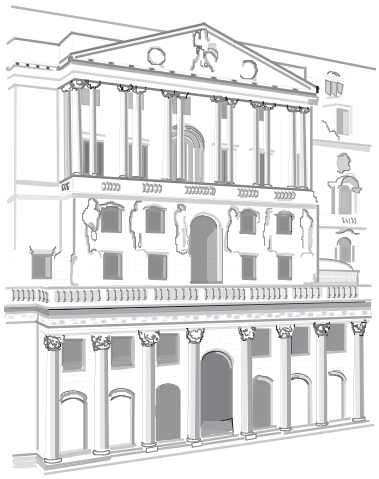
Bank of England Quarterly Bulletin



November 1995

Volume 35 Number 4

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Bank of England publications

Quarterly Bulletin and Inflation Report

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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-83075 Bad Feilnbach 2, Germany, at a price of DM 180.00 per volume or DM 4,100.00 per set.

See page 396 for details of the annual *Statistical Abstract*.

The gilt market

'Gilts and the Gilt Market: review 1994–5' outlines the main events in the gilt market in the year to March 1995 and also covers current and future developments. It updates information provided in 'British Government Securities: the market in gilt-edged securities', intended for those with a professional interest in gilts and the gilt market. 'Investing in Gilts: a guide for the small investor' provides basic information for small investors. These publications may be obtained free from the Bank of England, PO Box 96, Gloucester, GL1 1YB.

Working Papers

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

No	Title	Author
32	An assessment of the relative importance of real interest rates, inflation and term premia in determining the prices of real and nominal UK bonds	David G Barr Bahram Pesaran
33	Granger causality in the presence of structural changes	Marco Bianchi
34	How cyclical is the PSBR?	Joanna Paisley Chris Salmon
35	Money as an indicator	Mark S Astley Andrew G Haldane
36	Testing for convergence: evidence from nonparametric multimodality tests	Marco Bianchi
37	Wage interactions: comparisons or fall-back options	Jennifer Smith
38	The microstructure of the UK gilt market	James Proudman
39	Valuation of underwriting agreements for UK rights issues: evidence from the traded option market	Francis Breedon Ian Twinn

Issued by the Inflation Report Division, Bank of England, London, EC2R 8AH, to which enquiries regarding this *Bulletin* should be addressed. Telephone enquiries may be made to 0171-601 4030; email: dh95@cityscape.co.uk; and letters should be marked 'for the attention of the Publications Group'. General enquiries by telephone should be made to 0171-601 4444.

The Summary of this *Bulletin* is available at:
http://www.coi.gov.uk/coi/depts/GBE/GBE.html

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The Quarterly Bulletin and Inflation Report

Inflation Report
(published separately)

The *Inflation Report* provides a detailed analysis of recent monetary, price and demand developments in the UK economy. Headline (RPI) inflation rose between June and September, as did the Government's target (RPIX) measure—which excludes mortgage interest payments. Money and credit continued to grow strongly in the third quarter. Non-oil output growth slowed to around its long-term average rate, and unemployment continued to fall. Underlying average earnings growth has been little changed since the previous *Report*. The final section of the *Report* sets out the Bank's current assessment of the prospects for inflation over the next two years.

Operation of monetary policy (pages 317–30)

During the third quarter, markets lowered their expectations of inflation in the short term, and stopped anticipating an early increase in interest rates. Sterling was relatively unaffected by sharp movements in the foreign exchange markets, and appreciated slightly over the quarter as a whole. Gilt sales of £6.5 billion were made, but the September auction result was disappointing.

The international environment
(pages 331–38)

Growth in the major six overseas economies slowed in the second quarter, in part because of stock adjustments; monthly data for the third quarter have been mixed. Inflation fell in all the major economies between June and July; and commodity prices continued to fall in the third quarter.

Financial market developments
(pages 339–45)

Developments affecting the Japanese markets were the focus of attention for many market participants in the third quarter. Total gross debt issues continued to increase, compared with 1994. But turnover was mixed in equity markets and down in derivative markets.

Research and analysis
(pages 346–81)

Research work published by the Bank is intended to contribute to debate, and analysis to draw out the main features of the subject discussed; they are not necessarily a statement of Bank policy.

The net debt of the public sector: end-March 1995 (by Stephen Denby of the Bank's Monetary and Financial Statistics Division) analyses developments affecting the national debt and the public sector position during the last fiscal year. As a share of GDP, the public sector's net debt rose by 3.8 percentage points to 42.0%. General government consolidated gross debt (on a Maastricht basis) rose to 50.5%—but remained well below the 60% reference level.

The external balance sheet of the United Kingdom: recent developments (by William Amos of the same Division) examines changes to UK net external assets during 1994, focusing on changes in the pattern of capital flows and the impact of valuation changes.

The foreign exchange market in London (by Dale Thomas of Foreign Exchange Division) sets out the results of the survey earlier this year into London's foreign exchange market, and compares them with those from previous surveys and for other major centres. The results showed that London has consolidated its position as the world's largest centre for foreign exchange business.

Mezzanine finance (by Mark Pratt and Alex Crowe of Business Finance Division) describes the circumstances in which this form of financing is used, and considers its prospects.

The pricing of over-the-counter options (by Shelley Cooper and Stephanie Weston of the Banking Supervisory Policy Division) outlines the background to and results of a survey earlier this year into how firms trading in over-the-counter options price and manage the risk associated with these instruments.

Report
(pages 381–82)

A code of practice for Bank of England statistics outlines the code that the Bank is introducing in response to the Government's initiative earlier this year on official statistics.

Operation of monetary policy

- *Official interest rates remained unchanged during the third quarter.*
- *Markets revised down their expectations of UK inflation in the short term, and stopped anticipating an early increase in interest rates. But market expectations of inflation in the longer term remained well above the Government's target.*
- *Sterling was relatively unaffected by sharp movements in the foreign exchange markets during the quarter, and appreciated slightly on balance.*
- *Gilt sales of £6.5 billion were made, but the September auction result was disappointing.*

Overview

Decisions on monetary policy are based on the analysis of a wide range of indicators bearing on inflation. The Bank's current assessment is given in the November *Inflation Report*; this article reviews the operation of monetary policy in the third quarter of 1995.

The economic and financial data which became available during the quarter were mixed, and their implications for future inflation were not straightforward. They suggested that in the second quarter growth had continued at, or a little above, its potential rate. Information on the third quarter itself suggested a less buoyant picture, but was very incomplete. A major uncertainty was the extent to which output had been supported by involuntary stockbuilding, which might be reversed. Also uncertain was the extent to which the continuing deterioration in the trade account was attributable to weakening demand abroad or should be taken as a sign of continuing strength at home.

Inflationary pressures at the input stage eased, but remained strong. There were some signs that output price increases had moderated, but it was too soon to be sure of a change in trend. Encouragingly, however, there was no sign of any increase in wage inflation, in part because of a decline in 'wage drift'—the difference between the growth in earnings and settlements. Narrow money continued to grow at around 6% a year, but M4 accelerated to a twelve-month growth rate close to the top of its 3%–9% monitoring range, with shorter-run growth rates even higher.

The Bank took the view that there remained a significant possibility that the inflation target would not be met in 18 months' time, but that, given the uncertainties, the case for tightening monetary policy had become less pressing.

Foreign exchange markets

The third quarter proved to be a turning-point for the dollar. Against a background of faltering economic recovery in Japan and signs that the US recovery was regaining momentum, interest rate

differentials moved in the dollar's favour. By contrast, concerns about US inflation—which had weighed against the dollar earlier in the year and had sent long bond yields up to 8%—receded, bringing the long yield down to 6.6% at the end of the quarter. Both these factors helped underpin the dollar throughout the period; however, the catalyst for its recovery against the yen was the market perception that the Japanese authorities had decided to act more firmly on some of the pressing macro and microeconomic problems facing the Japanese economy—in particular, the impact of the strong yen on stock market valuations and the banking sector.

The decision by the Bank of Japan at the start of July to let money-market rates move below the Official Discount Rate—which had previously acted as a floor—was seen as a sign that the Japanese authorities intended to act positively against the strong yen. The 25 basis point cut in the target federal funds rate on 6 July had been expected, but the markets' perception of the US authorities' attitude was altered by aggressive and overt joint US and Japanese intervention. This, along with a less outspoken US stance on trade disputes, was interpreted as signalling a renewed determination to bolster the dollar. The US currency rose by ¥4 in July, while Japanese capital markets revived.

The dollar then rose sharply following the announcement of a new Japanese deregulation package on 1 August. The combination of the policy of injecting liquidity into the money market to lower money-market rates and ease the problems of the banking sector, fiscal measures to boost demand, and deregulation measures aimed at making the import of foreign goods easier would, it was hoped, help reduce the current account surplus with the United States—which had been seen as the main force which had driven the rise in the yen.

The dollar continued to rise throughout August, finally breaking a long-term resistance line around ¥94 early on 15 August. The accompanying concerted intervention pushed the dollar up to ¥97.3 and DM 1.4803 by the end of the day. The intervention was widely regarded as a success, the key factors being the element of surprise (it took place when many German banks were closed for regional holidays, and other European centres were closed), the fact that there was already demand for the dollar on technical and fundamental grounds, and the prominent role played by the Bundesbank.

The Bundesbank's participation in the intervention triggered a sharp rise in the value of the dollar against the Deutsche Mark. Until then, it had traded in a steady range against the German currency as the main policy changes were being made by Japan. With worries about inflation fast receding, expectations grew that the Bundesbank Council would decide to cut German interest rates at its meeting on 24 August, giving further momentum to the dollar. In the event, however, the 0.5% cut in official rates was widely discounted and the dollar hardly rose against the Deutsche Mark.

In the first few days of July, the re-election of John Major as Conservative Party leader in the vote on 4 July was seen as assured, and sterling quickly recovered ground lost earlier during the election campaign. With interest rates thought likely to remain unchanged in the short term and the domestic environment more settled, sterling was largely influenced by international factors. It maintained its

Effective exchange rate indices

strong link with the dollar, evident for much of the year. Throughout July and the first half of August, it traded at around $1.60; but it was unable to hold on to this level when the dollar rose sharply after the intervention on 15 August, and fell to the next area of strong technical support—in the $1.54 to $1.55 area—where it remained until mid-September. However, it appreciated both against the Deutsche Mark and in effective terms. By the end of August, sterling had risen to DM 2.2746 and 84.8 on its effective rate index (ERI), from lows for the quarter of DM 2.1943 and 83.2 on 20 July.

Most European currencies took advantage of the weaker Deutsche Mark, although in slightly different ways. The European countries with weaker currencies, Sweden and Italy, which are slightly ahead of the core ERM countries in the economic cycle, saw an appreciation. The lira rose 9% from its Q3 low of Lit 1,182.30 against the Deutsche Mark on 3 July to a high of Lit 1,077 on 14 September. Both the lira and the Swedish krona were helped by market speculation that they might join the exchange rate mechanism (ERM) next year, and that tough budgetary measures would be put in place. In contrast, other countries—such as France—used the easing of ERM tensions to lower interest rates; the differential between French and German three-month rates had fallen from 2.4% to 1.6% by mid-September.

The easing of tensions in the ERM and the rise in the dollar continued throughout the first half of September. The dollar rose to a twelve-month high of ¥104.66 on 19 September, prior to the Japanese supplementary budget on 20 September and following the 0.5% cut in the Official Discount Rate on 8 September. In the event, the market was disappointed with the results of the large package, particularly the absence of tax cuts and deregulatory measures, and profit-taking took the dollar back to around ¥100. Increased tension in the ERM affected confidence in the dollar recovery, as did the slow passage of the US budget for the 1996 fiscal year.

Tension in the ERM was heightened by reported comments of German officials, just before the summit of EU leaders in Majorca on 24 September, which were interpreted as casting doubts on the readiness of several countries for monetary union. This led to an outflow from the weaker currencies into the Deutsche Mark. Investors concerned about the impact of monetary union on the performance of the German economy were attracted by the Swiss franc, which rose to a ten-year high against the Deutsche Mark.

Sterling was caught up in these currency movements, falling back from the quarterly high of DM 2.3243 and 85.9 in effective terms reached on 14 September, and expected differentials over German interest rates increased. Sterling did, however, recover to the $1.58–$1.59 area against the dollar. As a result, its ERI finished September at 84.9, up 1.5 points over the quarter.

Official money-market operations

Although official interest rates remained unchanged, market expectations of their future direction underwent a significant change as the quarter progressed, so that towards the end of the period there was no longer an expectation of an *increase* in official rates, but instead some expectation that a *fall* might occur during the fourth

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			
1995	1 month	3 months	6 months	12 months	3 months	Short	Medium	Long	Long	ERI	$/£	DM/£
3 July	6 11/16	6 29/32	7 1/8	7 15/32	7.45	8.17	8.43	8.46	3.77	83.5	1.5992	2.2045
12 July	6 5/8	6 25/32	6 15/16	7 5/32	7.08	7.77	8.09	8.18	3.66	84.1	1.5918	2.2352
1 Aug.	6 13/16	6 7/8	6 31/32	7 3/16	7.06	7.86	8.25	8.30	3.68	83.3	1.5987	2.2072
15 Aug.	6 3/4	6 27/32	6 31/32	7 7/32	7.12	7.88	8.25	8.32	3.65	85.0	1.5527	2.2902
14 Sept.	6 23/32	6 11/16	6 5/8	6 19/32	6.50	7.24	7.76	7.91	3.56	85.3	1.5477	2.3045
29 Sept.	6 23/32	6 3/4	6 3/4	6 3/4	6.60	7.59	8.12	8.27	3.72	84.7	1.5825	2.2547

(a) Close-of-business rates in London.
(b) Gross redemption yield. Representative stocks: short—8% Treasury 2000; medium—8½% Treasury 2005; long—8% Treasury 2015; index-linked—2½% Index-Linked Treasury 2016 (real yield assuming 5% inflation).
(c) Middle-market rates.
(d) Implied future rate: December 1995 contract.

Short-term interest rates

(a) Three-month Libor implied by December 1995 futures contract.

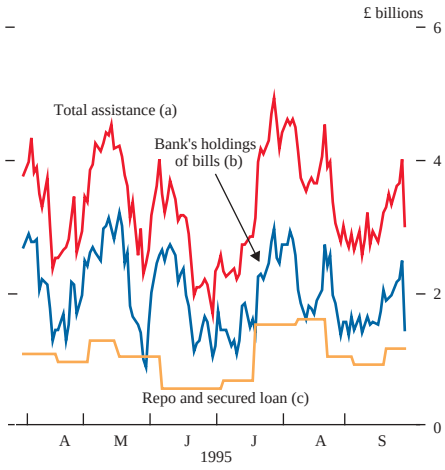
quarter, perhaps around the time of the Budget. No change in interest rates was expected to result from any of the four Monetary Meetings between the Chancellor and the Governor held in the period (on 5 and 27 July, and 7 and 29 September). Although much of the improvement in sentiment was attributable to benign domestic economic statistics, developments in overseas economies and in the currency markets also played an important part.

At the end of the second quarter, the markets had been faced with the uncertainties generated by the Conservative Party leadership election; the resolution of the election on the first ballot in the first week of July and the associated recovery of the exchange rate prompted a swift return to the more positive mood that had emerged when rates had not been raised at the May Monetary Meeting. The three-month interest rates implied by the September short-sterling contract, which had stood at 6 15/16% before the election, rose to 7 1/4% during the campaign but eased back to stand close to their earlier level by 7 July.

The improvement in sentiment was significantly reinforced by the Federal Reserve's decision on 6 July to reduce its target federal funds rate by 25 basis points, the first downward movement in US rates since August 1992. This reduction was followed by persistent speculation that the Bundesbank would also cut rates and, encouraged by moderating M3 growth, the German central bank eventually did so on 24 August, having previously permitted a steady reduction in the rate at which allotments were made in its variable-rate repos. These developments encouraged the markets to believe that the peak in UK interest rates might be close—a view that was seen as being increasingly supported by economic data showing weakening domestic demand which, it was believed, would restrain inflationary pressures.

The markets suffered a sharp setback, therefore, when strong July producer price figures were released on 14 August, especially in view of the concerns that had been recorded in successive minutes of Monetary Meetings about the risk of strong input price pressures feeding through to the output stage. Over August, most of the short-sterling curve rose by 1/4%, as the market became nervous about the forthcoming retail price figures. However, the market began to rally once more on the afternoon of 15 August, as aggressive central bank intervention succeeded in pushing the dollar sharply higher; over the following two days, a combination of benign labour market and retail price data brought the market back to close to the levels prevailing before the publication of the producer price figures.

Money-market assistance



(a) Bank of England's holdings of bills, market advances and funds supplied under the repo and secured loan facilities.
(b) Bank of England's holdings of eligible bank bills outright and on a repurchase basis and sterling Treasury bills 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 under secured loan facilities.

Table B
Influences on the cash position of the money market

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

	1995/96	1995		
	Apr.–June	July	Aug.	Sept.
Factors affecting the market's cash position				
Under/overfunding (+/-)	5.2	0.5	4.0	-0.3
Other public sector net borrowing from banks and building societies (-)	0.3	—	-0.2	0.7
of which, local authorities' deposits with banks and building societies (+)	*0.3*	*-0.2*	*-0.1*	*0.5*
Currency circulation (-)	-0.7	0.8	-0.4	-0.7
Other	4.0	-1.1	0.1	0.6
Total	**8.8**	**0.3**	**3.6**	**0.3**
Increase (+) in the stock of assistance	-2.5	2.9	-1.8	0.2
Increase (-) in £ Treasury bills outstanding (a)	6.1	3.2	1.9	0.4
Increase in bankers' balances at the Bank	0.2	-0.1	-0.1	0.1

(a) Other than those held outright by the Bank and government accounts, but including those purchased by the Bank on a repurchase basis.

The money markets continued to strengthen during the remainder of August, with the recovery of the dollar providing a helpful background, and were further boosted at the start of September by the decision of several building societies to cut their mortgage lending rates. Although these cuts reflected the particular weakness of demand in the housing sector, the markets rallied on the view that the outlook was increasingly similar in other sectors of the economy and that a reduction in base rates might therefore be possible later in the year. As the rally continued into the middle of the month, there were significant changes in interest rate expectations, shown in the slope of the cash and futures market curves. In the cash markets, one-year cash traded as much as $^{1}/_{8}$% below three-months. And in the futures market, the prices of the nearest contracts discounted a fall in market rates.

The rally faded a little in the second half of September, particularly on 20 September when the publication of buoyant broad money figures coincided with the release of the minutes of the July Monetary Meeting which described the recent strong growth of the monetary aggregates as worrying. Over the following days, renewed disturbance in the ERM—which also dragged sterling lower—and the result of the September gilt auction further dampened market optimism. But the impact of the gilt auction did not last long in the money markets and, generally, worse-than-expected news on the Government's budget—whether in the form of PSBR figures or the progress of funding—was regarded as encouraging for the money markets, since it was taken to limit the room for fiscal policy adjustments, and to make a monetary policy easing rather more likely.

During the quarter, the Bank became progressively less accommodating in its operational stance, with the intention of continuing the process—started in the second quarter—of returning shorter-term money-market rates closer to base rate, after the period of softening which followed the failure of Barings. The stock of assistance rose in the third quarter, following the increase in the size of the Treasury bill tender to £1,500 million weekly from 23 June. This led to an increase in the size of the average daily shortage; it had been around £550 million towards the end of the first quarter and around £625 million in the second, but rose to about £900 million in the third period. In the Bank's daily operations, the pace at which liquidity was injected each day was carefully managed: bill offers were scaled back when necessary, and part of each day's shortage was left to be satisfied through lending operations at the end of the day.

As the quarter progressed, cash rates out as far as three months converged on the prevailing level of base rate. The firmer rates at the short end of the money-market curve served to renew interest in the twice-monthly gilt repo. The total amount outstanding on the facility had fallen to around £550 million by the end of June, as short-term interbank rates traded below the repo rate. But as conditions tightened during the quarter, participation revived and by early October it stood at almost £2.3 billion. The repo conducted on 20 September attracted bids significantly in excess of the amount the Bank judged necessary to moderate fluctuations in the stock of money-market liquidity. In accordance with the functional purpose of the facility, bids were scaled down.

The increased size of the Treasury bill tender had several effects. Participation in the tender increased and broadened, with cover

rising to a high of 6.4 times in early September, and the spread between Libid and the average Treasury bill yield narrowed, from 48 basis points in the first quarter—when the weekly tender was only £350 million—to around 10 basis points in the latest period.

Gilt-edged market

Gilt yields maintained a generally downward trend in the third quarter, although currency turbulence—following reported comments before the Majorca Summit—hit all bond markets towards the end of September. The main movements during the quarter were: the narrowing of spreads against other bond markets early on, following the resolution of the domestic political uncertainties, and a widening towards the close; the steepening of the UK yield curve, as the market came to expect the next move in interest rates to be downward; and a downward shift in inflation expectations up to seven years, with an upward shift thereafter.

With the political uncertainties at the end of the second quarter resolved, gilts started the third quarter strongly. Ten-year yields approached 8%, and although the 25 basis point cut in US rates on 6 July was a factor, spreads with other major bonds narrowed as the underperformance in late June was corrected. After the successful July gilt auction, index-linked tap stocks brought in early August were quickly exhausted. These were the first tap sales since the publication of the Debt Management Review and followed the new procedures outlined there.(1)

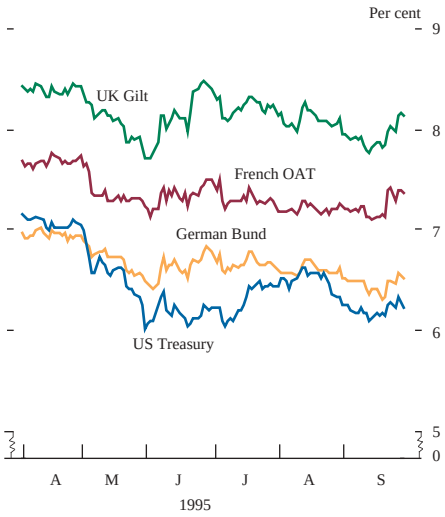
International sentiment provided a positive backdrop to the UK bond market in the middle of the quarter: the main factors were weaker US data, the cut in Japanese official rates, a growing expectation of a cut in German rates and, in the currency markets, central bank support for the dollar. Although higher-than-expected UK producer price figures published on 14 August set the market back, weaker domestic data and cuts in mortgage rates thereafter helped gilts to outperform other government bonds: the spread over German government bonds (Bunds) dipped as low as 137 basis points (on 12 September) and ten-year yields went below 8% for the first time since June. The German rate cut on 24 August, and the subsequent reductions in the repo rate (leaving it at 4.08% at the end of the quarter, compared with 4.50% at the start) caused a further pick-up. This lasted until the middle of September, when all three gilt benchmarks traded with yields of under 8%, while the US 30-year bond yield fell to a low of 6.5% on 14 September; ten-year spreads over US and German bonds at this point stood at 167 and 140 basis points respectively. Further index-linked tap stocks brought in early September were also quickly exhausted.

But towards the end of September, currency turbulence and the disappointing gilt auction dented sentiment and the market fell: in the last week of the month, spreads over Bunds widened by 13 basis points and over US Treasuries by 18 basis points; ten-year yields rose from 7.98% to 8.12%. The September gilt auction was (just) uncovered.

Yields on index-linked stocks also fell during the quarter—but by less at the short end, suggesting that inflation expectations there had reduced. Volatility on the option on the long-gilt future was low: it began the quarter at 10.4% (before the resolution of the

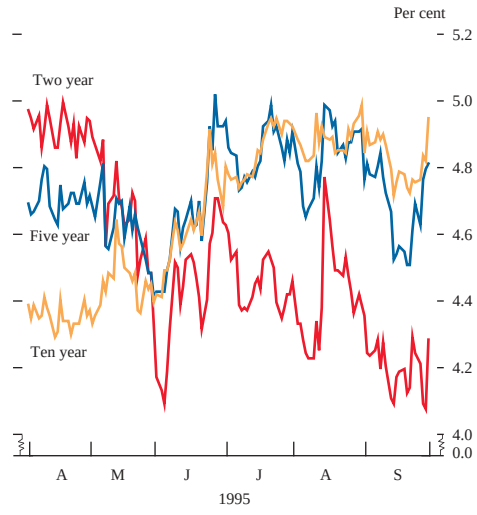
(1) For further details on the Debt Management Review, see the August 1995 *Bulletin*, page 226.

Ten-year government bond yields(a)



(a) Gross redemption yield on a semi-annual basis.

Implied forward inflation rates for different maturities(a)



(a) Time series for implied inflation rates looking two, five and ten years ahead: derived using the Bank's Svensson yield curve model.

