement. It redistributes the risk inherent in an issue's structure, making the senior securities less risky, and the subordinated securities more risky, than the average of the pool. Given that a central tenet of finance theory is that, in the absence of market distortions, the value of an asset is independent of its capital structure, quite why such a senior/subordinated structure should benefit issuers is unclear. The explanation most commonly offered is that different slices attract investors with different risk characteristics, thus allowing a more efficient allocation of the risks. This may, however, be somewhat superficial, especially since many of the subordinated classes themselves benefit from credit enhancements.

A number of other features can be incorporated into the structure of an issue to obtain a higher rating. *'Payout events'* may be included: these allow early redemption if certain specified events occur, thus reducing the risk of default. A *spread account* may be incorporated in cases where the underlying assets earn high interest rates. Under this arrangement, the excess of interest earned over that due to investors is retained in a separate account, to be paid out if there is any subsequent shortfall in interest or principal from the asset pool.

## Regulatory framework

The ABS market in the United Kingdom is not directly regulated; although most issues are listed on either the London or the Luxembourg stock exchange—and are therefore subject to prospectus and other requirements—the SPVs issuing them do not themselves require authorisation from a UK financial supervisor. But the significant role played by regulated financial institutions (such as banks and insurance companies) in the ABS market means that the regulations to which they are subject have influenced both the growth of the market and the structuring of issues.

The Bank of England's involvement with securitisation arises from its supervision of banks that wish to be involved in the market. The Bank's approach is outlined in two notices:(3) the first sets out the general principles it applies, and the second makes some amendments and extends the general approach to cover additional types of asset. The

(1) A *letter of credit with reserve fund* is a variant of this technique, in which the letter is paid for by a fund built up using the proceeds of the spread between the yield on the assets and the coupon payable to investors (net of the fixed fee paid to the servicer). In the United Kingdom, this technique has only been used to back the subordinated tranches of senior/subordinated issues.
(2) By the end of February 1994, subordinated tranches worth 0.1% of the total issued had been enhanced in this way.
(3) BSD/1989/1 and BSD/1992/3, available from the Bank's Banking Supervision Division (071-601-5082).

underlying objective is to ensure that banks involved in securitisation have adequate capital to cover the risks they face. The principles are intended to ensure: that securitisations achieve their intended effect of passing rights and obligations from the seller to the buyer; that all the parties understand their responsibilities and risks; and that all material risks to buyers and sellers are properly accounted for in the Bank's prudential supervision of banks.

Although building society involvement in the market (at least as originators) has so far been limited, the regulations covering building society supervision also influence the market's structure. Following the 1986 Building Societies Act, secondary legislation eased building societies' involvement in securitisation by widening some of the relevant powers. Societies can now, under certain conditions, originate transferable mortgages, buy and sell pools of mortgages, and invest in MBSs.

The Building Societies Commission's supervisory treatment is set out in a prudential note(1) that was issued in 1988 and is currently under review. The Commission's general approach has, so far, been similar to the Bank's: assets that have been securitised are allowed to be disregarded for capital adequacy purposes, provided the society retains no significant risks on them.

A number of other institutional factors influence the form and extent of securitisation. Legal, accounting and tax structures clearly play a part in determining the design of issues. The regulations covering the supervision of insurance companies(2) also have a role, in so far as they affect insurers' decisions on whether—and at what price—to offer pool insurance.

## The risks inherent in asset-backed securities

In thinking about the risks inherent in asset-backed securities, it is important to recognise that the risks associated with the underlying pool of loans are unchanged by securitisation. Securitisation alters only the distribution of the risk among the various parties involved: it allows them to concentrate or reduce exposures, and so maximise their expected returns given their perception of the risks involved. In addition, it may allow some portfolio risk reduction, if it allows investors to identify and purchase assets whose risk characteristics offset those of assets already held.

The opportunity that ABSs provide to increase an institution's risk exposure, coupled with the concentrations of risk that asset-backed securities may create (among credit enhancers, for example), increases the danger that in adverse circumstances some participants may have a greater exposure than they are able to deal with. Because the participants are interdependent, if an institution taking on an exposure following a securitisation does not properly evaluate and price it, this might lead to a systemic problem in the same way as can occur in other financial markets.

Securitisations also introduce new risks for originators and investors. Problems may arise for an originator either directly—from the launching of issues—or indirectly, through their effect on its lending decisions. Most obviously, problems could arise if investors were offered some kind of recourse (moral or actual) that allowed them to return non-performing assets to the originator. Such recourse would defeat the originator's objective in the securitisation of transferring the risk. As mentioned above, UK supervisory authorities try to ensure that banks and other regulated institutions are not exposed in this way, by limiting the types of recourse allowable if the assets are to be excluded from the balance sheet for capital adequacy purposes.

If originators create an ABS 'pipeline'—that is, make loans using a small amount of capital, with the intention of securitising them to release funds to make further loans—this may also create risks for them. If the environment were to become unfavourable for securitisation, such originators might be unable to make new loans. (CMLs suffered difficulties of this sort in the late 1980s.) This could cause problems for them if they were relying on a steady stream of new business to help cover operating costs. It would only pose a systemic problem, however, if such originators carried out a large proportion of total lending.

It has also been suggested that securitisation may lead to a reduction in the average quality of the originator's loanbook. This might happen if, in choosing the loans to be securitised, originators selected their better-quality assets. It might also occur if the availability of the new source of funds led institutions to undertake more lending and this, in turn, led to a deterioration in the average quality of the loans (because marginal rather than good-quality borrowers from other institutions were attracted).

Investors also face a number of risks, including prepayment risk (which was discussed above), interest rate risk, mismatch in the interest payment cycle, and a liquidity exposure. These risks may be more difficult to assess in the case of ABSs than for traditional securities, making misjudgments—and so incorrect investment decisions—more likely.

The interest rate exposure faced by investors is similar to that faced by the originator before the assets are securitised. It is the risk that the spread between the interest rate paid by borrowers and that due to investors may narrow, reducing the margin available for the servicer and thus increasing the risk of default for investors. Credit enhancements incorporated in the structure of the issue will, however, reduce the risk that investors will suffer losses as a result of such a narrowing.

(1) Prudential Note 1988/2, 'Capital requirements for off-balance-sheet mortgage lending'.
(2) Schedules 1 and 2 of the 1981 Insurance Act, Schedules 32 and 33 of the 1982 Act and Forms 11 and 12 of the 1983 Act; supervision of insurance companies is implemented by the Department of Trade and Industry.

Interest payment cycle mismatch occurs because interest payments on the underlying assets are usually on a different calendar from the payments on the securities. Mortgage interest, for instance, is normally paid monthly, whereas the coupon payments on most ABS issues are quarterly. As a result, the trust receives much of its income well before it needs to pay out. Although the terms of the trust normally restrict it to investing these funds in assets of at least equivalent quality, an additional element of default risk is introduced.

The final exposure investors face is liquidity risk. The secondary market in UK ABSs is fairly thin. Investors may therefore suffer a price penalty if they try to buy or sell a large amount. If, for example, an institution tries to buy a large quantity, it may face a disproportionate increase in the price either because of a shortage of available securities or because potential sellers assume it has information that is not widely available—and increase their prices accordingly.

The extent of this risk should diminish as the market develops. But some of the other risks, for example of a liquidity problem for an originator or group of originators, will be made worse if their market share increases. What effect an increase in the size of the market will have on participants' exposures to one another will depend not just on the overall size of the market but also on whether new entrants are attracted, reducing market concentration.

## Recent developments and prospects

The ABS market grew rapidly until mid-1989, when the differential between mortgage and interbank lending rates temporarily reversed, making further securitisation unprofitable for the centralised lenders who had driven the market. Growth resumed early in 1990, when a positive differential re-emerged, before slowing down again in mid-1991.

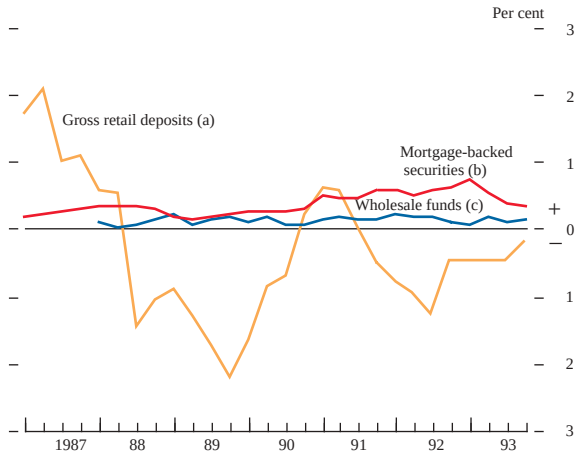
This most recent slowdown reflected a number of factors. Most importantly, the downturn in the economy reduced both the flow of new loans (and thus the need for funds) and investor appetite for asset-backed securities. The downgrading of one of the principal securitisers, and of several of the insurance companies that had provided guarantees on asset pools, reduced confidence in the market. It was also hit by the Bank's announcement that, in order to conform with European capital adequacy requirements, from January 1993 banks would face a 100% risk weighting on their holdings of mortgage-backed securities—even though the underlying assets would have attracted a more favourable treatment if held on their balance sheets directly. Subsequent clarification, however, led the earlier position to be restored—MBSs now attract the same 50% weighting as mortgage loans.

The recent economic recovery has seen an upturn in new ABS issues. The renewed growth has been distinctive, for both the type of issuer and the type of asset involved. The recession had a significant impact on the centralised mortgage lenders; not only was much of their lending of higher risk (for example second-mortgage), but market confidence in the sector was shaken by the financial problems encountered by a prominent CML in 1991. Although CMLs have carried out a number of new issues and refinanced some old issues, most of the recent activity has been originated by banks. Figures from Credit Suisse First Boston show that banks accounted for 71% of ABS issuance in 1992 and 1993, with the centralised lenders responsible for only 18%. As Chart 1 shows, the recent growth has also involved a wider range of assets.

Despite the recent market recovery, the proportion of assets securitised remains modest relative to potential supply. On the demand side, the further development of a European investor base might help to increase investor interest and thus the rate of market growth. The current period of low interest rates may also help if, in their search for higher nominal yields, investors become less wary of innovative products. And the recent economic upturn may provide a boost, if investors perceive loans to be less risky and so securities based on them to be of higher quality.

On the supply side, the development of the market will depend crucially on the increasing involvement of the traditional lenders—banks and building societies—who hold the majority of the assets that can be securitised. This will depend in turn on the cost of ABS issues relative to other sources of funds. As Chart 7 shows for building societies, the relative cost of MBSs fell during 1993, increasing the attractiveness of MBS issuance as a source of funds.

**Chart 7**
**Cost of marginal funding (margin over three-month Libor)**




(a) Average building society instant access rate for balances in excess of £25,000.
(b) AAA floating-rate mortgage-backed issues (initial margin).
(c) UK building societies' floating-rate eurobonds.

Three other factors may make ABSs a more attractive option for lenders in the future. With the increased demand for loans during the upturn, banks and building societies may start to come under capital pressures because of balance sheet growth. ABS issuance may be a viable alternative to new equity issues in this situation, if lenders are unable to increase capital sufficiently rapidly from retained earnings to

meet the demand. A related factor that may be important in the case of building societies is the statutory limit of 40% on the proportion of their funding that they can raise from the wholesale market (although this limit is being reassessed as part of the current review of the 1986 Building Societies Act). Securitisation may be an attractive way of easing this funding pressure.

Second, the recent growth in the importance of fixed-rate mortgages may make ABSs more attractive, since securitisation provides a mechanism for dealing with the attendant interest rate and prepayment risks. Lastly, the recent issues by a number of major banks will have reduced their fixed costs on any further issues, making such issues more likely.

If the US experience is a valid guide, ABS issuance may in the long term have far-reaching effects on the structure of lending, both because it allows institutions to specialise in one aspect of the lending process, and because it allows new lenders to enter the market and compete against traditional providers of loans. Both these developments could bring significant benefits to borrowers, by reducing the cost of funds and increasing the range of funding sources available.

# Annex

## Modelling the decision to securitise

As the article outlines, a number of factors may underlie the decision to securitise. This Annex provides a simple, one-period model of just one of those factors: the distortion created by capital adequacy requirements.

Assume that a bank (or other financial institution) may choose between assets of two types: government bonds, referred to as gilts *(G)*, and loans *(L)*. Loans give rise to a capital requirement ($\delta$); gilts do not.(1) The bank can fund its assets in three ways: by issuing asset-backed securities *(S)*, taking deposits *(D)* or using shareholders' funds *(K)*—equity capital and retained earnings. At time *t*, retained earnings are predetermined.

The bank therefore has the following balance sheet constraint:

$$G + L \equiv S + D + K \qquad \textbf{(1)}$$

where:(2) $K \geq \delta (L - S)$ **(2)**

and: $0 < \delta < 1$ **(3)**

It aims to maximise the profit that its shareholders receive in excess of their required return on capital; ÷ denotes this excess return:

$$\Pi = Gr_g + Lr_l - Sr_s - Dr_d - Kr_k \qquad \textbf{(4)}$$

÷ is simply the difference between the interest income on its assets and the associated funding costs. The bank earns interest on its gilt investments at rate $r_g$ and on its loans at $r_l$; it pays $r_s$ on the asset-backed bonds it has issued and $r_d$ on its retail deposits; $r_k$ is the required return on shareholders' funds. The interest received and paid are assumed to be net and gross of costs respectively. The equity and gilt markets are assumed to be perfectly competitive, so that the bank is a price-taker (quantity-setter) in these markets.

We assume, however, that it has a degree of market power in the other three markets, where it acts as a price-setter. In particular, we assume a semi-log linear form for the supply function for retail deposits ($D^S$) and for the demand functions for loans ($L^d$) and asset-backed securities ($S^d$):

$$\ln (D^S) = \alpha_0 + \alpha_1 r_d \qquad \alpha_0 > 0 \qquad \alpha_1 > 0 \qquad \textbf{(5)}$$

$$\ln (L^d) = \beta_0 - \beta_1 r_l \qquad \beta_0 > 0 \qquad \beta_1 > 0 \qquad \textbf{(6)}$$

$$\ln (S^d) = \psi_0 + \psi_1 r_s \qquad \psi_0 > 0 \qquad \psi_1 > 0 \qquad \textbf{(7)}$$

Other variables are not directly included, but can be considered to influence the parameters $\alpha$, $\beta$ and $\psi$, and so the demand for loans and asset-backed securities and the supply of retail deposits.

The bank's problem is thus to maximise ÷ . Given **(5)**–**(7)**, this can be presented as:

$$\max_{r_d,\, r_l,\, r_s} \Pi = (r_g(1-\delta) - r_s + \delta r_k) \exp(\psi_0+\psi_1 r_s) + (r_g - r_d) \exp(\alpha_0+\alpha_1 r_d) + [r_g(\delta-1) + r_l - \delta r_k] \exp(\beta_0-\beta_1 r_l) \qquad \textbf{(8)}$$

This yields the following equilibrium conditions:

$$r_d^* = r_g - \frac{1}{\alpha_1} \qquad \textbf{(9)}$$

$$r_l^* = \delta r_k + r_g(1-\delta) + 1/\beta_1 \qquad \textbf{(10)}$$

$$r_s^* = r_g(1-\delta) + \delta r_k - \frac{1}{\psi_1} \qquad \textbf{(11)}$$

These conditions state that the bank will expand its balance sheet until the marginal cost of funds is equal to the marginal return on its assets; and that it will re-allocate its asset (liability) portfolios until marginal returns (marginal costs) are equalised.

The optimal interest rate on securitisations, given by **(11)**, is positively related to a weighted average of the rate on alternative assets (gilts) and the capital adequacy costs of retaining loans on the bank's balance sheet. By differentiating **(11)** with respect to the variables relating to capital requirements, we can see the effect of changes in those variables on both the quantity of securitisations and the overall structure of the bank's liabilities:

$$dr_s^* / d\delta = (r_k - r_g) \quad > 0 \qquad \textbf{(12)}$$

$$dr_s^* / dr_k = (\delta) \quad > 0 \qquad \textbf{(13)}$$

From **(12)** we see that an increase in prudential requirements leads to an increase in $r_s$ which, from **(7)**, implies that the absolute quantity of securitisation rises. As capital becomes relatively more expensive ($r_k$ rises), the incentive to remove capital-intensive loans from the bank's balance sheet increases. From **(13)** we see that $r_s$ rises as $r_k$ rises, which implies that the quantity of securitisation, and the proportion of assets securitised, rises.

(1) This is a simplifying assumption, which does not affect the analysis; in reality, gilt holdings carry a risk weighting of either 10% or 20%, depending on the type of gilt and its maturity.

(2) We assume, however, that capital is expensive to hold ($r_k > r_g$). As a result, institutions will choose to hold the minimum possible, so that $K = \delta(L-S)$. In addition, the volume of securitisation is assumed to be no greater than the total of loans (ie $L-S \geq 0$). This implies that the following inequality must hold: $r_k \leq \frac{(\delta-1)}{\delta} r_g - \frac{\psi_0 - \beta_0}{\delta(\beta_1 + \psi_1)}$ .

# Personal and corporate sector debt

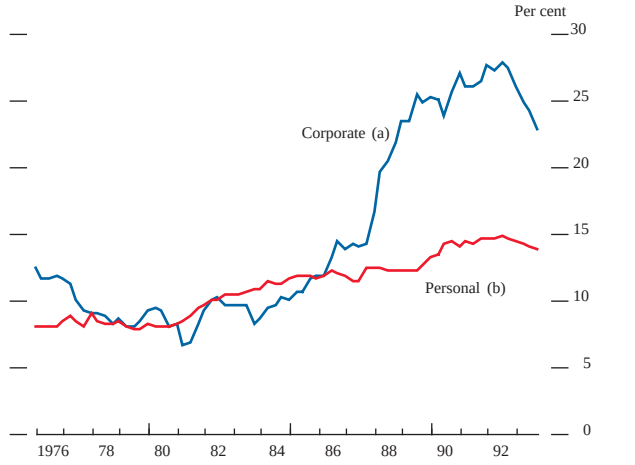
By Jennifer Smith and Gabriel Sterne of the Bank's Economics Division, and Michael Devereux.[1]

*This article examines the influence of debt on the behaviour of households and firms in the recent recession. It compares the levels of debt in the two sectors in recent years, and the sectors' reactions to indebtedness. It then considers each sector in turn. Debt was more unevenly spread across both households and firms in the recent recession than in its predecessors. Partly as a result, disaggregated data can in both cases help in reaching a more accurate picture of the influence of debt on behaviour, and in deciding between competing explanations of recent developments in the two sectors.*

## Overview

Debt had an important influence on corporate and personal sector behaviour in the 1990–92 recession and in the subsequent recovery. By comparing this recent experience with the recession of the early 1980s, this article examines the extent to which the historically high indebtedness played a part in the recent recession, and how continuing high levels of debt may affect the shape of the recovery.

**Chart 1**
**Capital gearing in the personal and corporate sectors**




(a) Ratio of outstanding borrowing (debt at nominal value) to capital stock at replacement cost.
(b) Borrowing from banks and building societies as a proportion of personal sector financial and physical assets.

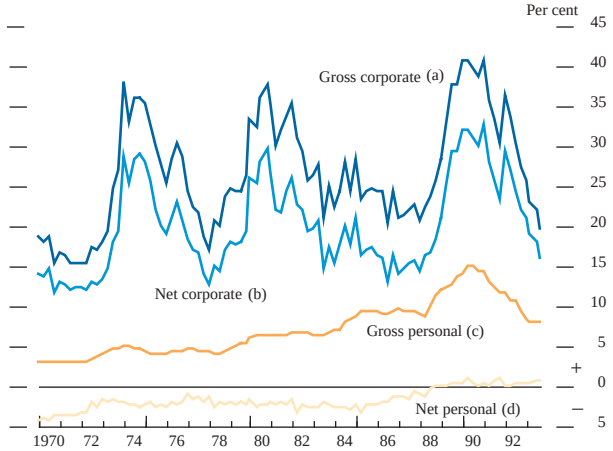
Some progress can be made towards answers using aggregate data; and the article starts by using these to identify a number of elements common to the two sectors. But there has been a wide dispersion of debt levels within both the personal and corporate sectors; so it then uses disaggregated data to gain a more detailed understanding and to help decide between competing explanations suggested by the aggregate statistics. For the personal sector, the disaggregated data allow in particular an analysis of the incidence of negative equity,[2] and of the extent to which overoptimistic income expectations played a part in the pattern of consumption. For the corporate sector, a cross-sectional analysis can help determine to what extent debt was a cause of firms' problems and how it interacted in this with poor profitability.

### *Some common threads and points of comparison*

There are various measures of the extent of corporate and household debt levels; the box on page 145 outlines the main ones.

Both personal and corporate sector capital gearing increased significantly from the mid-1980s, as Chart 1 shows. The increase coincided with a period of financial liberalisation,

**Chart 2**
**Income gearing in the personal and corporate sectors**




(a) Ratio of gross interest payments to post-tax income.
(b) Ratio of net interest payments to post-tax income.
(c) Ratio of gross interest payments to disposable income.
(d) Ratio of net interest payments to disposable income.

relatively low interest rates and tax cuts. Income gearing increased even more sharply in the late 1980s, as interest rates rose (see Chart 2). Strong consumer spending and an

(1) Michael Devereux was Houblon-Norman fellow at the Bank in 1992–93, and is Professor of Finance at Keele University.
(2) The authors acknowledge the contribution of Rob Thomas of the Bank's Economics Division in his work on negative equity.