Table C
Issues of gilt-edged 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 (b)	Date exhausted (b)
8% Treasury 2015	2,500	18.7.95	27.7.95	Auction	96.6875 (c)	Fully paid	8.34 (d)		
2% Index-Linked 2006	100	3.8.95	3.8.95	Tap	181.1250	Fully paid	3.52 (e)	3.52 (e)	8.8.95
2½% Index-Linked 2013	150	3.8.95	3.8.95	Tap	139.6875	Fully paid	3.61 (e)	3.60 (e)	7.8.95
6% Treasury 1999	250	8.9.95	8.9.95	Tap	95.6875	Fully paid	7.28	7.27	8.9.95
6% Treasury 1999	100	8.9.95	8.9.95	To CRND					
8% Treasury 2003	100	8.9.95	8.9.95	To CRND					
2½% Index-Linked 2001	100	8.9.95	8.9.95	Tap	177.4375	Fully paid	3.30 (e)	3.30 (e)	12.9.95
2½% Index-Linked 2016	150	8.9.95	8.9.95	Tap	150.3750	Fully paid	3.55 (e)	3.56 (e)	14.9.95
7½% Treasury 2006	3,000	19.9.95	28.9.95	Auction	95.6875 (f)	Fully paid	8.09 (d)		

(a) Gross redemption yield, per cent.
(b) Taps are exhausted when the issue is no longer operating as a tranchette; the equivalent date for stocks sold at auction is the issue date.
(c) Lowest-accepted price for competitive bids. The non-competitive allotment price was £96.1875.
(d) Yield at lowest-accepted price for competitive bids.
(e) Real rate of return, assuming 5% inflation.
(f) Lowest-accepted price for competitive bids. The non-competitive allotment price was £96.1875.

Conservative leadership contest) but dipped under 7% in late July, before hovering under 7.5% for most of August and September. It rose in the run-up to (and after) the September auction, and ended the quarter at 8%.

Tax reform and the strips market

The Chancellor of the Exchequer announced on 10 July that the Government would go ahead with the reform of the taxation of gilts and other bonds, and that an official gilts strip facility would be introduced.(1) The Bank announced at the same time that the strips market would not start before the second half of 1996, to allow not only the legislative and tax issues to be resolved, but also a large number of practical issues to be dealt with. In September, it was announced that four stocks would be strippable: the three 1995 benchmarks (8% Treasury 2000, 8½% Treasury 2005 and 8% Treasury 2015) and the new ten-year benchmark, 7½% Treasury 2006. The four stocks have the same coupon dates (7 June and 7 December), so the coupon strips will be *fungible*—ie identical with one another for trading purposes, aiding liquidity. The September announcement led the four named stocks initially to outperform surrounding issues; however, the size of the strips premium was not clearly identifiable from the behaviour of the stocks.

Gilt-edged funding

The July auction, for £2.5 billion of 8% Treasury 2015 was 1.42 times covered, with a 1 basis point tail—the difference between the yields corresponding to the average and lowest-accepted bids. The September auction was for the new ten-year benchmark (7½% Treasury 2006), which will be strippable, pay coupons free of withholding tax and be accounted for on an annual basis once the strip facility starts. The auction was for £3 billion, at the top of the range indicated in the funding remit and the largest auction to date in the financial year (though four auctions of over £3 billion had been successfully held in 1993/94). The auction was just uncovered (with cover of 0.99 times), and the dispersion of bids received and accepted was exceptionally wide (there was a tail of 7 basis points). Unusually, the stock did not cheapen relative to other stocks in its sector in advance of the auction, and the prices accepted were unusually far below those recorded in 'when-issued' trading. The small amount of remaining stock (£28.6 million) was held on official portfolios; it was announced that it would not be sold for a

(1) For further details on this, see the August 1995 *Bulletin*, page 228.

Table D
Official transactions in gilt-edged stocks

£ billions: *not seasonally adjusted*

	1995/96 (a)	1995		
	Apr.–June	July	Aug.	Sept.
Gross official sales (+) (b)	5.7	2.7	0.5	3.4
Redemptions and net official purchases of stock within a year of maturity(-)	0.2	2.3	—	—
Net official sales (c)	5.5	0.4	0.5	3.4
of which net purchases by:				
Banks (c)	0.3	-0.6	—	0.5
Building societies (c)	—	-0.5	0.2	-0.1
M4 private sector (c)	2.7	1.3	-0.2	2.3
Overseas sector	2.4	0.2	0.5	0.7

(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.

period of at least two months, and in any event only in stable market conditions. The result of the auction was seen as disappointing in the market; the gilt future fell 1½ points between the closing of bids (at 10.00 am) and 1.30 pm, when disappointing US durable goods figures were announced. Turnover at LIFFE in the long-gilt future was at record levels, with over 125,000 contracts traded.

Total gilt sales in the second quarter of the fiscal year, including tap sales, were £6,463 million, producing total sales for the first two quarters of £12,248 million, compared with a funding target of £26,875 million for the whole year.

Towards the end of September, the Bank convened the first quarterly meetings with gilt-edged market-makers and with end-investors, to seek views on the maturity schedule of the gilt auctions to be held in October and December. The minutes of the meetings were published.(1) On 29 September, the Bank announced that the auctions in the fourth quarter of 1995 would be for a stock in the range 2014–2016 on 25 October, and in the range 2004–2006 on 6 December.

(1) Copies may be sought from the Bank (telephone 0171-601 4492).

The gilt repo market

Open gilt repo trading will begin in January next year. It will be the most significant liberalisation in the gilt market since Big Bang and the second of the three central elements of the reform programme currently under way. It follows the introduction of a pre-announced auction calendar and maturity schedule, and comes ahead of an official gilt stripping facility. This note outlines the legal, regulatory and settlement structure under which—as a result of work undertaken with the market—gilt repo trading will take place. The Bank strongly urges all market participants to comply with the Code of Best Practice and not to enter into any repo or repo-like transactions unless there is sound legal documentation covering, among other things, marking to market, margining, netting and close-out in the event of default.

From 2 January 1996, there will be no official restrictions on anyone repoing, lending or borrowing gilts for any purpose, either directly or indirectly through an intermediary. The reform will therefore extend choice. By doing so, it should help to increase the demand for gilts and enhance the liquidity and efficiency of the gilt market. If successful, this should over time reduce the cost to the government—and hence the taxpayer—of servicing the national debt.

A series of mechanisms opened up by the gilt repo market should contribute to this goal. First, would-be investors will be able to repo out gilts—as 'collateral'—in order to finance

What is a repo?

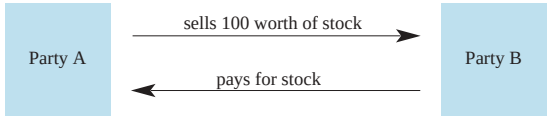
A repo is a 'sale and repurchase' agreement: Party A sells securities to Party B with a legally binding agreement to purchase *equivalent* securities from Party B for an agreed price at a specified future date, or at call. Party B has unfettered title to the securities, and may use or dispose of them as it pleases, but it has an obligation to deliver *equivalent* securities to Party A at the end of the repo.

The interest rate implied by the difference between the sale price and repurchase price is the repo rate. If Party A is selling securities to Party B in order to raise finance, the repo rate is, in effect, the cost to Party A of raising secured funds. Party B can 'lend' money to Party A for a 'repo rate' of interest, and take in a bundle of gilts. This is a *general collateral*, or GC, repo (see Figure A).

Alternatively, Party B may, for example, have a short position in a particular gilt, which it covers by obtaining ('reversing in') that stock from Party A. In this case, Party A is not paying Party B for raising secured funds; rather Party B is paying Party A for temporary title to an amount of the stock that it needs, for example to deliver into a sale. The repo rate may therefore be lower, so that Party A can invest the cash that it receives for the stock and earn a net return. This is a 'special' repo, ie a repo in a specific stock with a non-GC repo rate—see Figure B.

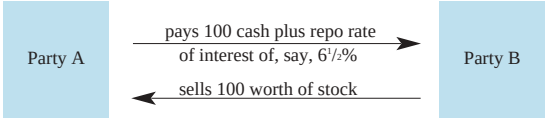
Figure A
General collateral repo (in non-specific stock)

First leg of the repo:



Party A now has 100 of cash, against which it has delivered 100 of stock to which Party B has full title.

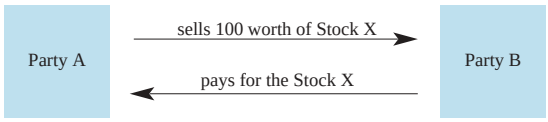
Second leg of the repo:



Party B has earned 6½% 'interest' on its cash.

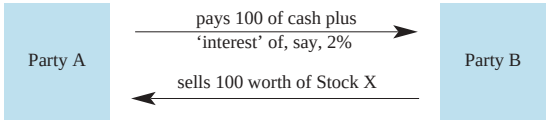
Figure B
Special repo (in a specific stock)

First leg of the repo:



Party B now has 100 of Stock X (eg to cover its short position) and Party A has the use of 100 of cash.

Second leg of the repo:



Party A has paid only 2% on the cash received in the repo, but has earned a higher money-market rate on investing the cash for the duration of the repo. Party B has foregone interest on its cash in order to cover its short position in Stock X.

purchases. This financing technique is widely used by international investors in other markets. Second, arbitrage in the cash market should be easier, as all market participants will be able to borrow stock to cover short positions. And, separately, the efficiency of the market in lending and borrowing gilts should be promoted if the price of borrowing stock becomes flexible.

Benefits should also arise from a greater integration of the sterling money and gilt markets. Gilt repo, as essentially a form of secured money, will extend the range of instruments traded in the sterling money markets. It is possible that they will also increase the emphasis placed on the cost of financing holdings of gilts and, more generally, promote arbitrage between the two markets, creating a more continuous yield curve.

What actually happens will depend on the appetite of market participants for repo trades. The role of the authorities has been to remove the obstacles to a repo market and to work with market practitioners on a framework for a safe and orderly market.

Market structure

Two major reforms are making the development of an open gilt repo market possible: to the structure of the gilt market, and to the tax regime for gilts.

The core of the gilt market structure will be unchanged, with gilt-edged market-makers (GEMMs) obliged to quote two-way prices on cash gilts on a continuous basis. But whereas in the past the existing stock-lending and borrowing facilities have been directed at servicing the market-makers, from 2 January any market participant will be free to undertake gilt repo or stock-lending transactions with any other for any purpose (subject to vires, supervisory consents, etc). There will be no official list of those who may undertake gilt repo transactions; it will be for each market participant to choose its counterparties. Similarly, any group will be free to offer intermediation services in gilt repos, on a name-passing, agency or matched-principal basis.

There are also changes for the core sterling market firms supervised by the Bank. Discount houses will be free to trade repos for any maturity and for any purpose, including running matched-book operations. Groups containing both a discount house and a Stock Exchange money broker (SEMB)—which currently provide intermediation services in stock borrowing and lending and in financing GEMMs' gilt positions—will be free to absorb the SEMB's sterling operations into the discount house.(1) As the Bank's counterparties in the money market, discount houses will, however, be required to remain separate from bank treasury operations in the same group.

To be supervised by the Bank of England, any SEMBs will need to run a business which, as now, is directed predominantly at servicing the GEMMs. Supervision by the Bank would no longer be appropriate if a SEMB opted to undertake wider business (unless it merged with, for example, a bank which was supervised by the Bank). It would then need authorisation from a self-regulatory organisation such as the Securities and Futures Authority and would no longer be a 'SEMB' as currently defined.

Gilt inter-dealer brokers (IDBs), which currently offer a matched-principal broking service among GEMMs in the cash gilt market, will also be free to offer a similar intermediation service to GEMMs in gilt repos.

Tax reforms

After the changes to the market structure, the second enabling step is the reform of the United Kingdom's withholding tax system. From 2 January 1996, UK and overseas companies and certain other investors will be able to receive gross dividends. The effect is that withholding tax should not be applied to dividend payments on most gilt holdings. Manufactured dividends(2) will be payable gross in all circumstances. This means that *all* counterparties to a gilt repo or stock loan will be able to manufacture gross dividend payments; most will also receive gross real dividends.

If that were the extent of the reforms, the Exchequer would suffer a one-off cash-flow loss. In order to offset this, UK-taxable investors who enter the new gross-paying arrangements will be subject to quarterly accounting to the UK tax authorities for tax on gilt interest. Investors wishing to take advantage of this gross payment regime will need to hold their gilts in special accounts (known as 'STAR' accounts) in the Central Gilts Office (CGO)—the book-entry transfer settlement system for gilts run by the Bank (see the box on page 327). If, as planned, international settlement systems—such as Cedel and Euroclear—join the CGO, then gilts owned by eligible persons held in those systems will also be able to receive gross dividends, provided that the settlement systems hold the gilts in CGO STAR accounts.

The Bank wrote to all CGO members in September allocating CGO STAR account numbers, to allow enough time for them to open STAR accounts by December. And following consultation in September and October, the Inland Revenue will soon finalise its Regulations for STAR accounts. It has also consulted on the revised tax forms that investors will need to use under the new quarterly accounting regime: both they and the implementing Regulations are due to be finalised shortly.

In tandem with these reforms to the withholding tax system, other important changes were introduced in the 1995 Finance Act which should promote the efficiency of the gilt market. In particular, from January 1996 the distinction between gilts that are and are not free of tax to residents

(1) The Bank will, however, review the nature and scale of equity and international securities lending intermediation that any discount houses taking this course would be permitted to undertake.
(2) A manufactured dividend is a payment of an amount equal to a dividend payment made by the 'borrower' of stock to the 'lender' of stock, so that the 'lender' receives the coupon income from the stock that it would have received had it not lent or repoed out the stock.

CGO STAR accounts and tax compliance

The main points concerning the operation of the CGO's new stock accounts are:

- To be eligible under the new CGO STAR account regime for gross dividend payments on gilts from January 1996, bodies will need to be UK-resident and subject to corporation tax, companies not resident in the United Kingdom, exempt bodies such as UK pension funds, or sovereign bodies not liable for UK tax.
- In order to obtain dividends gross, eligible market participants will have to hold their gilts in a CGO STAR account.
- Those already receiving gross payments have the choice of continuing with their current arrangements or moving to the CGO STAR account regime.
- So far as settlement is concerned, STAR accounts will function like ordinary CGO accounts, but they will be identifiable by their initial digit (which will be a 7 or an 8) and title (which will include the word 'STAR').
- An eligible market participant that is not a CGO member will need to make a declaration to a CGO member or to a 'recognised intermediary' (see below) to the effect that it is an eligible body. This declaration will be retained for inspection by the Inland Revenue. The declaration need be made only once for all current and future gilt holdings, unless the body's status changes.
- The Inland Revenue will maintain and publish a list of 'recognised intermediaries' who hold stock on behalf of others; it will embrace Stock Exchange members, EEA banks and building societies, and certain other UK and foreign intermediaries.
- Eligible bodies will need to ensure that their gilts are held in CGO STAR accounts by the end of November in order to receive gross payment on all gilts from the first dividend payment date in January 1996.(1)
- Existing CGO members have already been contacted about opening CGO STAR accounts.

(1) Those wishing to open a CGO STAR account should contact Hilary Jones, Central Gilts Office, Bank of England, 1 & 2 Bank Buildings, Princes Street, London, EC2R 8EU (telephone: 0171-601 4101).

abroad (FOTRA) will cease to be meaningful for most investors: most overseas investors will be able to receive gilt dividends gross and, having done so, will not be liable to UK tax whether or not a gilt is FOTRA.

On 10 July, following consultation by the Inland Revenue, the Chancellor of the Exchequer announced that the Government would introduce a fundamental reform of the taxation of gilts and other bonds from April 1996. The total return on wholesale investors' holdings of gilts and bonds will be taxed as income; this will make a strips market possible. Gilt issues that are designated strippable will be exempt from withholding tax and will therefore pay dividends gross from the start of the strips market.

Promoting a safe and orderly gilt repo market

The liberalisation involved in opening up the gilt repo market will involve new trading practices and, for some firms, new types of transaction. The Bank has therefore been addressing with market practitioners a series of measures designed to promote a safe and orderly market.

The Financial Services Act already provides a framework for the regulation of conduct of business and investor protection. Gilt repo transactions will also fall within the definition of 'financial instruments' for the purposes of the Investment Services Directive and the Capital Adequacy Directive, so that gilt repo trading will be subject to the requirements of the respective regulatory authorities.

Where new measures have been desirable, the Bank's role has been essentially catalytic, bringing together practitioners from various parts of the market to prepare and promote a standard legal agreement, a code of best practice and—where possible—standard settlement practices.

First, legal documentation using the PSA/ISMA Global Master Repurchase Agreement,(1) with which many market participants are already familiar, has been developed for use in the gilt repo market. An annex to the PSA/ISMA Agreement will cover points specific to the gilt market, such as the use of deliveries-by-value(2) in the CGO. This exercise has also prompted the ISMA, with the PSA, to review their Master Agreement. The opinion of leading Counsel on the key provisions of the Gilt Repo Legal Agreement, consisting of the revised PSA/ISMA Agreement with gilt annex, is being sought and will be published.

The use of a proper legal agreement is of paramount importance. The Bank strongly urges all market participants not to enter into any repo or repo-like transactions unless there is sound legal documentation covering, among other things, marking to market, margining, netting and close-out in the event of default. In other markets, some participants enter into undocumented sell/buy back transactions—where

(1) The PSA/ISMA Agreement was drawn up under the auspices of the Public Securities Association and the International Securities Market Association. The Agreement is widely used in existing repo markets.
(2) Delivery-by-value (DBV) transactions allow a bundle of gilts to a given aggregate value (rather than specific securities) to be delivered to another CGO member on an overnight basis. They unwind automatically the following day. DBVs are used primarily to provide collateral.

The key elements of the Gilt Repo Legal Agreement

The key elements of the gilt repo legal agreement (GRLA) are:

- It comprises the PSA/ISMA Global Master Repurchase Agreement for gross-paying securities together with supplemental terms and conditions to fit the characteristics of repos in gilts, set out as Part 2 to Annex I of the PSA/ISMA Agreement.
- It provides for absolute transfer of title to the securities being repoed.
- It provides for remargining during the life of a repo contract, or for a contract to be closed out and repriced. It also provides for close-out and set-off in the event of default.
- It provides for *all* transactions undertaken with a single counterparty under the PSA/ISMA Agreement with appropriate annexes (such as that for gilts) to be closed out and set off in the event of default by that counterparty.
- The GRLA facilitates the use of a series of overnight DBV transactions (securities delivered by value, rather than by individual security) in the CGO being entered into until either party wishes to end or amend the transaction, or until a specified date. Such transactions will be similar in economic terms to general collateral repos.
- It covers agency transactions where *one* of the parties acts as agent on behalf of a *named* principal.
- Users of the GRLA will be able to extend its provisions to cover further points specific to their needs, although they will need the agreement of their counterparties, and should obtain legal advice.

An updated and revised PSA/ISMA Agreement is being published. No major provisions are being changed, but there are minor changes of scope: for example, it will now cover some agency transactions, allow for repricing as a form of margin adjustment, and include an annex to allow repos to be structured as buy/sell backs.

The opinion of leading Counsel on the effectiveness of the GRLA between UK-incorporated counterparties will be made available to market participants.

a spot sale and forward purchase are undertaken as linked transactions. Such an arrangement provides less protection against market price movements in the event of counterparty default than does a properly documented repo, and the Bank regards this as falling well short of best practice.

The gilt repo Code of Best Practice

The key elements of the Code of Best Practice for gilt repo transactions are:

- Before entering into gilt repo transactions—and regularly thereafter—participants should review all legal, credit, systems and procedural matters relating to gilt repos to ensure that trading is adequately controlled and understood.
- New clients should be made aware of the Code.
- Gilt repo transactions should be subject to a legal agreement between the two participants concerned. It is strongly recommended that participants use the gilt repo legal agreement (subject to legal confirmation that it is appropriate for the transactions intended).
- A legal agreement should provide for: the absolute transfer of title to securities; daily marking to market of transactions; remargining; and full set-off of claims between the counterparties in the event of default.
- Particular consideration needs to be given to the effectiveness of any legal agreement proposed with a non UK incorporated counterparty.
- Margin should be called whenever a counterparty has a mark-to-market valuation exposure that they consider material.
- Taking delivery of securities and margin directly or via a third party can reduce potential credit risk. Those considering leaving securities purchased in the custody of their counterparty (a 'hold-in-custody' repo) should consider very carefully their counterparty's creditworthiness, systems and control procedures, etc.
- Special consideration should be given to 'stock events' such as ex-dividend dates, conversion options, etc occurring during the life of the repo.
- Confirmations should be sent out on the same day and checked on a timely basis.

The Code is recognised by financial regulators, exchanges and market associations.

These points are made in the industry-produced Code of Best Practice, which complements the Gilt Repo Legal Agreement. It endorses the best practice that has already developed over time in other repo markets and in London's existing cash gilt and stock-lending markets. The Code has been recognised as a statement of best practice by the Securities and Investments Board, the Securities and Futures Authority, and other regulators and trade associations. The Code Working Party will remain in existence as a standing body, and will keep the Code's provisions under review as the gilt repo market develops.

The report of the Gilt Repo Settlement Working Party, and CGO II

The Gilt Repo Settlement Working Party looked at existing gilt market and repo market settlement practices and relevant aspects of the Central Gilts Office (CGO) system.

The next generation of software for the CGO is currently being developed and should be in place by the end of 1996. Until then, various adjustments to the existing CGO and settlement conventions will be made to facilitate the smooth settlement of gilt repo transactions.

Enhancements to the current CGO system

The CGO settlement banks have agreed to increase the limit on free deliveries within CGO from £100,000 to £3 million to facilitate the movement of gilts as margin. They have also agreed to widen from 6% to 10% the consideration checking bands, which ensure that stock is transferred within the CGO at close to the market price, in order to allow smoother settlement of the second leg of a repo transaction. Both these changes will take effect from 2 January.

The capacity of the CGO is being increased by additional hardware and will be kept under review. And the CGO timetable is being extended at both the start and end of the day to accommodate any increase in volumes and help back offices.

Among the other points included in the Settlement Working Party report are:

- If the second leg of a repo transaction cannot be effected in CGO, even within the new consideration checking bands, it should be effected at the CGO Reference Price plus or minus the 10% checking bands, so as to minimise the side payment to be made through CHAPS.
- Repos will be possible using the CGO's delivery-by-value mechanism. Because DBVs unwind at the value at which they are initiated, a separate payment outside CGO will need to be made to cover the repo price differential.
- It is proposed that coupon entitlement should reflect the value date (settlement date), rather than the trade date as at present. This will be reflected in the Stock Exchange rules.
- Counterparties should agree whether margin should be delivered in cash, securities or by repricing the transaction.
- Where a repo spans an ex-dividend period, the forthcoming dividend payment should be factored into the calculation of margin.
- Open repos should be terminated and the gilts returned the same day if they are called before 10.00 am, unless the counterparties have agreed otherwise.
- The practice of call-over should be extended to cover all repo and stock-lending transactions, other than same-day trades. This involves the party due to deliver gilts calling its counterparty to confirm delivery.
- It is recommended that confirmations be sent and delivered on the day of trade, to ensure compliance with the gilt repo Code of Best Practice. A sample confirmation format, which may become the market standard, is included in the final report.
- Market participants cannot be forced to accept partial deliveries, but it is thought that many participants will wish to 'shape' large trades into smaller trades and also to accept partial deliveries. It is proposed that this become the basis of cash gilt market practice as well.

The development of CGO II

The Bank is proposing to use a clone of the CREST software to upgrade the current CGO software. Once in operation, it will:

- include a forward inputting facility;
- allow for the matching of trades for settlement;
- allow memorandum information, such as the repo rate, to be recorded;
- allow free deliveries for margin adjustments (which will be limited to £3 million in CGO I);
- allow the settlement banks to control their exposures by putting debit caps on members; and
- subject to there being room under these caps, allow settlement of the second leg of repos at the originally agreed price, regardless of prevailing market prices.

Monitoring the gilt repo market

The Bank plans to monitor gilt repo activity closely, in support of its operational responsibilities for gilt-edged funding and in order to provide information on the development of the market. Gilt repo activity undertaken by the Bank's money and gilt market counterparties will be covered by routine statistical returns and at supervisory and operational meetings. The Bank's gilt and sterling money market desk will monitor rates and day-to-day activity in the market.

In addition, the Bank is currently consulting on the collection of quarterly data from active gilt repo participants, with a view to publishing aggregate data in the *Quarterly Bulletin*. The proposed quarterly reports will cover:

- the value of repo contracts entered into during the period, broken down by original maturity;
- the total number of deal tickets written during the period; and
- the value of repo transactions outstanding at the end of the period, broken down by residual maturity.

This information will be requested for both repo and stock lending transactions, and will include buy/sell transactions undertaken under appropriate documentation. The Bank also aims to collect data on any undocumented transactions.

A third working party has considered a range of technical settlement and systems issues, such as whether to standardise various back office procedures relating to gilt repos and how repo transactions should be handled in the CGO. The CGO will be able to deal with greatly increased volumes, through an addition to its hardware capacity and an extension to its operating timetable to make it more convenient for users.

Where possible, settlement practices and related conventions for gilt repo transactions will conform with both existing gilt market and repo market practices. Where there are differences, the process of consultation has led to consensus either on what approach to adopt or, on certain points of detail, that the matter should be for counterparties to agree bilaterally. It is possible that some market practices which are necessary in the early days of the gilt repo market may not be needed when the upgraded CGO (CGO II) comes into operation. It is proposed that CGO II be based on CREST software and that it should incorporate many new services and features that will make the settlement of gilt repo transactions smoother and easier than is possible using the existing CGO software.

Some of the Working Party's recommendations are being adopted by the CGO, and some are reflected in the Gilt Repo Legal Agreement or the Code of Best Practice (or its Annex on conventions). The Stock Exchange is preparing amendments to its rules covering settlement practices in the cash gilt market.

Monitoring the market

The Bank supervises institutions rather than markets, and will not supervise the gilt repo market as such. It will, however, monitor its size, growth and orderliness, as well as its interaction with other markets. Day-to-day monitoring, both from the Bank's dealing room and via liaison with market participants, will focus on market rates and trading patterns. Beyond that, the Bank aims to collect data, mainly on activity levels, from the main repo market players; it plans to publish this in aggregate form and has put proposals to the trade associations whose members are affected.

Conclusion

This note has outlined some of the main elements of the preparations for the gilt repo market. Those interested in using the market should ensure that they follow the Code of Best Practice. They should seek professional legal, tax or other advice as necessary in order to ensure that all their business procedures and systems and controls are fully prepared for undertaking gilt repo transactions; and that, *prior* to starting trading, they have in place appropriate legal agreements with *all* counterparties (and legal opinions for non UK incorporated and other counterparties, as necessary).

Copies of the Gilt Repo Legal Agreement, the Code of Best Practice, the report of the Settlement Working Party and the repo monitoring forms that the Bank would like to receive from the main gilt repo market players are available from the Bank's Gilt-Edged and Money Markets Division.[1]

(1) Those interested should contact Mrs Amman Athwal, Gilt-Edged and Money Markets Division, Bank of England, Threadneedle Street, London EC2R 8AH (telephone 0171-601 5535).

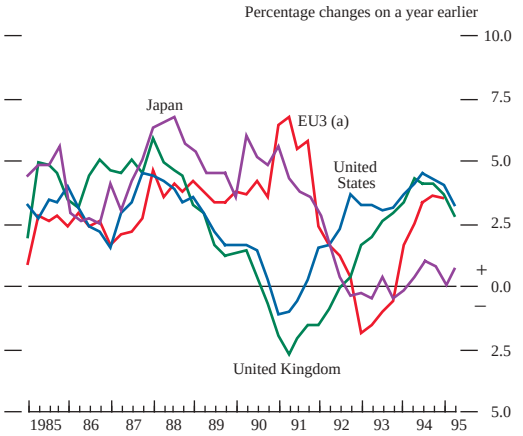
The international environment

- *Growth in the major six overseas economies slowed in the second quarter, in part because of stock adjustments. It slowed sharply in the United States; in Japan, growth in the second quarter was stronger than in the first, but the economy remained weak. In Europe, too, there was some evidence of a slowdown. Monthly data for the third quarter have been mixed.*

- *Inflation fell in all the major economies between June and July, and fell further in the United States and Germany subsequently. Commodity prices continued to fall in the third quarter.*

- *Official interest rates were cut in the United States, Japan, Germany and several other European countries during the third quarter. The dollar strengthened to a 14-month high against the yen. A further fiscal package to boost economic recovery was announced in Japan; contractionary budgets were announced in France and Italy.*

Chart 1
GDP in the major economies



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

Table A
Contributions to growth in 1995 H1

Percentage points (a)

	United States	Germany	Japan	France	United Kingdom
Consumption	0.8	0.5	0.6	1.1	0.5
Investment	0.8	—	0.3	—	0.3
Government expenditure	—	0.3	—	0.2	0.1
Stockbuilding	-0.3	-0.1	0.1	-0.8	—
Domestic demand	**1.4**	**0.7**	**0.9**	**0.5**	**0.9**
Net external trade	-0.4	0.3	-0.1	0.6	0.4
GDP	**1.0**	**1.1**	**0.8**	**1.1**	**1.2**

(a) Half-yearly contributions relative to the end-1994 position. Components may not sum to total because of rounding.

Overview

This article assesses economic developments in the European Union (excluding the United Kingdom), North America and Japan. These countries account for just under 50% of world GDP, according to IMF calculations, but for three quarters of UK trade.

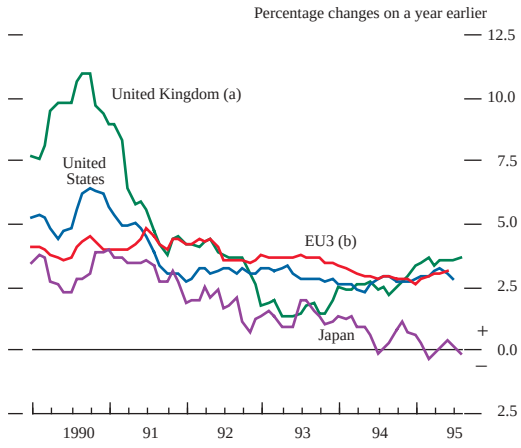
Year-on-year growth in the major six overseas economies slowed to 2.4% in the second quarter, down from 3.0% in the first and 3.3% in the fourth quarter of 1994. The stock cycle held back growth in the United States, Germany, France and Italy.

In all the major overseas economies other than Japan, GDP grew by around 3% or more year on year in the first quarter (see Chart 1). The Japanese economy barely grew at all; but over the second quarter, Japanese GDP grew by 0.8%, surprising most observers and possibly reflecting a recovery after the economic effects of the earthquake earlier in the year. The US economy slowed sharply in the second quarter, but fears of a standstill in growth were not realised. Growth slowed in Europe. Newly compiled GDP data for the whole of Germany showed much slower growth in the first quarter, but annualised growth of 4.3% in the second. Growth in Spain was strong in the first half. In France and Belgium, however, there was a marked slowdown in the second quarter, and in Italy GDP fell.

The slowdown in US growth largely reflected an inventory correction, as demand was met partly from stocks, rather than new production, so as to reduce stocks towards desired levels. A similar process may have occurred in Europe; stockbuilding cut growth in Germany, France and Italy in the second quarter.

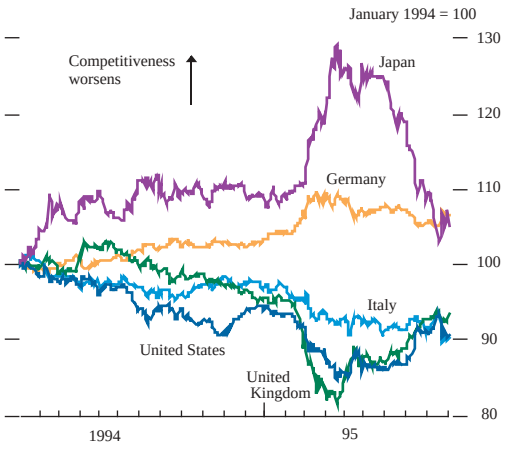
Outside the United States, investment was weak in the first half of the year (as Table A shows), in contrast to consumer spending. Business confidence was particularly low in France, Germany and Japan. External trade contributed positively to growth in Germany and France, despite real exchange rate appreciation.

Chart 2
Consumer prices in the major economies



(a) RPIX measure.
(b) A GDP-weighted average of Germany, France and Italy.

Chart 3
Effective exchange rates



Inflation has generally remained low and may fall further. Commodity prices fell during the first three quarters of 1995, and by the third quarter lower oil prices had been passed through to producers.

Average producer and consumer price inflation in the Group of Seven (G7) major economies remained at an annualised rate of around 2½% in the first half of the year. In the third quarter, a key feature was the noticeable fall in consumer price inflation in August in both the United States and Germany. In the United States, this was despite a further fall in unemployment, from an already low level. The explanation for this may lie in increased labour market flexibility, which has prevented the emergence of wage pressures. Only in Italy does inflation remain an immediate concern.

The low-inflation environment and the news suggesting relatively soft activity led to a general easing of official interest rates in the third quarter. The main development on the foreign exchanges was a depreciation of the yen.

As reported in the August *Quarterly Bulletin*, the Federal Reserve in the United States cut its key interest rate by 25 basis points to 5.75% on 6 July. In Germany, the Bundesbank cut its discount and Lombard rates by 50 basis points, to 3.5% and 5.5% respectively, on 24 August—the second 50 basis point cut in the discount rate this year. It cited continuing weak M3 growth as the main factor behind its decision. Austria, Belgium, Denmark, the Netherlands and Portugal followed suit and in the following week France cut its 5–10 day repo rate by 35 basis points to 6.15%—the fifth cut since June.

In September, the Bank of Japan eased its monetary policy, halving the Official Discount Rate (ODR) to 0.5%, its lowest level ever and the lowest official rate anywhere in the world. Together with concerted central bank foreign exchange intervention in August, and earlier moves to facilitate outward investment from Japan, this helped to produce a turnaround in the yen/US dollar exchange rate, with the dollar rising to a high of ¥104.7 on 19 September. The strengthening of the dollar was accompanied in Europe by an appreciation of other currencies against the Deutsche Mark in the first part of the quarter, but later public concerns about the prospects for economic and monetary union (EMU) led to a partial reversal of the Deutsche Mark's fall.

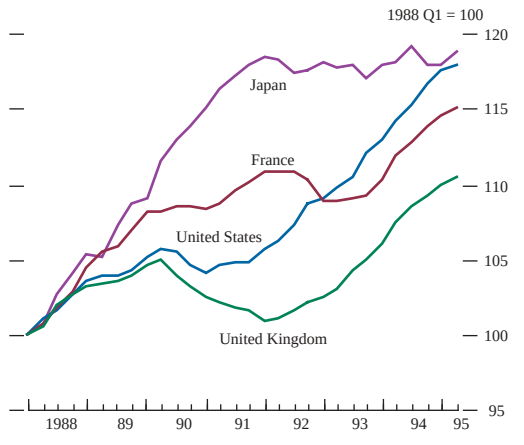
Fiscal policy was further relaxed in Japan in an attempt to stimulate the depressed economy, with supplementary packages in July and September. Elsewhere, fiscal tightening remained the objective.

US growth continued, but slowed sharply in Q2

After a quarterly rate of around 1% during 1994, US GDP growth slowed to 0.7% in the first quarter of 1995, and only 0.3% in Q2. In 1994, growth was boosted by 0.6 percentage points by restocking, as the economy readjusted from the recession in the early 1990s; during this year, an inventory correction has occurred—notably in the automobile sector—reducing growth by 0.3 percentage points in the second quarter. In fact, around half of the 0.8% fall in industrial production in the second quarter was in the automobile sector. It seems to have been in response to an unexpected slowdown in the growth of car sales, which led to a faster build-up of stocks and cutbacks in production.

Chart 4
United States: manufacturing inventories to output ratio

Chart 5
GDP in selected economies



Some further reduction in the ratio of stocks to output may have occurred in the third quarter, although automobile sales grew strongly, limiting the need for further destocking there (see Chart 4).

Other data on US activity in the third quarter have been mixed. The monthly employment data have been volatile, but stronger than in the second quarter. Industrial production increased in the third quarter, following a fall in the second, suggesting that industrial output may have passed a trough. Overall, activity probably returned towards—but not above—its trend rate of growth.

The Japanese economy grew in the second quarter, but has remained depressed

The early 1990s recession in Japan was long but mild by recent international standards, and GDP did not fall by much (see Chart 5). Equally, the upturn has been muted. Japanese GDP grew by only ½% in 1994 and the outturn for this year may be little higher. GDP was more or less flat in the first quarter, but grew quite strongly in the second. The stimulus to growth came from consumption and investment. The current account surplus has been falling; export growth slowed in the second quarter—though volumes continued to rise—while imports surged, despite lacklustre domestic demand.

The Bank of Japan's August Tankan survey of business expectations showed the first fall in business confidence for almost two years. It was unclear, however, to what extent the 11% depreciation of the yen against the dollar in August was reflected in the survey. Concerns that the decline in employment would accelerate and about the continued problems in the financial sector seem likely to have undermined confidence.

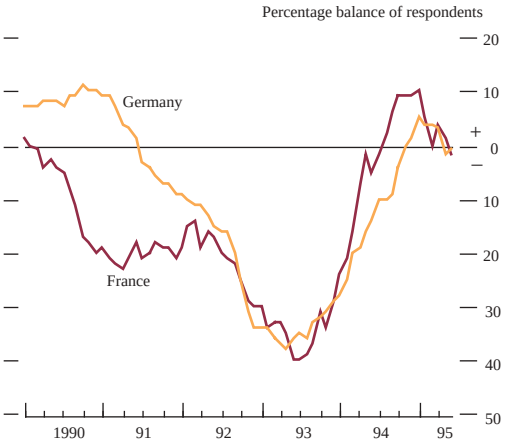
A major source of the weakness in demand has been the real estate sector. The collapse of a speculative boom in property has left the banking sector with bad loans totalling around 10% of GDP, according to official estimates. The major banks have had some success in reducing their bad loans, but by international standards their capital ratios remain low.

The so-called 'second tier' banks, particularly the agricultural co-operatives, are in a more serious position, with a substantial proportion of property loans on their books; there is little sign of any recovery in the real estate sector. It is possible that a shortage of credit is holding back recovery. The lower interest rates during 1995 have, however, led to a widening of banks' margins and will have boosted their profits.

European growth depends on consumption and investment

In the second quarter, growth slowed in France and Italy, but not in Germany. New GDP data for the whole of Germany showed growth of 0.2% in the first quarter and 1.1% in the second, suggesting a slightly lower rate of growth in the first half of this year than that in the second half of 1994. Growth in eastern Germany, at around 7% a year, was below the official projection of 9% or so for 1995. The rise in growth in the second quarter is, however, difficult to reconcile with survey evidence of a slowdown, and slower credit growth. Because of changes in the way the

Chart 6
Business confidence[a]



(a) Source: European Commission.

Chart 7
European GDP growth

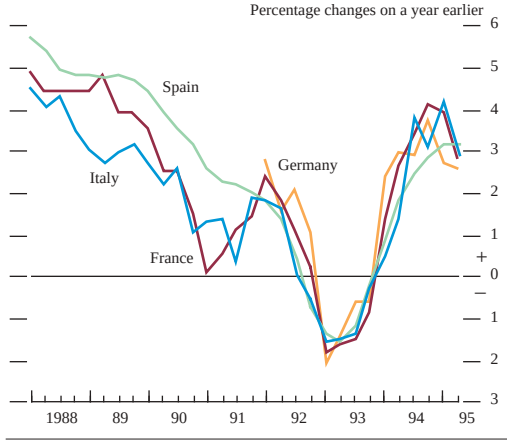
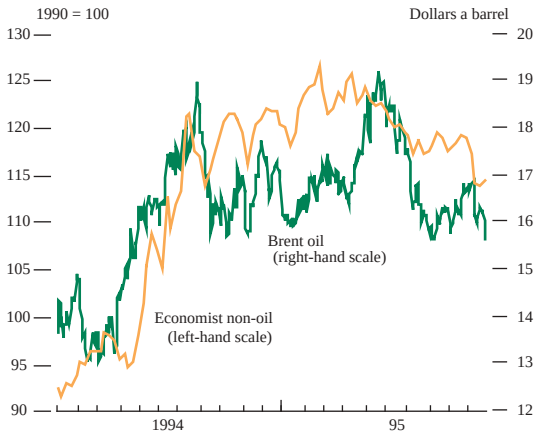


Chart 8
Commodity prices[a]



(a) In dollars.

industrial production statistics are compiled, quarter-on-quarter comparisons may be less reliable than usual.

Growth in France slowed markedly in the second quarter, despite the big boost to consumption from the government's scheme to subsidise purchases of new cars. Consumption in the third quarter is likely to have been affected by the increase in VAT in August, but may also have been bolstered by a pick-up in employment and a reduction in the relatively high saving ratio. As in Germany, investment and stocks held back growth in the second quarter, as business confidence fell (see Chart 6).

The Italian and Spanish economies grew very strongly in the first quarter. In the second quarter, Spanish GDP grew less quickly, but measured Italian GDP—which tends to be volatile—fell by 0.4% compared with the first quarter, reflecting a sharp fall in stocks.

The outlook for the continental European economies depends on whether other elements of domestic demand—notably household consumption and investment—sustain recovery, now that the impetus to growth from stockbuilding has passed. There is a risk that continuing high levels of unemployment and further fiscal consolidation may hold back consumption, and hence growth.

It is interesting that the year-on-year rates of growth in the major continental European economies seem to have converged at around 2½%–3% a year (see Chart 7). A key question for the international economy is whether economic cycles—not just in Europe, but globally—are becoming more synchronised. If so, this could increase the risk of larger upswings and downswings, as external demand would reinforce, rather than offset, the effect on output of fluctuations in domestic demand.

Inflation fell a little further

Weaker energy and commodity prices relieved some of the price pressures on producers in the first three quarters of the year. Oil prices fell from a peak of $19 a barrel in May to around $16 a barrel in September. Commodity prices, as measured by the Economist non-oil index, fell by 2.7% in the third quarter, taking the reduction since January to 7.2%. The sustained rise in commodity prices after the start of 1994 seems, therefore, to have come to an end. Falls in the prices of food and energy held down consumer price inflation in Europe—notably in Spain, Sweden and Italy.

G7 consumer price inflation has remained between 2% and 2½% over the past 18 months, and fell from 2.4% to 2.3% between June and July. Consumer price inflation subsequently fell further in the United States—to 2.4% in September—and in Germany, to 1.5% in August on reweighted data.

The fall in US inflation is particularly interesting, given the mature stage of the recovery and low level of unemployment. The explanation may lie in labour market developments. Despite the fact that the economy is probably close to 'full employment' when judged by historical standards, there has been no sign of a rise in earnings growth and unit labour costs have been flat. It is possible that the rate of unemployment consistent with stable inflation—or NAIRU—has fallen, perhaps because of greater labour market flexibility and business restructuring. Increased job insecurity,

caused in part by rapid technological change, may have added to this effect. Investment in new technology may also have led to higher productivity growth.

In Germany, labour market developments have been less favourable for inflation. High wage settlements were conceded earlier this year, and the length of the average working week was reduced from October: as a consequence, unit labour costs are likely to rise this year and next. The very low level of consumer price inflation in August partly reflected sharp falls in seasonal foods, which provisional data suggest unwound to some extent in September.

In France, consumer price inflation rose by 0.5 percentage points to 2% between July and August, reflecting the increase in VAT imposed during the month. In September, prices rose a further 0.4%, but the annual rate of inflation remained around 2%.

Consumer price inflation has been around or just under zero in Japan for most of the year. In the second quarter, core consumer prices fell by 0.2% compared with a year earlier; over the same period, the consumers' expenditure deflator—which may give a more accurate reading of inflation—fell by 1.1 percentage points. The deflationary pressure reflected not only lower import prices resulting from the stronger yen in the first part of the year, but also structural changes leading to more competition and discounting in the retail sector.

Only in Italy and Canada has inflation picked up during 1995. In Canada, the annual rate rose from around ½% in January to 2.9% in May, but—as in the United States—the annual rate then fell, and was 2.3% in August; in Italy, inflation rose from around 4% in January to 5.8% in August. In Canada, the rise was almost all accounted for by the dropping out from the year-on-year comparison of a cut in tobacco taxes in February 1994. Some of the increase in Italian inflation reflected higher indirect taxes, which will fall out of the index in early 1996. But there is some risk in Italy that higher inflation will feed through to wage growth. The danger of such second-round effects was increased by measures in the budget for 1996 to allow public sector employees to recoup real earnings losses over the past two years. The box on page 336 looks more closely at inflation performance among countries in the European Union.

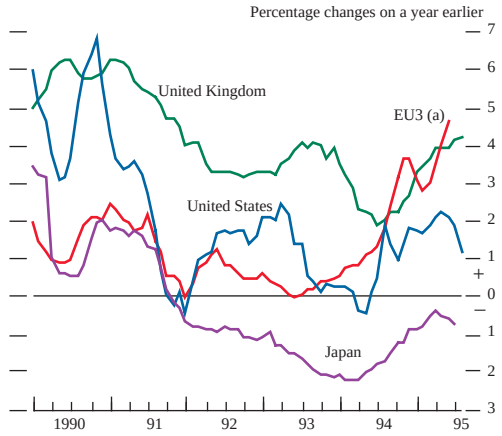
For the G7 as a whole, narrow money growth has remained modest, at 2.1% a year in June. But within this, there were considerable country differences. In the three months to July, Canadian M1 grew at an annualised rate of 18%. In Japan, the comparable rate was 15%. In continental Europe, however, narrow money growth has been very weak. M1 in Germany grew by 2.9% in the year to July, and in France and Italy its growth was even less.

Average broad money growth in the G7 as a whole was 3.2% in June, little changed from the average rate in 1994. But distortions arising from asset substitution have been significant.

Official interest rates have been cut in all the major regions

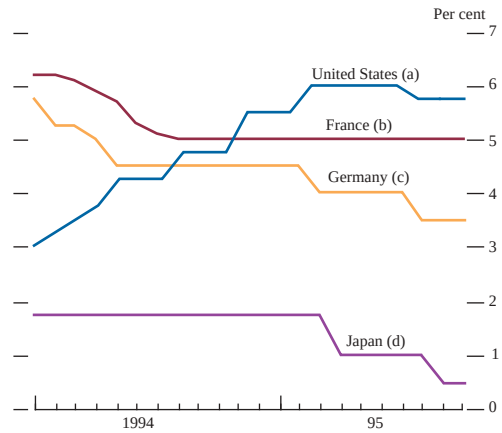
Following the 25 basis point cut by the US Federal Reserve on 6 July (discussed in the August *Bulletin*), a round of European interest rate cuts was initiated in Germany on 24 August. The Bundesbank cut both the Lombard and discount rates by 50 basis

Chart 9
Producer prices in the major economies



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

Chart 10
Official interest rates



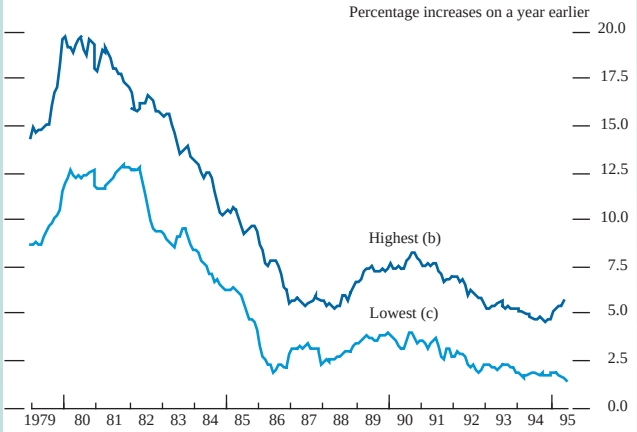
(a) Federal funds target rate.
(b) Intervention rate.
(c) Discount rate.
(d) Official Discount Rate.

Inflation in continental Europe

In the first eight months of 1995, inflation differentials widened between those EU economies with the highest inflation and those with the lowest. This box examines whether this is a temporary deviation or a break in the trend towards convergence.

Following the introduction of the exchange rate mechanism, the inflation differential between historically higher-inflation and lower-inflation countries has fallen. But, as the chart shows, in the first eight months of 1995 inflation fell in the historically lower-inflation countries, but rose elsewhere.

EU consumer prices(a)



(a) Inflation is weighted by GDP for each group of countries.
(b) The four countries with the highest inflation in December 1994: Greece, Italy, Portugal and Spain.
(c) The four countries with the lowest inflation in December 1994: Belgium, Denmark, Finland and France.

Consumer price inflation performance in EU countries

	Aug. 1995 Per cent	Change since Dec. 1994 (percentage points)
Austria	2.1	-0.5
Belgium	1.2	-0.7
Denmark	1.7	-0.6
Finland	0.4	-1.1
France	1.9	+0.3
Germany	1.5	-0.9
Greece	8.4	-2.4
Ireland	2.4	+0.1
Italy	5.8	+1.7
Netherlands	1.5	-1.1
Portugal	4.0	-0.1
Spain	4.3	—
Sweden (a)	2.5	—
United Kingdom (RPIX)	*2.9*	*+0.4*

(a) The figures for Sweden are for July.

To some extent, the different recent experiences reflect changes in tax rates. Changes in indirect taxes feed into headline consumer price indices fairly rapidly. In Germany, the impact of the mineral oil tax in 1994 dropped out of the index in 1995, reducing recorded inflation by 0.4 percentage points. Conversely, indirect taxes have been raised this year in both Spain and Italy. Under current budget plans, tax effects are likely to produce some convergence among inflation rates next year, as the headline rates in Italy and Spain fall back, while tax increases push up inflation in France and Belgium.

Underlying inflation rates, however, have also diverged in 1995. Whether or not convergence of underlying inflation rates resumes depends on a number of factors:

Exchange rates: There have been significant movements in exchange rates in 1995. But the depreciation of the weaker currencies in the first four months of the year was largely reversed in the third quarter, so any changes to cost pressures arising from this should prove to be temporary.

Producer prices: In a number of the historically higher-inflation economies, there has been some evidence of pressures in the supply chain. Producer prices have risen faster than consumer prices (possibly reflecting earlier exchange rate developments); in Sweden, for example, annual producer price inflation was nearly 11% in August. In the past, however, such pressures have taken some time to feed through to consumer prices.