## Measures of gearing

Gearing ratios measure the significance of levels of debt. Two main ratios are widely used: capital gearing, which can be thought of as a 'stock' measure; and income gearing, which is a 'flow' measure. Both are useful indicators of the importance of a given level of debt, and so its potential influence on behaviour.

*Capital gearing* is a ratio of debt to assets. It can be thought of as a measure of financial exposure, since it indicates the proportion of wealth that would have to be sold in order to pay off debt. It is sometimes used as an index of vulnerability to changes in asset prices.

The various measures of capital gearing differ in their use of net or gross debt as the numerator of the ratio, and financial or physical assets as the denominator. In this article, corporate sector net capital gearing is defined as net debt at book value (gross debt including bonds less liquid assets) as a percentage of the physical capital stock at replacement cost. (Other measures focus on debt at market value in relation to the market value of equity, which indicates financial markets' assessment of the net worth of a firm; series based on these measures, however, tend to be more volatile.) Personal sector capital gearing is defined as the stock of personal borrowing from monetary sector institutions divided by the sum of tangible and financial wealth less non-monetary sector financial liabilities.

*Income gearing* is a ratio of interest payments to income. It indicates how costly debt is to service, and provides a measure of vulnerability to changes in interest rates, since it shows the proportion of income that is needed to service debt. Like capital gearing, there are both net and gross versions: the interest payments can be included either gross or net of interest receipts. It is usually defined in net terms for the corporate sector and in gross terms for the personal sector and, unless otherwise stated, this article follows that practice.

Analysis of both gross and net gearing measures is often useful when the debtors and creditors within a sector are distinct, and their behaviour is different. Net gearing will, in most cases, provide a more useful summary of the financial position of individual agents.

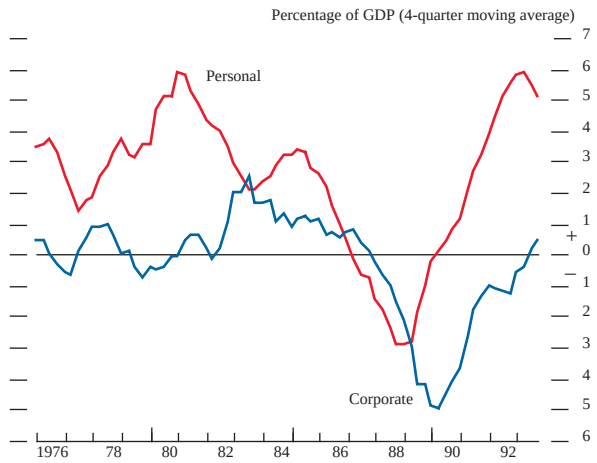
The *financial surplus (deficit)* of a sector is the balance of its saving and net receipts of capital transfers, less its expenditure on fixed assets and the increase in the book value of its stocks. In principle, any deficit is met by borrowing from, and any surplus is lent to, other sectors.

investment boom led the personal and corporate sectors to run financial deficits peaking at around 3% and 5% of GDP respectively during this period (Chart 3). The merger boom added to companies' net borrowing requirement.

The increase in capital gearing was much more marked in the corporate sector than the personal sector for two main reasons. Companies ran significantly larger financial deficits and continued running deficits longer. And house price rises boosted the value of personal sector assets and so dampened the rise in personal capital gearing until 1989.

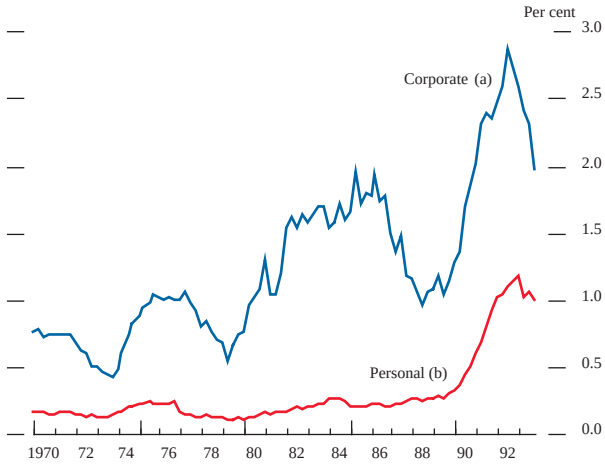
Nevertheless, house price volatility markedly increased the diversity of net asset positions across the personal sector. People who had bought houses earlier benefited from the house price boom; but many who bought in the late 1980s and early 1990s suffered from negative equity, as price falls took the value of their houses below the level of their

**Chart 3**
**Financial surplus/deficit in the personal and corporate sectors**(a)




(a) Financial deficit as a proportion of GDP (- means deficit/+ means surplus).

**Chart 4**
**Insolvencies in the personal and corporate sectors**

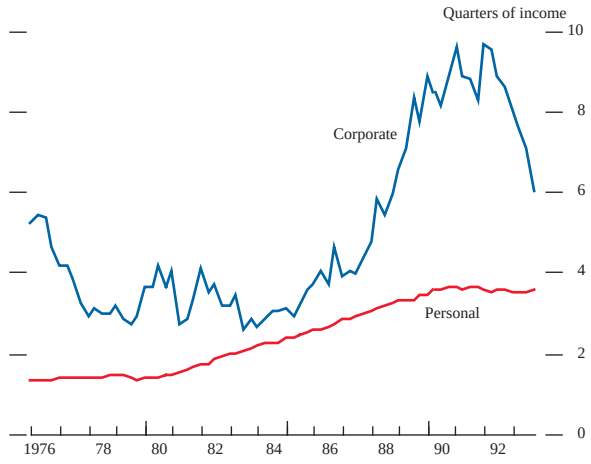



(a) Percentage of active companies (annualised rate).
(b) Percentage of working population (annualised rate).

mortgages. In the corporate sector, diversity stemmed more from differences in financing choices than from asset-price inflation; many firms borrowed heavily in the late 1980s, but others increased their bank deposits. As Chart 4 shows, insolvency rates in both sectors began to rise sharply between 1990 and 1992.

In the same way that corporate sector borrowing increased more rapidly than that of the personal sector during the second half of the 1980s, firms reduced their spending more rapidly as interest rates rose and growth slowed. Since 1992, the corporate sector as a whole has reduced its level of debt, partly by net repayments of bank debt. Despite large falls in the real and nominal value of housing assets, the personal sector in aggregate has not repaid debt to the same extent.

**Chart 5**
**Ratio of debt to income: corporate[a] and personal[b] sectors**



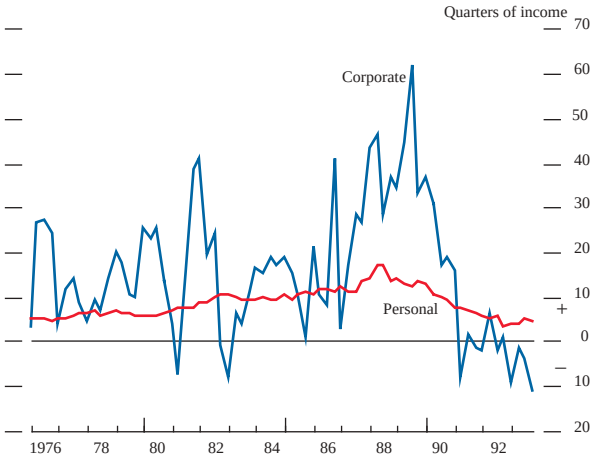

Debt is measured by the stock of sterling lending by banks and building societies. This excludes trade credit, company bonds and miscellaneous instruments, and for persons also excludes loans for house purchase from miscellaneous financial institutions.
(a) ICCs' stock of sterling borrowing from banks and building societies as a proportion of their post-tax income.
(b) Persons' stock of sterling borrowing from banks and building societies as a proportion of their disposable income.

As Chart 5 shows, since the beginning of 1992 the decline in the corporate sector's debt-income ratio has contrasted with the stability of the personal sector ratio. The difference can, however, partly be explained by the different movements of income in the two sectors: while nominal personal disposable income has risen by just over 9% during the period, the nominal post-tax income of the corporate sector has increased by 38%.

Since 1990, interest rate reductions have led to lower income gearing for both sectors; income gearing is no longer high compared with the mid-1980s and is around half its 1990 peak (as shown in Chart 2). Meanwhile, both sectors have increased the proportion of borrowing they undertake at fixed, rather than variable, interest rates, which has reduced the short-run sensitivity of their interest payments—and therefore retained income—to changes in interest rates.(1)

Although it is sometimes difficult to distinguish the acceptance of a given level of debt from the inability to

**Chart 6**
**Ratio of the flow of debt to income: corporate[a] and personal[b] sectors**




Debt is measured by the stock of sterling lending by banks and building societies. This excludes trade credit, company bonds and miscellaneous instruments, and for persons also excludes loans for house purchase from miscellaneous financial institutions.
(a) ICCs' sterling borrowing from banks and building societies as a proportion of their post-tax income.
(b) Persons' sterling borrowing from banks and building societies as a proportion of their personal disposable income.

reduce it, several factors suggest that households have been more comfortable than firms with their recent debt levels. Falls in personal sector non-mortgage borrowing have been more than offset by increases in borrowing for house purchase. During 1993, the rate of increase in household borrowing—although low—exceeded income growth (see Charts 5 and 6). Chart 6 also suggests that the corporate sector may have reacted more to past high debt levels: in aggregate, firms began repaying debt in 1991, before any marked rise in their income. And consumer spending has been the driving force of the recovery, even though real disposable income growth has been very subdued; by contrast, despite higher income growth firms' investment has so far contributed little to the recovery.

## The personal sector

### *Consumption in the recession and the recovery*

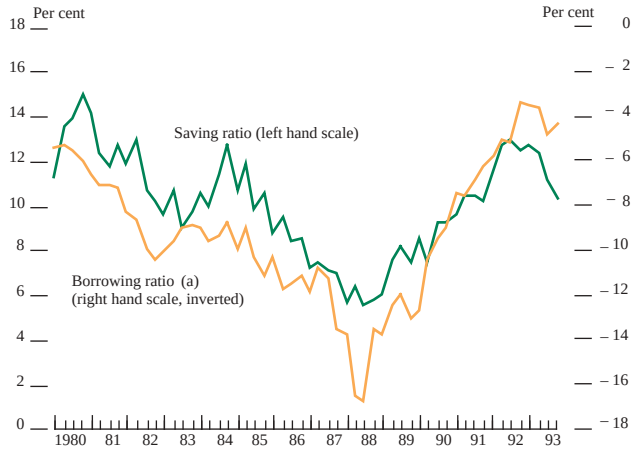
Relative to GDP, consumption fell faster and for longer during the 1990–92 recession than is usual in downturns in major industrialised countries. As noted above, its recovery since then has contributed more to GDP growth than any other category of expenditure. The variation in consumption has been associated with large changes in the saving ratio (see Chart 7): the proportion of income consumed increased substantially during the mid-1980s, but fell again between 1989 and 1992.

These movements have confounded many forecasts, which underpredicted consumption during the boom and overpredicted it during the recession. A wide variety of explanations have been put forward for the errors.

First, it has been suggested that expectations of permanent income increased during the mid-1980s, encouraging

(1) See the article on fixed and floating-rate finance in the United Kingdom and abroad in the February 1994 *Quarterly Bulletin*.

**Chart 7**
**Personal sector saving and borrowing**




(a) Bank and building society borrowing by the personal sector as a proportion of personal disposable income.

relatively high borrowing by consumers.[1] When the expected increase failed to materialise, consumers were left with excess debt, leading them to reduce consumption, increase net saving and reduce borrowing in order to restore their desired debt-to-income ratios.

Second, financial liberalisation—particularly taken together with a change in permanent income expectations—has been offered as a factor contributing to the growth of consumption. Previously, capital market imperfections—liquidity constraints—may have prevented consumers from increasing their borrowing as they wished to finance higher spending.

Third, the sharp rise in consumption during the mid-1980s and its fall between 1990 and 1991 could have been caused in part by owner-occupiers responding to changes in their housing wealth, particularly in regions where house prices changed most. This explanation emphasises the importance of wealth and asset prices in determining consumers' behaviour.[2] If net debt is the main determinant of consumption behaviour, then the fall in consumption should have been greatest among those owner-occupiers with outstanding mortgages.

Finally, some economists have focused on the influence of demographic factors and changes in the distribution of income. A redistribution of income towards those with higher propensities to consume (notably the young) might account for the increase in consumption during the late 1980s. King has presented both theory and evidence to show how distributional shocks that alter the allocation of net wealth between debtors and creditors can lead to large changes in demand and output.[3]

Some of these explanations are based on a suggestion that different types of consumer reacted differently to the shocks affecting the whole economy. To decide between them, it is therefore necessary to look at disaggregated data. Before assessing what these data show, however, the next section investigates the importance of debt levels as an influence on consumers' behaviour. Sectoral data can throw light on how far the changes in capital gearing were the result of changes in asset values and how far of changes in the volume of debt, and on what the effect of interest rate changes was on debtors and creditors.

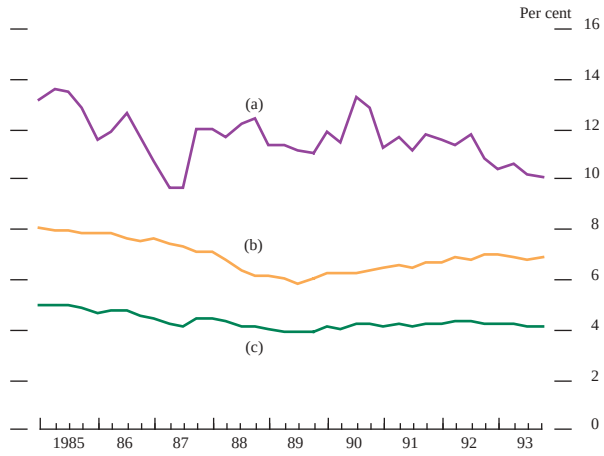
## Aggregate measures of personal sector debt

### *Capital gearing*

Movements in personal sector capital gearing result from changes in either borrowing or the value of assets held. The steady rise in capital gearing during the 1980s reflected increased borrowing; it increased more sharply in late 1989 as house prices began to fall. The ratio levelled off after 1990, as the rate of increase in personal sector borrowing slowed. And since 1992 Q3, it has declined as personal sector wealth has increased; a 27% increase in net financial wealth and a 7% growth in tangible wealth (including consumer durables) have both exceeded the 5% rise in the stock of borrowing.

In general, falling asset prices may be an important element in the explanation of movements in consumption. Asset values are often included, along with income, as an explanatory variable in consumption functions. Chart 8 shows that the relationships between consumption and a variety of wealth measures have been broadly maintained, despite quite large swings in asset values.

**Chart 8**
**Consumption/wealth ratios**




(a) Personal sector quarterly consumption as a proportion of net financial wealth.
(b) Personal sector quarterly consumption as a proportion of tangible wealth.
(c) Personal sector quarterly consumption as a proportion of total net wealth.

By the end of the fourth quarter of 1993, the personal sector held about £2,600 billion worth of net assets. Of this, 60% was accounted for by tangible assets, primarily housing. Although this is a higher proportion than in some European countries, it is similar to that seen in the United States and Japan. But the volume and structure of personal sector debt suggest that the United Kingdom might be particularly

(1) Permanent income is the steady rate of consumption that could be sustained over an individual's life, given his/her current wealth and present and future earned income.
(2) See Muellbauer, J and Murphy, A, 'Is the UK balance of payments sustainable?', *Economic Policy*, Vol 11, pages 345–83, 1990.
(3) King, M A, 1993 EEA Presidential Address, 'Debt deflation: theory and evidence', forthcoming *European Economic Review*.

prone to difficulties related to debt deflation resulting from falls in tangible asset prices; in particular, UK mortgage lending is characterised by relatively high loan-to-value ratios.(1)

### *Income gearing*

A high proportion of the stock of UK mortgages have variable—rather than fixed—interest rates, compared with around 25% in the United States; this makes the personal sector particularly sensitive to changes in short-term interest rates.(2)

Although household capital gearing has remained high, household income gearing has fallen substantially over the last three years, as interest rates have fallen. Since 1990 Q3, average mortgage rates have declined by roughly seven percentage points; the current level of income gearing—8%—is close to that seen in the mid-1980s. The decline contrasts with recent experience in other major economies, where income gearing has either continued to rise or fallen only slightly.

Total personal sector interest payments, which form the numerator of income-gearing measures, have fallen from a peak of £14.5 billion a quarter in 1990 Q3 to £9.3 billion in 1993 Q4—a reduction equivalent to about 5% of personal disposable income. But the net effect of interest rate reductions depends in addition on their effects on consumers' investment incomes; average bank and building society deposit rates fell by about eight percentage points in the same period.

The personal sector has been a *net floating-rate debtor* since 1988; in 1993 Q4, its total bank and building society borrowing of £410 billion compared with total deposits of £384 billion. So in aggregate, consumers' net income *benefits* in the short run from cuts in short-term interest rates, although the net interest receipts are very small in relation to income (see Chart 2). The effect on aggregate consumption depends on debtors' and creditors' relative propensity to consume, and on whether the interest rate changes are viewed as permanent or temporary. If, as is generally thought, borrowers have a higher propensity to consume, this will tend to magnify the negative relationship between consumption and interest rates.

## The disaggregated picture

To what extent can the fall in consumption during the recession be explained by falling asset prices, and to what extent by disappointed income expectations? One way of addressing this is to analyse the behaviour of consumers with different asset-holding, debt and income profiles.

### *Income and expectations*

The pattern of changes in income over time across the distribution of household income suggests that unfulfilled income expectations may have had an important bearing on household behaviour. Households in the top half of the income distribution enjoyed substantial real rises in their income between 1980 and 1988; since then, they have suffered significant real declines—see Table A. The potential for unfulfilled income expectations is clear, if expected permanent income is affected by actual income. Furthermore, changing permanent income expectations affect the behaviour of younger consumers more than older. So any effect as a result of unfulfilled income expectations probably reinforced that from negative equity, which has been concentrated among the young: two thirds of those suffering from negative equity are first-time house-buyers.

**Table A**
**Real pre-tax household income: by decile**

£ per week, January 1987 prices

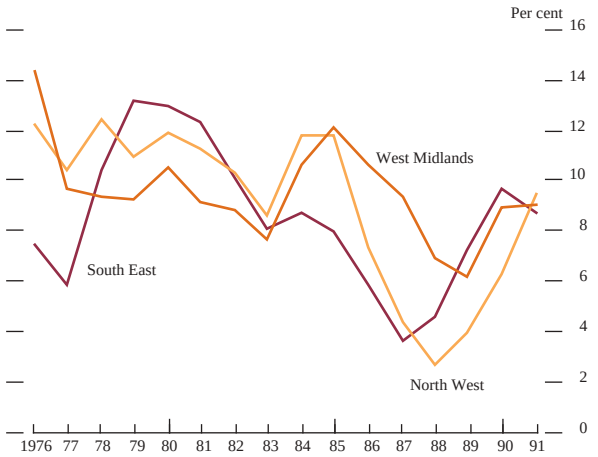
| | 1980 | 1988(a) | | 1992(b) | |
|---|---|---|---|---|---|
| 10th decile | 57.50 | 56.00 | *-3.1* | 52.00 | *-6.5* |
| 20th decile | 83.50 | 83.50 | *0.4* | 79.50 | *-5.2* |
| median | 198.00 | 220.50 | *11.4* | 204.50 | *-7.2* |
| 80th decile | 319.00 | 397.50 | *24.5* | 377.50 | *-5.0* |
| 90th decile | 400.50 | 511.50 | *27.7* | 500.00 | *-2.2* |

Figures for the 10th decile refer to a household whose income is exceeded by 10% of households. The deflator used is the retail prices index excluding mortgage interest payments. Income is rounded to nearest £0.50.
Source: Family Expenditure Survey.
(a) Figures in italics give percentage change based on unrounded real income, 1980 to 1988.
(b) Figures in italics give percentage change based on unrounded real income, 1988 to 1992.

The distribution of income and spending patterns across different income groups can have important effects on aggregate behaviour. Because high-income households account for a disproportionate amount of consumption—it has been estimated that the top 4% of income-earners account for almost 15% of all consumer spending—the expectations and behaviour of high-income groups may be particularly influential.

Regional differences also suggest some role for income expectations in the explanation of the movements in consumption, but the evidence is not conclusive. Regional saving ratios show that the consumption boom of the mid to late-1980s was associated with a sharp fall in the saving ratio of households in the South East (Chart 9). Consumers in

**Chart 9**
**Saving ratios by region**




(1) See Table G in the article on fixed and floating-rate finance cited in footnote (1) on page 146.
(2) See the box on personal sector gearing in the major economies in the August 1993 *Quarterly Bulletin*, pages 336–37.

northern regions also spent more of their income, but the falls in their saving ratios were generally smaller. Between its peak in 1986 and its trough in 1990, unemployment fell faster in the South East than in the rest of the economy which, other things being equal, would cause the expected income of those in the region to increase relative to other regions; this could in part explain their spending behaviour. Since 1990, however, despite a larger rise in unemployment in the South East than in other regions, the recovery in consumption has been led by a decline in the saving ratio in the South East. This suggests that factors other than income expectations have been more important in determining consumers' behaviour.

### *Debt levels and asset prices*

Since 1980, the proportion of households with mortgage debt has increased sharply, leaving the personal sector more vulnerable to changes in interest rates and to falls in house prices. According to the Family Expenditure Survey (FES), the proportion of households with mortgages rose from 33% in 1980 to 42% in 1992.

There is no doubt that homeowners in the southern regions suffered most from the recent falls in house prices. House prices in those regions started to fall earlier, from the fourth quarter of 1988; prices in northern regions rose until at least mid-1990. And the largest falls were seen in southern regions.(1) To a great extent, these falls reversed previous very rapid rises—for example, prices rose by almost a third in East Anglia during 1988, but then fell by over a third between the end of that year and the beginning of 1993. The spending decisions of homeowners who did not move during this period were probably relatively unaffected by these price movements: it is unlikely that asset-price changes associated with so obvious a boom had an immediate and full impact on their spending decisions. But the price falls and debt deflation left many recent house-buyers—a substantial minority of all homeowners, and often young, first-time buyers—with negative net wealth.

**Table B**
**Regional profile of negative equity, 1994 Q1**

| | Number of households with negative equity ('000s) | Total value of negative equity (£ billions) | Average amount of negative equity per household (£) |
|---|---|---|---|
| Greater London | 220 | 1.7 | 8,000 |
| Rest of South East | 510 | 3.8 | 7,500 |
| South West | 180 | 1.0 | 5,700 |
| East Anglia | 80 | 0.6 | 6,700 |
| East Midlands | 100 | 0.3 | 2,600 |
| West Midlands | 90 | 0.1 | 1,400 |
| Other regions | 120 | 0.1 | 900 |
| **Total** | **1,290** | **7.6** | **5,900** |

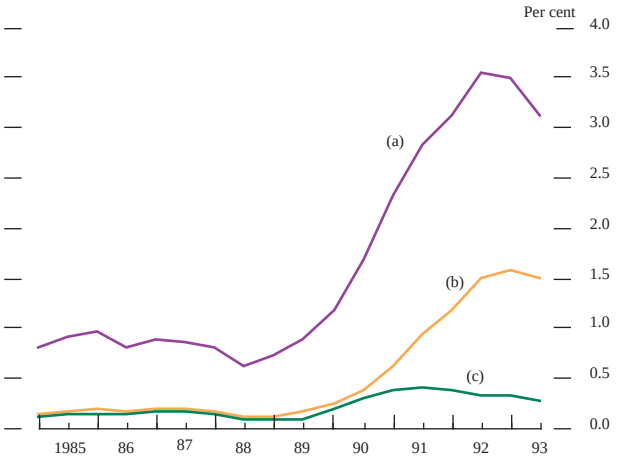
Components may not sum to totals because of rounding.

For the country as a whole, negative equity is estimated to have risen from £8 million at the beginning of 1989 to a peak of almost £12 billion in the first quarter of 1993. At its peak, about 1.8 million households were affected, with an average negative equity of £6,600 (the average had fallen to £5,900 by 1994 Q1—see Table B). Since house prices fell furthest in the South East, the problem was worst there, with about 900,000 households (including in Greater London) having negative equity in 1993 Q1—over 50% of all affected households. Their average negative equity—at £9,000—was also substantially higher.

There is some evidence that the increase in negative equity has altered the behaviour of households and affected the economy as a whole. Lump-sum repayments to mortgage lenders, other than on loan redemptions, have risen by 140% since 1989, to reach £2.5 billion in 1993—nearly 5% of personal sector saving. This increase cannot readily be explained by changes in mortgage rates; rates fell sharply between 1989 and 1993, reducing the incentive to repay debt. A more likely cause was concern about the level of debt, particularly among households with negative equity. But debt repayment of £2.5 billion is not large compared with the benefit that consumers have enjoyed from lower interest payments; in gross terms these have increased annual personal income net of interest payments by £18 billion a year between 1990 and 1993.

The severe income-gearing problems faced by some indebted households provides another example of the range of experience within the personal sector; it is illustrated by the large increase in the proportion of mortgages going into arrears and leading to possessions (Chart 10). But falling asset values do not by themselves explain these increases, unless households are simply unwilling to continue paying interest and capital on a secured debt that exceeds the value of the underlying asset. The increase in arrears is more likely to have resulted from lower-than-expected personal income growth or larger-than-expected increases in interest rates. Falling nominal house prices exacerbated the difficulties, however, because negative equity prevented households from trading down and so reducing their mortgage payments to more sustainable levels.

**Chart 10**
**Mortgage arrears and possessions**




(a) Mortgages over six months in arrears as a proportion of the outstanding stock of mortgages.
(b) Mortgages over 12 months in arrears as a proportion of the outstanding stock of mortgages.
(c) Possessions as a proportion of the outstanding stock of mortgages.

(1) In Greater London, prices declined by 29% between 1988 Q4 and 1993 Q1. Prices fell by only 5.3% in the North as a whole (the fall occurred between 1990 Q3 and 1993 Q1), 8.4% in the North East (1990 Q2 to 1993 Q1) and 10.3% in the North West (1991 Q2 to 1993 Q1).

Homeowning consumers with no outstanding mortgage debt seem to have reacted to lower interest rates, and lower investment income, by reducing their spending: according to the FES, between 1991 and 1992 real consumption by such homeowners fell by about 11%, whereas spending by households with a mortgage rose by 5%.

## Summary

The disaggregated data support the view that consumption behaviour over the recent cycle was the combined result of income-expectation, asset-price and debt factors. The influence of demographic factors makes it difficult to determine the relative importance of income expectations and net debt. Specifically, young households both had a key role in unfulfilled permanent income expectations and were the group that suffered most from high net debt and negative equity following the house-price falls. Again, regions that saw the fastest income and asset-price growth in the mid-1980s subsequently faced the largest rises in unemployment, the greatest house-price falls and the most substantial negative equity.

The following main points can be suggested:

- the comparatively modest increase in personal sector capital gearing masks a financial position that was significantly worse for a number of households. At its peak, 1.8 million households were affected by negative equity;
- consumer behaviour seems to have reflected both debt levels and income shocks; and
- there is some evidence of increased lump-sum repayments and of mortgagors switching to fixed-rate mortgages. Consumer borrowing has remained subdued, but households have been willing recently to let their saving ratios fall.

## The corporate sector

Levels of corporate gearing such as those seen in the second half of the 1980s—and shown in Charts 1 and 2—do not inevitably mean difficulties for companies. Chart 4 shows that the corporate insolvency rate did rise sharply from 1989, but firms do not necessarily experience financial distress when their net debt reaches 27% of physical assets [the average for industrial and commercial companies (ICCs) in 1992] or because net interest payments reach 31% of income (the average in 1990).

Such average gearing levels provide cause for concern because of the likelihood that they mask much higher gearing levels for a significant minority of firms. It is only by looking at data for individual firms that it is possible to gain a real indication of how many directly faced financial difficulties. Furthermore, there is substantial interdependence between firms (eg through trade credit and customer-supplier links); so the greater the number of such highly-geared firms, the more likely there are to be implications for the rest of the sector, ie the greater is overall fragility.

### The company data used

Data were taken from the accounts of UK-quoted companies compiled by Datastream International. On average, around 1,200 companies were included in the sample for each year; its composition changed over time, as companies entered and left the quoted sector.

The year shown is that in which an accounting year ended, so data for a particular year usually reflected activity of the company in both the cited and the previous calendar year. At the time of compilation, only half of the accounts for 1993 were available, predominantly of companies that had reported in the first half of the year.

As all firms were quoted, they represented a wide—but not full—spectrum of the UK corporate sector. In particular, small firms are not usually quoted and are therefore underrepresented in this sample. Subsidiaries are excluded.

To calculate capital gearing, the replacement cost of capital was calculated for each firm using the perpetual inventory method.

This part of the article examines the diversity of corporate gearing over the last two decades. It focuses on how this diversity has changed since 1980; and it analyses the characteristics of those firms that experienced the most acute financial distress. From the data used (see the box above), it is possible to analyse: whether gearing varied according to firm size; whether the same firms were consistently more highly geared; and whether firms with high debt levels also experienced poor profitability. It begins by suggesting why levels of debt might affect a company's performance, and by offering a number of reasons for the expansion of debt in the late 1980s.

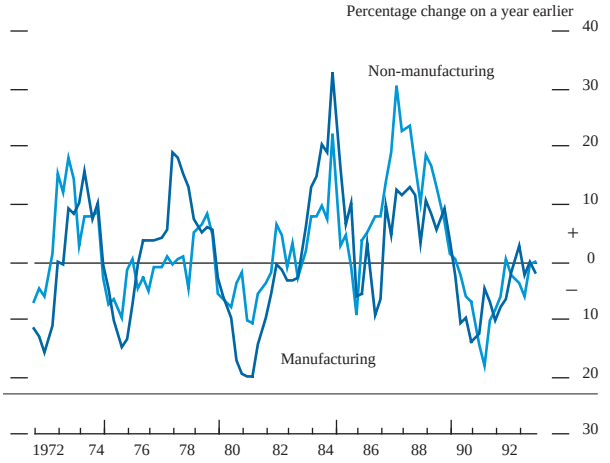
### *Do debt levels matter?*

The results presented here focus on the importance of debt for corporate performance. But debt is just one source of finance: companies may choose instead to use equity issues or may generate sufficient funds internally. There are several reasons why a firm's choice of method of finance may affect its market value. The most important are: differences in tax rates affecting the different methods; costs associated with bankruptcy; and the impact of different sources on the incentive both to commit effort and take risks. The incentive for highly geared firms to take risks may lead potential financiers to be more cautious; opportunities for productive investment may as a result be missed.

Although debt levels are in practice likely to influence behaviour, it is difficult to determine an equilibrium level of gearing. That will depend on all the factors that affect the expected stream of future income and the cost of financing debt. These are not easily measurable at either the aggregate

level or the level of the firm. But the disaggregated analysis presented here can offer information beyond that contained in aggregate data about which firms face financial pressures.

**Chart 11**
**Business investment in manufacturing and non-manufacturing**(a)(b)




(a) Non-oil business investment.
(b) Figures include public corporations and are therefore not affected by privatisations.

*Why did debt levels rise so rapidly in the 1980s?*

There are a number of reasons why a shift in gearing levels might have been observable in the 1980s. Financial liberalisation (including the abolition of exchange controls) increased financial choice and allowed some firms to increase levels of gearing to desired levels. Financial innovations enabled firms to substitute debt for equity— in part because they increased the opportunities for leveraged buy-outs—while also increasing competition among suppliers of finance.

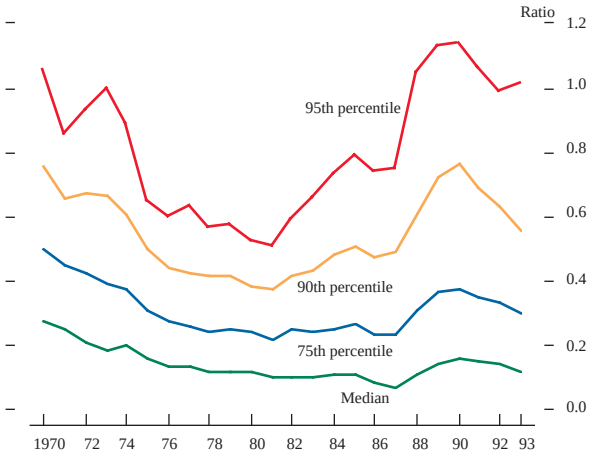
In addition, the liberalisation occurred at a time when expectations of both future income and real interest rates were probably too optimistic. A number of pieces of evidence support this view. Most medium-term forecasts published in the late 1980s overpredicted output. And the buoyancy of business investment during the period—illustrated in Chart 11—may suggest that firms' assessments of medium-term income net of interest payments were also overoptimistic.

## Gearing levels

Using disaggregated data taken from the accounts of UK-quoted companies, it is possible to focus on the diversity in companies' behaviour that is not observable from average measures.

Chart 12 shows the changing distribution of firms' capital gearing over time: for each year, it plots the gearing of the median firm in the distribution, along with that of representative firms at various points in the upper tail of the distribution. The 95th percentile line, for example, shows the gearing of the firm whose gearing level was exceeded by only 5% of firms in the sample. This upper tail therefore

**Chart 12**
**Corporate sector capital gearing:**(a) **cross-sectional distribution**




(a) Gross debt less cash, as a proportion of replacement cost of physical assets.

contains those firms likely to be facing financial difficulties in any specified year, and the evolution of the line suggests whether these difficulties are becoming more or less acute over time.(1) A number of points emerge:

- in every year shown, there was a wide disparity between the gearing of median firms and firms in the upper tail. The gearing of the 95th-percentile firms never fell below 50%, whereas after 1980 over half of the firms consistently had gearing of less than 15%;

- diversity of gearing increased sharply over the 1980s. In the late 1980s, gearing increased across all parts of the distribution. For firms in the upper tail, it rose to very high levels. By 1990, 5% of the firms had borrowing over 1.2 times the value of their physical capital stock. Such firms were likely to be vulnerable to falls in their income and increases in their debt-servicing costs; and

- there is little evidence of persistent cyclicality of capital gearing, either for median firms or for firms in the upper tail. Rather, the lines are U-shaped up to 1990: it is plausible to suggest that firms ended the 1960s with high levels of debt; then allowed the real value of this to be eroded by inflation during the 1970s; and in the 1980s—helped by financial liberalisation—increased their debt, encouraged by increasing confidence in the economic recovery and the merger boom. After 1990, firms across all parts of the distribution made efforts to reduce their borrowings. This is also evident from recent data on net bank lending to ICCs (see Charts 5 and 6).

It is also clear from the data underlying Chart 12 that smaller firms (in terms of turnover) were over-represented in the upper tail of the distribution. If the relatively heavily indebted firms were mainly larger ones, then a severe economic shock would be likely to lead to defaults on higher absolute levels of debt.(2) But the predominance of smaller

(1) This approach follows that in Bernanke, B S and Campbell, J Y, 'Is there a corporate debt crisis?', *Brookings Papers on Economic Activity*, 1988.
(2) In 1990, the average net indebtedness of the largest 25% of firms in the sample was around 14 times the average level of debt of the smallest 25% of firms in the sample, where size of firm is determined by turnover.

firms in the upper tail is a feature which appears fairly consistently throughout the period analysed; it became particularly marked from the late 1980s. The capital gearing of the smallest 25% of the firms increased from 0.9 in 1987 to 1.6 in 1990; in contrast, the capital gearing of the largest 25% rose more modestly, from 0.6 in 1987 to 0.9 in 1990. This illustrates the particular difficulties faced by smaller firms during the 1990–92 recession.

Some care is needed, however, in drawing conclusions from these data. The estimated value of the physical capital stock will understate the total value of the firm if it owns intangible assets such as brand names, patents and copyrights. But this will not affect the conclusions here, unless there has been a substantial shift in business activity between sectors which are heavily reliant on physical capital and those heavily reliant on intangible assets.

### *Persistence of indebtedness*

The analysis can also be used to see whether the same firms were consistently more highly geared, or whether firms that survived a period of high indebtedness tended not to repeat the experience. If the same firms were consistently found in the upper tail of the distribution, it might suggest that they were content with such high levels of debt. The question is addressed in Table C, which analyses the persistence of capital gearing over the sample period, using Spearman rank correlations. The technique uses a ranking of the firms from highest to lowest-geared for each year; a coefficient close to one indicates that there is a close correspondence between firms' ranks in the two years in question; a coefficient close to zero indicates little correspondence. A negative coefficient shows an inverse correlation between the ranking of firms in the two years.

**Table C**
**Spearman[a] rank correlation coefficients for capital gearing in different years in the sample**

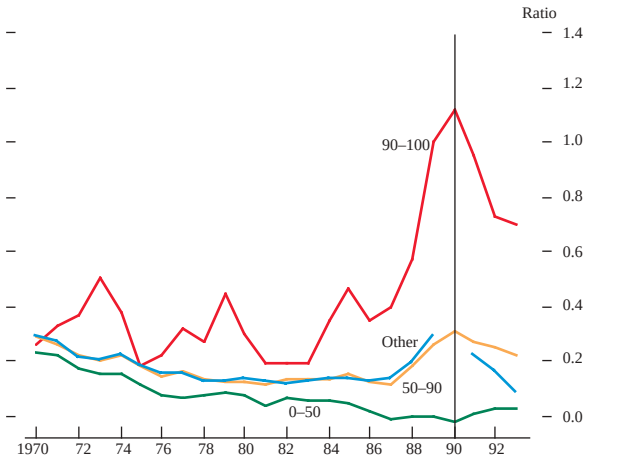
| | 1970 | 72 | 74 | 76 | 78 | 80 | 82 | 84 | 86 | 88 | 90 | 92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1970 | 1 | | | | | | | | | | | |
| 72 | 0.72 | 1 | | | | | | | | | | |
| 74 | 0.58 | 0.71 | 1 | | | | | | | | | |
| 76 | 0.48 | 0.61 | 0.74 | 1 | | | | | | | | |
| 78 | 0.42 | 0.49 | 0.62 | 0.78 | 1 | | | | | | | |
| 80 | 0.35 | 0.42 | 0.55 | 0.65 | 0.74 | 1 | | | | | | |
| 82 | 0.29 | 0.39 | 0.46 | 0.58 | 0.64 | 0.73 | 1 | | | | | |
| 84 | 0.23 | 0.33 | 0.37 | 0.46 | 0.51 | 0.56 | 0.67 | 1 | | | | |
| 86 | 0.12 | 0.30 | 0.31 | 0.36 | 0.38 | 0.42 | 0.52 | 0.63 | 1 | | | |
| 88 | 0.09 | 0.22 | 0.22 | 0.26 | 0.29 | 0.31 | 0.36 | 0.41 | 0.54 | 1 | | |
| 90 | 0.06 | 0.16 | 0.20 | 0.26 | 0.28 | 0.28 | 0.30 | 0.32 | 0.44 | 0.59 | 1 | |
| 92 | 0.07 | 0.14 | 0.18 | 0.23 | 0.25 | 0.24 | 0.28 | 0.33 | 0.40 | 0.46 | 0.68 | 1 |
| | 1970 | 72 | 74 | 76 | 78 | 80 | 82 | 84 | 86 | 88 | 90 | 92 |

(a) See Spearman, C, 'The proof and measurement of association between two things', *American Journal of Psychology*, 1904.

A number of points can be drawn from the table. First, the coefficients are all positive, indicating that there was some correspondence between the ranking of companies' gearing over time. This may in part have been the result of sectoral effects—some sectors use physical assets less intensively and so consistently have a lower level of gearing. Second, over the long term the coefficients are very small. Even over a two-year time horizon, the correlation may be as low as 0.5, suggesting that firms did not keep their position in the gearing distribution for very long. And finally, the correlations are lower in the 1980s than in the 1970s. This is consistent with the picture of a rapidly-changing structure of corporate sector finances in the 1980s.

Another way of gaining information about changes in the gearing of highly indebted firms is by selecting firms in various parts of the distribution in a particular year, and investigating how their gearing changed over several years. This is done in Chart 13, where the sample is divided into four 'cohorts' of firms, based on firms' gearing relative to the overall distribution in 1990; the median gearing of each cohort is then plotted over several years. Details of the cohorts used are shown on the chart. The cohort of firms that did not exist in 1990 (labelled 'other') contains very different types of firms before and after that date; up to 1989, its members are firms that left the sample before 1990, and after 1990 its members are newly quoted companies.[1]

**Chart 13**
**Capital gearing[a] of firms grouped according to ranking in overall distribution in 1990**




The lines show the median gearing of the following groups of firms:
0–50: Low-geared firms, whose gearing was in the lower half of the gearing distribution in 1990.
50–90: Firms whose gearing was between the 50th and 90th percentile in 1990.
90–100: Highly geared firms, whose gearing was higher than the 90th percentile in 1990.
Other: Firms that did not exist in 1990 (hence the break in the line).
(a) Gross debt less cash, as a proportion of the replacement cost of physical assets.

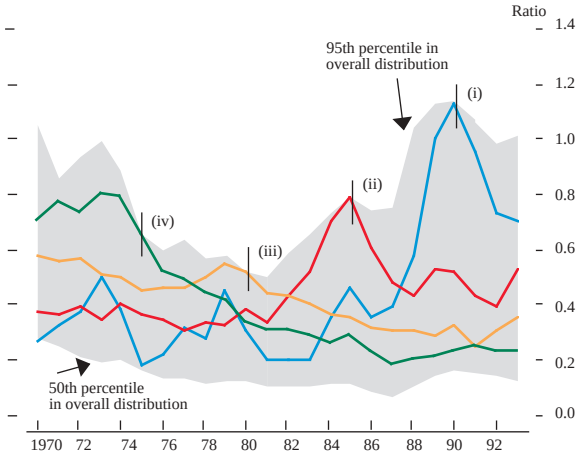
Chart 13 suggests that firms that were highly geared in 1990 had seen their gearing levels increase extremely rapidly to reach that point. The median gearing of the cohort of highly geared firms was just over 0.4 in 1987, but nearly trebled over the following three years. These highly geared firms subsequently reduced their gearing almost as quickly. This feature is consistent with the low Spearman rank correlations seen even for short periods. The line showing 'other' firms indicates that the firms that left the quoted sector in 1989 had a median gearing level well above that of the overall distribution. It would appear that debt may have been a factor in firms leaving the sector.