Wage pressures: Wage settlements have been higher in Germany than elsewhere this year. On its own, this would increase inflation convergence within the European Union. But there is also a risk that the higher current inflation in some other countries will feed through into wages next year. In Italy, the 1996 budget allows for public sector pay increases partly to offset real wage declines over the past two years. And if such second-round effects persist, any impetus towards long-term convergence will be weakened. Such pressure is not uniform across higher-inflation economies, however; Spanish wage pressures may be reduced by the combination of high unemployment and labour market reforms.

Demand pressures: In the short run, stronger demand is likely to make it easier for retailers to pass on any rising costs, since consumers may be less resistant to price increases. If so, costs may be passed through more rapidly than they were following the last major bout of exchange rate depreciation (in 1992–93), which coincided with the European recession.

The balance of risks at present may suggest rising inflationary pressures in some economies. But these risks are generally concentrated in a small number of economies. Furthermore, the higher-inflation countries have shown a willingness to tighten monetary policy in response to inflationary pressures, so the divergence may be only a temporary phenomenon.

Chart 11
Nominal exchange rates

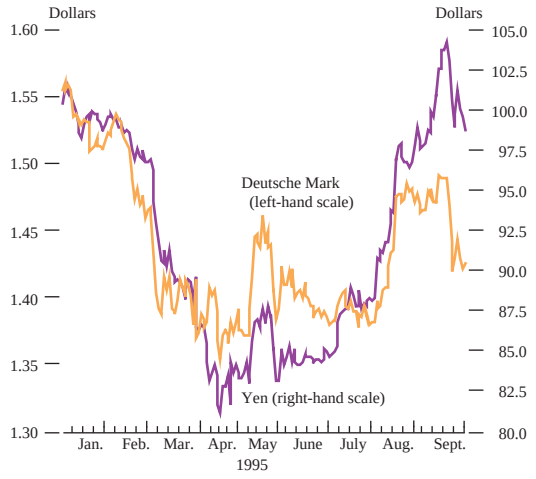


Chart 12
Ten-year government bond yields

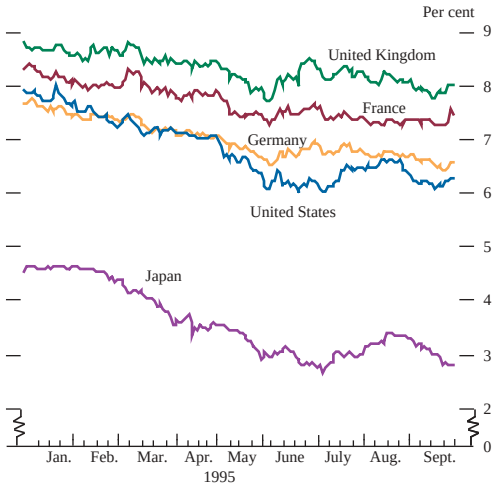


Table B
Three-month interest rates expected in March 1996[a]

Per cent

	1994	1995		
	30 Dec.	30 Mar.	30 June	29 Sept.
US dollar	7.22	6.94	5.77	5.73
Deutsche Mark	5.62	5.85	4.90	3.95
Yen	2.95	1.85	0.94	0.53
Sterling	7.47	8.37	7.72	6.71

(a) Expected rates as implied by futures contracts.

points, to 5.5% and 3.5% respectively—the second 50 basis point cut in the discount rate this year. Austria, Belgium, Denmark, the Netherlands and Portugal followed suit in cutting rates; and the Bank of France cut its 5–10 day repo rate by 35 basis points to 6.15% in the following week. Ireland reduced its interest rates by only 25 basis points, in the face of very strong growth (of around 6% a year) and a slight pick-up in inflation. Official rates were held steady in Sweden, Italy and Spain, following rises in the second quarter.

The Bank of Japan cut its ODR by 50 basis points on 8 September, to a record low level of 0.5%; Governor Matsushita said that the easing was to prevent the further spread of deflation and to secure economic recovery. The Bank of Japan also reaffirmed its intention of guiding market rates below official rates. The easing of Japanese monetary policy was further promoted by official purchases of US dollars which, helped by earlier moves to liberalise outward portfolio investment from Japan, helped push the yen to a 14-month low of ¥104 against the dollar on 19 September (see Chart 11). This was accompanied by a strengthening of other European currencies against the Deutsche Mark.

By mid-September, exchange rate movements had largely reversed the sharp changes which occurred in the first four months of the year, as Chart 11 shows. But in the latter part of September, some European currencies experienced turbulence related to market uncertainty about monetary union.

Government bond yields fell gradually throughout the first three quarters of 1995. Around July, yields in most countries increased sharply, but they subsequently fell back to earlier levels except in Italy and Spain. Nonetheless yield curves steepened in August/September, reflecting lower short-term rates and some market uncertainty concerning medium-term fiscal prospects and, within Europe, monetary union.

By the end of the quarter, markets appeared to expect little further change to short-term interest rates in the following six months (see Table B). Implied interest rates two years ahead fell during the third quarter. Expected interest rates more than two years ahead fell by less, and indeed they rose in France, suggesting that short-term cyclical factors—rather than a longer-term improvement in the credibility of monetary policy—were responsible for the fall in implied short-term rates there.

Fiscal stimulus in Japan contrasted with tightening elsewhere

Further fiscal measures were unveiled by the Japanese authorities in September, making a total of seven fiscal stimulus packages in the past three years. The total value of the most recent package was ¥14 trillion—equivalent to 3% of GDP—of which about ¥8 trillion is estimated to involve new spending. About half of the total package is in the form of capital expenditure.

Elsewhere, further fiscal tightening has been announced. In the United States, cyclical factors have led to a narrowing of the fiscal deficit, but there is also evidence of structural improvement. Although major uncertainty surrounds the budget for the fiscal year 1996, there appears to be a greater determination to achieve a balanced budget some time in the next decade. The US Congress

has passed a resolution on balancing the budget within seven years; the Administration has set out a ten-year plan to achieve a budget balance.

In France, the 1996 budget unveiled in September confirmed the government's intention to reduce its deficit to 3% of GDP in 1997, in line with the Maastricht convergence criterion. Tax receipts in the first eight months of 1995 were below target, however, because growth has been lower than forecast.

In Italy, robust growth in the first quarter and the completion of pension reforms in August both helped the three-year stabilisation plan which the authorities have put in place. The government deficit to GDP ratio this year may be lower than the original target of 8%. But attempts to stabilise the debt position are made more difficult by the risk premia on interest rates. At the end of September, Italian ten-year government bond yields were 368 basis points higher than those in Germany. The 1996 budget announced in September targeted a reduction in the deficit to GDP ratio in 1996 from 7.4% to 5.8%, to be achieved by a combination of cuts in spending and additional receipts.

Financial market developments

- *Developments affecting the Japanese markets, including the depreciation of the yen against the dollar, were the focus of attention for many market participants during the third quarter.*
- *Total gross debt issues continued to increase compared with their low levels last year and the recovery in emerging-market debt continued.*
- *Prices in most major equity markets rose strongly as expectations of further interest rate rises waned, but turnover was mixed; and on most major derivatives exchanges volumes were down.*

Overview

During the third quarter, the attention of many market participants was focused primarily on developments in Japan, with sentiment strongly influenced by the depreciation of the yen against the dollar.(1) But the other major bond markets were fairly settled in the period and total gross debt issues continued to increase after the generally low levels in 1994. In particular, international bond issues rose during the quarter and their average maturity increased. The recovery in emerging-market debt also continued: the Salomon Brothers Brady Bond index rose 6.6%, with Brazilian Brady bonds particularly strong.

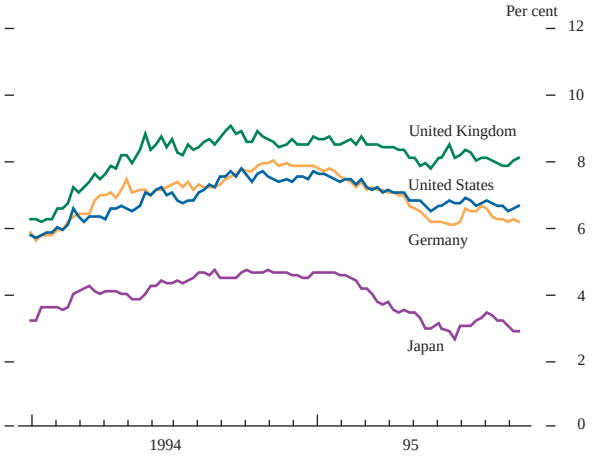
Prices rose strongly in nearly all the world's major equity markets during the quarter, as expectations of interest rate rises waned. Turnover on the US exchanges increased strongly, whereas—with the exceptions of Paris and Switzerland—turnover on most of the European exchanges fell slightly; and the fall in turnover on the Tokyo Stock Exchange was particularly striking. Equity issues with an international tranche increased in the quarter and are expected to remain buoyant.

Turnover on the world's major derivatives exchanges fell slightly during the quarter, with the exception of the main German derivatives exchange (the DTB). In particular, turnover on the Chicago Mercantile Exchange (CME) was down 16% compared with the second quarter.

Bond and other debt markets

The Japanese authorities' announcement on 2 August of measures to promote purchases of overseas assets led to expectations of higher Japanese investment in other major bond markets. The measures were interpreted in many quarters as a response to the strength of the yen against the dollar, and may have been one factor that contributed to the subsequent fall of the yen. Survey data suggested that many investors began to lengthen their dollar, and shorten their yen, positions.(2) Ten-year Japanese government bond yields fell as low as 2.6% at the beginning of the quarter, 200 basis points lower than at the beginning of the year. They then rose to 3.4% by the middle of the quarter, but fell back to end the quarter at 2.9%. On 8 September, the Japanese government announced a large fiscal stimulus package in order to forestall disinflationary forces.(3)

Chart 1
Ten-year government bond yields



Source: Bloomberg.

The Federal Reserve's cut of 25 basis points in the federal funds target rate on 6 July led many market participants to conclude that the chances of any further reduction were evenly balanced, and there was no strong trend in yields over the rest of the quarter. Ten-year yields rose from 6.21% to just over 6.5% in mid-August, but fell again to 6.32% by the end of the quarter. In Germany, market sentiment continued to be dominated by signs of weaker economic growth. The Bundesbank cut its discount and Lombard rates by 50 basis points on 24 August. Yields on ten-year government bonds (Bunds) fell as low as 6.43%, but then recovered slightly to end the quarter down 25 basis points.

(1) For more detail on exchange rate developments during the quarter, see the review of the operation of monetary policy on pages 317–24.
(2) Source: Merrill Lynch Global Investor Survey.
(3) For more detail on this, see the review of the international environment on pages 331–38.

The spreads between most 'non-core' European (including Italian, Spanish and Swedish) government bonds and Bunds fell for most of the quarter. Greater currency stability led investors to treat some non-core markets as in effect high-yield Bunds—which increased demand for these bonds. So the spreads on ten-year Italian government bonds fell to 366 basis points, having been as high as 493 basis points in the second quarter, and Spanish government bond spreads were some 60 basis points lower than their average during the second quarter. But public discussion of the prospects for economic and monetary union (EMU) led to some turbulence—and widening of spreads—at the end of the quarter.

International issues

At $121 billion, total international gross bond issues in the third quarter reached their highest level since the first quarter of 1994. The growth of floating-rate bond issues was particularly strong, with the ratio of floating to fixed-rate issues rising from 0.17 to 0.24 in six months. Announcements of syndicated loans totalled $72 billion in the quarter (of which $21 billion was accounted for by a single loan to an American corporate borrower), 29% below the peak of the first quarter of this year, but 21% higher than in the third quarter of 1994. The fall over the course of this year has been partly because borrowers have seen bond markets as an increasingly attractive alternative to loans. Total euromedium-term note (EMTN) announcements were up 29% on the same quarter last year, as the market continued to offer low fees to many of the more frequent borrowers.

The increase in issues was coupled with an increase in the average maturity of international issues, which rose to 6.2 years—its highest level since the second quarter of 1994. The average maturity of yen-denominated issues rose 76% compared with second quarter to 6.6 years; the average maturity of new dollar issues was 7.7 years.

Since the start of 1994, banks have increased their share of international bond borrowing: by the third quarter, it was 31%, up from 28% in the same quarter a year earlier. Non-financial companies' share has also risen slowly, from a trough of 18% in the fourth quarter of last year to 24% in the third quarter of this—which was comparable with the figure for the first half of 1994.

The recovery in the market for emerging-market debt continued, with Latin American international bond issues again high, at $6.3 billion, and improved secondary market conditions. Investor demand was strong as volatilities fell: the 90-day volatility of the Salomon Brothers Brady Bond index fell from a peak of 39% in April to around 17% at the end of September. The much smaller East European debt market benefited both from the general positive sentiment towards emerging-market debt and from Moody's rating of Polish sovereign debt at investment grade: East European bond issues totalled $0.9 billion, down on the second quarter's peak, but 3.6 times higher than in the first quarter. Eastern European borrowers, such as Slovakia, also increasingly tapped the syndicated loans market. The first South African Rand-denominated international bond was issued.

Dollar issues

The proportion of dollar-denominated international bond issues rose to 38% over the third quarter, whereas yen-denominated issues fell to 19%; since the start of 1994, the yen's share of quarterly issues has varied from 8% to 25%. Market commentators suggested that a widening of dollar swap rates, after a period when they were narrow compared with recent years, encouraged borrowers to issue in dollars.

In the US domestic market, falling volatilities and generally improving conditions encouraged issuers. The asset-backed securities (ABS) and mortgage-backed securities (MBS) sectors benefited most, with the ABS market continuing its rapid expansion and the MBS market showing signs of recovery. ABS issues totalled $27 billion in the quarter,

Table A
Total financing activity:[a] international markets by sector

$ billions; by announcement date

	1994				1995		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3
International bond issues							
Straights	77.1	68.6	75.0	75.6	81.7	82.7	92.3
Equity-related	20.7	5.7	4.0	2.8	2.3	4.6	6.7
of which:							
Warrants	*8.2*	*0.8*	*0.7*	*1.1*	*0.9*	*0.5*	*1.2*
Convertibles	*12.45*	*4.9*	*3.3*	*1.7*	*1.4*	*4.1*	*5.5*
Floating-rate notes	38.7	17.8	17.9	18.3	14.2	16.6	22.2
Bonds with non-equity warrants	0.5	—	—	—	—	—	—
Total	**136.5**	**92.1**	**96.9**	**96.7**	**98.2**	**103.9**	**121.2**
Credit facilities (announcements)							
Euronote facilities	35.7	46.0	40.2	71.4	54.9	62.8	75.9
of which:							
CP	*3.9*	*15.4*	*10.9*	*6.2*	*6.8*	*8.9*	*6.4*
MTNs	*31.9*	*30.6*	*29.3*	*65.2*	*48.1*	*53.9*	*69.5*
Syndicated credits	53.8	64.5	59.3	72.8	101.6	74.9	72.1
Total	**89.5**	**110.5**	**99.9**	**145.8**	**156.5**	**137.7**	**148.0**
Memo: amounts outstanding							
All international							
Bonds [b]	1,888.4	1,947.7	2,020.8	2,041.8	2,188.5	2,225.3	2,204.4
Euronotes [c]	289.8	330.3	378.7	406.1	461.6	517.1	555.8
of which, EMTNs	*177.9*	*216.5*	*259.4*	*292.0*	*347.1*	*397.5*	*426.4*

(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.

Table B
Currency composition of international bond issues

$ billions

Currency denomination	1993	1994				1995		
	Year	Year	Q2	Q3	Q4	Q1	Q2	Q3
US dollar	175.6	147.3	26.2	30.6	37.3	30.6	32.8	46.4
Yen	58.7	77.8	20.7	23.9	22.1	13.6	25.4	23.5
Deutsche Mark	56.4	39.8	8.4	8.5	9.2	14.3	20.1	15.8
Sterling	42.6	29.5	6.6	5.3	4.1	6.5	4.5	4.9
French franc	42.3	28.7	8.5	3.1	3.5	4.8	3.2	2.5
Swiss franc	27.5	20.8	3.2	6.2	4.3	5.7	6.8	9.3
Italian lira	12.3	17.1	5.0	4.6	2.7	5.9	1.7	2.0
Ecu	11.4	7.6	1.8	1.5	0.9	2.9	0.2	2.7
Other	58.2	53.3	11.6	13.2	12.3	14.0	9.2	14.0
Total	**485.0**	**421.9**	**92.0**	**96.9**	**96.4**	**98.2**	**103.9**	**121.1**

Source: Bank of England ICMS database.

29% up on the same quarter in 1994, assisted by the growth in consumer credit. MBS issues totalled $15 billion, but were still down on the third quarter of 1994. Proposed legislation in the United States—already home to the biggest of these markets—would make it even easier to issue ABSs.

Yen issues

As Japanese domestic interest rates fell, Japanese investors continued to search for ways of maintaining returns on their portfolios. One option is to hold foreign currency assets; but in recent years such holdings have often resulted in losses, as the yen has appreciated. An alternative is to invest in the domestic equity market, but over the second quarter the Nikkei 225 index fell and Japanese investors turned to the yen-denominated eurobond market. During the third quarter, although the index recovered and the appreciation of the yen slowed, market reports indicated that Japanese demand for yen-denominated eurobonds remained high.

Sterling issues

Announcements of sterling bond issues totalled £3.0 billion in the third quarter, a fall of £354 million on the previous quarter. £2.05 billion of this quarter's total was in fixed-rate eurosterling form (£650 million of which was made up of issues by the regional electricity companies), £155 million was fixed-rate domestic bonds and £765 million floating-rate. Outstanding sterling commercial paper rose by £0.6 billion to £6.7 billion over the quarter and outstanding sterling issues of MTN programmes rose to £15.4 billion from £14.0 billion.

British Land launched an innovative 40-year first-mortgage debenture in eurosterling, which is a bearer, rather than a registered, security and therefore will allow overseas investors to participate. It also pays interest gross, so non tax paying investors will not have to wait to receive reclaimed tax. Two banking institutions launched £100 million perpetual subordinated debt issues over the quarter; each had an issuer call option, with a step-up coupon if the call was not made.

The most notable feature of the third quarter was the further tightening of spreads between corporate bonds and gilts in maturities over five years: the effect of the recent change in the Inland Revenue's regulations allowing a widening of the range of instruments eligible in PEPs continued to be felt,(1) as PEP managers began to purchase bonds for their issues. A large number of such PEPs have now been launched by a range of investment management houses.

Ecu issues

In the United Kingdom, there were regular monthly auctions of ECU 1 billion of Ecu Treasury bills during the third quarter, comprising ECU 200 million of one-month, ECU 500 million of three-month and ECU 300 million of six-month bills. The auctions were strongly oversubscribed, with issues being covered by an average of 2.5 times the amount on offer. Bids were accepted at yields up to 15 basis points below the Ecu Libid rate of the appropriate maturity—a somewhat wider spread than in the previous quarter. There are currently ECU 3.5 billion of Treasury bills outstanding. Secondary market turnover averaged ECU 2.0 billion a month, similar to volumes in the previous quarter.

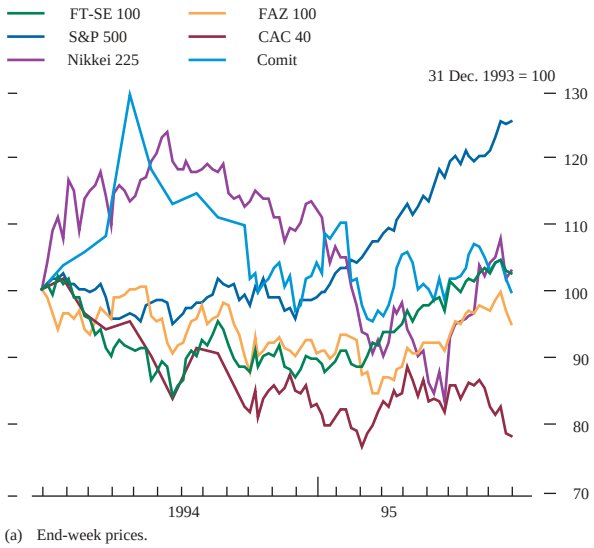
On 18 July, the Bank reopened the Ecu Treasury note maturing in 1998 with a further tender for ECU 250 million, raising the amount outstanding to ECU 1.75 billion. Cover at the tender was 10.2 times the amount on offer and bids were accepted in a range of 6.75%–6.77%. The total of notes outstanding under the UK note programme rose from ECU 6 billion to ECU 6.25 billion. Turnover in the notes continued to be higher than in 1994. The UK government's total outstanding Ecu debt rose from ECU 12.0 billion to ECU 12.25 billion over the quarter.

The French government issued ECU 1.8 billion in bonds and notes during the third quarter, taking its outstanding Ecu debt to ECU 20.8 billion (excluding stock bought back or held for repo purchases). The Italian government issued ECU 1 billion of notes, but because of redemptions the total outstanding fell from ECU 24.9 billion to ECU 23.4 billion over the quarter. In addition, the total of Italian government Ecu eurobonds outstanding remained at ECU 5.9 billion. Other Ecu issues included borrowings by the Kingdom of Sweden, and by French and German financial institutions.

Equity markets

In the United States, the Standard and Poor's 500 index rose by 7.3% during the third quarter. A strengthening of the dollar against the yen combined with better-than-expected company results led the index to reach a series of all-time highs, peaking on 20 September at 586.77; towards the end of the quarter, however, the rise was stemmed following the

Chart 2
Equity indices(a)



(a) End-week prices.

(1) For more details on this, see the review of financial market developments in the August 1995 *Quarterly Bulletin*, pages 242–43.

sharp weakening of the dollar. Technology shares were particularly strong: the NASDAQ index, which is heavily weighted in this sector, rose by 11.8% over the quarter.

The FT-SE 100 index rose by 5.8% over the period, reaching a record high of 3,570.8 on 13 September. Take-over speculation—especially in the utilities sector—was a major driving force behind this, underpinned by expectations that UK interest rates were unlikely to rise further in the short term and by the optimistic US sentiment. Again, at the end of the quarter prices declined from their peaks in response to international currency pressures.

The German equity market, as measured by the FAZ index, continued the strength seen in the second quarter: the index rose by a further 4.3%, helped by expectations of improved company profits and the interest rate cut on 24 August. The French market, however, continued its recent lacklustre performance—falling by 3.6% during the quarter—as political tensions and concerns about the fiscal deficit undermined the optimism which had accompanied the result of the presidential elections earlier in the year.

Italian and Spanish equity prices rose by 1.3% and 4.1% respectively, with the positive factors of lowered expectations of European interest rate increases and stabilising domestic political environments outweighing currency concerns. Scandinavian equity markets recorded a series of all-time highs, as rises in telecommunications shares were reported to be attracting foreign buyers; the market indices of all four main markets rose by over 5% during the quarter.

Japanese equity prices recovered markedly during the third quarter, with the Nikkei 225 index rising by 23.4% to levels last reached in February. As the yen weakened against the dollar, overseas investors returned to the Tokyo market, buying high-technology and other export-orientated company shares. Domestic investors, however, appeared more cautious about the stability of the financial sector, and this uncertainty—combined with a downturn in the dollar against the yen in the second half of September—restrained further price rises.

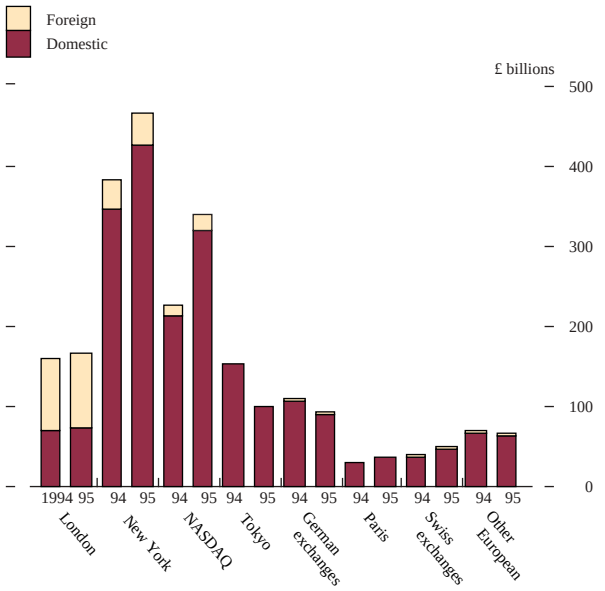
Turnover

Chart 3 compares equity turnover on the major exchanges for the second quarter of this year with the same quarter of 1994. Both the New York Stock Exchange and NASDAQ recorded large increases in turnover over the period, up 21% and 50% respectively. Turnover on most European exchanges fell slightly, with the exceptions of Paris and Switzerland, where volumes rose by 16% and 30% respectively. Turnover on the Tokyo stock exchange remained subdued—it was some 35% lower than in the same quarter of 1994.