The tendency for firms that were highly geared in a particular year to have increased their gearing levels rapidly

(1) Firms may have ceased to exist because of either insolvency or merger. New firms may have been the result of merger or may have been newly quoted in the year in question.

in the preceding years and to have reduced them rapidly afterwards is a feature of the 1980s but not the 1970s. Chart 14 plots the gearing of four cohorts of highly geared firms in four benchmark years. The boundaries of the shaded areas represent the median gearing of the entire sample and the gearing of the 95th percentile firm in the sample.(1)

**Chart 14**
**Capital-gearing ratios of highly geared firms**(a)




Lines (i) to (iv) reflect the median gearing of the following cohorts of highly geared firms:
(i) Firms whose gearing was higher than the 90th percentile in 1990.
(ii) Firms whose gearing was higher than the 90th percentile in 1985.
(iii) Firms whose gearing was higher than the 90th percentile in 1980.
(iv) Firms whose gearing was higher than the 90th percentile in 1975.
(a) Gross debt less cash, as a proportion of the replacement cost of physical assets.

The sharper spikes for the gearing of highly indebted survivors in the 1980s indicate that in that decade highly geared firms may have acted earlier—and more actively—to reduce their levels of gearing. Although the gearing of firms that were highly indebted in 1975 also fell rapidly, this was a feature across the whole distribution at the time, as high inflation eroded the value of debt.

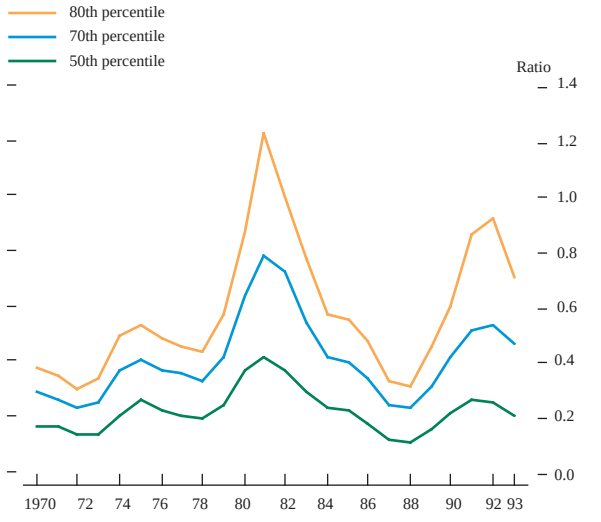
### *Income gearing*

There was a wide diversity in the income gearing of sample firms, particularly during the last two recessions (see Chart 15). In both 1981 and 1992, net interest payments exceeded 90% of post-tax income for 20% of firms. High levels of interest rates in 1980 meant that the income gearing of firms in the upper tail of the distribution was higher then than in the 1990–92 recesssion, even though capital-gearing levels were much lower in the earlier recession(2) and a smaller proportion of firms were making low profits or losses (see below).

## Profitability

Profitability (defined here as pre-tax operating profits as a proportion of turnover) also showed considerable dispersion in all the years examined. Chart 16 plots median profitability in each year, together with the profitability of representative firms in the upper and lower tails of the distribution. Diversity of performance increased over the course of the 1980s; once again this is consistent with the greater access to finance (provided by financial liberalisation) leading to a wider range of project outcomes.

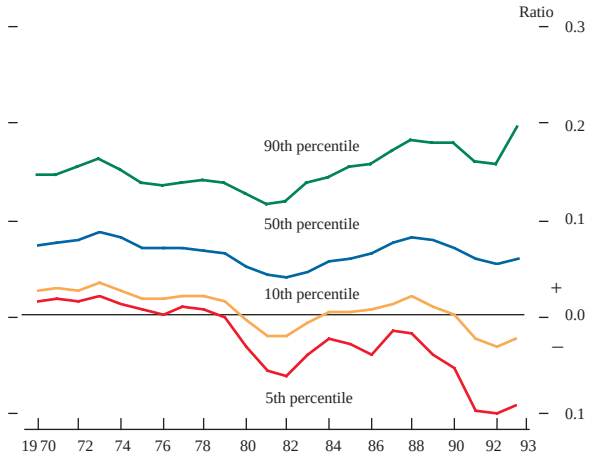
**Chart 15**
**Corporate sector net income gearing:**(a) **cross-sectional distribution**




(a) Net interest payments as a proportion of post-tax income net of interest receipts.

In contrast to capital gearing, profitability was pro-cyclical across the distribution—and particularly pro-cyclical for less profitable firms. Not only did profitability fall in the last two recessions, but firms in the lower tail of this distribution were more affected relatively by the fall. And although well over 10% of firms made losses during the recessions, Chart 16 also shows that the most profitable 10% of firms earned profits in excess of 15% of turnover even in the 1990–92 period.

**Chart 16**
**Profits/turnover:**(a) **cross-sectional distribution**




(a) Pre-tax operating profits as a proportion of turnover.

### *Links between indebtedness and profitability*

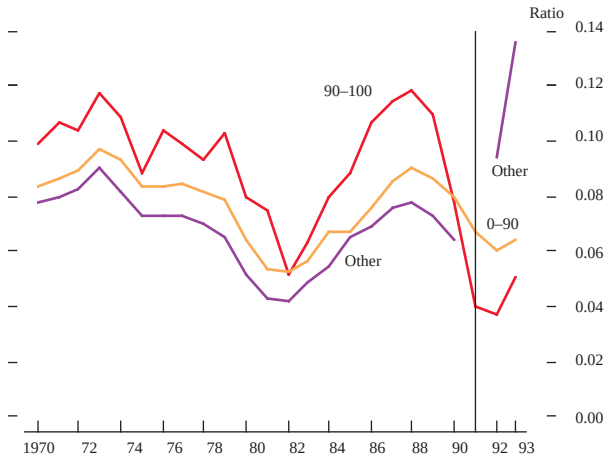
Debt levels may have an important influence on the performance of firms. Geroski and Gregg(3) have described

(1) The median gearing of the 90%–100% percentile firms in the four benchmark years by definition equals the gearing of the 95th percentile firm in the overall distribution in that benchmark year.
(2) Percentiles above the 80th have not been plotted because in the most recent two recessions over 15% of firms made operating losses. This implies negative income gearing for some of the most financially distressed firms.
(3) Geroski, P A and Gregg, P, 'Coping with recession', *National Institute Economic Review*, November 1993.

some of the key features, using company accounts data and the results of a detailed questionnaire on how firms responded to recession. They found that many firms became vulnerable to recession through overexpansion in the 1980s, and that 'firms that are extremely hard hit by recession seem to be much more likely to make major changes in their workforce organisation and operation than other firms. These firms are very likely to have abandoned or postponed investments in all forms of capital.' The results of a cross-sectional analysis focusing on the link between profitability and debt support the view that many firms faced financial pressures in the 1990–92 recession because they overcommitted themselves in the 1980s when profitability was buoyant. They suggest, in contrast, that the difficulties in the recession of the early 1980s were primarily the result of low profitability.

Charts 17 and 18 show the profit-to-turnover ratio for different cohorts of firms ranked by their capital gearing in, respectively, 1991 and 1981—two years in which the economy was in recession. They show a different profitability profile for highly geared firms. The firms that were highly indebted in 1991 had been among the most profitable in the mid-1980s; their median profitability grew rapidly until 1987, when it was nearly three percentage points higher than the remainder of firms. It then fell rapidly to a trough in 1992. The profile is consistent with the proposition that those firms that took on high levels of debt in the late 1980s had income expectations that were not fulfilled, and that this was the reason why so many of them faced problems when the economy moved into recession. A symptom of their problems was that they increased their already-high levels of gearing in the two years to 1991, a period of rapidly-falling cash flow.

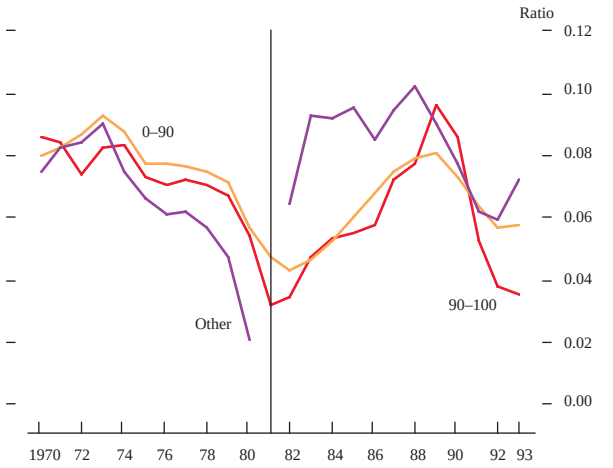
**Chart 17**
**Profitability[a] of firms grouped according to capital-gearing ranking in 1991**




The line reflects the median profitability of the following groups of firms:
0–90: Firms whose gearing was below the 90th percentile of the gearing distribution in 1991.
90–100: Firms whose gearing was higher than the 90th percentile in 1991.
Other: Firms that did not exist in 1991 (hence the break in the line).
(a) Pre-tax operating profits as a proportion of turnover.

In contrast, the 1981 cohort of highly geared firms had a median profit-to-turnover ratio that broadly tracked that of other firms present in 1981. There is much less to suggest that firms took on debt in the late 1970s on the basis of

**Chart 18**
**Profitability[a] of firms grouped according to capital-gearing ranking in 1981**




The line reflects the median profitability of the following groups of firms:
0–90: Firms whose gearing was below the 90th percentile of the gearing distribution in 1981.
90–100: Firms whose gearing was higher than the 90th percentile in 1981.
Other: Firms that did not exist in 1981 (hence the break in the line).
(a) Pre-tax operating profits as a proportion of turnover.

expectations of strong profits. Chart 18 also suggests that poor profitability may have been a more important factor in firms leaving the quoted sector in 1981. As the line for 'other' firms shows, the difference in the profitability of the firms leaving the sector in 1981 and those replacing them was very marked; and the profitability of the incoming firms was the highest of all the 1981 cohorts for most of the period until 1993.

This suggests that profitability had a very important influence on the incidence of financial distress in the early 1980s recession, but that it was the combination of debt and profitability levels that led many firms to experience difficulties in the 1990–92 recession.

## A picture suggested by the disaggregated data

Following a decade of high inflation that eroded the nominal value of debt, by 1980 even the most indebted firms had relatively low levels of capital gearing. The recession that followed caused financial distress for many firms, but this was more a product of low profitability than of high indebtedness. As the economy emerged from the 1979–81 recession, firms became increasingly optimistic about the likely returns on investment, while financial liberalisation allowed some of them increased access to finance. Capital gearing was increased, first and fastest by relatively highly geared firms, but later by firms across the whole of the distribution. As the economy entered the 1990–92 recession, three factors left many firms in a precarious position. First, capital gearing was at historically high levels, particularly for the most indebted firms. Second, although average profitability was robust, it was very weak for the firms at the lower tail of the profitability distribution, and tended to fall most sharply in the case of highly indebted firms. And third, high nominal interest rates meant that income gearing rose sharply; since 1990, those firms in the top 20% of the income-gearing distribution have faced net interest payments of at least 59% of income.

The following summary can be given:

- levels of debt increased significantly in the late 1980s, but the full extent of this is not revealed by the aggregate data. Firms that became highly indebted in a recession did not tend to repeat the experience;

- poor profitability affected a significant minority of firms in both the two most recent recessions. But debt was more important as a cause of problems in 1990 than a decade earlier. Furthermore, highly indebted firms in the recent recession were among those with the sharpest decline in profitability; and

- following their most recent experience, highly geared firms have taken more active steps than in earlier years to reduce their burden of debt. But even last year, many firms remained vulnerable to a sharp rise in interest rates.

## Conclusions and prospects

Corporate and personal sector indebtedness increased markedly during the 1980s and the high levels persisted into the early 1990s. In the recent recession, debt had a much greater impact on both sectors' behaviour than in the recession of the early 1980s. It was more unevenly distributed across households and firms; and as a result, aggregate measures mask the force of financial pressures on a significant minority. In the corporate sector, the difficulties were reflected in a greater dispersion of capital-gearing levels, and the combination of debt and poor profitability (particularly among highly geared firms) led to major changes in workforce organisation, cuts in investment and widespread insolvency. A substantial minority of households were affected by negative equity, mortgage arrears and possessions. The combination of debt levels and income shocks seems to have been an important influence on consumers' behaviour.

Consumers' willingness to borrow in the coming months will depend, among other things, on changes in the value of their assets. Conditions in the housing market appear more favourable than in the recent past, and any further rise in house prices could have quite large effects on the levels of negative equity and on aggregate capital gearing. The rise in house prices in the year to the first quarter of 1994 reduced the number of households with negative equity by over a quarter.

In the short term, many firms are likely to concentrate to a greater extent than in previous recoveries on reducing capital gearing. This may dampen investment and employment expansion. As the economy continues to recover, however, firms' desire to issue debt will ultimately depend on the existence of profitable investment opportunities. ICCs' average profitability is much higher now than when the economy emerged from the 1980–82 recession, and the earlier experience suggests that the profitability of firms at the lower tail of the distribution may increase relatively quickly as the economy recovers. It is therefore unlikely that the scars of the recent financial difficulties will lead ICCs to be reluctant in the longer run to take on debt.

In the near future, the gradual nature of the recovery and the severe financial constraints facing a minority of firms and households may lead to cautious borrowing behaviour and further balance sheet adjustment. But in the longer term, both the corporate and personal sectors are likely to use a wide range of sources of finance, including debt.

# Inflation over 300 years

By Helen MacFarlane and Paul Mortimer-Lee of the Bank's Economics Division.

*In recent years, there has been a widening acceptance of the view that the primary purpose of monetary policy should be to maintain price stability, and the primary purpose of central banks should be to secure this. But what has been the history of UK inflation over the first 300 years of the Bank's existence? How has thinking about inflation developed over that period? And how has the workforce of the Old Lady herself withstood the inflationary ravages of time?*


POLITICAL RAVISHMENT or The Old Lady of Threadneedle Street in danger!
Cartoon by James Gillray, published in 1797

## What is inflation?

Calculating how much prices have risen during the last 300 years is a difficult task. Part of the reason for this is that the bundle of goods and services that was available in 1694 and the bundle consumed now show some important differences. Some elements are, of course, common to both—for example, basic foodstuffs such as eggs, lamb and bread—so their prices can be compared. Potatoes, which had arrived in Britain by 1694 but were not widespread until much later (price data are available only from 1762), can be thought of as a close substitute for such foodstuffs. But it is more difficult to find seventeenth-century analogues of other elements in today's Retail Price Index (RPI). What can we

compare with the price today of a second-hand car—a second-hand sedan chair? And although we might be able to discover the relation between the ticket prices for a concert of Purcell's music now and in 1694, we cannot compare the prices of digital compact disc recordings of his music.

To try to overcome these problems, statisticians and economists have spliced together price indices from a number of periods. This technique allows—albeit imperfectly—the weights of the goods and services included

> *'Inflation means that your money won't buy as much today as it did when you didn't have any.' (Anon)*

in the price index to evolve over time. But although spliced indices give some indication of the broad trends in the price level since 1694, they can never be exact. There is a much wider range of goods and services today, reflecting a more developed structure of production. So food prices comprise only a fifth of today's RPI compared with two thirds in 1694, implying that the index is now much less sensitive to certain shocks, such as the failure of the grain harvest.

There are similar problems—including difficulties over the availability of comparisons and over changes in quality—when trying to see how wages have evolved over the period. The standard of education in the population as a whole is much higher now than in 1694. And the range of skills available in the workforce is very different (there were no computer programmers in seventeenth-century England). Even over shorter periods, comparison is difficult. Would it be fair to compare the £30,000 paid to Aston Villa for their striker Trevor Ford in 1950 (that year's record transfer) with the £2.3 million they paid for Dean Saunders in 1992?

### *What goes up can come down*

At a best estimate, prices have risen by a factor of 67 since the Bank's foundation in 1694. If the area of the new £50 note were increased in the same proportion, the result would be a note some 4 feet by 3 feet, necessitating cash machines the width of double-doors and vans instead of wallets (and giving a rather different meaning to the phrase 'velocity of circulation'). Looked at another way, if the current size of the £50 note were taken to represent the purchasing power of £50 in 1694, then to reflect its real purchasing power today, it would need to shrink to smaller than a postage stamp.

**Average inflation rates**(a)

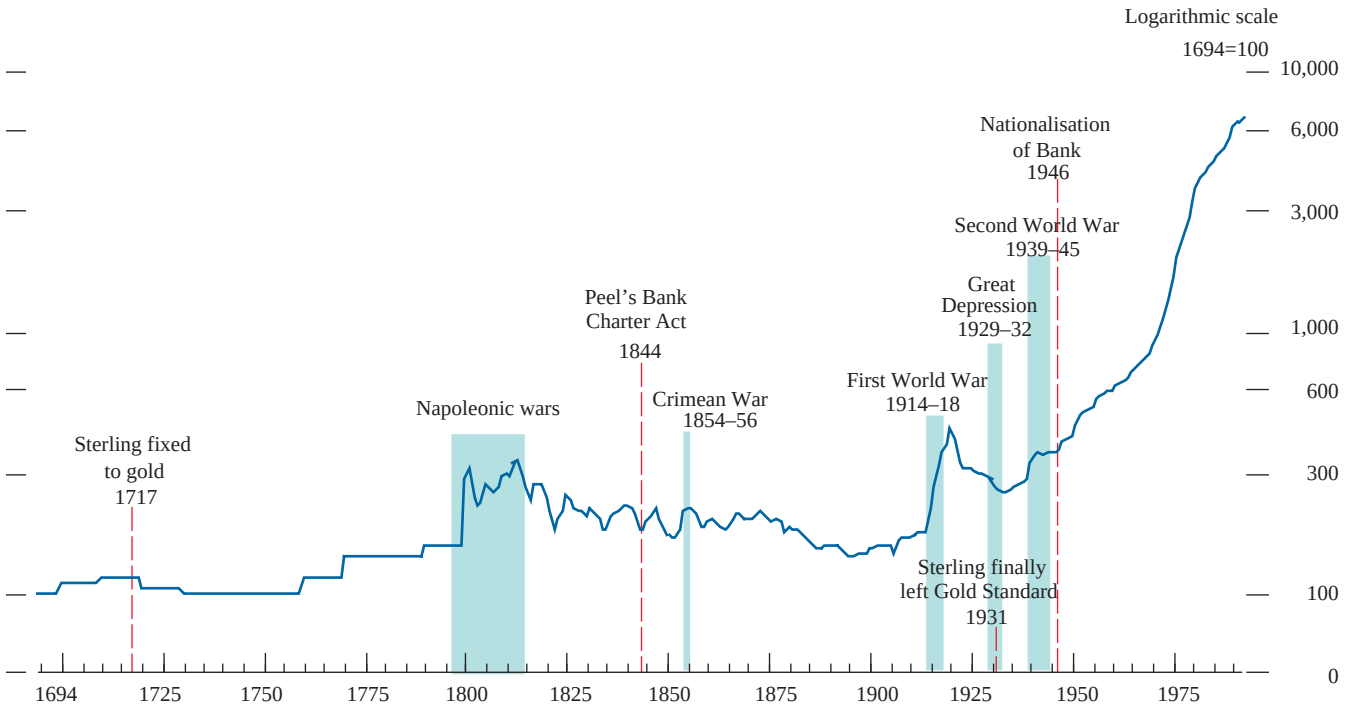
Per cent

| | |
|---|---|
| 1900 to 1913 | 1.3 |
| 1914 to 1918 | 15.3 |
| 1919 to 1939 | -1.2 |
| 1940 to 1945 | 4.3 |
| 1946 to 1949 | 2.6 |
| 1950 to 1959 | 4.3 |
| 1960 to 1969 | 3.5 |
| 1970 to 1979 | 12.5 |
| 1980 to 1989 | 7.4 |
| 1990 to 1993 | 5.1 |

(a) Geometric averages.

Experience of the general trend in prices since the Second World War might suggest that inflation is always with us. In fact, the history of the last three centuries is not one of an unbroken rise in prices, but rather of periods in which prices increased, others when they fell, and little tendency for sustained rises or falls. Indeed prices have risen more quickly in the last 50 years than in any similar period since 1694; the index of prices tripled between 1694 and 1948, but has risen almost 20-fold since. Even within the post-war period, however, the rate of inflation has varied markedly, as the table above illustrates.

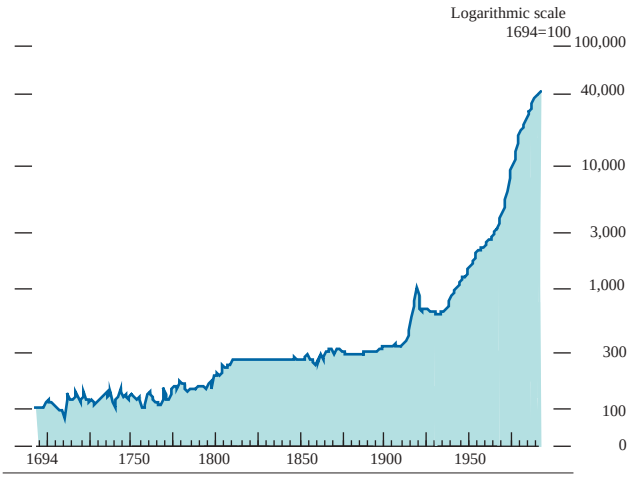
**Chart 1**
**Retail Price Index**



### *Wages*

The profile of nominal wages over the last 300 years has been similar to that for retail prices, as a comparison of Charts 1 and 2 shows. It is notable, however, that real wages appear to have been considerably more variable in earlier

**Chart 2**
**Nominal wages**




centuries than they have been in this one (Chart 3)—though precise comparisons are difficult from the available data.(1) It is clear also that nominal wages have risen by much more than prices. An index showing movements in builders' wages relative to a basket of consumables,(2) set at 100 for 1694, had fallen to a low of 62 by 1801. This was in the period of the war with France, when the cost of living rose sharply (the price of the basket rose over 30% in 1800). But by 1993, the index had risen to over 600.

Bank of England staff also appeared to feel the pinch in the Napoleonic era. According to W Marston Acres: 'the increase in salaries granted by the Directors in 1800 was not commensurate with the rise in the cost of living, and it was only because of the money earned by extra work that more clerks were not in difficulties'.(3)

> *'When I first started working, I used to dream of the day when I might be earning the salary I'm starving on today.' (Anon)*

In 1821, following five years of peace, clerks' annual increments and maximum attainable salaries were reduced; at the time, prices were falling by over 10% a year. In 1854, following the imposition of income tax(4) to finance the war against Russia, clerks were moved to request that the Bank pay their tax for them. The request was initially refused, but clerks were later granted a 10% rise because of the 'high prices of provisions concurring with the pressure of income tax'—prices rose by around 16% in 1854. But by 1865 the

**Chart 3**
**Real wages**


staff were again complaining of hardship, suffering 'much difficulty in meeting their unavoidable expenses and maintaining social respectability'.(5)

Bank clerks—and indeed the Bank's Chief Cashier—were paid £50 a year in 1694. Increasing this in line with the 400-fold rise in the overall nominal wage index since then would suggest a figure of £20,000 today. In fact graduate entrants into the Bank currently start on a salary around 25% less than this. The Chief Cashier has done rather better.

In 1694, the Bank was cleaned by one person, Susan Bennett. The only woman employed by the Bank at the time, she was paid £10 a year. Today, the Bank employs a staff of 59 'housekeepers', whose annual salary is around 500 times that in 1694.

### *Swings and roundabouts*

The general trend in the price index masks some very large changes in relative prices. Even over short periods, relative prices can change substantially, reflecting changes in supply and demand conditions. Since January 1987, for example, the RPI sub-index for audio-visual equipment has fallen by around 20%, while that for water charges has doubled. Over the same period, coffee prices have fallen by 1%, while soft-drink prices have risen by over 50%.

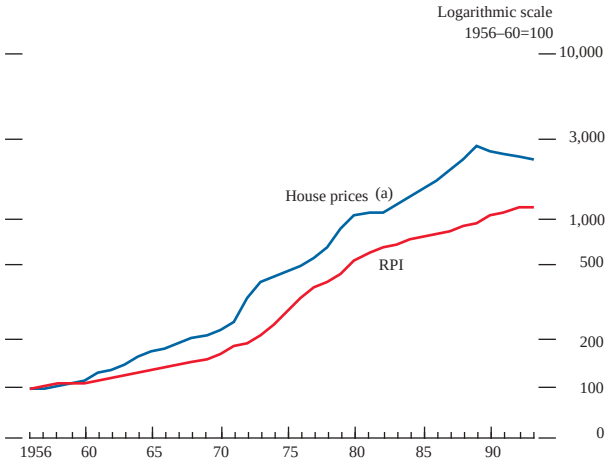
Looking at the prices of three essentials, the average price of bread in London in 1694 was 5.6d (about 2.3p) per 4lb.(6) In 1894, the price was just 5.5d, though it had risen to 1s 5d (about 7p) at the time of the Napoleonic wars. In the decade from 1974 to 1984, it tripled; and by 1993, it had risen a further 60%. The retail price in London of a ton of coal rose by around 70% between 1700 and 1830, to 20 shillings. It was much the same price in 1900, rose to around 30 shillings in the 1914–18 period, dropped back to 20 shillings after the

(1) See, for example, Crafts, N F R, *British Economic Growth during the Industrial Revolution*, 1991.
(2) Historical data taken from Phelps Brown, E H and Hopkins, S V, 'Seven centuries of the price of consumables, compared with builders' wage-rates', *Economica*, 1956.
(3) Marston Acres, W, *The Bank of England from Within*, 1931.
(4) Income tax was introduced in 1799 at 2 shillings (10p) in the pound. It was abolished in 1816 and reintroduced with Peel's tax legislation of 1842.
(5) Marston Acres, W, *op cit*.
(6) Figures taken from Mitchell, B R, *British Historical Statistics*, 1988.

First World War, and then rose to over 30 shillings during the Second. By the end of 1992, it cost £145. The *Bank of England Quarterly Bulletin* is one item to have exhibited downward as well as upward price flexibility over recent years: its price rose by a pound a year from £4 in 1981 to £6 in 1983, before being fixed at £7.50 between 1984 and 1993. It was cut to £6.50 this year—a bargain since the price includes the separate *Inflation Report*.

The Bank's old Threadneedle Street building cost £13,153 7s 9d on completion in 1734; the present Threadneedle Street building cost £5.3 million in 1939.(1) In the post-war period, residential property prices have risen sharply in nominal and real terms, as Chart 4 shows.

**Chart 4**
**House price index and RPI**




(a) Source: Nationwide house price index.

## Inflation theories through the ages

One of the first-documented episodes of inflation occurred in ancient Rome. Between the middle of the second century AD and the end of the third, the price of wheat rose 200-fold. The inflation that this reflected was caused by the debasement of the metal currency; a succession of Emperors assumed that their personal credibility would be sufficient to maintain the value of coins even if they were reduced in size. Ordinary citizens simply joined in the practice of cutting the edges off the coins.

Following various efforts to maintain the value of the British currency in relation to the price of gold, in 1717 its value was fixed explicitly by the astronomer Sir Isaac Newton. The equivalence was maintained until 1931, except for brief periods at around the time of the Napoleonic wars and during and after the First World War. In the period of the Gold Standard, the predominant view of what determined the price level was based on the 'quantity theory'—the idea that a change in the money supply would eventually cause prices to rise in the same proportion.

W S Jevons was one of the first people to develop the concept of a price index.(2) His work was stimulated by the fall in the value of gold, following the Australian and Californian discoveries of 1849. Jevons argued that it was crucial to 'discriminate permanent from temporary fluctuations of prices'. He also hypothesised that 'commercial tides' might be a reflection of the periodic fluctuations in sunspot activity observed by astronomers in the 19th century—but his observations on the importance of distinguishing absolute and relative price changes have proved the more robust.

> *'The rise and influence of central bankers and inflation has moved in tandem with a shift away from reliance on a metallic base for a currency.' (John Hartwick, A Brief History of Price, 1993)*

The depression of the 1930s saw the main focus of economics switch towards output and employment, and away from money and prices; this was epitomised in Keynes' General Theory with its concept of unemployment equilibrium.(3) With the re-emergence of inflation in the 1940s, however, came the Keynesian notion of an 'inflationary gap': inflation was seen as the product of an excess of desired demand over productive potential. Productive potential set a ceiling beyond which output could not rise; any excess *ex ante* demand would simply translate into inflationary pressure. This approach proved inadequate, however, to explain the coexistence of inflation and unemployment.

In 1958, A W Phillips fitted a curve through a scatter diagram of the rate of change of money wages plotted against the level of unemployment over the period 1861–1957. The curve suggested an inverse relationship between the two variables: the lower the level of unemployment, the faster the rise in wages.(4) Moreover, there was a rate of unemployment greater than zero at which wage inflation was zero and the level of (frictional) unemployment was matched by the number of vacancies. As M Blaug put it: 'the old hope of simultaneous achievement of stable prices and full employment had to give way to the notion of a trade-off between price stability and full employment'.(5) The trade-off mentality was born.

> *'The great tragedy of Science—the slaying of a beautiful hypothesis by an ugly fact.' [Thomas Henry Huxley (1825–95)]*

The statistical relationship captured by the Phillips curve began to break down in the mid-1960s when inflation persisted despite a continuous rise in unemployment—the Phillips curve seemed to be shifting outwards. The main

(1) Figure quoted in *The Bank of England 1891–1944*, Sayers, R S, 1976.
(2) In *A serious fall in the value of gold*, 1863.
(3) Keynes, J M, *The general theory of employment, interest and money*, 1942.
(4) Phillips, A W ,'The relation between unemployment and the rate of change of money wages in the United Kingdom, 1861–1957', *Economica, 1958*.
(5) Blaug, M, *Economic Theory in Retrospect*, 1968.

theoretical response to this phenomenon was the expectations-augmented Phillips curve; inflation was taken to be a function of unemployment and expected inflation. In M Friedman's explanation of this theory,(1) there was a 'natural' rate of unemployment (determined by institutional factors) at which the Phillips curve was vertical. Any attempt by government to stimulate the economy and reduce unemployment could have an impact only for as long as employees' inflation expectations remained below actual inflation. Over time, inflation expectations would adjust and unemployment would move back to its natural rate. The theory raised the question of how expectations are formed. In the extreme case, where expectations are assumed to be 'rational', it implied that there was no trade-off between inflation and unemployment even in the short run, and that an economy remained permanently on its vertical long-run Phillips curve.

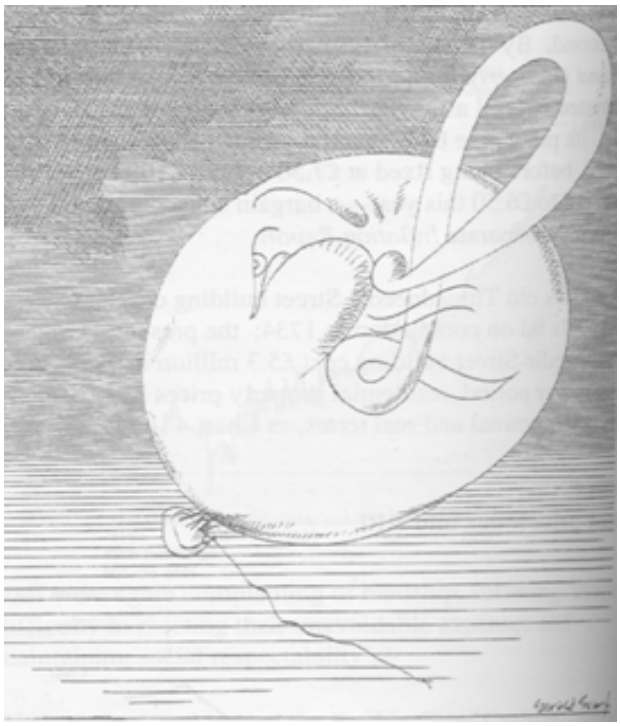
More recent work on inflation has focused on the credibility of the monetary authorities in their pursuit of anti-inflationary policies. Building on the idea that only unexpected inflation can affect growth, because expected inflation will be built into agents' decision-making processes, Kydland and Prescott developed the concept of 'time-inconsistency'.(2) According to them, policy surprises cannot occur systematically, since agents will begin to anticipate the government's behaviour and build this into their expectations—with the result that growth will be unchanged but inflation will be higher. The way around this is for the authorities to be able somehow to offer a credible commitment not to spring policy surprises. The body of economic work developing this approach has been widely used to support the case for central bank independence.

## What can we blame for inflation?

> *'Inflation is like sin: every government denounces it and every government practises it.' (Sir Frederick Leith-Ross, Observer 1957)*

The years since the Second World War form the longest unbroken period of annual price rises since the founding of the Bank. The pattern in previous periods was of alternating bursts of inflation and deflation, but little tendency towards either sustained price rises or falls.

The chief exception to this was at the time of the Napoleonic wars around 1800. The wars led to a sharp rise in prices which was only reversed over the course of the following 100 years. In 1797, the war brought a suspension of specie payments—payments of gold in exchange for bank notes. The Bank was authorised to refuse to exchange because of the large payments by the United Kingdom to its allies and heavy government borrowing. Prices rose and gold commanded a premium over its quoted mint price. The Bank was accused by Ricardo and other Bullionists of over-issuing Bank notes, which they felt was prompting the



The Old NEW Face of Britain—Inflation and Falling Pound
Cartoon by Gerald Scarfe, published in 1976

pound to depreciate. Some felt in addition that the Bank was engaged in unsound banking practices that were leading to internal instability.

The Bank rejected these criticisms on the grounds that it could not over-issue notes when new issues were based on the discount of sound short-term commercial paper—the so-called *Real Bills Doctrine*. The argument was, however, flawed because the Bank issued new notes by purchasing public bonds as well as by discounting commercial bills. In addition, trading problems with Latin America in 1810 and a domestic recession in 1811 showed that many of the commercial bills were less 'sound' than they had appeared. The Bank also refused to acknowledge the underlying problem: that the heavy public borrowing associated with the war was being monetised.

In the early nineteenth century, anti-inflationary policy consisted mainly of trying to ensure that the Bank maintained its ability to redeem its promises to pay; interest rates were set at levels consistent with maintaining the link to gold. A number of 'near misses' with this policy, however, convinced Peel in 1844 to introduce the Bank Charter Act, in an attempt to check the alleged inflationary tendencies of the Bank.

In the present century, there was high inflation during the First World War—prices rose by over 100%—while output fell. Despite the large price rise, which exceeded that in the United States, the United Kingdom was determined to return to the gold standard at the pre-war parity, which it did in 1925. This meant an enormous deterioration in UK

(1) Friedman, M, 'The role of monetary policy,' *American Economic Review*, 1968.
(2) Kydland, F E and Prescott, E C, 'Rules rather than discretion: the inconsistency of optimal plans', *Journal of Political Economy,* 1977.

competitiveness, and led to a long period of deflation even before the onset of the depression in 1929–30. The experience during the Second World War was of a more moderate increase in prices, of around 30%. The difference was partly because rationing had the effect of containing measured price increases. There was also no sharp price increase once the war had ended, partly because rationing continued for several years and partly because the increase in civilian employment, as the troops were demobilised, led to an increased supply of goods and services.

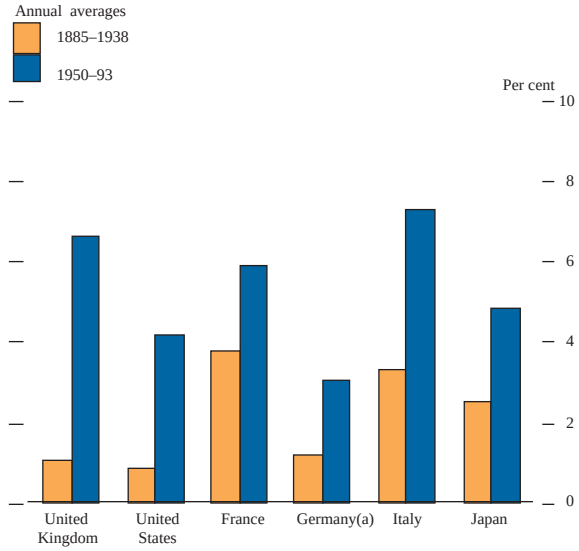
A number of factors explain why earlier periods of inflation were usually temporary and later reversed. One was the source of the inflationary impetus. Higher prices were often the result of temporary disturbances, such as wars or the failure of harvests. Once peace or the harvest was restored, the excess demand for goods in terms of money subsided. The close interlinkages between different economies because of the use of a gold standard were another factor; an increase in relative prices in one country tended to produce an outflow of gold from that country, implying a monetary contraction which helped to stabilise prices.

In addition, the role and behaviour of the public sector were different. The sharp increase in the level of government debt that accompanied a war was often transitory, and succeeded by a substantial fall in spending once the war had ended. After 1814, for example, government spending fell from almost 30% of GDP to around 10%.(1) In earlier episodes too, the link between government borrowing and inflation was partly the result of the fact that too heavy a reliance was placed on monetary financing of the government. More recently—and particularly since the 1950s—public debt has generally increased in nominal terms (if not as a proportion of money GDP). This has reflected in part the greater role given to countercyclical fiscal policy—whether discretionary or through the operation of automatic stabilisers. Furthermore, for much of the early part of the post-war period macroeconomic policies were designed to maintain the economy at a very high level of demand. This almost guaranteed that the inflation resulting from a positive output gap would persist, because policies were implemented to prevent the emergence of a large negative output gap. As a result, the average output gap remained above zero for long periods, and the rate of inflation rose.

### *Explanations and cures*

During the first 300 years of the Bank's history, a variety of factors have been seen as contributing to the inflationary process. Some blamed the inflation of the 1970s on decimalisation in 1971—the smallest coin increased 2.4 times in value, and over time prices caught up with the change. A number of solutions have likewise been suggested to cope with inflation or to avoid it. These have varied from conventional monetary restraint (ie increases in interest rates) to price and wage controls of differing degrees of severity. (As noted earlier, there is evidence from the earliest days that in inflationary periods the Bank's own employees were expected to exercise wage restraint.) Some periods of wider pay and price restraint appear to have had a short-term influence on inflation (for example the pay restraint of 1972–73). But the restraint has often relied on behaviour on the part of employees and firms that was not in their individual interests; in addition, it has often encouraged governments to follow more inflationary macroeconomic policies. Overall, such periods have frequently been followed by periods of 'catch up', as prices readjusted to macroeconomic fundamentals.

**Chart 5**
**Rates of growth of consumer prices**

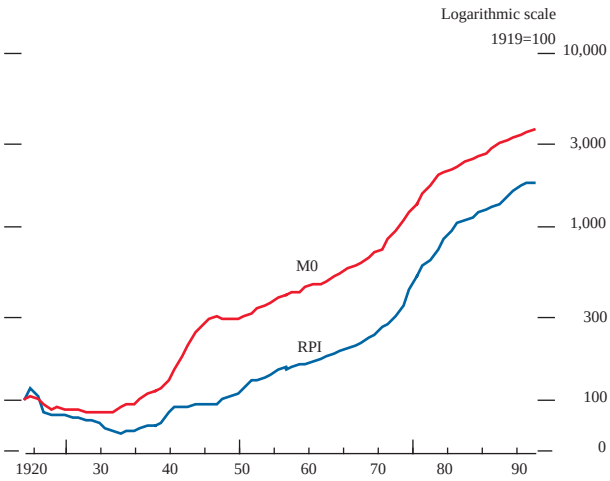



Source: *The Economist.*

(a) Excluding the years 1920–23.

Factors external to the domestic situation have also regularly been blamed for boosting inflation—not always with sound foundation. Chart 5 above, however, could be interpreted as suggesting a degree of contagion in inflation between countries. The United Kingdom has certainly not been alone

**Chart 6**
**Narrow money and prices**




(1) See Veverka, J, 'The growth of government expenditure in the United Kingdom since 1790', *Scottish Journal of Political Economy*, 1963.

in experiencing much more rapid inflation in the post-war period; the same has been seen in other major countries, though the US performance has been slightly better than the UK's in both the 1885–1938 and 1950–93 periods. Germany's inflation performance has been superior to the US's in the post-war period; but on earnings the story has been a little different, with the United States consistently exhibiting lower average growth.

Shocks affecting prices can arise from many sources. Whether or not they give rise to inflation, rather than a change in relative prices but no change in the overall price level, depends on monetary policy. Inflation is a monetary phenomenon, and is reflected progressively in money's loss of value in terms of goods and services. Monetary growth in excess of the growth in real economic activity can occur without causing inflation, provided that the velocity of circulation of money (the ratio of nominal national income to the money stock) falls. There have, however, been almost no instances when inflation has *not* been associated with an increase in the money supply (as Chart 6 shows for the years since 1920).

# The development of a UK real-time gross settlement system

*Efficient interbank payment systems are a vital part of the infrastructure of any modern economy. But where such systems are based on end-of-day settlement, there is scope for receiver risk. To eliminate that risk, a number of countries have now decided on settlement arrangements based on real-time gross settlement (RTGS); the initial decision to adopt RTGS in the United Kingdom was taken in 1992. This article explains the reasons behind that decision and describes the main features of the new system, which is due to be implemented before the end of 1995.*[1]

## Introduction

On an average day, payment systems in the United Kingdom process 16 million transactions with a total value of over £160 billion. One system, the Clearing House Automated Payment System (CHAPS), regularly processes daily payments totalling more than £100 billion through its 14 member banks.[2] The scale of these flows, and the size of the obligations they create between member banks, make it essential that these payment systems are based on sound settlement arrangements. It is also important, given the rapid growth in payments between banks, to eliminate the scope for instability at one bank to spread to others—and perhaps to be magnified—because of the inadequate design or structure of payment systems.

Awareness of these considerations has, over the last five years, led the Bank of England and the banking community to co-operate on a number of improvements to UK payment systems. The key element in this programme was initiated in 1992, when the Council for the Association for Payment Clearing Services (APACS) decided to adopt real-time gross settlement (RTGS) in the United Kingdom. A formal framework for introducing RTGS was established last year.

RTGS will mean that transactions across settlement accounts at the Bank of England will be settled continuously during the business day (in 'real time'), rather than only at the end of the day. In particular, it will mean that individual payments will be settled through CHAPS shortly after they are initiated. This will be achieved by linking a modified CHAPS network to a real-time accounting system at the Bank of England in which the settlement accounts of the banks will be held. The Bank will debit the sending bank for the value of each CHAPS instruction—provided it has the necessary funds on its account—and immediately credit the receiving bank with final central bank funds. This is a fundamental change from the present settlement process, where all interbank obligations arising during the day are netted and settled together at the end of the day.

In order to operate successfully with real-time gross settlement, the CHAPS member banks will require additional intra-day liquidity. To provide this, the Bank has agreed to grant the member banks intra-day liquidity facilities for RTGS purposes (see below).