Equity issues

In the UK equity market, £2 billion was raised in rights issues by UK and Irish companies during the third quarter, compared with £1.2 billion in the previous quarter. 43

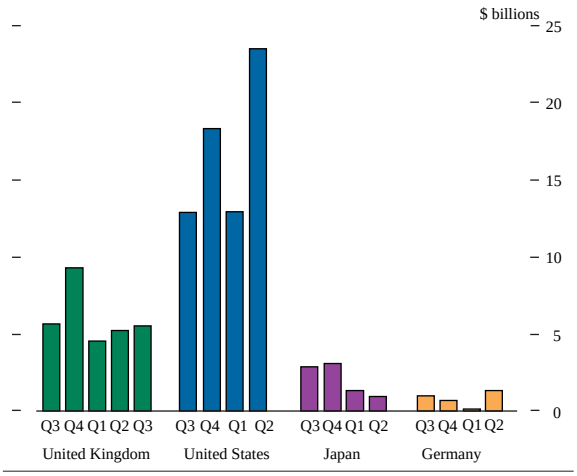
Chart 3
Turnover of domestic and foreign equities on major stock exchanges(a)



(a) Turnover in the second quarter of the year indicated.

companies joined the Official List, of which 16 raised capital of £443 million—compared with £1.1 billion in the previous quarter—and 22 transferred from the Unlisted Securities Market. The balance were non capital raising introductions. In the United States, $23.4 billion of equities were issued in the second quarter, up from $13.5 billion in the first. Equity issues in Germany also increased sharply in the second quarter, rising from $179 million to $1.33 billion.

Chart 4
Equity capital raised on major stock exchanges



After low levels in the first half of the year, total issues of equity with an international tranche increased in the third quarter; and they are expected to remain buoyant. Issuing activity is thought to have increased for two reasons: low levels of investor interest in the first half of the year led to a delay in many offerings; and European governments are keen to complete as much of their privatisation programmes as possible before the Deutsche Telekom privatisation, which is expected to dominate the European equity market next year.

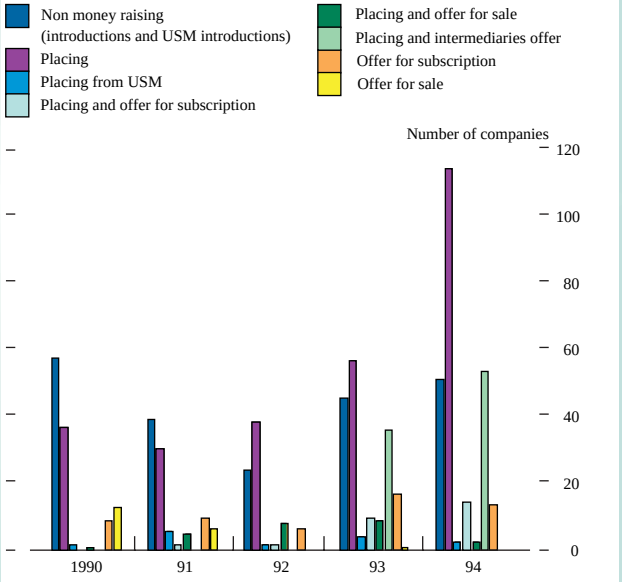
Listing on the London Stock Exchange

On 16 August, the London Stock Exchange announced the results of its consultation on its Listing Rules. It has decided to abolish the rule governing initial public offerings—which requires offers of equity of over £50 million to include a public offer—on the grounds that it serves no investor protection purpose and makes raising equity capital more expensive. From 1 January 1996, companies will be able to issue shares by any method, and it is likely that more companies will issue through placings—already the favourite method, because it is cheaper and easier—so denying the retail investor direct access to new issues.

In recent years, there have been a number of changes to the Listing Rules. The recommendations of the Ross-Russel review (implemented from the start of 1991) led to companies capitalised at between £15 million and £30 million being allowed to use intermediaries offers,(1) or placings in conjunction with an intermediaries offer or an offer for sale. In 1993, the maximum size of placings was increased to £25 million and that for intermediaries offers to £50 million.

The number of new issues has increased dramatically over the past five years: this may be partly because of the increasing flexibility afforded to new companies raising equity capital. As the chart shows, placings have become increasingly significant, whereas offers for sale have become less common (they are now used mainly for privatisations).

Methods of joining the Official List



Source: London Stock Exchange Quarterly Review.

(1) *Intermediaries offers* allow intermediaries other than the lead manager to subscribe for new shares on behalf of their clients, so enabling retail investor involvement without the need for a public offer.

Structural developments

During the quarter, two significant moves in the UK equity market opened up alternative, automated trading to investors. For larger investors, on 21 September Tradepoint Investment Exchange began to offer subscribing institutions an order-driven, screen-based trading system for 400 stocks listed on the London Stock Exchange. The system competes directly with the Stock Exchange's market-maker system. In a separate move, a joint venture between Sharelink, the broker, and Electronic Share Information (ESI) enabled retail investors to place orders to buy and sell shares with Sharelink via the Internet, using share price information distributed through the Internet.

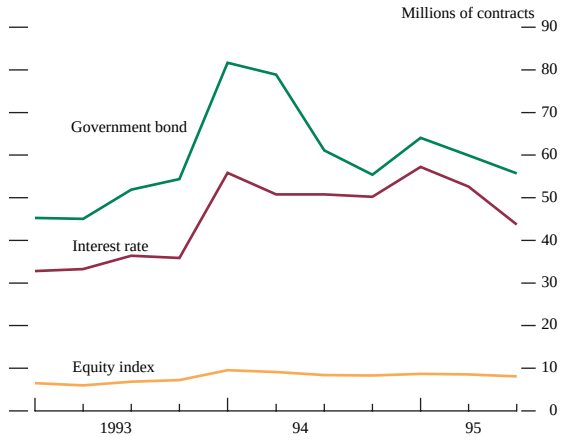
From 26 September, the Stock Exchange's Rule 4.2, the occasional trading facility for unlisted shares, ceased. Over the third quarter, the number of companies traded on the Alternative Investment Market (AIM) increased by 67 to 81, of which 54 had been traded under Rule 4.2. Market comments to date on AIM have been mixed, and have suggested that trading volumes are high but that trading is limited to private clients rather than institutions.

The *Nouveau Marché*—the new French market for small companies—will begin operations in mid-February 1996. The market will be managed by *Société du Nouveau Marché*, a subsidiary of the SBF-Paris Bourse. Bids and offers posted to a central order book will be matched twice daily; between matchings, market-makers will display bid and offer prices.

Derivatives markets

Turnover on the major derivatives exchanges was generally down on the previous quarter, but there were differences in performance between contract types. In the United States, turnover in longer-term government bond contracts fell less than that in short-term interest rate contracts, whereas in Europe the performance of different contract types was more mixed; discussion of the prospects for EMU led to increased activity in government bond futures towards the end of the quarter after a quiet start. The limited scope for introducing

Chart 5
Quarterly turnover of futures by type(a)



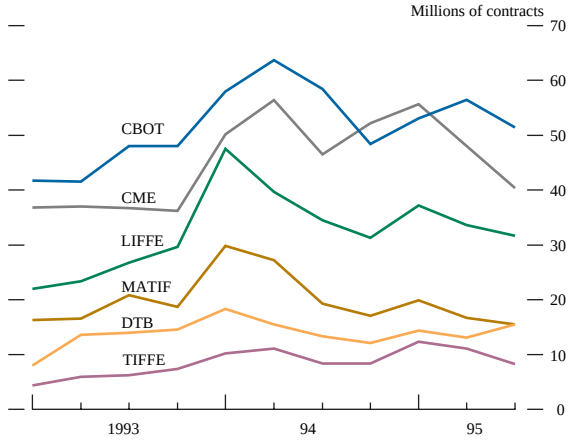
(a) Turnover in the major futures contract listed on the CME, CBOT, LIFFE, DTB, MATIF and TIFFE.

new interest rate contracts in what is now an increasingly mature market has encouraged exchanges to explore further other possible growth areas—such as currency, commodity and flex contracts.

Turnover on the London International Financial Futures Exchange (LIFFE) fell by 6% during the third quarter, but total open interest ended the quarter up 5%. Volumes in LIFFE's Bund futures contract overtook those in the notional bond futures contract on the main French derivatives exchange (MATIF) to become Europe's most actively traded contract. Turnover in LIFFE's new FT-SE 100 flex option was also strong and its new Bund basis-trading facility made a promising start.

LIFFE announced a feasibility study into transferring its individual equity options contracts from open outcry to automated trading, in an attempt to revitalise the United Kingdom's equity option market. Turnover in this market has remained sluggish, with volumes for the first three quarters of this year down 14% on the same period of 1994.

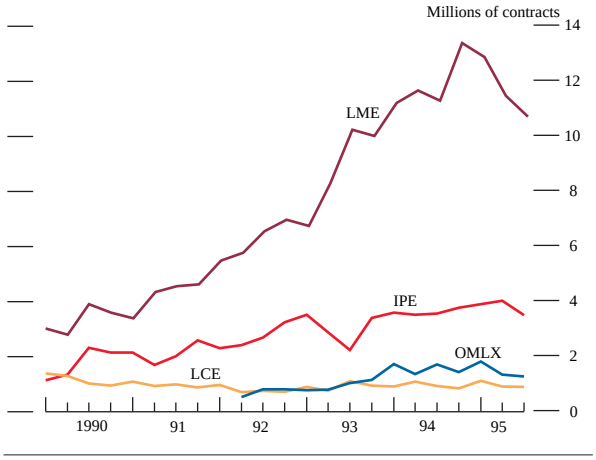
Chart 6
Quarterly turnover on major derivatives exchanges



Elsewhere, turnover on the DTB rose 15% during the quarter, whereas volumes on MATIF fell by 8% (see Chart 6). In the United States, volumes on the CME and the Chicago Board of Trade (CBOT) fell by 16% and 9% respectively. In the Far East, volumes on TIFFE, Japan's largest derivatives exchange, were down 22%.

The CME's eurodollar futures contract maintained its position as the world's most actively traded contract, though its turnover was down 22% during the third quarter, with open interest ending the quarter virtually unchanged. The CME's Mexican peso contract continued to be one of its fastest-growing contracts (albeit from a low base). Its proposed Growth and Emerging Markets Division announced plans to launch futures and options on the Brazilian *real*, a Mexico 30 Stock Index contract and Mexican Brady Bond contracts—in each case, pending regulatory approval.

Chart 7
Quarterly turnover on London's other derivatives exchanges



Turnover in the CBOT's US Treasury Bond future fell 12% during the quarter, but it maintained its position as the world's most actively traded bond futures contract. The fastest-growing contract on the exchange so far this year has been the 30-day Fed Funds futures contract (though, again, from a low base). The contract is based on the average overnight federal funds rate on a one-month basis. The CME is planning to introduce its own 30-day Fed Funds contract, which will have a smaller face value than the CBOT's and will expire simultaneously with the CME's other short-term interest rate contracts.

In the over-the-counter (OTC) markets, the International Swaps and Derivatives Association (ISDA)—which conducts a half-yearly survey of its members(1)—for the first time released a survey of replacement costs, as at the end of 1994. The gross replacement value of outstanding transactions totalled $172.6 billion, 2.0% of the notional principal. However, netting under ISDA master agreements reduced the figure to $77.9 billion (0.9%) and use of collateral reduced it further to $71.0 billion (0.8%). The Bank of England recently surveyed the UK market as part of the first internationally co-ordinated central bank survey of derivatives markets. The results are currently being collated with a view to their release before the end of the year; the Bank for International Settlements will publish data aggregated from 26 central banks.

Other exchange developments

There were further moves towards link-ups between commodity exchanges during the third quarter. In July, the New York based Coffee, Sugar and Cocoa Exchange (CSCE) approached the Board of the London Commodity Exchange (LCE) concerning a possible friendly bid. The LCE later announced that it was also entering into discussions with LIFFE and the International Petroleum Exchange (IPE) about separate collaboration proposals. The IPE has, as a result, delayed a decision on a site for its new trading floor. The

(1) See the financial market developments section, *Quarterly Bulletin* August 1995, page 249.

New York Mercantile Exchange (NYMEX) subsequently made a $38 million merger offer to the CSCE, along the lines of its recent merger with the New York based commodities exchange, COMEX, which resulted in COMEX's becoming a division of NYMEX. However, the CSCE and the New York Cotton Exchange have already signed a letter of intent to build a joint trading facility in New Jersey.

In a separate development, the LCE announced that it had signed a letter of intent with the CBOT to explore establishing a joint trading facility located in London. The facility is intended to trade existing CBOT agricultural contracts for which there is excess European demand, by open outcry, as well to develop new products. Work is progressing on the LIFFE/CBOT agreement to trade each other's most liquid government bond contracts.

Exchanges continued to extend the range of ancillary services they provide for exchange and OTC products: for example, the CME is developing a swaps collateral depository; the CBOT is developing its own 'HITS' system for trading, guaranteeing and clearing swaps. MEFF RF, one of Spain's two financial derivatives exchanges, is awaiting regulatory approval for the clearing of peseta-denominated interest rate swaps. And the Amsterdam-based European Options Exchange introduced a facility for clearing off-exchange trades for all its exchange-listed products; the deals will be cleared through the European Options Clearing Corporation, a wholly-owned subsidiary of the EOE.

The net debt of the public sector: end-March 1995

By Stephen Denby of the Bank's Monetary and Financial Statistics Division.

This article continues a long-standing annual series analysing the public sector debt position, the national debt and its distribution. It has been compiled with the help of the Central Statistical Office and others. Its main points are:

- *In 1994/95, the nominal value of the net debt of the public sector and market holdings of the national debt rose by around £39 billion and £31 billion respectively. As a proportion of GDP, these measures increased respectively by 3.8 and 2.6 percentage points—to 42.0% and 44.2%.*

- *In the twelve months to the end of March 1995, general government consolidated gross debt as a proportion of GDP (calculated on a Maastricht basis) rose by 2.2 percentage points to 50.5%. This meant that it remained well below the 60% reference level specified in the Maastricht Treaty.*

The net debt of the public sector

This article analyses developments in the net debt position of the public sector to the end of March 1995. The net public sector debt reflects the cumulative effect of past fiscal policy; and trends in the ratio of public sector net debt to GDP give a guide to the effect of the current fiscal stance. The interest payments on the debt are a current payment for past expenditure and can influence fiscal policy. If interest payments rise, other government spending net of receipts—ie the *primary deficit*—would need to be reduced to meet a given target for the public sector borrowing requirement (PSBR). Debt interest totalled £22 billion (7.9% of total current and capital expenditure) in 1994/95 and is forecast to total £23.4 billion in 1995/96. In addition, inflation reduces the real value of the government's debt, since it is largely denominated in nominal terms.

At the end of March 1995, the net debt of the public sector was £290.8 billion (see Table A), an increase of £39.1 billion (15.5%) on a year earlier. The net debt was 42.0% of GDP, its highest proportion since 1986, as Chart 1 shows. Its rate of increase has slowed, however, from a peak of 23.0% (£47.2 billion) in 1993/94, and this has been mirrored by a fall in the PSBR from £45.5 billion to £35.9 billion in 1994/95 (see Table B). (The box on reconciliation on page 349 outlines the main reasons why the figure for the change in debt is not exactly equal to the PSBR.)

The main component of the increase in gross debt in the year was a rise of around £22.9 billion in market holdings of gilts. In addition, market holdings of Treasury bills more than doubled during the year and holdings of national savings also increased. A drop of about £7.7 billion in public sector liquid assets served to increase the net debt position (see Table C). Most of this drop was the result of a reduction in the stock of money-market assistance held by the Issue

Table A
Net public sector debt[(a)]

£ millions, nominal values; *percentages in italics*

31 March	1994	1995	Changes 1994–95
Central government			
Market holdings of national debt	274,653	305,917	31,264
as a percentage of GDP	*41.6*	*44.2*	
Net indebtedness to Bank of England Banking Department	729	869	140
Savings banks	1,444	1,445	1
Accrued interest and indexing on national savings	3,103	3,317	214
Notes and coin in circulation	21,447	21,771	324
Other	280	391	111
Total central government gross debt	301,656	333,710	32,054
Local authorities			
Total gross debt	49,290	49,573	283
less:			
Central government holdings of local authority debt	40,997	40,324	-673
Local authority holdings of central government debt	124	159	35
General government consolidated gross debt	**309,825**	**342,800**	**32,975**
as a percentage of GDP	*47.0*	*49.5*	
Public corporations			
Total gross debt	23,868	32,271	8,403
less:			
Central government holdings of public corporation debt	22,951	31,529	8,578
Local authority holdings of public corporation debt	69	5	-64
Public corporation holdings of central government debt	2,854	4,186	1,332
Public corporation holdings of local authority debt	961	1,057	96
Public sector consolidated total debt	**306,858**	**338,294**	**31,436**
as a percentage of GDP	*46.5*	*48.9*	
Public sector total liquid assets (Table C)	**55,181**	**47,527**	**-7,654**
as a percentage of GDP	*8.4*	*6.9*	
Net public sector debt	**251,677**	**290,767**	**39,090**
as a percentage of GDP	*38.2*	*42.0*	
Memo item:			
General government consolidated gross debt (Maastricht basis)	**307,834**	**340,859**	**33,025**
as a percentage of GDP (ESA) (b)	*48.3*	*50.5*	

(a) Data from 1970 to 1995 are published in the Bank of England Statistical Abstract 1995, Part 1, Table 17.1.
(b) See footnote (2) on page 348.

Department of the Bank; in addition, since no prepaid government stocks were issued in 1994/95, instalments due on such stocks fell to zero.

Chart 1
Measures of public sector debt relative to GDP

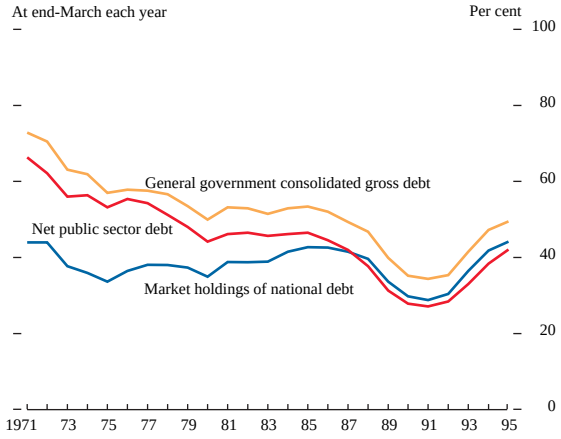


Table B
Composition of the PSBR

£ millions; *percentages in italics*

	1993/94	1994/95
Central government borrowing requirement (CGBR):		
on own account	48,101	38,285
for on-lending to local authorities	-655	-392
for on-lending to public corporations	1,504	458
CGBR	**48,950**	**38,352**
Local authorities' net borrowing from markets (adjusted)	-2,126	-572
Public corporations' net borrowing from markets (adjusted)	-1,294	-1,875
Public sector borrowing requirement (PSBR)	**45,530**	**35,904**
Alternative analysis:		
CGBR on own account (CGBR[O])	48,101	38,285
Local authority borrowing requirement (LABR)	-2,781	-964
Public corporations' borrowing requirement (PCBR)	210	-1,417
As a percentage of GDP:		
CGBR	*7.6*	*5.7*
CGBR (on own account)	*7.5*	*5.7*
LABR	*-0.4*	*-0.1*
PCBR	—	*-0.2*
PSBR	*7.1*	*5.3*

The sharp increase in the net debt to GDP ratio in the early 1990s has been brought under control by measures introduced in recent budgets. The budgets in 1993 introduced structural tightening through tax increases and a reduction in the share of government spending in the economy. The 1994 budget was fairly neutral itself but maintained these tight fiscal measures. Further consolidation is due, following this spring's tax increases, through the planned tight control on real spending. As a result, the Treasury, in its Summer Economic Forecast, expected the PSBR to fall by 2% of GDP in 1995/96 and 1¼% in 1996/97. The expected reduction reflects structural tightening and some cyclical improvement.

Further PSBR reductions were projected after 1996/97 in the 1994 budget, and a small fiscal surplus was expected in 1999/2000. The current plans, if met, would mean that the ratio of public sector debt to GDP will peak at just under 43% at end-March 1996 and then fall steadily thereafter. Chart 2 provides a longer-term comparison of levels of gross national debt. (The differences between the national debt and net public sector debt are explained in the notes and definitions at the end of this article.)

Table C
Public sector liquid assets

£ millions, nominal values

31 March (a)	1994	1995	Changes 1994–95
Central government			
Official reserves	28,908	28,330	-578
Commercial bills, including bills held under purchase and resale agreements	5,388	1,726	-3,662
British government stock held under purchase and resale agreements	3,097	989	-2,108
Treasury bills held under purchase and resale agreements	1,112	—	-1,112
Loans against export credit and shipbuilding paper	890	84	-806
Bank deposits	1,748	1,795	47
Instalments due on British government stocks	1,250	—	-1,250
Total	42,393	32,924	-9,469
Local authorities			
Bank deposits	4,907	5,480	573
Building society deposits	3,855	3,927	72
Other short-term assets	2,424	2,621	197
Total	11,186	12,028	842
Public corporations			
Bank deposits	1,376	2,349	973
Other short-term assets	226	226	—
Total	1,602	2,575	973
Public sector total liquid assets	**55,181**	**47,527**	**-7,654**

(a) Data from 1970 to 1995 are published in the *Bank of England Statistical Abstract 1995*, Part 1, Table 17.1.

Chart 2
Gross national debt as a percentage of GDP:(a) 1900–95

(a) Source: HM Treasury.

In March of this year, the Treasury published its second remit to the Bank, outlining plans for the Bank's operations in the gilt market in 1995/96; in July, the Treasury and the Bank jointly issued the *Report of the Debt Management Review*, which describes the objectives of debt management policy and the overall framework for gilt-edged funding. The two publications demonstrate the importance attached by the monetary authorities to minimising the cost over the long run of servicing government debt.(1)

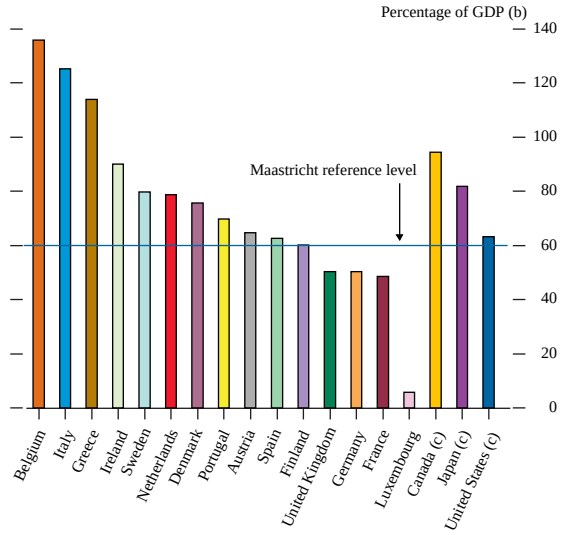
(1) Both may be obtained by contacting the Bank's Gilt-Edged and Money Markets Division (telephone: 0171-601-3297).

General government debt

The measure of debt used in the criterion to be met by countries wishing to participate in Stage 3 of Economic and Monetary Union is general government consolidated gross debt (shown as a memorandum item in Table A). The Maastricht Treaty states that such countries should avoid excessive government debt and deficit levels.(1) Although the Treaty does not specify what constitutes 'excessive', it does establish reference levels. These are 60% of GDP for gross debt (unless the ratio is diminishing sufficiently and approaching this value at a satisfactory pace), and 3% of GDP for deficits (unless the ratio has declined substantially and continuously, and is close to the reference value, or the excess is exceptional and temporary).

EU Member States are required to report their debt and deficit levels to the European Commission at the beginning of March and September each year. As Chart 3 shows, at the end of 1994 the United Kingdom's debt to GDP ratio, at 50.3% on the common reporting basis,(2) compared favourably with that in many other OECD countries; at the end of March this year, the proportion was 50.5%. Of the Member States, only Luxembourg, France, Germany and the United Kingdom had debt ratios below the 60% reference level at the end of 1994. (By way of comparison, Japan, Canada and the United States were all above 60%.) But the UK deficit was above the reference level: only Germany, Ireland and Luxembourg had a deficit of less than 3% at end-December 1994.

Chart 3
General government debt: at 31 December 1994(a)



(a) Source: unless otherwise stated, European Commission.
(b) GDP as defined by the European System of Integrated Accounts.
(c) Source: *OECD Economic Outlook 57*, June 1995.

The national debt

As Chart 2 illustrates, although the national debt has been rising as a percentage of GDP in recent years, it remains much lower than for much of this century. The debt ratio rose markedly during and immediately after the two World Wars, reaching a peak of 252% in 1946. In the post-war period, it fell to 37% in 1990 before picking up again.

Change in debt outstanding

Table D shows that the nominal value of the national debt increased by £42.2 billion in 1994/95 to a total of £349.5 billion, in line with the increase in net public sector debt. The proportion of marketable debt (that which can be traded in a secondary market—including gilts, Treasury bills and some foreign currency instruments) in market hands was 81% at the end of March 1995. The only significant change in the share of individual instruments was in respect of Treasury bills—up by 1.5 percentage points. Although foreign currency debt fell as a percentage of market holdings in 1994/95, the actual level of this debt remained stable. Chart 4 provides a breakdown of the market holdings of national debt by type of instrument.

Table D
Market and official holdings of national debt(a)

£ millions, nominal values

Percentage of market holdings in italics

	End-March 1994		End-March 1995	
Market holdings				
Sterling marketable debt:				
Government and government-guaranteed stocks: index-linked	34,709	*12.6*	39,201	*12.8*
Government and government-guaranteed stocks: other	166,806	*60.7*	185,191	*60.5*
Treasury bills	3,077	*1.1*	7,887	*2.6*
Sterling non-marketable debt:				
National savings: index-linked	6,769	*2.5*	7,088	*2.3*
National savings: other	37,014	*13.5*	39,991	*13.1*
Interest-free notes due to the IMF	5,441	*2.0*	5,598	*1.8*
Certificates of tax deposits	2,133	*0.8*	1,612	*0.5*
Other	1,843	*0.7*	2,435	*0.8*
Total	257,792	*93.9*	289,004	*94.5*
Foreign currency debt: (b)				
North American government loans	1,000		822	
US dollar floating-rate note	2,631		2,399	
Ecu Treasury bills	2,723		2,863	
Ecu 9 1/8% 2001 bond	1,945		2,045	
Ecu Treasury notes	3,890		4,499	
Deutsche Mark 7 1/8% 1997 bond	2,018		2,245	
US dollar 7 1/4% 2002 bond	2,021		1,843	
Multi-currency revolving credit facility	385		—	
Debt assigned to the government	248		196	
Total	16,861	*6.1*	16,913	*5.5*
Total market holdings	274,653	*100.0*	305,917	*100.0*
Official holdings	32,654		43,615	
Total debt	**307,307**		**349,532**	

(a) Data from 1970 to 1995 are published in the *Bank of England Statistical Abstract 1995*, Part 1, Table 17.2.
(b) Sterling valuation rates:
31 March 1994: £1 = US$ 1.4845, Can $ 2.0531, ECU 1.2853, DM 2.4776.
31 March 1995: £1 = US$ 1.6280, Can $ 2.2833, ECU 1.2224, DM 2.2271.

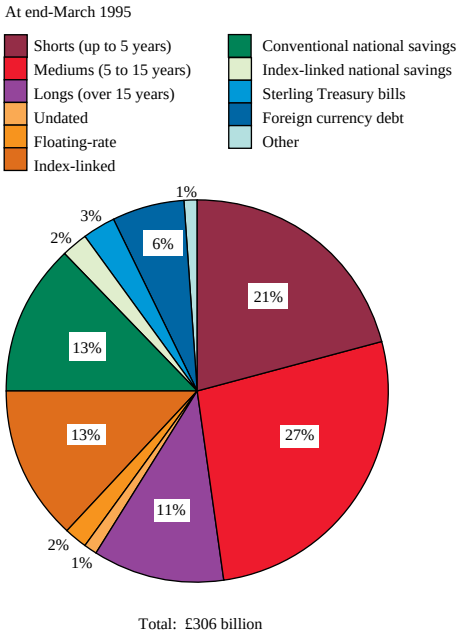
Analysis of debt by instrument

Gilt-edged stocks

By end-March 1995, index-linked and conventional gilts together accounted for 73% of the market's holdings of the national debt and 90% of marketable debt. The authorities have been introducing a series of reforms to help enhance

(1) Article 104c of the Treaty on European Union.
(2) The data for Member States are compiled on a common basis, as defined in the European System of Integrated Economic Accounts (ESA). In accordance with the ESA, IMF interest-free notes are excluded from the calculation of general government debt for the European Union. As they are a liability of the National Loans Fund, however, they are included in government debt in the remainder of this article.

Chart 4
Composition of market holdings of national debt

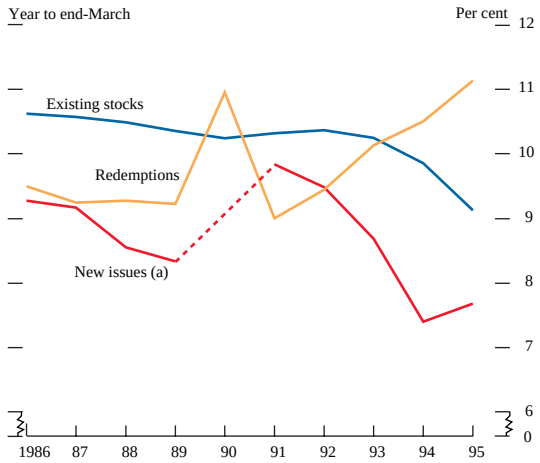


the efficiency and liquidity of the gilt market. Further details are given in the note on the introduction of an open gilt repo market on pages 325–30 of this *Bulletin* and in 'Gilts and the Gilt Market: review 1994–5'.(1)

A total of £29.6 billion nominal of gilts were issued in 1994/95, of which £2.4 billion were further tranches of index-linked stocks. Four new conventional stocks were created: 8% Treasury 2000, 8½% Treasury 2005, 8% Treasury 2015 and 7% Treasury Convertible 1997. The first three have become the five-year, ten-year and long-dated benchmarks for 1995. A further £2.6 billion of the Floating-Rate Treasury 1999 stock—originally issued at the end of 1993/94—was issued, taking the total nominal value outstanding to £5.1 billion.

Six stocks, with a total nominal value of £9.0 billion, were redeemed in the year, one of which was an index-linked stock for £0.7 billion (including indexation uplift on the capital repayment). The average coupon on stocks redeemed during the year—weighted by size of stock—rose for the fourth successive year, from 10.5% to 11.1%, while the weighted-average coupon on conventional stocks issued during the year rose to 7.7% from 7.4% (Chart 5).

Chart 5
Average coupon on conventional British government stocks



(a) No British government stocks were issued for cash between November 1988 and December 1990.

Over the year, the average maturity(2) of all dated stocks in market hands fell from 10.6 to 10.4 years, while the average excluding index-linked stocks remained steady at 9.1 years (Table E and Charts 6 and 7). Table F shows that the average amount of stock to be redeemed annually over the following five years has been rising since 1991 and is now £13.3 billion.

Table E
Average life of dated stocks in market hands

Years to maturity at 31 March:

	1990	1991	1992	1993	1994	1995
Assumptions (a)						
Latest possible redemption:						
All dated stocks (b)	10.2	9.9	10.0	10.8	10.6	10.4
Excluding index-linked stocks	8.4	8.0	8.4	9.4	9.1	9.1
Earliest possible redemption date:						
All dated stocks (b)	10.1	9.6	9.8	10.5	10.4	10.1
Excluding index-linked stocks	8.2	7.7	8.1	9.0	8.9	8.8

(a) No conversions (no conversion options were available between 1990 and 1994).
(b) Index-linked stocks are given a weight reflecting capital uplift accrued to 31 March.

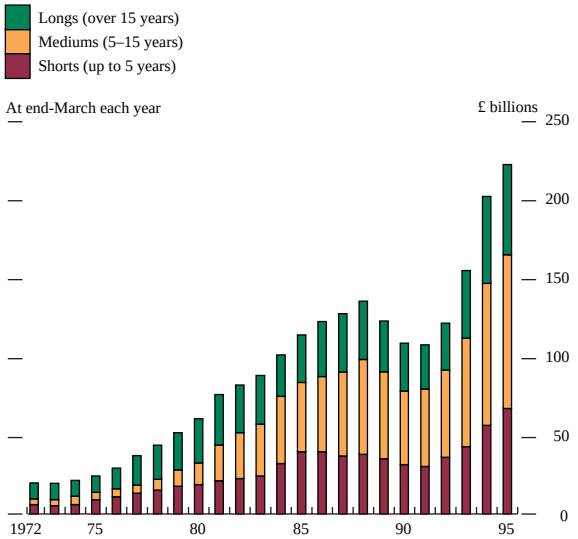
Reconciliation

There are several reasons why the borrowing requirement figures, which relate to transactions and are on a cash-flow basis, are not the same as the changes in debt—which are on a nominal, accrued basis:

- Changes in exchange rates affect the value of foreign currency liabilities and assets independently of transactions.
- When British government stocks (gilts) are issued (or bought in ahead of redemption) at a discount or premium, the borrowing requirement is financed by the actual amount received or paid out, while the level of debt is deemed to increase (or decrease) by the nominal value.
- The borrowing figures include the uplift on index-linked British government stocks only when it is paid out; but the figures for debt outstanding include it as it accrues over the life of the stock.

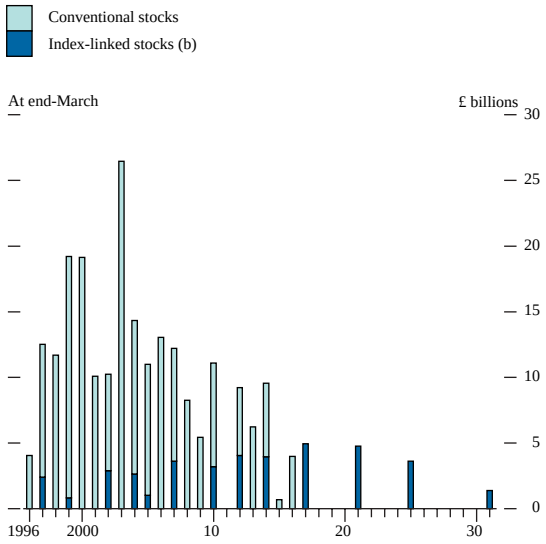
(1) Available from the Bank of England, PO Box 96, Gloucester, GL1 1YB.
(2) The aggregation of index-linked and non index linked stock for the purpose of measuring average maturity presents a conceptual difficulty (see the December 1982 *Quarterly Bulletin*, page 540). This calculation, which gives index-linked stocks a weight reflecting the capital uplift accrued so far, assumes that stocks will mature on their latest maturity.

Chart 6
Breakdown of market holdings of dated British government stocks(a)



(a) Figures include index-linked stocks and the Floating Rate Treasury 1999 stock in their appropriate maturity bonds.

Chart 7
Maturities of dated stocks(a)



(a) The latest possible redemption date is assumed for double-dated stocks.
(b) Figures include accrued uplift up to 31 March.

Table F
Average amount of stock in market hands to be redeemed annually over the following five years

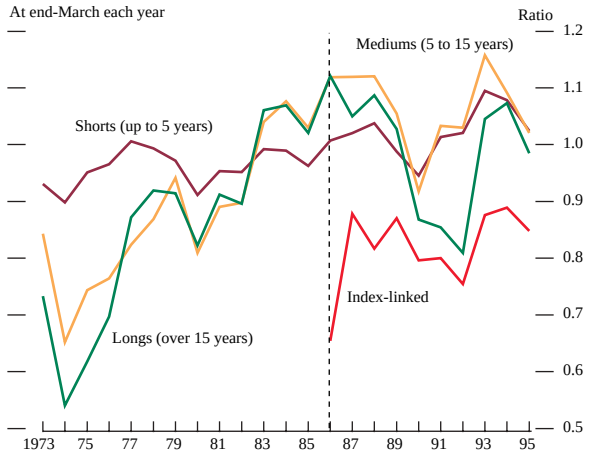
£ billions, at end-March

	1990	1991	1992	1993	1994	1995
With no conversions (a)	6.2	6.0	7.2	8.5	11.2	13.3

(a) No conversion options were available between 1990 and 1994, and no conversions are assumed for 1995.

The market value of all gilts in market hands (including undated stocks, such as the 3½% War Loan, which currently trade at a large discount) was 2.7% lower than their nominal value at end-March 1995, compared with a premium of 3.4% a year earlier. The fall reflected the weakness of world bond markets in 1994. Chart 8 shows that the ratio of market value to nominal value fell sharply for all maturity bands during the year. The ratio for long gilts fell most sharply, from 1.07 to 0.98. Index-linked stocks remained at a large discount, falling from 0.89 to 0.85.(1) Shorts and mediums both fell to 1.02, from 1.08 and 1.09 respectively.

Chart 8
Market value/nominal value ratios of fully-paid dated British government stocks in market hands



Data before 1986 include index-linked British government stocks within the three main maturity bands.

National savings

National savings rose by £3.5 billion to £51.8 billion in 1994/95. Accrued interest and index-linked increments, as well as deposits with the National Savings Bank, do not form part of the national debt, however. Adjusting for this, the total contribution of national savings to the national debt was £47.1 billion. Holdings of most instruments grew steadily in the year, but holdings of Pensioners' Guaranteed Income Bonds, introduced in 1992/93, doubled.

Sterling Treasury bills

Market holdings of sterling Treasury bills more than doubled in the year to £7.9 billion, reflecting large increases in the amounts sold at the weekly tender made in order to influence the stock of money-market assistance.(2) These were raised from £200 million at the end of March 1994 to £900 million a year later.

Foreign currency debt

The sterling value of debt denominated in foreign currency was little changed over the year, at £16.9 billion; as a percentage of total market holdings of the national debt, it dropped from 6.1% to 5.5%. Over the year, sterling strengthened against the US and Canadian dollars, while falling against the Ecu and the Deutsche Mark. So debt denominated in dollars—North American government loans, the floating-rate note and the 7¼% 2002 bond—fell in sterling terms, whereas the sterling value of the 7⅛% 1997 Deutsche Mark bond and the Ecu debt increased. In

(1) Calculated for index-linked stocks on the basis of the nominal value and accrued uplift to date.
(2) See the articles on operation of monetary policy in the February 1995 *Quarterly Bulletin*, pages 5–14, and the May 1995 *Bulletin*, pages 125–37, for further details.

addition, the total of Ecu Treasury notes outstanding rose by ECU 0.6 billion nominal. The multi-currency revolving credit facility, raised after the suspension of sterling's membership of the Exchange Rate Mechanism, was repaid in April 1994.

Sterling debt: analysis by holder[1] (Tables G and H)

Insurance companies' and pension funds' holdings[2] of sterling debt accounted for 44.8% of total market holdings in 1995, up from 41.7% the year before. This is thought to have been largely the result of increased holdings of gilts by pension funds, prompted by the increasing maturity of funds and reassessment of optimal asset allocation in the light of the debate over the Minimum Funding Requirement contained in the Pensions Act. A large increase in banks' holdings of Treasury bills accounted for the rise of £6.2 billion in their debt holdings. The total sterling debt held by individuals and private trusts was up by £2 billion, as a result of larger holdings of national savings instruments. Two sectors—building societies and overseas residents—reduced their holdings during the year, as they were net sellers of Treasury bills and gilts respectively.

Table G
Distribution of the sterling national debt: summary[a]

£ billions

	Amounts outstanding at 31 March (b)		
	1994	1995	Change in 1994/95
Market holdings			
Public corporations and local authorities	2.5	3.4	0.9
Banking sector	16.3	22.5	6.2
Building societies	5.8	5.3	-0.5
Institutional investors:			
Insurance companies and pension funds	107.4	129.4	22.1
Other	2.7	3.3	0.7
Overseas residents	43.9	41.1	-2.8
Individuals and private trusts	51.4	53.4	2.0
Other (including residual)	27.8	30.6	2.8
Total market holdings	257.8	289.0	31.2
Official holdings	31.2	42.0	10.8
Total sterling debt	**289.0**	**331.0**	**42.0**

(a) See Table H for a more detailed analysis. Data for 1970 to 1995 are published in the *Bank of England Statistical Abstract 1995*, Part 1 Table 17.3.
(b) Figures shown may not sum to totals because of rounding.

Table H
Estimated distribution of the sterling national debt: 31 March 1995

£ millions, nominal values (a)

Market values in italics (b)

	Total debt	Percentage of market holdings	Treasury bills	Stocks (c) Total	*Market value*	Up to 5 years to maturity	Over 5 years and up to 15 years	Over 15 years and undated	Non-marketable debt
Market holdings									
Other public sector:									
Public corporations	3,217		3	709		355	354	—	2,505
Local authorities	149		7	142		71	35	36	—
Total	3,366	1.2	10	851	*863*	426	389	36	2,505
Banking sector: (d)									
Discount market	281		183	98		91	8	—	—
Other	22,235		6,805	15,249		5,959	7,483	1,808	180
Total	22,516	7.8	6,988	15,348	*15,494*	6,049	7,491	1,808	180
Building societies	5,266	1.8	66	5,199	*5,309*	4,682	312	205	1
Institutional investors:									
Insurance companies	82,717		26	82,690	*81,490*	9,741	40,375	32,575	—
Pension funds	46,705		347	46,359	*42,779*	3,738	24,000	18,621	—
Investment trusts	2,092			2,092	*2,088*	219	860	1,013	—
Unit trusts	1,244			1,237	*1,252*	390	735	112	7
Total	132,757	45.9	373	132,377	*127,609*	14,088	65,969	52,321	7
Overseas holders:									
International organisations	6,632		—	1,034	*1,040*	114	820	100	5,598
Central monetary institutions	13,041		332	12,709	*12,924*	7,799	4,668	242	—
Other	21,437		115	21,322	*21,628*	12,992	6,478	1,852	—
Total	41,110	14.2	447	35,065	*35,592*	20,905	11,966	2,194	5,598
Other holders:									
Public trustee and various non-corporate bodies	334			334	*335*	52	225	57	—
Individuals and private trusts (e)	53,356			10,697	*10,779*	4,033	4,980	1,684	42,659
Industrial and commercial companies	7,797		3	2,020	} *22,452*	16,337	6,118	2,066	{ 5,774
Other (residual)	22,502			22,502					—
Total	83,989	29.1	3	35,552	*33,567*	20,422	11,322	3,808	48,433
Total market holdings (d)	289,004	100.0	7,887	224,392	*218,433*	66,572	97,449	60,371	56,724
Official holdings (d)	42,041		1,108	8,091	*7,757*	2,438	4,511	1,142	32,842
Total sterling debt	**331,044**		**8,995**	**232,483**	***226,190***	**69,010**	**101,960**	**61,513**	**89,566**

Owing to the rounding of figures, the sum of separate items will sometimes differ from the total shown.

— nil or less than £1 million.

(a) For explanations see the notes to similar tables on pages 439–40 of the November 1992 *Bulletin*.
(b) Some of these estimates are based on reported market values; certain others rely on broad nominal/market value ratios.
(c) A sectoral analysis of gilt holdings from 1970 to 1995 is published in the *Bank of England Statistical Abstract 1995*, Part 1 Table 17.4.
(d) Official holders include the Bank of England Issue Department and, exceptionally, the Banking Department.
(e) Direct holdings only; explained in the notes.

(1) The Bank conducted a survey of Central Gilts Office (CGO) members at end-March 1994 to improve its knowledge of the sectoral distribution of holdings of government stocks at that date. A summary of the survey—and of a further survey at end-December 1994—was included in the publication, 'Gilts and the Gilt Market: review 1994–5'. The estimate of the sectoral holdings there cannot, however, be directly reconciled to the gilts data in Tables G and H, since these include maturity data in arriving at the market value of holdings. It is intended to repeat the survey at the end of each calendar year.
(2) Figures for pension funds are based on the Central Statistical Office's regular statistical enquiries to a stratified sample of larger funds, with an allowance for smaller funds.

Notes and definitions

The national debt

The *national debt* comprises the total liabilities of the National Loans Fund. The total excludes accrued interest (including index-linked increases) on national savings, Consolidated Fund liabilities (including contingent liabilities, *eg* coin), liabilities of other central government funds (notably the Issue Department's note liabilities, Northern Ireland government debt and stocks issued by certain government funds), and sundry other contingent liabilities and guaranteed debt.

The national debt includes the whole nominal value of all issued stocks, even where there are outstanding instalments due from market holders: in such circumstances a counter entry is included in public sector liquid assets. The nominal value of index-linked gilt-edged stocks has been raised by the amount of index-linked capital uplift accrued to 31 March each year where applicable. Definitive figures for the national debt will be published in the *Consolidated Fund and National Loans Fund Accounts 1994/95 Supplementary Statements*. Provisional figures (some of which are revised in this article) are from *Financial Statistics*, September 1995.

Market holdings of the national debt, etc

Market holdings exclude holdings by other bodies within the central government sector (principally the funds of the National Investment and Loans Office, the Exchange Equalisation Account, government departments and the Issue Department of the Bank of England) and by the Banking Department of the Bank of England (together called 'official holders'). The term 'market' includes local authorities and public corporations as defined for national income statistics (see below). Exceptionally in these articles, Issue Department's holdings under purchase and resale agreements are included in market holdings; such holdings are therefore included in Table C as a central government liquid asset.

Gross domestic product (GDP)

The percentage data shown in Table A are based on the average measure of GDP at current market prices in four quarters centred on 31 March. The data in Table B are based on GDP for the financial years 1993/94 and 1994/95.

Net indebtedness to the Bank of England Banking Department

The Banking Department's holdings of central government debt (principally sterling Treasury bills and British government stocks) less its deposit liabilities to the National Loans Fund and the Paymaster General.

Savings banks

This comprises deposits on ordinary accounts of the National Savings Bank.

Notes and coin in circulation

Excludes holdings by the Banking Department of the Bank of England which are subsumed within the figure for 'Net indebtedness' (see above).

Other central government gross debt

Comprises market holdings of Northern Ireland government debt (principally Ulster Savings Certificates) and the balances of certain public corporations with the Paymaster General.

General government consolidated gross debt

This includes not only market holdings of the national debt *(qv)* but any market holdings of other central government debt. In addition it includes all local authority debt. All holdings of each other's debt by these two parts of the public sector are then netted off to produce a consolidated total—which is the total of general government debt held outside general government.

Public sector consolidated total debt

This includes not only market holdings of the national debt *(qv)* but also any market holdings of other central government debt. In addition it includes all local authority and public corporation debt. All holdings of one another's debt by these three parts of the public sector are then netted off to produce a consolidated total, which is the total of public sector debt held outside the public sector, and of which further estimates (and a fuller analysis) are published each year by the Central Statistical Office in Table S1 of *Financial Statistics*.

The net debt of the public sector

This is derived from the consolidated debt of the public sector by deducting the public sector's holdings of liquid assets.

Official reserves

These are at the official dollar valuation (see notes and definitions to Table 8.1 in the February 1995 *Bulletin*) converted into sterling at the end-March middle-market closing rate.

Instalments due on British government stocks

The national debt includes the whole nominal value of all issued stocks, even when there are outstanding instalments due from market holders; a counter entry is, therefore, included in assets.

PSBR

Figures are taken from *Financial Statistics*, September 1995.

The external balance sheet of the United Kingdom: recent developments

By William Amos of the Bank's Monetary and Financial Statistics Division.

This article examines changes to the net external asset position of the United Kingdom during 1994 (using figures published in the 1995 CSO Pink Book); it continues a series begun in September 1985 and last updated in the November 1994 Bulletin. *It focuses on capital flows, the impact of valuation changes to existing assets and the earnings on these assets. It also includes an international comparison of external balance sheets.*

Introduction

The United Kingdom had identified net external assets of £17.7 billion at the end of 1994, compared with a revised estimate of £13.2 billion at the end of 1993 (see Table A).(1) As in the previous four years, the increase in net assets was achieved despite a recorded current account deficit (albeit the smallest since 1986); it was the result of changes in asset prices. The increase in net assets was accompanied by recorded net capital outflows which, taken together with the recorded current account deficit, imply significant unrecorded inflows; these measurement problems are reflected in the balancing item in the accounts.

Table A
UK external assets and liabilities(a)

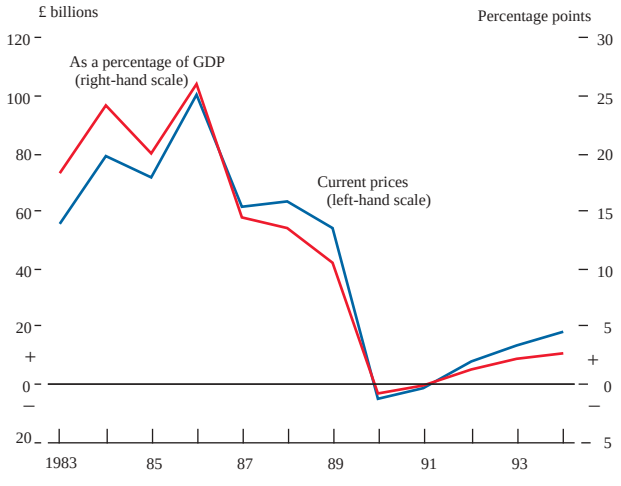
£ billions

	Stock end-1993	Identified capital flows	Net valuation effect (b)	Total change in stock	**Stock end-1994**
Non-bank portfolio investment:					
Assets	323.1	-32.7	-5.7	-38.4	284.7
Liabilities	193.8	22.4	-12.0	10.4	204.2
Direct investment: (c)					
Assets	166.1	16.9	-4.8	12.1	178.2
Liabilities	132.9	6.7	0.1	6.8	139.7
UK banks' (d)(e) net liabilities in:					
Foreign currency	13.6	-18.9	9.2	-9.7	3.9
Sterling	23.5	5.2	-1.2	4.0	27.5
Public sector:					
Reserves (assets)	29.0	1.0	0.6	1.6	30.7
British government stocks (liabilities)	48.7	3.0	-7.5	-4.5	44.2
Other net public sector assets	-3.3	-2.7	-0.1	-2.8	-6.1
Other net assets	-89.2	39.4	-0.5	38.9	-50.3
Total net assets	**13.2**	**3.6**	**0.9**	**4.5**	**17.7**

(a) The sign convention is not the same as in the balance of payments: a transaction that increases an itemised stock is + and one that decreases it is -.
(b) Residual component.
(c) UK banks' external borrowing from overseas affiliates is treated in the published data as an offset to outward direct investment, but it is treated here as part of the banks' net foreign currency liabilities.
(d) Estimated take-up of UK banks' bonds appears indistinguishably from foreign investment in other UK company securities in the published data, but is treated here as part of banks' net foreign currency liabilities. Banks' holdings of foreign currency bonds are treated as foreign currency lending.
(e) UK banking sector plus certain other financial institutions.