The decision to change to real-time settlement was a response to growing concern over *receiver risk*—the possibility that the final settlement of payments between banks (relating to transactions already done) could be frustrated, at least in part, if one member of the system failed during the day and so was unable to meet its obligations at the end of the day.[3] RTGS is widely regarded as providing the best means of eliminating receiver risk from interbank payment systems; and a number of countries have developed, or are in the process of developing, systems based on RTGS at the central bank. The recognition that, by eliminating receiver risk, RTGS can reduce the scope for systemic risk in payment systems has also led EU central banks to support the wider use of real-time settlement for settling large-value payments.[4]

## Payment networks in the United Kingdom

In the United Kingdom—as in many other countries—a number of payment systems operate in parallel; each of them offers some advantage in meeting the demands of a particular type of customer or transaction. A distinction is often drawn between those networks that handle large volumes of retail transfers with a relatively low average value, and those that deal with high-value or more time-critical payments, often referred to as wholesale systems.

In the United Kingdom, CHAPS is the most widely used system for making high-value, same-day sterling transfers. CHAPS was established in 1984 to offer a nationwide electronic network for making guaranteed and irrevocable sterling credits between its members, either on their own account or on behalf of customers.

(1) The article is intended to provide a general introduction to payment system risk as well as a description of recent developments on RTGS; it complements the remarks made by Mr Quinn in his speech to S.W.I.F.T.'s annual SIBOS conference in September 1993 and reprinted in the November 1993 *Quarterly Bulletin*, pages 530–34.
(2) The membership of the CHAPS system is due to expand to 16 shortly.
(3) The box on page 165 explains the concept of receiver risk and how the risk arises.
(4) Their recommendation is contained in the 'Report to the Committee of the Governors of the Central Banks of the Member States of the European Economic Community on Minimum Common Features for Domestic Payment Systems' by the Working Group on EC Payment Systems, November 1993.

A major reason for the introduction of CHAPS was the need to supplement the Town Clearing—a paper-based system providing same-day, high-value sterling debit clearing, but only in the area of the City of London. The efficient same-day service offered by CHAPS is now widely used to make payments for a variety of purposes, including the settlement of equity, foreign exchange and money-market transactions, company transfers and payments in relation to housing transactions. In contrast, the Town Clearing has become less important in recent years and tends to be used for a much more limited range of transactions. Indeed, now that RTGS development work has begun, the future of the Town Clearing is under review and it is likely that it will cease operations in due course.

In addition to these two wholesale systems, there are three retail sterling payment systems. The Cheque Clearing and the Credit Clearing deal with cheques and paper credit items respectively. The third system, BACS, is an automated clearing house offering electronic batch clearing for both debit and credit items, such as direct debits and standing orders.(1) All these clearings are settled across members' accounts at the Bank of England at the end of the day.

Payments also arise from the settlement of transactions in gilt-edged stock and sterling money-market instruments. These are generated in the Central Gilts Office (CGO) and Central Moneymarkets Office (CMO) Services(2) and settled across the banks' accounts with the Bank of England at the end of the day.

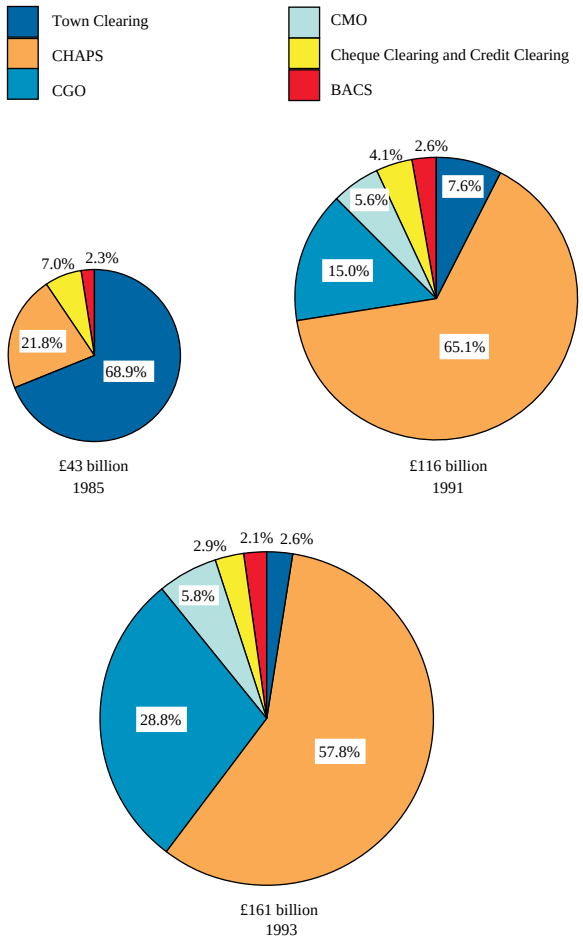
Chart 1 shows the systems' relative share by value in average daily payment flows. It shows that although the values settled through the Town and the retail clearings are large in absolute terms, they are much lower than those passing through CHAPS and CGO; in contrast, the retail clearings process much larger numbers of payments. During 1993, transfers equal to the value of UK annual GDP were settled through CHAPS roughly every seven days. Comparison of the three pie-charts in Chart 1 shows that the value of total payment traffic has grown by almost 300% since 1985 and that CHAPS has come to account for over half the total. It is for that reason that at this stage emphasis has been placed on eliminating receiver risk from CHAPS.

## Current architecture of CHAPS

The CHAPS network currently operates on a distributed basis: there is no central computer system through which payment instructions between members are routed. Instead, during the day, each member bank sends payments directly to the others across a telecom network.

In order to participate, each member bank has a standardised piece of software—known as a gateway—which links its internal payment system to the CHAPS network as a whole. The gateway records the value of all incoming and outgoing payments. Settlement banks send payment instructions to one another without any data on individual transfers being sent to the Bank of England. At the end of the day, the gateways calculate final debit and credit balances for each member bank. These are sent to the Bank, which posts the multilateral net amounts to the members' settlement accounts.(3) It is only when the Bank has agreed the figures for the day and updated the banks' settlement accounts—usually by around 7.30 pm—that settlement (for CHAPS and all other sterling clearings) can be considered final. So receipt of an incoming CHAPS instruction does not mark final settlement, but is rather a promise by the sending bank to provide value at the end of the day.

**Chart 1**
**Average daily values transferred through UK payment systems**




Sources: APACS, Bank of England.

### *Receiver risk in CHAPS and risk reduction measures*

Despite the fact that final settlement only occurs at the end of the day, since CHAPS was established banks and their customers have come to regard receipt of a CHAPS instruction during the day as akin to receipt of final central

(1) The structure and organisation of these retail systems and of CHAPS and the Town Clearing were outlined in the article 'Recent developments in UK payment clearing systems' printed in the August 1987 *Quarterly Bulletin*, pages 392–94.
(2) The key features of the CGO Service were outlined in the article 'Gilt-edged settlement: Phase 2 of the CGO Service' printed in the February 1987 *Quarterly Bulletin*, pages 80–82. A general introduction to the CMO Service was outlined in the article 'Central Moneymarkets Office', printed in the November 1990 *Quarterly Bulletin*, pages 514–18.
(3) These postings are made on a multilateral net basis for administrative convenience; the underlying legal position of each member is represented by the bilateral net amounts it owes to other members or its bilateral net claims on them.

## Receiver risk and real-time gross settlement

To support the complex set of transactions that occurs in any modern economy, prompt, reliable and stable mechanisms for transferring funds between accounts at different credit institutions are essential. Central banks have a general interest in ensuring that these systems remain both secure and responsive to the economy's needs. They also have a responsibility to work with the banking community to limit the potential for systemic risk within payment networks. This is particularly important in the case of wholesale systems, given the large sums transferred each day.

One important type of risk in payment systems arises when a system member provides funds to its customers having received a payment instruction from another member but before final settlement. A receiving bank that offers irrevocable funds to its customer is exposed to the sending bank until settlement occurs; this exposure is commonly referred to as *receiver risk*. Those receiving funds prior to settlement may initiate further interbank transfers, which create additional obligations for their settlement banks. The chain of events may be repeated several times during the business day.

The ability of each bank to settle its obligations will, as a result, become increasingly dependent on the ability of all the other banks in the system to meet theirs. Were a settlement bank to fail before final settlement the other members would be deprived of a source of funds needed to fund their own payments. The existence of receiver risk is common in end-of-day net settlement systems such as CHAPS.

Real-time gross settlement provides a mechanism for eliminating receiver risk. There are a number of variants of RTGS systems, but all require that interbank transactions are recorded in the accounts of the central bank (or other settlement agent) as they happen. As a result, it is possible to structure the system so that a settlement bank only receives an incoming payment instruction once the payment has been settled by the central bank. This removes the possibility of settlement failure being transferred through the payment system as a result of one member becoming insolvent during the course of the day. Since, under such an arrangement, banks are unaware of the payments that have been made to them until they have been settled, there is also little scope for them to pass value to their customers before final settlement.

RTGS systems do not necessarily result in receiver risk being transferred to the central bank; if the central bank does not grant any additional intra-day liquidity, it will be responsible for transferring funds between accounts on an intra-day basis, but will not take on any exposures itself. Only where the central bank agrees to provide extra intra-day liquidity to the settlement banks will it acquire an exposure, and it may choose to limit this by taking some form of collateral or by entering into sale and repurchase agreements.

bank funds. Banks are often prepared to let customers make outward transfers on the basis of the receipt of an incoming CHAPS instruction, and each transfer is irrevocable and guaranteed by the sender's settlement bank. In providing funds to a customer against an incoming instruction, therefore, the receiving bank is relying on the credit standing of the sending bank rather than of the original payer. This increases the interdependence within the banking system.

In addition, the rules of CHAPS oblige a member bank that receives a CHAPS instruction to provide the customer with same-day funds. So the customer relies on its settlement bank to provide value, even if the sending bank is unable subsequently to do so. And, as a result, each CHAPS member bank incurs a direct exposure to another member whenever it receives a higher value of CHAPS instructions from that bank than it sends to it.(1) The unconditional requirement to provide value means that the settlement banks cannot eliminate receiver risk by making their obligation to pass funds on to their customers contingent on final settlement.

The values and volumes passing across CHAPS grew rapidly during the second half of the 1980s. It became clear to both market participants and the Bank of England that large and growing interbank exposures would be a feature of the system unless specific measures were adopted. Moreover, since the flows between banks were not spread evenly through the day, there was the potential for some member banks to develop large exposures to others at certain hours of the day. And some banks incurred substantial net debit positions in CHAPS which were balanced against anticipated inflows in the Town Clearing.

The then Governor sought to open a debate on these issues in his 1989 Ernest Sykes Memorial Lecture.(2) Following a period of detailed discussion and analysis involving the CHAPS banks, APACS and the Bank, it was decided in March 1991 that in the short term receiver risk should be controlled using a system of interbank limits, while further work was done on the best long-term method for removing such risk altogether. In 1992, the initial decision was taken to eliminate receiver risk by adopting RTGS as the basis for settlement.

At present, therefore, interbank exposures in CHAPS are controlled using net bilateral receiver limits (NBRLs). A

(1) These exposures are incurred by member banks directly, since they operate in CHAPS as principals, rather than as agents for their customers.
(2) The lecture was reprinted under the title 'Challenges facing the sterling wholesale payment systems,' in the August 1989 *Quarterly Bulletin*, pages 401–6.

NBRL allows a bank to limit the extent to which the value of its incoming CHAPS instructions from another member can exceed the value of its outward instructions to that bank. In this way, it can control the net inflow of funds from any single source for which it is obliged to give same-day value to its customers. Each bank decides the size of the NBRLs that it sets for its counterparties; it may change them at any time. NBRLs will continue to be used to control interbank exposures in CHAPS until RTGS is introduced.

To reinforce the discipline imposed by bilateral limits and to gain experience of the likely impact of RTGS, net sender limits (NSLs)—or net debit caps—have also been adopted. These restrict the extent to which the payments made by any one bank to all other members can exceed the value of all incoming transfers to it. To allow maximum flexibility, NSLs are currently self-assessed and can be raised during the day. NBRLs and NSLs have been introduced into CHAPS in stages during the last two years, and have provided valuable experience for member banks.

Although such limits have not previously been used in the United Kingdom to control receiver risk in the high-value clearings, similar techniques have been used in a number of other countries. In the United States, for example, banks operating within the Clearing House Interbank Payments System (CHIPS) are able to set bilateral credit limits on other participants and the clearing house applies a net debit cap on each participant. Net debit caps are also employed in the Zengin System, one of the wholesale payment systems that operate in Japan.

## The RTGS programme

The introduction of RTGS in the United Kingdom is part of a broad international trend towards eliminating payment and settlement risk. There is real-time gross settlement within the Federal Reserve's Fedwire system in the United States, in the Bank of Italy's continuous Settlement System (BISS), in the SIC system in Switzerland and in the Netherlands Bank's current account (FA) system. The Bank of France is currently implementing a real-time gross settlement system, and the National Bank of Belgium proposes to implement one; other countries in the EU and elsewhere are planning to do the same.

While these systems share some features, there are also various differences—reflecting the institutional arrangements and business needs of the banking community in each country. The differences include: the range of transactions that are settled individually in real time; the ownership of the main wholesale payment network and message-routing arrangements; and the terms on which the central banks offer intra-day credit, if they do (the Swiss National Bank, for example, does not provide additional daylight funds in respect of the SIC system, and the Federal Reserve has opted for a system of charges for intra-day overdrafts that occur in Fedwire).(1)

The UK RTGS programme similarly reflects the United Kingdom's particular institutional arrangements. At its centre is the creation of a real-time link between the CHAPS network and the Bank's internal system for maintaining settlement accounts. Within the overall RTGS programme, therefore, there are two discrete but interrelated sets of tasks, one for the Bank and one for the CHAPS and Town Clearing Company Ltd. Given the interdependence of these and the need to co-operate on a number of interface issues, early in 1993 the Bank, the CHAPS and Town Clearing Company Ltd and APACS established a formal structure for programme co-ordination; this will remain in place throughout the programme. It is planned that implementation of the RTGS system will begin before the end of 1995; it will, however, be a phased process and details of the transition have yet to be finalised.

### *Main features of the RTGS system*

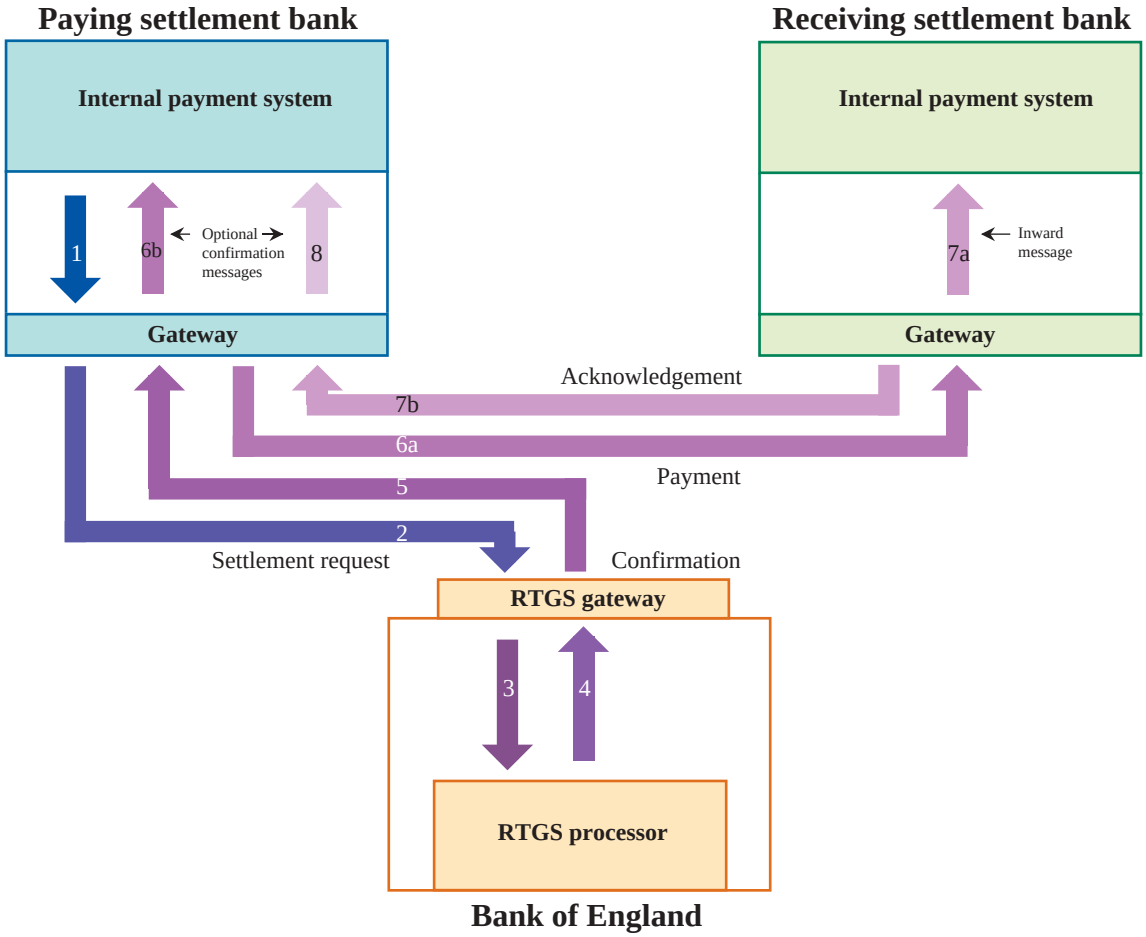
The RTGS system will provide the settlement banks with accounts at the Bank of England that can be updated continuously. Transactions that currently take place across settlement accounts at the Bank will use these accounts. So as well as CHAPS traffic, the other clearings will use these real-time accounts for settlement.

To allow real-time settlement of CHAPS payments, the present arrangements for routing messages across the CHAPS network will need to be modified. Under the new system, each CHAPS instruction will be settled at the Bank before it is sent to the receiving bank. The gateway software will be altered so that for each payment instruction sent by a bank a settlement request (a subset of the information in the main message) will first be sent to the Bank, while the main message is retained at the sending bank's gateway. Only if the sending bank has sufficient funds on its account will the Bank settle the transaction, by debiting the account and crediting the receiving bank; it will then return a confirmation to the sending bank. As soon as this is received, the main message containing the full payment details will be automatically released to the receiving bank; it will then know that it has received final and irrevocable funds on its account at the central bank. Chart 2 presents the message flows involved.

This form of message-routing can be described as L-shaped, to distinguish it, for instance, from the more usual V-shaped structure of the Fedwire system. With V-shaped routing, the full payment message (rather than a subset of the information) is passed initially to the central bank and then, once settlement is complete, on to the receiving bank. There are other variants, including a T-shaped structure, where one payment message is sent to the receiving bank while a duplicate is sent to the central bank. The L-shape has the merit that it builds on the existing architecture of CHAPS. It also ensures that a bank only receives an incoming payment message once it has been settled.

(1) Comparisons of the payment system arrangements in different countries can be found in the BIS publication 'Payment Systems in the Group of Ten Countries' (December 1993), and in 'Payment Systems in EC Member States', published by the Committee of EC Central Bank Governors (September 1992). Copies are available from Payment Systems Division (HO-6), Bank of England (071-601-5684).

## Chart 2
## Payments between CHAPS settlement banks under RTGS




Once RTGS is operational, a bank will normally send a settlement request to the Bank only when it has sufficient funds on its settlement account. To ensure that payments continue to flow smoothly and gridlock is avoided, the Bank will provide additional liquidity to the CHAPS banks on an intra-day basis. But sometimes at least, banks may have to delay releasing payment instructions, and hold them in a queue. The prime responsibility for managing any such queue will rest with the individual bank. This will not be a new development; and the experience of operating net sender limits has already provided a valuable opportunity to develop techniques for scheduling payment flows before RTGS is implemented.

Although payment flows will normally be managed within each bank, a 'circles' processing (or 'optimisation') facility will also be provided: to allow the simultaneous settlement of queued payments which, if they were all made, would largely balance; this will be a further measure to avoid gridlock. It is also planned that each bank will be able to communicate with the Bank using an enquiry link, to obtain information on its current balance and on entries made to its settlement account.

### *Liquidity arrangements*

The balances currently held on settlement accounts at the Bank are small compared with the values passing across CHAPS each day. To ensure the smooth flow of payments through the system, the Bank has therefore agreed to provide the CHAPS banks with additional intra-day liquidity. A settlement bank will be able to obtain 'daylight' funds by selling assets to the Bank under same-day sale and repurchase agreements (repos). The Bank has indicated that it will be prepared to buy assets in the following categories for this purpose:

- HMG sterling Treasury bills;
- eligible sterling local authority bills;
- eligible sterling bank bills;
- sterling stock issued or guaranteed by HMG; and
- HMG foreign currency marketable debt.

In addition, banks will be allowed during the day to draw on their cash ratio deposits[1] at the Bank.

After the RTGS system has closed at the end of each day, cash ratio deposits will be reinstated and all outstanding

(1) Cash ratio deposits are non-interest-bearing deposits placed by the banks with the Bank of England to finance its activities; they are calculated as a proportion (currently 0.35%) of each bank's eligible liabilities. The amounts are adjusted twice a year but are not normally withdrawable.

repos will mature. Each bank will therefore have to ensure that it has sufficient funds on its settlement account to repurchase the assets previously sold to the Bank.

Banks will be able to enter into repos both at the start of and during the day. They will also be able during the day to buy back assets sold to the Bank earlier that day, as long as they have sufficient liquidity on their settlement accounts. Most of the relevant assets will be held in book-entry form in CGO, CMO or the European Settlements Office (ESO) operated by the Bank. These systems allow real-time movement of securities and so will provide the maximum flexibility for handling these transactions alongside a bank's normal trading of the assets concerned.