There were large changes in securities prices in 1994. Following rises in short-term US interest rates, bond yields increased and equity prices fell leading to capital losses on portfolio investments. The portfolio stocks and flows data suggest that UK external holdings of portfolio assets recorded capital losses; however, these were more than offset by the implied capital losses sustained on UK external portfolio liabilities. These movements resulted in a positive securities price effect on UK net portfolio assets. The estimate of the size of this effect should, however, be regarded with caution, since the levels data are prone to revisions; the net asset position at the end of 1993 was, for example, revised down by £7.1 billion in the 1995 Pink Book. Although revisions are normally small in relation to the total of gross assets and liabilities (£1,405 billion and £1,388 billion respectively at the end of 1994), the effect on the net assets figure is significant (see the box on measurement issues on page 354).

Chart 1
Net identified external assets at current prices and as a percentage of annual GDP

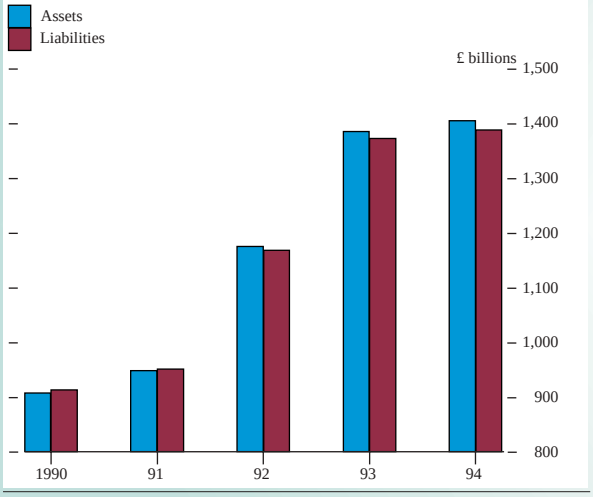


(1) Direct investments are recorded at book rather than market value. It has been estimated that the net direct investment stock was underestimated by £60 billion in 1993. See Pratten, C, (1994), 'The valuation of outward and inward direct investment', Department of Applied Economics (DAE), University of Cambridge, unpublished report to the Central Statistical Office available on request from the DAE.

Measurement issues

The 1995 CSO Pink Book contained revisions to the data published a year earlier. The revision to the reported 1993 current account was less than £1 billion; the relatively small adjustment maintained the trend observed for the current account since the then Chancellor of the Exchequer's initiative on economic statistics in 1990. The 1993 net external asset position was, however, revised downwards by £7.1 billion to £13.2 billion. This followed a substantial downward revision to the 1992 position in the 1994 Pink Book: the significant revisions to net assets are the result of relatively small amendments to the totals of gross external assets and liabilities. For example, the 54% revision to the 1993 net asset position was the result an amendment of 0.63% to gross assets and a 1.17% change in gross liabilities.

Gross external assets and liabilities



Unusually, the 1994 balance of payments data displayed both a net capital outflow and a current account deficit. These apparently contradictory figures were reconciled by a balancing item of £5.2 billion—the largest since 1988. The United Kingdom is not unique in having such a statistical discrepancy; and at both a European and global level, efforts are being made to improve the quality of these data.

In Europe, for example, both Eurostat and the European Monetary Institute have established groups of balance of payments experts. One objective of these task forces is to produce meaningful aggregates for the European Union, based on the recommendations of the fifth edition of the IMF balance of payments manual. Among other things, the manual recommends the reconciliation of portfolio stocks and flows data, to allow statistical agencies to cross-check stocks and flows data. Since many of the banks most involved in investment in foreign securities report both their transactions and holdings to the Bank of England, earlier this year the Bank completed an exercise to:

- reconcile stocks and flows data;
- produce actual and expected rates of return; and
- estimate full rates of return by adding capital gains to the income rate of return.

From this work, the Bank has created a system to estimate individual banks' portfolio stock positions at the end of quarters and compare the estimates with the actual outturn. The method chosen revalues the previous end-quarter stock positions using current end-quarter stock prices and adds revalued transactions data for the current quarter to produce an estimate of the stock position. This estimated position is compared with the outturn. Expected rates of return on both income and capital gains are generated. This system of cross-checking improves the accuracy of reporting and provides statisticians with a greater understanding of market developments.

The estimated end-quarter stock position is constructed by applying a yield and exchange rate revaluation to the previous quarter's data, so reflecting price and currency movements. But whereas the currency composition of a bank's end-quarter holdings is known, the maturity of those holdings is not. It is assumed (from the available evidence): that the average maturity of bonds held is five years;(1) that banks primarily hold fixed rather than floating-rate securities; and that in general they hold high-quality debt (not least because the Basle capital adequacy requirements encourage this).

To calculate the income rate of return, average portfolio income data are applied to an average of the previous two quarters' holdings. This provides a way of avoiding seasonal distortions, eg the usual six-monthly cycle of interest payments. An expected income rate of return is also calculated in order to allow the data reported by banks to be checked. It is constructed by weighting generic five-year bond yields according to the currency composition of banks' portfolios. To generate the full rate of return, the capital return is added to the income rate of return.

The exercise to reconcile transactions and levels should help to improve the quality of UK balance of payments. And, in addition, it has increased statistics-gatherers' understanding of the market and their ability to recognise and correct misreporting before data are published.

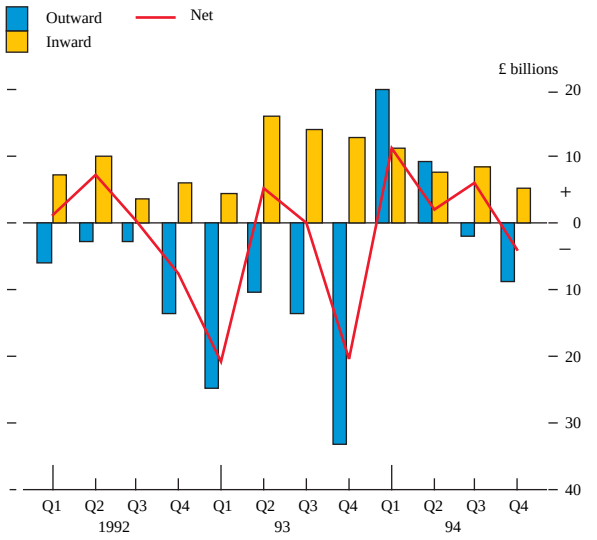
(1) Banks' holdings of foreign bonds tend to be of ten years or less. Although there are 30-year bonds and longer maturities in issue, they represent a relatively small segment of the market as a whole.

Capital flows

Portfolio investment

UK capital account transactions in 1994 were once again dominated by activity in the securities markets. Holdings of overseas securities were significantly reduced in the first half of the year, following the large increase in 1993 (see Chart 2). The disposal of overseas portfolio assets in the first half of the year led to net sales (of £18.6 billion) for the year as a whole.(1) The flow of inward portfolio investment was also lower than in 1993, but at £31.8 billion it remained significantly above the figures reported in prior years.

Chart 2
Portfolio investment(a)



(a) Includes banks' investment. + = increase in liabilities.

Following the increase in US interest rates on 4 February 1994, the holdings of overseas securities built up in 1993 were rapidly reduced. This sell-off was accompanied by a reduction in short-term liabilities to the overseas sector (see Table B). During 1993, UK residents—notably securities dealers—had increased their borrowing from overseas to finance holdings of securities; these liabilities were reduced in 1994. Banks and securities dealers both reduced their holdings of overseas securities in the first half of the year; securities dealers had, however, built up larger holdings in 1993 and their sales were correspondingly greater. Banks reported net sales of £2.9 billion in the period while other financial institutions (OFIs) sold £28.3 billion. In the second half of the year, banks purchased £17 billion worth of overseas securities, more than reversing their earlier sales. OFIs, however, remained net sellers of overseas securities, reducing their positions by a further £5.2 billion.

In the reduced net purchases of UK securities by overseas investors, there was a striking distinction between corporate and government issues. Net purchases of UK company securities fell by £4.4 billion to £26.1 billion, while net

Table B
UK balance of payments: transactions data

£ billions
Increase in UK assets (-)/ increase in UK liabilities (+)

	1990	1991	1992	1993	1994
Current balance	-19.3	-8.5	-9.5	-11.0	-1.7
Long-term capital:					
Public sector (a)	-0.7	7.0	7.8	16.2	5.4
Private sector (b)	3.2	-18.8	-11.3	-61.5	34.9
	2.5	-11.8	-3.5	-45.3	40.3
Balance	**-16.8**	**-20.3**	**-13.0**	**-56.3**	**38.6**
Short-term capital (c)	8.5	13.4	12.8	31.2	-40.6
Banks' transactions (d)	7.2	9.6	-5.6	28.3	-2.3
Balance before reserves and errors	**-1.1**	**2.7**	**-5.8**	**3.2**	**-4.3**
Reserves	-0.1	-2.7	1.4	-0.7	-1.0
Errors and omissions	**-1.2**	**—**	**-4.4**	**2.5**	**-5.2**

Columns may not sum to totals because of rounding.

(a) Includes overseas purchases of gilts and long-term government borrowing.
(b) Includes direct and portfolio investment excluding overseas investment in gilts.
(c) Includes all other non-bank and government capital flows other than long term as defined above.
(d) Banks' net deposits, ie excludes banks' portfolio and direct investment.

purchases of British government stocks fell by £12.2 billion to £3 billion. The substantial fall for government stocks was the result of reduced net buying by overseas residents other than overseas monetary authorities; this group of investors made small net sales during the first half of the year. There was reduced external demand for government securities elsewhere—including in Germany, Japan and the United States—in the second quarter of the year.(2)

The fall in overseas residents' net acquisitions of UK company securities reflected reduced buying of equities. Throughout the period, overseas investors remained net purchasers of both equities and bonds; however, net acquisitions of bonds increased to £21 billion in 1994 from £13.5 billion in 1993, whereas net equity acquisitions fell from £17 billion to £5.1 billion in 1994.

Direct investment

Direct investment overseas by UK residents continued at a similar rate as in 1993—that is significantly above the rates seen in the early 1990s. In 1994, these high capital outflows largely reflected profit retention by overseas affiliates. As the profitability of overseas affiliates of UK companies has increased, so have their retained profits.(3) And of the direct investment outflows in 1994, 85% (£14.4 billion) represented retained profits.

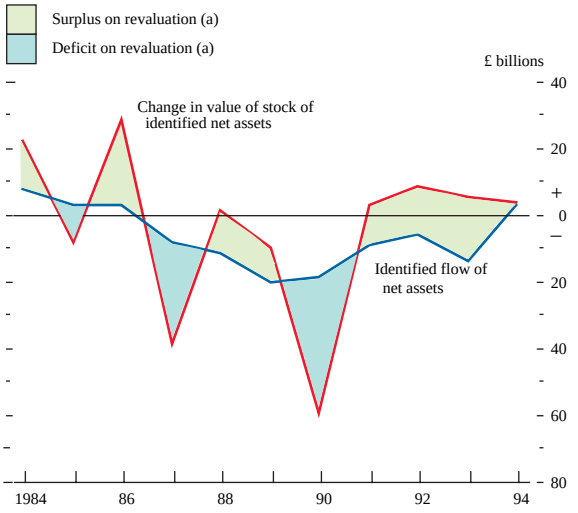
Inward direct investment by overseas residents, by contrast, was at the lowest since 1986. This reflected almost a halving in the unremitted (ie reinvested) profits of non-oil companies, and the lowest level of acquisitions of share and loan capital since 1988. The box on page 358–59 examines the trends, determinants and implications of direct investment in more detail.

(1) See the article in the May 1995 *Quarterly Bulletin*, pages 154–59, which discussed bond yield changes in 1993 and 1994.
(2) More details can be found in the box on international securities transactions in 1994 in the February 1995 *Quarterly Bulletin*, pages 30–31.
(3) In balance of payments accounting, profits earned overseas are reported as income to the United Kingdom in the current account; the retained profits are then shown as an outflow in the capital account.

Effects of revaluation and an international comparison of external balance sheets

Of the recorded £4.5 billion increase in UK net assets in 1994, an estimated £0.9 billion was the result of revaluations—the smallest recorded revaluation effect in recent years. Because of positive revaluations in each of the past four years, the United Kingdom's net asset position has increased despite recorded current account deficits. By definition, a current account deficit must be accompanied by net capital inflows—as liabilities to overseas are increased, overseas assets are reduced, or some combination of the two. Other things being equal, this will reduce the external net asset position. During 1994, however, according to the official statistics, there was both a current account deficit and a net outflow on the capital account. This apparent inconsistency is explained by the existence of a balancing item of £5.2 billion reflecting errors and omissions elsewhere in the accounts.

Chart 3
Contributions to changes in net external assets



(a) Residual component—difference between change in recorded net stock and identified net flows.

Revaluations of gross assets and liabilities occur as a result of exchange rate movements, securities price changes, write-offs and revaluations of direct investments. It is difficult to revalue assets and liabilities accurately using official data, largely because of a lack of detail in some sectors about the exact location, currency of denomination and the type of investment involved. Table C provides estimates of the impact of revaluation effects and relates them to recorded capital flows. The estimate for the exchange rate effect is disaggregated into components for portfolio investment, direct investment and other net assets (that is lending to overseas residents, and the effects on the official reserves and on central government assets). The 'other' element in revaluations is the residual amount, ie that not due to exchange rate or securities price effects: it may therefore reflect, among other factors, inaccuracies in estimating the sources of revaluations. Given the estimation problems, Table C should be viewed only as broadly indicative.

Table C
Change in identified net external assets

£ billions

		Average (a) 1982–90	1991	1992	1993	1994	1995 H1
A	Current balance (deficit -)	-5.8	-8.5	-9.5	-11.0	-1.7	-4.4 (b)
B	Identified capital flows (inflows -) (c)	-3.6	-8.5	-5.1	-13.5	3.6	2.3
C	Revaluations	-0.6	12.1	14.4	19.4	0.9	-4.0
	of which:						
	Exchange rates		*7.5*	*63.2*	*3.9*	*0.3*	*14.3*
	Portfolio investment		*3.2*	*27.8*	*0.2*	*0.5*	*8.1*
	Direct investment		*6.2*	*27.3*	*2.9*	*1.8*	*11.8*
	Other net assets		*-1.9*	*8.1*	*0.8*	*-2.0*	*-5.6*
	Securities price effect		*11.0*	*-13.2*	*22.9*	*11.6*	*-4.5*
	Other (d)		*-6.4*	*-35.6*	*-7.4*	*-11.0*	*-13.7*
D	Change in identified net assets (increase +)	-4.3	3.6	9.3	5.9	4.5	-1.7
E	Net asset level (end-year)	-5.6	-2.0	7.3	13.2	17.7	15.9 (e)
F	Balancing item (f) (inflows/credits +)	2.2	—	4.4	-2.5	5.2	6.7

(a) End-year net asset level refers to end-1990.
(b) Not seasonally adjusted.
(c) Note the difference between this sign convention and that of the balance of payments statistics.
(d) Including revaluations to direct investment stocks relating to write-offs, profitable disposals of assets etc as well as residual error.
(e) This is a preliminary estimate of the net stock position at the end of the second quarter of 1995.
(f) F = B-A.

As in the previous two years, UK net portfolio assets were subject to significant revaluation effects in 1994. The overall positive securities price effect occurred despite overseas assets being subject to large negative price revaluations; the effect of these appears to have been outweighed by the impact of the fall in the price of UK securities on overseas residents' portfolios. This probably reflected the decline in UK securities prices relative to other securities markets in 1994. The overall exchange rate effect was also positive for the UK external balance sheet. The revaluation was consistent with a slight depreciation of the sterling effective exchange rate, and maintained the trend observed since 1991.

Preliminary estimates for the first half of this year indicate a downward revaluation of UK net assets, despite a significant positive exchange rate effect which reflected the depreciation of sterling against most major currencies during the period. The size of the revaluation should, however, be viewed with caution, since the half-year assets and liabilities data are prone to revision.

International comparisons of net external assets

Table D offers an international comparison of net external assets. Broadly speaking, in France, Germany, Japan, the United Kingdom and the United States, there was a continuation of the trend seen in recent years. Since 1985, when the net external assets of the United States and Japan were virtually identical in dollar terms, Japanese net external assets have increased while those of the United States have fallen. These movements are largely the result of the regular current account surplus of Japan and deficit of the United States. With a current account surplus and a strong Deutsche Mark, before 1990 German net assets followed a similar trend to Japanese. But following German unification in 1990, the current account moved into deficit, and this was accompanied by a fall in net external assets, despite the Deutsche Mark's slight depreciation against the US dollar

Table D
International comparisons of external net asset positions[a]

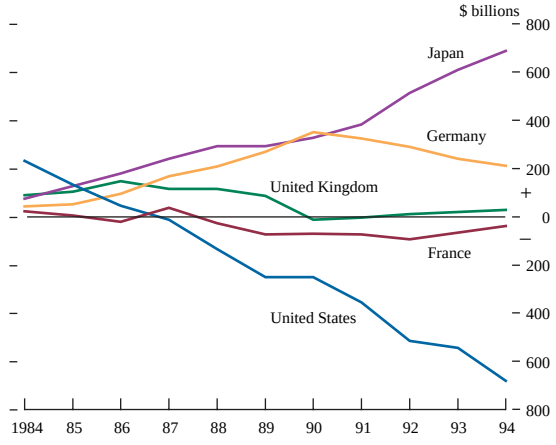
End-years	1981	1985	1991	1992	1993	1994
United States						
$ billions	374.3	139.1	-355.1	-515.7	-545.3	-680.8
Percentage of GNP	12.3	3.4	-6.2	-8.6	-8.6	-10.1
Japan						
$ billions	10.9	129.8	383.1	513.6	610.8	689.0
Percentage of GNP	1.0	10.0	10.6	13.7	14.5	14.5
Germany						
$ billions	29.2	52.8	325.2	289.7	240.9	212.0
Percentage of GNP	4.0	9.0	18.5	16.6	14.6	11.2
France						
$ billions	56.4	6.1	-74.4	-95.0	-66.8	-38.3
Percentage of GNP	8.6	1.0	-5.7	-7.5	-5.6	-2.8
United Kingdom						
$ billions	62.2	102.6	-3.7	11.0	19.6	27.7
Percentage of GNP	11.9	22.4	-0.4	1.2	2.1	2.6

(a) The data underlying this table are taken from national sources, the IMF *International Financial Statistics Publication* (GNP figures) and *OECD Financial Statistics Part 2*. National sources may use differing methodologies.

between 1990 and 1993. France's net asset position improved during 1994, despite a small appreciation of the franc against the US dollar; this was countered by a current account surplus. International balance of payments data can be subject to large revisions and problems of comparison; however, these are unlikely to distort this broad picture significantly.

In general, increases in net external assets have been positively correlated with current account surpluses. The exception, however, has been the United Kingdom which, despite running current account deficits, has managed to

Chart 4
International comparisons of external net asset positions[a]



(a) See footnote to Table D.

increase its estimated net external assets in recent years. This has been achieved—as Table C illustrates—primarily through significant exchange rate movements, but it has also reflected favourable net portfolio price movements. In 1993, the value of UK portfolio liabilities rose by less than UK overseas portfolio assets; in 1994, the value of UK portfolio liabilities fell by more than UK overseas portfolio assets.

Investment income

UK net investment income rose to a record high of £10.5 billion in 1994. This helped push the current account into surplus in the third quarter and contributed to the lowest annual current account deficit since 1986. As Table E

Table E
Investment income (II)

£ billions

	Annual average 1982–90	1991	1992	1993	1994	1995 H1
Earnings on assets						
Portfolio (a)	2.8	5.5	8.2	9.5	8.6	4.2
Direct	10.2	12.8	13.4	16.4	21.9	10.6
Other non-bank private sector	2.0	4.3	4.0	4.8	4.2	2.0
Public sector (b)	1.1	1.8	1.6	1.4	1.4	1.0
UK banks' spread earnings on external lending	1.6	0.3	1.8	2.1	6.7	2.1
Total	**17.7**	**24.6**	**28.9**	**34.2**	**42.9**	**20.0**
Payments on liabilities						
Portfolio (a)	1.8	6.5	6.8	7.3	7.9	4.9
Direct	6.8	4.5	5.3	10.4	9.5	5.8
Other non-bank private sector	2.2	5.7	6.8	8.9	9.0	4.2
Public sector (c)	1.9	2.6	3.2	3.4	4.1	2.2
Banks' cost of net liabilities	1.9	5.9	3.1	2.3	1.8	1.1
Total	**14.6**	**25.2**	**25.2**	**32.4**	**32.3**	**18.2**
Net II earnings	**3.1**	**-0.6**	**3.7**	**1.9**	**10.5**	**1.8** (d)
Net II excluding spread earnings	1.5	-0.9	1.9	-0.2	5.6	-0.3

(a) Non-bank private sector.
(b) Including official reserves.
(c) Including gilts.
(d) Not seasonally adjusted.

shows, the increase was the result of a substantial rise in earnings on assets and a small fall in the income paid on liabilities. In 1993, the decline in investment income was largely the result of a fall in net direct investment earnings; the increase in 1994 was largely attributable to a recovery in this area. Net direct investment income more than doubled, to £12.4 billion, in 1994.

Net earnings from direct investment by the banking and OFIs sectors significantly improved in 1994. The profits of overseas banks resident in the United Kingdom, affected by difficult trading conditions, fell from £2.9 billion in 1993 to £1.3 billion in 1994; these earnings are a debit in the UK current account so, other things being equal, a fall in them improves the UK net investment income position. Similarly, overseas OFIs operating in the United Kingdom experienced a £2.2 billion fall in earnings. The banking sector's net direct investment earnings were further boosted by an increase in the profits of UK banks' overseas affiliates—a credit to the UK current account. In 1993, these offices reported profits of £313 million; in 1994, their profits were some £700 million higher. The rise stemmed mainly from higher profits in European and US affiliates, following subdued earnings in 1993.

Net earnings from non-bank portfolio investments fell from £2.2 billion in 1993 to £0.7 billion in 1994. From the rates of return, shown in Table F and discussed further below, this seems to have been largely the result of non-banks, notably securities dealers, running down their overseas securities

Foreign direct investment

Recent trends in foreign direct investment illustrate the extent of changes to the pattern of global production. In advanced economies, foreign-owned firms now account for a large share of 'domestic' output, employment, investment and trade. This has important implications for global economic relations.

Measurement issues

International comparisons of direct investment are subject to considerable measurement problems. Not all countries adhere to IMF and OECD recommendations on measuring direct investment. Japanese figures, for example, exclude unremitted profits and take no account of disinvestment flows or loans from affiliates to parents. There is a further problem in identifying the *destination* of investment flows, because funds are often channelled through holding companies in third countries—this is particularly evident in the data for the Netherlands and Switzerland.

Despite these difficulties, detailed data are available on UK and global stocks and flows of direct investment. The Central Statistical Office's (CSO's) annual enquiry into overseas direct investment provides detailed data on the source, destination and industrial composition of UK direct investment. And comparative data can be generated using a combination of the IMF balance of payments data, OECD estimates and official national sources.(1)

Global trends

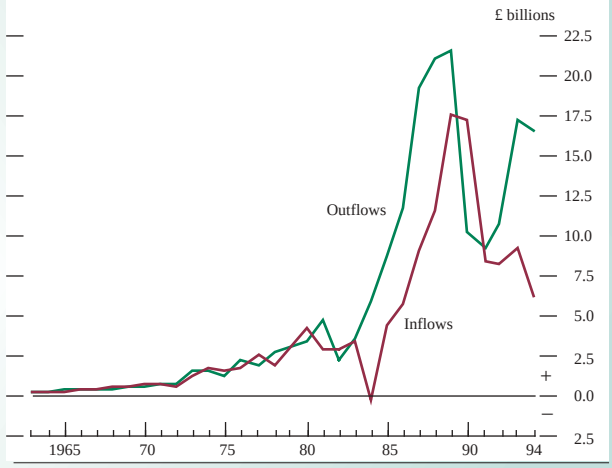
In the 1980s, there was a surge in global foreign direct investment. UN estimates suggest that between 1983 and 1990 global flows rose at an average annual rate of 30%—over three times the rate of world export growth and four times as fast as world GDP growth. Direct investment flows reached a peak of around $230 billion in 1990; the largest flows were between the United Kingdom, Japan and the United States. Outward investment fell in the following two years because of recession. But the flows have since recovered strongly; they reached around $200 billion in 1993.

Developed countries account for the majority of outward flows (around 90% of the global total in 1991–93). And in recent years, there has been a sharp increase in inflows to the developing world, concentrated mainly in 10–15 countries in Asia and Latin America: most notably, in 1993 China became the second largest recipient of foreign direct investment inflows after the United States.