The move to real-time settlement—and in particular the Bank's provision of intra-day liquidity—is a major change, and one which could influence how the payment system operates and how banks manage their liquidity. It will therefore be introduced in a flexible and pragmatic manner so as to avoid major disruption.

## Future developments

RTGS will provide the means of eliminating receiver risk in other financial market payment systems. In particular, it will allow full delivery-versus-payment (DVP) for securities settlement. This will be valuable for the settlement of high-value transfers of gilt-edged stock in CGO and money-market instruments in CMO, and also for equity settlement in the CREST system. The advantages of DVP are well-known.(1) Taking CGO as an example, at present transfers of stock take place against a promise to pay (an assured payment) issued by the buyer's settlement bank. Final settlement of these assured payments occurs only at the end of the day. Full DVP for gilt-edged stock would provide simultaneous transfer of assets in CGO and money—central bank funds—in RTGS. Given the values that pass across CGO each day, this would be a significant step towards eliminating receiver risk from London's markets.

In addition, a UK RTGS system will make it possible for final sterling payments to be synchronised with final payments in another currency in its own country's RTGS system. It will therefore provide the potential to remove foreign exchange settlement (or Herstatt) risk.

## Conclusion

RTGS will offer a means of eliminating receiver risk from the high-value sterling payment systems. This will be a major advance on present arrangements, and will give the United Kingdom a settlement infrastructure in line with what are now regarded internationally as highest standards. As well as attacking payment system receiver risk, RTGS will make it possible to remove similar risks from both securities and foreign exchange settlement. Its introduction will therefore be a major advance in ensuring sound and secure payment systems for financial markets and the economy generally.

(1) The concept of DVP in securities settlement systems is explained in the BIS publication 'Delivery versus Payment in Securities Settlement Systems', (September 1992).

# Credit and economic policy

*In a speech at the Institute of Credit Management National Conference,*[1] *the* ***Deputy Governor*** *considered the influence of policy on the lending process. He mentioned two particular influences: the institutional and legal framework, which serves to underpin the business of lending; and the macroeconomic climate in which decisions are made. Referring to the 1980s, he pointed to the value of financial liberalisation, which had led to more flexibility, diversity and competition. However, he stressed the link between the monetary laxity in 1986–88 and the inflation and recession that followed. That experience underlines the need for monetary restraint, to create the conditions for sustainable economic growth. In such a climate, lenders could lend with greater certainty, concentrating on the merits of each individual proposition without fear that it will be overridden by further 'boom and bust'.*

Given the title of your conference, I thought I would use this opportunity to make a connection between two types of credit. One is the lending that individual institutions do. The other is the amount of lending that goes on in an economy as a result of what a central bank does. The links between the two take many forms, but the message that shouts out from history is that those links should never be ignored—not by individual lenders, and not by central banks either.

I begin with the first type—the lending done by all kinds of financial institutions. Lending is part of their job; for a lot of them, it is the main reason why they are in business. It is also a main cause of why they sometimes lose money. That I applaud—not out of some sadistic instinct that allegedly lurks in every central banker's pin-striped breast, but because losses reflect risk, just as surely as success does, and lenders should not try to avoid all risk. It is risk that turns the economic wheels. Any lender that wants to avoid risk will lend only to governments, in return for Treasury bills. In my job, I cannot belittle the many virtues of Treasury bills, but they are not the driving force of a successful economy.

So lending should involve risk, and risk will involve losses. But the interesting thing about losses is what causes them. No doubt behind each loss there is a story, and its details vary. Some losses are huge in scale: on sovereign credits, on big projects, on loans to large companies that go spectacularly wrong. At the other extreme, some losses are tiny—the small firm that went astray, or the individual who could not reduce his overdraft. All along that scale, other details will apparently vary: different firms, different industries, different types of lending.

Beneath this variety, though, it is striking how often the essence is the same. It is faulty credit judgments—judgments about who should borrow, how much and for what—that lie at the heart of so many loans that go bad.

Certainly, bankers can misjudge the value of the collateral for their loans. Certainly, investors can get caught out by sudden movements in stock-markets, or interest rates, or exchange rates. But these misjudgments are often overshadowed by the simplest of errors in gauging whether a debtor can service a debt and eventually repay it.

These errors are, no doubt, the things that exercise a lot of lenders a lot of the time. They rightly put a great deal of money and ingenuity into devising ways to reduce them. They look more closely at each request for a loan. They build up masses of data on the credit records of firms and individuals. They have credit committees with clearly defined limits. I hope too that lenders have their instincts, the almost chemical feel for whether a borrower is or is not a good person to do business with. This instinct is often the thing that ensures that lenders do take risks. If they never backed a hunch about a new borrower with little or no track record, it would be hard or impossible for small companies to get started at all.

No doubt all these internal systems help: they reduce the number of bad loans and increase the (far greater) number of those that go on quite happily. The combination of data, sifting and judgment is what defines lending institutions. In theory, they learn from experience. In reality, the lessons are never that simple. The circumstances of particular loans seldom quite match anything that has gone before. Customers want different types of finance. Lenders are anyway always thinking up new ways of lending. So it would be wrong to suppose that errors can ever be eliminated, like a stain gradually being cleaned out of a carpet.

At this point, we should let policy break into the private world of lenders and borrowers. It can do so in various ways, but I want to concentrate this morning on just two of them. One is the institutional and legal framework for the business of lending—who can do what, how, and how much.

(1) Delivered on 9 March.

The other is the part that macroeconomic policy plays in setting the background for lending and borrowing.

In Britain, the legal framework has changed enormously over the past 15 years. The abolition of exchange control, the ending of hire-purchase restrictions, the disappearance of mortgage queues—each of these involved a big shift in policy and was followed by a big shift in behaviour.

But that was not all, not by a long way. In the mid-1980s, Big Bang transformed the securities business in the City of London, by getting rid of many restrictive practices. In this, it simply paralleled what was happening in other parts of the economy. In my previous job, as a journalist, who does what was changed out of all recognition in the 1980s, by a mixture of new technology and new labour laws. The same was true of finance.

By rewriting the rule book, parliament and the various City bodies changed the whole business of lending and borrowing. It has become more flexible, more diverse—and much more competitive. The new world has offered many more opportunities for lenders and borrowers, including opportunities to make mistakes. Alas, many of those were taken up eagerly, which is no doubt why some people look back at financial liberalisation and regret that it ever happened.

I am sure that regret is misplaced. Burnt fingers are painful, and visible. But they should not obscure the numerous instances of where the old restrictions had stopped things from happening. Credit denied to potentially good borrowers is capable of doing more harm to an economy than credit advanced to bad ones. For a long time, restrictive practices hampered the British economy, as surely in finance as in printing. The new freedoms do not guarantee benefits, but they certainly give them a chance of happening where none had existed before.

But the financial liberalisation of the 1980s went even deeper than that. It was a supply-side reform, one of many; but it was distinguished by having effects on the demand side as well. Borrowers and lenders could do more business, and they set to it with a will—under the indulgent eye of the monetary authorities. This is the second point where private transactions meet public policy, and it is here that the greatest lessons from the 1980s need to be learnt. We should not regret the financial liberalisation, but we should—and do—bitterly regret the monetary laxity that went with it.

In common with the position in many other countries, Britain's financial conditions in 1986–88 were far too loose. They produced the inflationary surge of 1989–90, which in turn had to be stopped by policies that caused the recession of 1990–92. It was as simple and as brutal as that.

As a result of that sequence, lenders lost money and many borrowers suffered enormously. I talked earlier about the difficulties that lenders face with credit assessment and credit control, but I know that those difficulties are magnified if the macroeconomic climate is itself unstable. The swings of 1986–92 guaranteed that too much would be lent and borrowed and then much would be lost. Lenders and their customers were responding to the swings. They were not causing them. The cause, as ever, lay in monetary policy.

The changes of the past 15 years have deprived the Bank of England of some levers of monetary control. But most of those levers worked by the monetary equivalent of ration books, which in the rest of the economy had disappeared many years before. It may have been convenient for the Bank and the Treasury to limit certain types of credit by law or by the Governor's eyebrows, but it was also arbitrary and inefficient. Nobody should have any desire to return to those bad old days.

A more serious consequence of financial liberalisation was that it broke down the familiar relationships between money and the economy. It *was* harder to interpret what was happening, so it was harder to get policy right. Hence all the shifts in the methods of monetary policy during the 1980s. We tried different types of money-supply targets, each of which proved unreliable. This was not government being fickle, switching from one target to another as the mood took it. The aim was admirably robust: to set out clear guidelines for policy, and to stick to them. But it would have been perverse to stick to a particular monetary target when it was providing confusion rather than certainty, and there is no doubt that the confusion arose largely because of the structural changes that were made to the financial system. But that is an explanation for the failures of monetary control, not an excuse.

Today, we have fewer instruments of monetary control than we did; but we have enough. We have no simple and direct pointer to how prices will change; but we have enough useful indicators, provided we watch them closely. We may still be feeling queasy from the big-dipper ride of 1986–92; but we have our eyes on the future. Our task is to keep demand growing moderately and steadily, so that the private sector can plan ahead with some confidence. The result would be sustainable economic growth. By the standards of the 1986–88 boom, that sounds dull—and it is: blessedly, wonderfully dull.

In the dull new world of macroeconomic management, it is the private sector that provides all the excitement. That is another way of saying that the conditions for growth—for investment, jobs, saving, training, developing new products and new services—are greatly enhanced. Of course, the statistics month by month will not always be ideal: blips happen, but it takes a lot of them to change a trend. The trend today is pretty clear. The economy will soon enter its third year of recovery, and the pace of that recovery is enough to have started reducing unemployment. Meanwhile, inflation is low and the government's target is for it to go lower still.

That point is worth dwelling on, because too many people seem to misunderstand what anti-inflationary restraint actually means. It is tempting to feel that, after all the pain of the past few years, Britain has won the war against inflation, so we can now afford to relax. That is a delusion, and a dangerous one too. We have got inflation down in order to establish the conditions for resuming economic growth; now we have to keep inflation down in order to sustain growth. Monetary restraint is not a hair-shirt, but it has to be a habit. After all the unforced errors of the past, it will take many years to prove that we have acquired it.

As far as the credit business is concerned, this combination of steady growth and low inflation will allow lenders to lend with greater certainty. Their customers can think more about the long term. Lenders can concentrate on the intrinsic merits of each business proposition, with less danger that it will be overridden by another boom or bust. So if lenders have bad debts, you will find it much harder to blame recession. One of the features of macroeconomic stability is the disappearance of scapegoats: no stars, dear Brutus, just ourselves. As your conference title puts it, you are there on the front line.

At the Bank of England, we are merely part of the supply lines. As such, we have the ability to mess things up—and our record shows that we have often used it. In the 1990s, we can do better than that, much better.

# The London Approach: distressed debt trading

*In a speech at the Euroforum Conference on 23 March, Mr Pen Kent, an Executive Director of the Bank of England, considered how the London Approach to company workouts could best be reconciled with the developing secondary market in distressed company debt. He announced that the idea of having a moratorium on trading, to avoid disruption at sensitive times, had been rejected by the banking community. And he set out a number of recommendations on conduct to allow the spirit of the London Approach to be extended to cover trading in distressed debt.*

I have been asked to speak about 'harmonising the needs of all parties': that suits my purpose very well, because it is an area in which I hope to show considerable progress has been made. Indeed, I had not fully appreciated how much progress until I attended a meeting at British Bankers' Association last Friday.

I will briefly explain what the 'London Approach' actually is, the range of issues we have been looking at recently and then specifically how the needs of the various parties interested in the distressed debt market might be reconciled.

## The London Approach

The *main aim* of the London Approach is: to maximise value for creditors. The aim is not to prevent receivership or administration if this is shown to be the most appropriate outcome, but to avoid the unnecessary collapse of potentially viable businesses as a result of disagreements between creditors. In practice, London Approach restructurings tend to be organised by banks who have the resources and experience to formulate 'workout' proposals. The hope is that where insolvency is avoided this will also serve the interests of other stakeholders, including trade creditors, shareholders, employees etc.

The *main tenets* of the London Approach are:

- Banks are initially supportive and don't rush to appoint receivers.
- Decisions about a company's future are made on the basis of reliable information which is shared among all the parties to a workout.
- Banks and, where appropriate, other creditors work together to reach a collective view on whether and how a company should be given financial support.
- Pain is shared on an equitable basis.

These are 'common-sense' principles which, together with a number of more detailed 'conventions'—eg super-priority being accorded to new money—have been developed within the banking community to serve their financial and 'reputational' interests. The London Approach is voluntary and it is widely used, because it is seen to work and to be fair.

## Role of the Bank of England

Our role is part missionary and part peacemaker. As *missionary*, we advocate the London Approach as a sensible basis for banks and other interested parties to co-operate, in a constructive way, in deciding the fate of companies facing a cash-flow crisis. In 1990, as the recession developed, we were concerned that some of the conventions for providing support to companies in financial difficulty that had emerged in the early 1980s might have become outmoded or simply forgotten. We therefore instigated a series of discussions with banking groups which showed considerable support for the London Approach. More recently, we have been highlighting some of the areas of contention which have arisen during the past four years, with a view to ensuring the London Approach remains effective and up to date.

As *peacemaker*, we try to help banks resolve differences of view which threaten to undermine an attempted workout. We are willing to be approached by any bank or other interested party which thinks that our involvement will help smooth the path to an eventual agreement on the terms of a workout. Since the start of the recession, we have been actively involved in some 150 workouts, and have been kept informed of many others by the banks concerned. Our aim is to break log-jams and to seek a solution which represents an acceptable compromise for those concerned. In other words, we act as an 'honest broker'.

I should stress that we have no statutory powers for what we do as an intermediary in the context of workouts. It is not part of our supervisory responsibilities; we rely instead on the authority vested with us by the constituent members of the London banking community, who continue to seek our assistance in resolving difficult issues.

## Track record

The London Approach has undoubtedly been useful during the recession of the past four years, although there is inevitably room for further improvement. A large number of

companies owe their continuing existence to the fact that their bankers and, in some cases, bondholders and other creditors followed its precepts in deciding the terms of a collective financial restructuring. It is in everyone's interest that businesses which are basically viable should be kept alive; value is maintained for shareholders as well as other creditors, jobs are preserved and productive capacity is kept in existence.

However, no one claims the London Approach is perfect. Perhaps its greatest strength is its adaptability. It needs to be kept under review to ensure that its effectiveness is not diminished by financial innovations or new market practices. Indeed, we should always be on the look-out for ways in which it can be made more effective. For this reason, I and my colleagues in the Bank of England have pursued—and added to—an 'Agenda for Action', designed to focus attention on resolving tricky issues and learning lessons from experience.

## Main issues

We have publicly flagged the following questions and broad areas of concern during the past 18 months:

(i) How to improve communication between borrowers and lenders in order to ensure problems are addressed at an early stage.

(ii) Inadequacies of loan documentation and the possibility of introducing majority-voting provisions, instead of unanimity.

(iii) Concern at the level of advisory fees—and sometimes banking charges—and how to introduce greater accountability for costs.

(iv) Is trading in impaired debt helpful or disruptive to the process of preserving value?

(v) Corporate governance and the responsibilities of banks who become shareholders.

(vi) Increasing the level of trust among parties to a workout.

(vii) Involving non-bank creditors, eg bondholders or trade creditors, in workout negotiations.

(viii) Encouraging equity or mezzanine investors.

(ix) The linkage between statutory insolvency procedures and the London Approach.

## Distressed debt

Much of what I have said so far is by way of background. However, I make no apology for that, as I consider it essential to understanding the culture in which debt-trading in the United Kingdom must evolve.

For the past 18 months or so, my colleagues and I at the Bank of England have taken a close interest in the evolution of the secondary market in distressed corporate debt within the United Kingdom. We have sought to respond to the widespread uncertainties and questions posed by the whole range of interested parties.

The Bank of England has three main interests in this market:

- If it can introduce liquidity into banks' loan portfolios, this should increase the potential for sound portfolio management. A parallel can obviously be drawn here with the secondary market in third-world debt. In addition, if the market were sufficiently deep and well informed, it might provide a useful guide to the extent of provisioning which might be appropriate in individual cases.

- Irrespective of the potential attraction of the market, we have an interest in the efficiency and reputation of London as a financial centre. A responsible and professional market could enhance London's standing, but some of the press coverage and concerns expressed to us—particularly by banks already established in London—highlight the damage and uncertainty that can arise from poor communication and questionable practices. A good example of this relates to the way 'inside' information might be gained and used for profit.

- Our third interest is in the impact this market might have on the established culture in the United Kingdom for dealing with companies in financial difficulty. In this respect, the market represents something of a two-edged sword. There are clearly dangers of new players, unfamiliar with the legal and cultural mechanisms which operate in the United Kingdom, disrupting well-intentioned efforts to preserve value in viable businesses. Equally, we have first-hand experience of debt sales providing a solution to fundamental disagreements between established lenders: in the longer term, the market could even introduce a new source of 'mezzanine' or equity finance to replace what are often perceived as excessive amounts of bank lending for individual businesses.

Our approach has been threefold:

(i) to recognise the potential benefits that a professional market could bring; but

(ii) to draw attention to the potential disruption to corporate workouts which could arise; and

(iii) above all, to learn more about the market—and the players within it—and to encourage constructive dialogue between them.

I have always made clear that our interest is *not* as a supervisor or 'regulator' of the market. In exploring how

best to reconcile debt-trading with the London Approach, for example, we have been asking for ideas and reflecting those ideas back to a wider audience in order to judge the reaction.

Some have argued for effectively banning the trading of debt—particularly at sensitive times—while others have responded by arguing the case for total freedom of action. I understand this latter response but, if interpreted literally, it would preclude the London Approach itself. The UK banking community recognises this in adopting the London Approach and has implicitly accepted some diminution in the sovereignty of lenders, in the interest of the collective good of the whole community. This is because they recognise that it is in their wider interest in the long run.

As the debate about the pros and cons of debt-trading has progressed, the volume of trading has continued to grow. One of the consequences of this is that market practices have begun to evolve, and speculation about the unknown has begun to be replaced by hard experience. This experience seems generally to have been reassuring. One of the ideas initially advocated by a significant number of people—and mooted by myself in earlier speeches—was the idea of a closed season on trading to avoid disruption at sensitive times. After a fairly wide discussion among a range of banks, both British and foreign, this has now been firmly rejected. However, it will of course remain open to any group of lenders to agree amongst themselves to restrict their activities, either in their original loan documentation or at the time when a borrower's difficulties become apparent.

A second possibility we have been discussing is whether, instead of a moratorium on trading at particular times, there should be a 'code of conduct' which sets out the behaviour expected of people when entering into deals. What I am about to explain comes close to that, but recognises some real difficulties. For example, how can one ensure a common understanding of the 'code' without writing it down, and how—if you do write it down—do you prevent people from focusing on the letter of the code in a legalistic way, rather than upholding the spirit which lies behind it? Therefore, for the time being, it might be best to set aside the idea of a formal code of conduct.

## Recommendations

What I want to outline to you now is how I believe the spirit of London Approach can be (and arguably already is being) extended to encompass secondary trading in distressed debt, in order to increase the liquidity of the market without causing unnecessary disruption.

Debt-trading should be conducted in a positive and constructive spirit; sellers should ensure that potential buyers are aware of the UK culture for dealing with companies in financial difficulty including, particularly, the London Approach. I have argued in the past that a failure to do this would be tantamount to misleading.

Institutions intending to sell their debt are encouraged to inform their fellow lenders of these plans. This will often occur naturally in the process of gaining a borrower's consent. Either way, I would hope it would assist in the process of managing unavoidable publicity, minimising any unnecessary fragmentation in the number of lenders, and in preserving a positive and constructive understanding between lenders so as to minimise the scope for damage to the underlying businesses.

What I have described is a modest extension of a common-sense approach, which I hope you will all feel able to accept. But it is part of a continuing process, not an end in itself. There are many aspects of the market which could—and I hope will—be considered further in the coming months. A classic example would be the issue of 'inside information'—what can legitimately be used, or not used, to guide trading or investment decisions?

## Future role

Finally, I should perhaps explain what I see as the continuing role for the Bank of England in this market. I earlier characterised our role within the London Approach as part missionary and part peacemaker. That metaphor is equally useful in this respect. As *missionary*, we will continue to encourage debate and communication, and to support the evolution of a professional market for trading distressed corporate debt in the United Kingdom. We will welcome continuing contact with each of the players involved, and stand ready to help 'facilitate' this process if and when required.

By seeking to extend the London Approach to encompass debt-trading, we are implicitly extending our role as *peacemaker*. In the same way as we have invited bankers in the past to seek our help as honest broker in reconciling difficulties among lenders, so in future we will be happy to be approached by new investors who believe they have a constructive solution to offer but feel they are not being given a fair audience, or are finding it impossible to get a minority institution to join the party! By the same token, we might take it upon ourselves to contact those new lenders—and offer our help or 'good offices'—if they are cited to us by others as apparently causing difficulty: our motives in these circumstances will, I hope, be judged on their merits at the time. I am sure that, with experience, these new lenders will embrace the London Approach for all the same reasons that the banking community has found convincing in the past.

# The conduct of economic policy

*This year's Roy Bridge Memorial Lecture*[1]*—in memory of Roy Bridge who, as Assistant to the Governors, was responsible for the Bank's foreign exchange operations during the 1960s—was given by the former Chancellor of the Exchequer, Lord Lawson. In it, Lord Lawson addresses the question of what the main focus of attention should be in the conduct of economic policy. He seeks to show the dangers of a preoccupation with short-term movements in the business cycle. Economic policy cannot abolish these, and the suggestion that it can may result in an increased severity of cycles. And if too much attention is paid to cyclical developments, policy-makers may give too little concern to the areas where they can have an influence over prosperity in the longer term.*

I am honoured to have been invited to deliver this year's Roy Bridge Memorial Lecture, in this splendid setting.

Although Roy Bridge never became an executive director of the Bank of England, let alone one of the Governors, he was a legend in his lifetime, as the greatest expert on the foreign exchange markets the Bank has ever had. Sadly, although he was in charge of the Bank's intervention and other foreign exchange operations during my time as a City Editor in the early 1960s, I never really got to know him—making the mistake of hob-nobbing with his superiors instead, who had rather less insight into these matters than he did.

Those were, of course, the years of Bretton Woods and fixed exchange rates, in which Bridge firmly believed, as he did more widely in the international financial co-operation which underpinned them—while occasionally chafing at the dangerously narrow margins within which he had to operate. I would not venture to guess where he would stand on these vexed questions today; but as a consummate operator and foreign exchange market tactician, I suspect that he would not have been greatly impressed by the handling of the events that led up to the ERM trauma of September 1992.

It is not, however, exchange rate policy that I wish to talk about this evening—partly because, within Europe at any rate, it has been displaced by the essentially political question of monetary union, and partly because there is a wider issue which I believe to be of more fundamental importance to the conduct of economic policy.

I would simply say that there are three basic propositions to which I believe Roy Bridge subscribed, which I would strongly endorse. First, the exchange rate is not merely a price like any other, about which the authorities can be blithely indifferent. It is far too powerful for that. So those responsible for the conduct of monetary policy are bound to take it into account. Second, no self-respecting country should tolerate a steadily-depreciating exchange rate. And third, co-operation on the exchange-rate front should form part of any properly-functioning system of international financial co-operation.

---

The more fundamental question I propose to address this evening, however, is what the conduct of economic policy ought to have as its principal focus of attention.

There can be little doubt that the question at the centre of the economic debate in this country at the present time is whether the substantial, but sadly necessary, tax increases due to come into force in a fortnight's time will kill—or at least severely maim—the recovery from the recession and, if so, what the Government should do about it. This is essentially a special case of the continuing obsession with the short-term progress of the economy, in which each new statistic that is published—many of which will subsequently be revised, in any case—is hailed as cause either for reassurance that the recovery is 'on course', or for concern that it is not.

It is hard to imagine a more futile focus of attention than this. In the first place, there is overwhelming practical evidence that economies—certainly, free economies—move in cycles. There are rival explanations of why this should be so, and rival theories of what—if anything—can be done about it. But the evidence of an—albeit irregular—cyclical pattern is painfully evident.

For Keynes, who was a close observer of, and active participant in, the financial markets, and whose thinking was greatly coloured by this, the cycle was essentially a matter of mood swings, from optimism to pessimism and back again *ad infinitum*—although this was made to sound rather more scientific by being described in the *General Theory* as fluctuations in the marginal efficiency of capital. The 'marginal efficiency of capital', however, was defined in terms of the expected return on new investment; and what fluctuated, Keynes explained, was expectations.

(1) Organised by the Forex Association, London and delivered in the Guildhall on 24 March.

Thus, to quote from the *General Theory*, in terms which describe with uncanny accuracy what occurred in the United Kingdom in the late 1980s:

> "A boom is a situation in which overoptimism triumphs over a rate of interest which, in a cooler light, would be seen to be excessive."

Sooner or later this overoptimism is shattered as it comes up against cold reality, leading to what Keynes describes as "disillusion", leading to "a contrary 'error of pessimism'". It was the problem of correcting this that particularly exercised him:

> "It is not so easy to revive the marginal efficiency of capital, determined, as it is, by the uncontrollable and disobedient psychology of the business world. It is the return of confidence, to speak in ordinary language, which is so insusceptible of control in an economy of individualistic capitalism."

Hence the need, as he saw it, for the government to step in with a programme of public works.

The Keynesians subsequently refined and complicated their master's analysis—to no great advantage. The essence remained a cycle which occurred as a result of the wayward behaviour of the private sector; and which, they claimed, could be stabilised not by monetary policy (that had been tried during the pre-Keynesian era; but, as Keynes had argued in the passages quoted above, did not work) but by an active countercyclical fiscal policy. Unfortunately, in the half century and more since the publication of the *General Theory*, the active use of fiscal policy has been demonstrated to be no more effective in eliminating the economic cycle than Keynes considered monetary policy to be. What it has done, however, is to leave many countries with a higher level of public spending, public deficits and public debt than they are comfortable with.

This failure inevitably opened the door to the post-Keynesian monetarist thesis. This essentially held that, so far from monetary policy being ineffective in suppressing the cycle, it was the ill-judged active use of monetary policy that largely caused the cycle. All governments needed to do was to maintain a consistent, steady, non-inflationary growth of the money supply—easier said than done—and the cycle would cease to be a problem.

There are insights in both these approaches; but at the end of the day both of them, I believe, have done more harm than good—and indeed continue to do.

Keynes's emphasis on mood swings from excessive optimism to unwarranted pessimism I find wholly convincing. One channel through which this can affect the economy, which has been important in a number of countries—including the United Kingdom—in recent years, is the credit cycle. The UK economy may be particularly prone to a pronounced credit cycle, as a result of our unusual pattern of housing tenure, with very little private rented accommodation and thus disproportionate emphasis on credit-financed homeownership; and the cycle was certainly further amplified in the 1980s by the once-for-all effects of financial deregulation.

But the essential phenomenon is a general one, by no means confined to this country. To put it at its simplest, when people are feeling confident they are likely to increase their borrowings and spend more than they earn. But sooner or later, they will inevitably reach a point at which they feel (or their bank manager points out to them) that their indebtedness has gone as far as—if not further than—is prudent, and they will rein back. If this ebb and flow is an individual phenomenon, then nothing follows from this; but as soon as it becomes a herd phenomenon, as it frequently does, then a cycle is born.

I find it wholly unconvincing to believe that the credit cycle (to take this one example: there are of course others) is caused simply by mistakes in monetary policy. Of course, such mistakes can exacerbate the cycle; but the cycle would be there without them. There is no way in which the monetary authorities can fine-tune bank lending, any more than they can fine-tune expectations. Friedman's famous observation that monetary policy works with long and variable lags is highly relevant in this context. Nor of course is there any way the authorities can predict the point at which the credit cycle is likely to turn of its own accord—although turn it inevitably will.

The harm that both these approaches to the business cycle do is twofold. First, the one thing they have in common is, I believe, profoundly mistaken. Both of them—and even more the two of them cumulatively—reinforce in the public mind what might be termed the myth of the straight line.

Keynesian economics has been popularly understood to say that macroeconomic stabilisation policy—in this case, fiscal policy—can prevent the discomforts of boom and recession, and ensure that the economy grows in a steady and sustainable straight line. So much so, in fact, that even fluctuations that last only a few months are seen as aberrations that call for explanation, rather than an inescapable feature of the real world. And monetarist economics too has been popularly understood to proclaim that it is within the power of the authorities—in this case, by avoiding monetary error—to ensure steady, sustainable, non-inflationary straight-line growth.

Surely by now we have enough experience in country after country throughout the world to know that this simply isn't true. For all practical purposes, the cycle is endemic. That is not to say that governments can or should do nothing at all about it. The maintenance of financial discipline at all times should not only keep inflation low—an important end in itself—but also make far less likely the emergence of an explosive boom. How financial discipline is best

maintained will vary from time to time and is in any case closer to an art than a science.

There is nothing intrinsically wrong with the Government's present practice of targeting inflation directly—*provided* it is not seen as any kind of auto-pilot. It is worth recalling that inflation as defined for these purposes remained within the authorities' current 1%–4% target range throughout the two years from March 1986 to March 1988—a time when, as we now know, the pressure of demand was growing considerably more strongly than was apparent at the time.

As for the risk of a slump, in the global economy of today stimulatory action is most unlikely to be warranted unless the threat itself is worldwide—that is, if global depression looms. In that case, worldwide—and preferably co-ordinated—monetary relaxation would be the right response. But that is not the case today, nor has it been at any time since the 1930s.

But what we are talking about here is the prevention of pathological extremes. What neither monetary nor fiscal policy can possibly do is abolish the cycle itself. Yet even now the UK authorities are promising just that: an end to the ups and downs of the past, and the nirvana of steady, sustainable, non-inflationary growth. (In parenthesis, it is worth adding that the claim is, in a sense, even bolder than that. For on the assumption that the economy is currently operating well below capacity—although no one knows how much below—it ought to grow for a time at a higher, unsustainable rate, to come closer to capacity, before slowing down to its long-term sustainable rate. The notion that it is within the authorities' power to deliver this, without any alarums and excursions on the way, is mind-boggling.)

But does it matter if people imagine—against all the evidence, not only in this country but abroad—that we are in a new era, in which the business cycle is a thing of the past? I believe it does. What Martin Taylor, the Chief Executive of Barclays Bank, recently referred to as the 'grotesque imprudence' of the banks during the late 1980s, was not only very damaging to the banks themselves. It also undoubtedly exacerbated the scale of the credit boom and thus of the subsequent recession. And it arose to a considerable extent because the banks, along with their customers, behaved as if the boom would go on for ever.

In other words, the ever-present awareness that we live, as we always have done, in a cyclical world could do more than anything else to prevent the excesses of optimism and pessimism that play such a large part in the cycle, and in so doing reduce the severity of the cycle itself.

I mentioned at the start the tax increases due to come into force in a couple of weeks' time, amounting to some 1½% of GDP. For the sake of completeness, let me say that I would be astonished if they were to bring the recovery to a halt. In 1981, my predecessor as Chancellor, Geoffrey Howe, imposed rather larger tax increases, at the very trough of the recession, completely out of the blue. Yet despite the considerable shock, the economy never looked back. This time, the extra taxation has been well advertised in advance, and comes when the economy is already two years into the upswing from the trough of the recession. And contrary to popular mythology, the recession of the early 1990s has proved, however unpleasant, considerably less severe than the recession of the early 1980s.

There are, of course, other reasons for not expecting the tax increases to kill the recovery, among them the fact that 1½% of GDP is equivalent to little more than the average change in the personal saving ratio in any year. All in all, in the cyclical world in which we live, the sheer momentum of the cycle, the natural rhythm of the economy, should never be underestimated.

I also mentioned earlier on that I believed that the obsessive focus of the economic debate on the short-term vagaries of the business cycle was damaging in two ways. The first of these ways is that, by not accepting these vagaries—and indeed the cycle itself—as inescapable features of the real world, and by expecting governments to ensure that economic life moves in a straight line, the cycle is actually likely to be more severe than would otherwise be the case. But the second aspect of the damage is more fundamental. Excessive concentration on the cycle—where the ability of government to improve economic performance is far less than is generally recognised—can all too easily be at the expense of focusing the attention of government on far more important matters, where their power for good or ill is in the long run considerably greater.

To identify what ought to be the primary concern of those responsible for the conduct of economic policy, and indeed the main focus of the wider economic debate more generally, we can do worse than remind ourselves of the full title of Adam Smith's magnum opus, *An Inquiry into the Nature and Causes of the Wealth of Nations*. For the difference in prosperity between those countries which have conducted their affairs reasonably successfully and those which have not is indeed striking. Yet for most of my lifetime—until very recently—there has been a curious reluctance to seek to understand this, as Adam Smith sought, in economic policy terms. For some, it has been seen as a matter of the exploiters and the exploited. For others, as an unalterable historical accident. For yet others, as an essentially cultural mystery. And for many, it has been seen as all of these.

This was never a convincing approach. It was never a convincing explanation, for example, of why those Latin American countries whose prosperity was on a par with that of the nations of Western Europe a century ago are so much worse off than us today. But it is two relatively recent events that have made that approach manifestly untenable.

One of these is the explosive growth and amazing economic success of a number of countries in East Asia. Here is a part of the world with a culture, history and civilisation wholly

different from ours. Yet like the western world, and unlike other developing countries, the high-performing Asian economies—to adopt the term used in the recent World Bank study, *The East Asian Miracle*—decided to embrace the market economy. Of course, the market economy cannot exist within a vacuum. So far from being the jungle it is sometimes characterised, it can flourish only in the right institutional context—above all, within the framework of the rule of law.

The World Bank study's conclusions about the reasons for these countries' outstanding success are worth spelling out—even though there is nothing in them that would have surprised Adam Smith. They can be summed up in the following five points:

- what are described as 'market-friendly' policies, including allowing the price mechanism to reflect economic scarcities, low protection, and flexible labour and capital markets;

- the maintenance of low inflation through monetary and fiscal discipline, involving positive real interest rates and firm control of public spending, leading to low budget deficits and in some cases budget surpluses;

- the encouragement of savings—largely as a result of the policies already enumerated;

- a high-grade bureaucracy, largely insulated from political interference; and

- heavy emphasis on universal education, notably at the primary stage.

Those were the conclusions reached by the World Bank's Research Report, published last year, on what they described as the East Asian economic miracle. Whether the World Bank's actions in the developing world are always entirely consistent with this analysis is less clear. But it is an analysis that is clearly echoed by the experience of Sir William Ryrie, who headed the International Finance Corporation for nine years, until his retirement at the end of last year, and who, in an impressive survey of the development scene delivered at Chatham House a few months ago, summed up in these terms:

> " What I am convinced of is that the market economy offers a prospect of strong growth and rising living standards to countries which have made only slow progress for several decades. I conclude that *the development task now consists chiefly of helping these countries to make a market economy work successfully*."

The East Asian economic miracle is one of the two defining economic events of recent years, to which I referred a short time ago. The other is, of course, the collapse of Communism in the former Soviet bloc, largely as a result of economic failure on a scale that few had thought possible. Here is a part of our own continent, a part of the same culture as ours, with a high level of basic education and indeed a history of economic development—before the war, well within my own lifetime, the prosperity of Czechoslovakia was on a par with that of Switzerland. Yet the decision of its former leaders to abjure the market economy, including the institutions required to underpin it, condemned its people to a degree of relative pauperisation unique in the economic history of the world. The conclusion is inescapable, as the post-Communist leaders of those countries are for the most part well aware. They know that the overriding need is to create and develop a functioning market economy.

But, it may be objected, what has all this got to do with us? As a mature, developed economy with a fully-fledged market system, surely we have already done all that is necessary on that front; and policy-makers in the United Kingdom, as in the rest of the developed world, are quite right to devote their energies to seeking to eliminate the economic cycle? I have already indicated, in the early part of this talk, some of the reasons why I believe this to be profoundly mistaken. But there are other reasons too.

In the first place, such an attitude is dangerously complacent. Despite its success—and despite the worldwide consensus in its favour that has now, for the first time since the war, at last emerged—the market economy is always under threat of erosion by the lobbying of special interest groups, by the impatience of public opinion, and by the politicians' itch to meddle. If the condition of liberty is eternal vigilance, that is particularly true in the economic dimension.

But even if vigilance can prevent backsliding, are we really so sure that there is no scope for further progress? Are we really so confident that all the barriers to competition that should be removed have been removed? That privatisation has reached its practical limit? That our labour market is as flexible as it could be? That the tax system is as non-distorting as it should be? (There is certainly a risk of regression here.) Are we really so sure that public spending is under adequate control, looking at the medium and long term as well as the short term? That our institutional arrangements are incapable of improvement? That there are no unnecessary bureaucratic barriers to new-business formation and its financing?

The reforms which the Thatcher government put in place during the 1980s—and to which some of us devoted so much effort—were a substantial achievement. But it clearly would be quite extraordinarily complacent to believe that there is nothing further to do on these fronts. And if there is, then here is an important structural and supply-side agenda to which economic policy-makers should be directing their attention.

But there is another reason too why the developed world, including not least the United Kingdom, would be making a grave mistake in pandering to the seemingly ineradicable popular fixation with the short-term vagaries of the business cycle. Not so long ago, it was fashionable to worry that the nations of the world were irrevocably divided between the haves and the have-nots—with the gulf between them likely to grow ever wider. Today, the focus of concern has changed, as the most successful of the have-nots are dramatically closing the gap and fears are voiced that, without some form of protection, unskilled jobs in the developed world will be lost or unskilled wages unacceptably depressed by the low-wage competition from the more dynamic emerging economies.

And this fear comes at a time when, as the recent Detroit jobs summit demonstrated, there is already concern that technological development within the West itself is having precisely that effect.

The structural unemployment or wage problem is one to which policy-makers are clearly right to be turning their attention—and it is certainly far too complex for me to attempt to do justice to it at this late stage this evening. Suffice it to say that the United States has shown how new jobs can indeed be created in what remains the most technologically advanced economy in the world; that a high standard of basic education has never been more important (and far more fundamental, incidentally, than training—for it is the *capacity* to be trained and retrained that needs to be enhanced if the supply of labour is to upgrade itself to meet the new pattern of demand); and that, meanwhile, the tax and other burdens on employing unskilled labour should wherever possible be lightened—as indeed I lightened them on the National Insurance front during my time as Chancellor.

But the point I wish to make in this context tonight is that protection cannot and must not be part of the package. It is inevitable—and right—that different countries will feel they can afford different levels of social provision and environmental protection, depending on the stage of prosperity they have reached. But these differences can form no part of any justification for protection, any more than differences in national wage levels, which have always existed, have been accepted as a justification for protection.

Competition between firms in different countries is as beneficial to economic growth as competition between firms within a single country. Measures designed to hold back the development of the emerging countries are not only morally wrong and often politically dangerous: their economic effect can only be to hold back the growth of world prosperity to the detriment ultimately of the peoples of the developed world itself. Indeed, it is this common interest in global prosperity that is the foundation stone of international economic co-operation.

This, then, is the international agenda to which economic policy-makers need to address themselves—not as some optional extra, but as a major preoccupation.

---

Let me sum up my theme this evening in the following terms. Experience shows that the conduct of economic policy can have a profound effect, for good or ill, on the long-term prosperity of a nation and its people. Moreover, although the task is never easy, we also know from experience throughout the world—perhaps more clearly than at any time in the past—what the secret of success is.

By contrast, experience—not merely in this country but throughout the developed world—demonstrates clearly that we cannot eradicate the business cycle, the alternation of boom and recession, and indeed the short-term fluctuations in the rate of inflation that tend to be associated with it.

Yet paradoxically, despite these two well-established facts, the focus of economic debate in this country—and I suspect in most other developed countries—is almost exclusively on the short-term vagaries of the business cycle about which policy-makers can in reality do very little, rather than on the conditions for improved performance over the longer term about which, both nationally and internationally, much can be done.

There are, I suspect, three principal reasons for this extraordinarily perverse paradox. The first—and I list them in no particular order of importance—is the unfortunate legacy of Keynesianism. Keynes himself, writing in the mid-1930s, was of course concerned less with the avoidance of cycles than with the avoidance of slumps, which he mistakenly believed to be almost the natural condition of free economies. Hence, for example, his statement in the *General Theory* that:

> "The right remedy for the trade cycle is not to be found in abolishing booms and thus keeping us permanently in a semi-slump; but in abolishing slumps and thus keeping us permanently in a quasi-boom."

But it is not hard to see how, when Keynesianism came to be put into practice in conditions far removed from those of slump and the 1930s, it readily degenerated into a dangerously inflationary obsession with the cycle as such. And even if we have through bitter experience succeeded in inoculating ourselves against the inflationary aspects of Keynesianism, the short-term preoccupation with the cycle is as great as it has ever been.

The second reason for the paradox may be the passionate desire of the economics profession to believe that everything that matters can be reduced to mathematical equations and numbers. Since this cannot be done with any remote degree of plausibility for the Nature and Causes of the Wealth of Nations, Adam Smith's subject-matter must clearly be far

less important than the dissection of the business cycle, which so readily lends itself to mathematical and numerical analysis. Although a one-time mathematician myself, I am irresistibly reminded of one of Aldous Huxley's short stories, *Eupompus gave Splendour to Art by Numbers*. Eupompus in the story was a fashionable Alexandrian portrait-painter, who suddenly became obsessed with numbers. To quote Huxley:

> "Number seemed to him the sole reality, the only thing about which the mind of man could be certain. To count was the one thing worth doing, because it was the one thing you could be sure of doing right. Thus art, that it may have any value at all, must ally itself with reality—must, that is, possess a numerical foundation."

Eupompus thereupon founded a school of numerical painters, known as the Philarithmics—until one day, in a fit of madness, he killed a number of his followers and then himself. Huxley's narrator suggests that it was, in fact, a fit of sanity. Eupompianism in economics may have much to answer for too.

The third reason for the paradox about which I have been speaking this evening is, of course, the short time-horizon of the financial markets, of the media and all too often of governments faced with the problem of re-election. For all these, the cycle is perhaps bound to loom large.

But whatever the reasons for the perverse focus on what economic policy-makers cannot achieve at the expense of what they can, does it matter? I believe it does. It matters in political terms that the public are systematically miseducated on a matter as important as this is. And it is clearly a debasement of democracy if governments are to be elected or ejected largely on the basis of the particular phase of the inescapable economic cycle at the time an election is held.

But it matters in economic terms too. I have little doubt that perpetuation of the notion that the cycle can be avoided—what I have described as the myth of the straight line—is in practice likely to lead the cycle to be more pronounced than it might otherwise have been. And even more important, obsession with the vagaries of the cycle can all too easily lead those responsible for the conduct of economic policy to devote far less attention than they should to those issues, both at the national and the international level, that really will affect the prosperity of the people over the longer term.

That is a luxury neither this country, nor the world as a whole, can readily afford.