UK trends

The United Kingdom was the world's largest *outward* direct investor between 1986 and 1988, with a share of over 20% of total world flows. The main destination for UK investment was the United States, where UK companies were a major participant in cross-border merger and acquisition activity. A decline in this activity and recession led to a sharp fall in UK outward investment in 1990–91. But outflows have now started to recover, and reached £16.4 billion in 1994, though remaining below their 1989 peak (see the chart).

UK direct investment outflows and inflows



The United Kingdom was also a major destination for *inward* investment in the late 1980s: inflows peaked at £17.4 billion in 1989 (about 16% of world and 38% of EU inflows); the main source was the United States. But in recent years, other EU states and, to a lesser extent, other developed countries have increased their share of inward investment. Despite Japan's importance as a source in the late 1980s, in 1993 its share of the total *stock* of UK direct investment was only 4.5%. Inward investment in the United Kingdom fell sharply in the recession and has yet to recover: inflows were only £6.7 billion in 1994, around 40% of their 1989 level.

(1) The UNCTAD, Division on Transnational Corporations and Investment holds a database on foreign direct investment, details of which are reported in the *1994 World Investment Report*.

UK foreign direct investment flows by region

£ billions

		1988	1989	1990	1991	1992	1993
Western Europe	Outflows	5.8	5.6	5.8	4.0	4.9	6.6
	Inflows	7.3	7.9	8.1	4.9	4.1	2.1
North America	Outflows	11.0	12.2	0.9	2.6	1.2	7.0
	Inflows	1.5	7.0	4.8	2.1	3.7	4.4
Japan	Outflows	0.1	0.2	0.2	—	—	-0.1
	Inflows	1.1	1.2	2.1	—	—	0.4
Rest of the world	Outflows	4.0	3.4	3.1	2.8	4.0	3.6
	Inflows	1.7	1.2	2.2	1.3	1.0	2.3
Total	Outflows	20.9	21.5	10.1	9.3	10.1	17.0
	Inflows	11.6	17.4	17.2	8.4	8.8	9.2

Service industries have received a rising share of investment flows over the last decade, accounting for 40% of UK inward investment and 45% of outward investment in 1993 (compared with 36% and 38% respectively in 1980). This trend reflects both the growing importance of the sector in domestic and world output, and the extent of service-sector liberalisation (including privatisation programmes).

Determinants

A firm's *ability* to undertake foreign direct investment is dependent on the availability of finance, and consequently on aggregate profitability; but the factors affecting the *need* to undertake direct investment are less obvious. However, direct investment is generally much more difficult to reverse than portfolio investment. As a consequence, the determinants of its growth, location and industrial composition are likely to be longer-term and more structural than the risk-return influences on portfolio flows.(2)

There may be long-term advantages to a firm in replacing market transactions with internal transactions through vertical integration. Downstream integration with a foreign supplier may remove uncertainty involved in obtaining supplies, allow production to be moved to lower cost areas or offer tax advantages through transfer pricing. Upstream integration may improve a firm's responsiveness to local market conditions, or allow it to obtain or preserve a presence in regional market places.

Economic theory suggests that for a firm to be willing to establish an overseas subsidiary, there must be cost advantages relative to acquiring a domestic incumbent firm sufficient to compensate for the costs of adapting production to local conditions. These advantages may be superior technological or managerial abilities, better marketing skills or a brand identity.

The United Kingdom's importance as a provider of direct investment is partly a product of its historical ties (with the United States and the Commonwealth), which have produced a large existing stock from which it can reinvest retained earnings. Outward investment in the United States may also have been motivated by a desire to acquire ready-made management structures or marketing and technological expertise.

Its attractiveness to inward investors may be attributable to the access that it provides to the developing European economy, a favourable corporate tax regime, and the extensive liberalisation of financial and other service industries in recent years. Japanese investment in the United Kingdom seems to have been particularly motivated by a perceived managerial and technological advantage. Finally, there may be fewer impediments to take-overs in the United Kingdom than in other EU countries: share ownership is widely dispersed, there are few dominant inter-company and bank shareholdings, and comprehensive shareholder registers exist.

Implications

Outward investment activity has provided companies with an additional source of earnings and the United Kingdom with a source of investment income which has boosted the *invisible* trade balance. Investment income was a major contributor to the improvement in the current account in 1994, and provided a quarter of the increase in ICCs' total income. In addition, outward investment has also allowed access to overseas markets which would otherwise be difficult to supply.

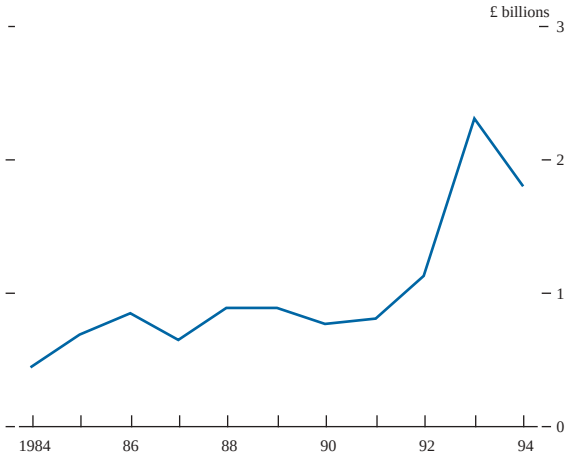
Inward investment may have benefited the *visible* trade balance by leading both to import substitution and an increase in re-exporting activities by foreign-owned firms. It has also accounted for a higher proportion of total domestic investment than in most developed countries (about 14% between 1986 and 1990, compared with an OECD average of 4%), suggesting that it may have slightly increased overall domestic investment in this period. Its wider benefits include increased domestic productivity and technology transfer.

(2) Theoretical explanations for foreign direct investment are discussed in Lizondo, J S, *Determinants and Systemic Consequences of International Capital Flows*, IMF March 1991.

portfolios during 1994. Despite large repayments of borrowing by the non-bank private sector, payments on overseas liabilities increased slightly. The combination of an increase in interest payments and a fall in overall liabilities reflected the lag on interest payments to overseas.

In contrast to securities dealers, banks increased their holdings of overseas securities by £11.1 billion (10%) during 1994. Their 48% increase in holdings of overseas securities during 1993 had resulted in a substantial increase in net earnings; but in 1994, despite the increase in assets, banks' net income from portfolio investments fell by 21% (see Chart 5). The decline in net income occurred not because of a fall in interest and dividend receipts, but because of an increase in banks' funding costs.(1)

Chart 5
Banks: portfolio investment income net of funding costs(a)



(a) British Invisibles 'City Table' 1995.

Banks' spread earnings on external lending are estimated to have grown substantially in 1994. Banks continued to report net interest and dividend receipts and, as in 1993, net receipts on interest rate swaps. Net receipts on interest rate swaps with the overseas sector increased almost tenfold to £2.4 billion in 1994. Banks ascribed this increase mainly to positions in which they had taken on fixed-rate liabilities and floating-rate assets: when interest rates increased, UK banks' receipts exceeded their payments.

Estimates for 1995 H1 put net investment income at £1.8 billion—substantially lower than in 1994 H1. The main factors underlying the fall were higher payments on portfolio and direct investment liabilities compared with the first half of 1994. As a result of these, there were net payments on securities in 1995 H1, reversing the trend of net receipts recorded in recent years.

Capital gains and full rates of return

Table F sets out the investment income and full rates of return on specific assets in recent years. The investment income rate of return is calculated by taking earnings as a percentage of the stock of investment. The full rate of return includes investment income plus any capital gains, again expressed as a percentage of the stock. In 1994, the full rate of return on UK overseas assets fell once again. Having almost halved in 1993, there was a similar reduction in 1994. But whereas the decline in 1993 reflected a return to more normal rates following unusually high returns recorded in 1992,(2) in 1994 the fall appears largely to have been the result of capital losses recorded on UK residents' holdings of overseas securities. In a similar way, the fall in the price of UK securities resulted in the full return on UK portfolio liabilities falling by 15.8 percentage points to -2.9% in 1994, which contributed to a fall of four percentage points on the total rate of return on liabilities.

Table F
Estimated investment income(a) **and full rates of return**(b) **on identified assets and liabilities**

Percentage points

Assets

	Total		Portfolio		Direct		Banks			
							Foreign currency		Sterling	
	II	Full	II	Full	II	Full	II	Full	II	Full
1990	8.7	-5.4	4.1	-20.1	13.0	2.0	9.3	-4.5	13.8	14.3
1991	8.1	10.4	3.8	14.1	10.2	7.3	9.8	8.8	15.2	11.6
1992	5.9	18.2	4.1	15.8	9.0	17.2	6.0	21.4	11.1	6.6
1993	5.3	9.2	3.6	14.3	9.6	13.0	5.7	5.9	7.4	8.3
1994	5.6	4.2	3.9	1.7	12.0	9.7	5.2	9.1	7.8	9.5

Liabilities

	Total		Portfolio		Direct		Banks			
							Foreign currency		Sterling	
	II	Full	II	Full	II	Full	II	Full	II	Full
1990	8.6	-1.0	6.9	-3.7	6.2	-4.8	9.0	-4.1	12.9	12.7
1991	8.1	9.1	6.4	13.6	3.8	2.0	9.3	8.6	13.6	11.5
1992	5.6	16.8	5.2	16.1	4.3	-0.3	5.6	21.5	9.2	7.2
1993	5.2	7.4	4.2	12.9	7.9	8.1	5.4	4.9	6.1	6.9
1994	4.9	3.4	4.6	-2.9	6.8	6.9	4.6	4.4	4.4	4.1

(a) II earnings as a percentage of the stock.
(b) II earnings plus stock revaluations as a percentage of the stock.

The investment income returns of portfolio assets continued to be lower than those on liabilities. It should be noted, however, that for the past two years the full rate of return has been slightly higher for assets than liabilities: the capital gain on assets has been higher than that on liabilities. This may indicate a larger proportion of capital-uncertain assets than liabilities.

The income rate of return on direct investments was significantly higher for assets than for liabilities in 1994; this probably reflected the pick-up in banks' and industrial and commercial companies' direct investment earnings overseas.

(1) Banks' portfolio investment income net of funding are published in the British Invisibles City Table. Banks' portfolio investment funding costs are not directly reported and have to be imputed. The method used was outlined in the press release issued with the July 1995 British Invisibles City Table. Essentially, the stock of investment to be funded is allocated between banks' own foreign currency capital, securitised borrowing from overseas and a residual amount. Capital is regarded as interest-free; interest on securitised borrowing is estimated by the Bank; and the rate of interest applied to the residual amounts is assumed to be equal to the implied rate of interest on banks' total foreign currency borrowing and deposit liabilities to overseas residents.
(2) Details of the 1992 returns can be found in the article on the UK external balance sheet in the November 1994 *Quarterly Bulletin*, page 361.

The foreign exchange market in London

By Dale Thomas of the Bank's Foreign Exchange Division.

In April, 26 central banks, including the Bank of England, conducted surveys of turnover in their local foreign exchange markets as part of a worldwide exercise co-ordinated by the Bank for International Settlements. The UK survey was the fourth of the London market, after those in March 1986, April 1989 and April 1992.(1) *This article sets out the results and compares them with those from previous surveys and for other major centres.*

The results show that:

- *London has consolidated its position as the world's largest centre for foreign exchange business. Total average daily turnover in London during April 1995 was US$464 billion (60% higher than the US$290 billion*(2) *recorded in April 1992).*(3)

- *The proportion of gross turnover accounted for by forward business, largely in swaps, increased from 48% to 59%, continuing the trend seen between 1989 and 1992. Nearly 80% of the increase in total turnover was accounted for by activity in the swap market. As a consequence, trading for spot value now accounts for rather less than half of total turnover.*

- *US dollar/Deutsche Mark trading, which accounts for 22% of transactions, continues to have the largest share of the market. Turnover in US dollar/yen (17%) is now greater than turnover in sterling/US dollar (11%). Overall, the proportion of trades that involve sterling has fallen from 24% to 16%.*

- *The proportion of interbank business transacted through London brokers is around 35%, a similar share to 1992: about 30% through conventional voice brokers and 5% through electronic brokers.*

- *Interbank business continues to be concentrated among the larger principals: the top 20 firms now account for 68% of the market, compared with 63% in 1992. But a wide range of banks continue to participate in the London market, with 79% of turnover generated by non UK owned banks.*

- *Interbank business continues to form the bulk of activity, but the proportion of business with non-financial customers and other financial institutions has risen further, to 25% of the total.*

The results of the survey

A total of 26 central banks conducted surveys of the foreign exchange markets in April this year, the same number as in 1992, but more than the 20 in 1989. The surveys were co-ordinated by the Bank for International Settlements (BIS) and the survey forms were broadly similar, although with some differences in detail to allow for local factors.

Daily turnover in London

After adjusting to allow for double reporting of transactions between UK principals, the average volume of principals' business in London during the survey period is estimated to have been some $464 billion a day—60% higher than the 1992 figure of $290 billion a day (see Chart 1). However, there have been large exchange rate movements since 1992:

(1) Described in the September 1986 *Bulletin* (pages 379–82), the November 1989 *Bulletin* (pages 531–35) and the November 1992 *Bulletin* (pages 408–17) respectively. There is no significant foreign exchange market in the United Kingdom outside London.
(2) The 1992 figures differ from those included in the 1992 *Bulletin* article since they do not include data on turnover in options and futures.
(3) All these figures are quoted after adjustment to allow for transactions between UK banks being reported by both parties to the transaction.

The London survey

The coverage of the survey

The Bank of England's survey of the London foreign exchange market was conducted over the 18 business days of April 1995 and coincided with similar surveys conducted in other centres around the world. A total of 301 principals and 12 brokers in foreign exchange participated in the London survey, a smaller number than in 1992. As in 1992, the institutions approached were mainly banks which report regularly to the Bank in respect of foreign exchange exposures, as well as a number of investment houses listed by the Bank as market-makers in foreign exchange under Section 43 of the Financial Services Act 1986. Other institutions dealing in foreign exchange did not take part directly in the survey, but their transactions with principals taking part, or through brokers, will have been reported by those institutions.

The questionnaire

Survey participants were requested to complete a questionnaire prepared by the Bank of England, based on a standard format produced by the Bank for International Settlements (BIS) and agreed with other central banks.

For the 18 business days of the survey period, contributors were asked to provide details about their gross turnover in foreign exchange, classified by type of currency, transaction and counterparty. As in previous years, deposit business was specifically excluded from the survey. Gross turnover was defined as the total absolute value of all deals contracted, ie the sum of all foreign exchange transactions during the month of April without netting purchases from sales of the same currencies. For swap transactions, participants were asked only to report the size of the near end of the swap. Data were requested in terms of US dollar equivalents, rounded to the nearest million.

The questionnaire was set out in a matrix format, analysing activity simultaneously by currency, instrument and counterparty, to maximise the information obtained and to minimise errors from double counting. This should enable the BIS, which intends to produce a summary of the results from all 26 countries early next year, to calculate global turnover more accurately and to classify activity in more detail.

The survey distinguished between the following types of transaction:

- for *spot* value (ie for settlement no more than two business days after the deal was contracted—but here defined also to include overnight and next day business); and

- for *forward* value (ie for settlement more than two business days after dealing, but including overnight and other short-dated swaps):

Forward contracts were further broken down into:

- *outright forwards* (ie single sales or purchases of foreign currency for value more than two business days after dealing); and

- *swaps* [ie spot purchases against matching outright forward sales or *vice versa*, and 'forward/forwards' (swap transactions between two forward dates rather than between spot and forward dates)].

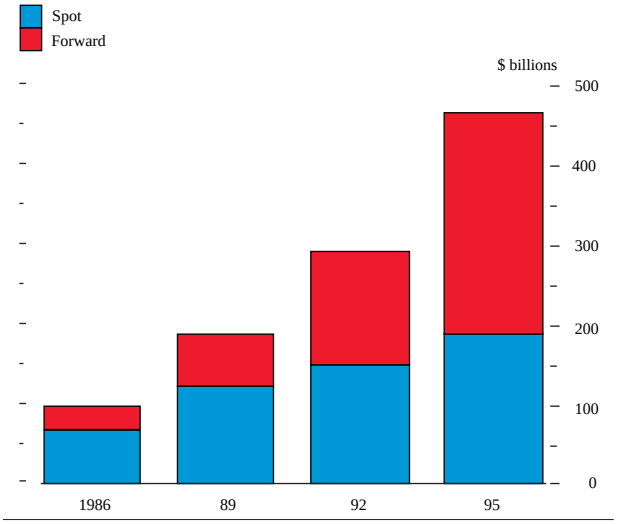
By counterparty, principals were requested to distinguish between transactions with other *interbank counterparties* (other commercial banks participating in the survey, either in the United Kingdom or elsewhere), *other financial institutions* (which would include banks not participating in the survey) and other *customers* (non-financial customers), in each case separating local and cross-border transactions. Additionally, principals were asked how much business was done through brokers and how much through automated dealing systems, and to indicate whether they operated netting arrangements and if so to give details. Brokers were also asked how much of their business was done through their own branches and subsidiaries abroad, and how much through other brokers abroad.

Finally, contributors were asked to indicate how foreign exchange turnover recorded by their London offices during the survey period compared with levels regarded as 'normal'.

The aggregate responses to the main sections of the questionnaire are reproduced in Table L at the end of the main article. In conjunction with the foreign exchange survey, the Bank of England also conducted a parallel survey of the London derivatives market, again as part of a worldwide exercise co-ordinated by the BIS. Data on foreign exchange options and futures trading, which were included in the results of the foreign exchange survey in 1992, will this year be included in the derivatives market survey.[1]

(1) It is intended to summarise the results of the derivatives market survey in a future *Quarterly Bulletin*.

Chart 1
Daily turnover in London



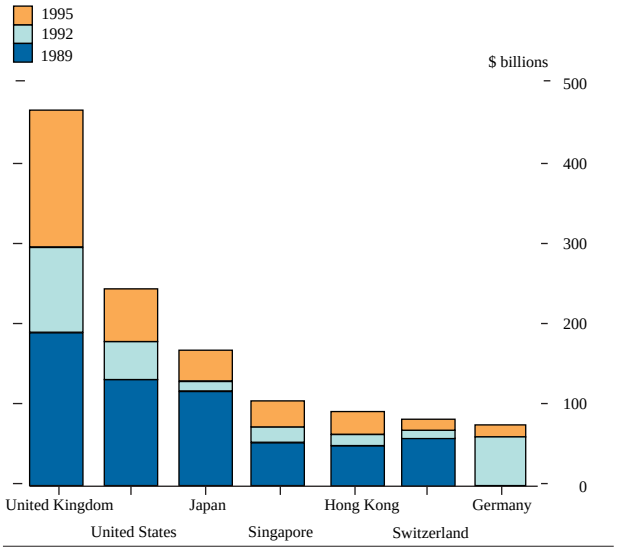
in sterling terms the overall growth was 74%; in Deutsche Mark terms it was 31%.

About 26% of the firms taking part in the survey considered the overall level of turnover during the survey period to have been below normal; 53% considered business normal and 7% above normal; the remaining 14% did not comment.

Global turnover

The worldwide results show that London has further consolidated its position as the world's biggest centre for foreign exchange business (see Chart 2). Both the Federal Reserve Bank of New York and the Bank of Japan reported smaller percentage increases than London's—of 46% and 34%, to $244 billion and $161 billion respectively (compared with $167 billion and $120 billion in 1992).

Chart 2
Turnover in major centres



It is clear that there has been a substantial further increase in global foreign exchange activity over the past three years.

However, it would be misleading simply to aggregate the individual results from countries to produce a figure for global turnover; to do so would double count deals between centres. Early next year, the BIS intends to produce a comprehensive summary of the results from all 26 countries and an estimate of global turnover, adjusted for such double counting.

Currencies traded

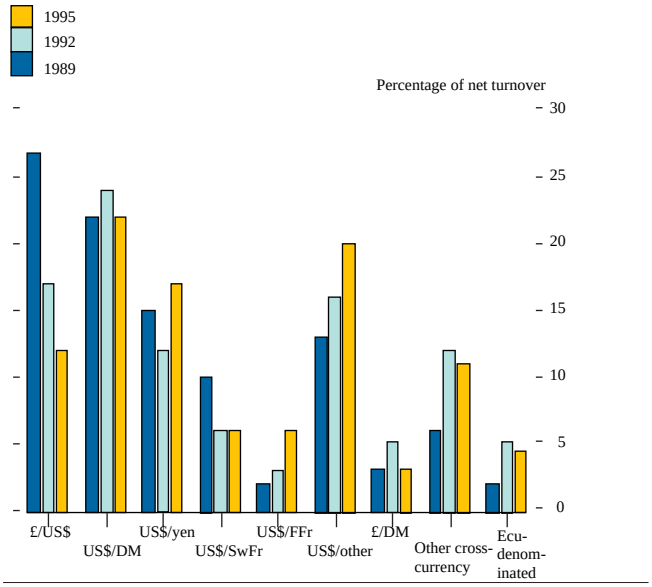
US dollar/Deutsche Mark trading, which accounts for 21.5% of transactions, continues to have the largest share of the London market (see Table A). Sterling/US dollar (11.5%) is

Table A
Relative shares of total turnover by currencies traded

Shares of total net turnover, adjusted for double counting of domestic interbank business, are given in italics

	1995						1992	1989
	Spot		Forwards		Total		Total	Total
£/US$	3.6	*3.1*	9.2	*8.3*	12.8	*11.5*	*17.2*	*27.0*
US$/DM	11.9	*11.8*	9.2	*9.7*	21.1	*21.5*	*23.7*	*22.0*
US$/yen	5.9	*5.7*	10.9	*11.3*	16.8	*17.0*	*12.3*	*15.0*
US$/Swiss franc	1.6	*1.7*	3.5	*3.7*	5.1	*5.5*	*6.0*	*10.0*
US$/French franc	0.8	*0.9*	4.3	*4.5*	5.1	*5.5*	*2.9*	*2.0*
US$/Canadian $	0.6	*0.5*	1.8	*1.9*	2.4	*2.4*	*2.3*	*2.0*
US$Australian $	0.4	*0.4*	1.2	*1.2*	1.7	*1.6*	*1.3*	*2.0*
US$/lira	0.4	*0.4*	2.9	*2.9*	3.2	*3.4*		*2.0*
US$/peseta	0.2	*0.2*	1.8	*1.8*	2.0	*2.1*	} *8.6*	
US$/other EMS	0.7	*0.8*	4.9	*5.1*	5.7	*5.9*		} *7.0*
US$/other	1.2	*1.2*	2.9	*2.9*	4.0	*4.2*	*3.4*	
£/DM	3.3	*2.8*	0.4	*0.4*	3.7	*3.2*	*5.4*	*3.0*
£/other	0.4	*0.4*	0.9	*1.0*	1.3	*1.3*	*1.3*	*1.0*
DM/yen	2.1	*1.9*	0.3	*0.3*	2.4	*2.2*	*2.4*	*2.0*
DM/other EMS	4.6	*4.8*	0.8	*0.9*	5.4	*5.7*	*4.3*	*2.0*
Ecu-denominated	1.1	*1.1*	3.2	*3.0*	4.3	*4.1*	*5.1*	*2.0*
Other cross-currencies	2.2	*2.3*	0.7	*0.8*	3.0	*3.1*	*3.9*	*3.0*

Chart 3
Currency composition of principals' turnover



still actively traded, but turnover in US dollar/yen (17.0%) is now greater (see Chart 3).

There has been a further growth in cross-currency trading,(1) particularly involving the Deutsche Mark. Within the US dollar business, there has been a shift away from trades

(1) Currency pairs not involving the dollar.

involving sterling and the Swiss franc towards the yen and EMS currencies other than sterling. The share of US dollar/French franc business has almost doubled and is now as large as that of US dollar/Swiss franc. The trend to greater trading of US dollar/EMS currencies was already evident in 1989; in contrast, the increase in the share of US dollar/yen transactions reverses the fall seen between 1989 and 1992.

The share of sterling/Deutsche Mark trading fell to 3.2% and the total proportion of net trading that involved sterling fell from 23.9% to 16.0%, although the absolute level of turnover involving sterling rose. This decline was evident in previous years and reflects the growing internationalisation of the London market, through the growth of trading in other currency pairs, as well as the reduced use of sterling as a trading and reserve currency.

Table A shows that, as in 1992, the currency pairs are not equally represented in the spot and forward markets. US dollar/Deutsche Mark business clearly dominates spot trading but in the forward market, US dollar/Deutsche Mark, US dollar/yen and sterling/US dollar all have around the same market share. Sterling/US dollar, in particular, has a much higher share of the forward than the spot market, because of the widespread use of the liquid forward market for money-market purposes. Also almost all forward deals involve the US dollar. This is because it is standard practice if a trader wants to swap one non-dollar currency for another for the transaction to be executed in two deals: one swapping the first non-dollar currency for the dollar and the other swapping the dollars for the second non-dollar currency.

The results from other centres reveal similar trends (see Table B). In New York, for example, the share of US dollar/Deutsche Mark (down from 33% to 30%) and sterling/US dollar (down from 10% to 8%) business has

Table B
Currency composition: international comparisons

Percentages of principals' overall turnover;
1992 data where available in italics

	London		New York		Tokyo		Singapore
$/£	11	*17*	8	*10*	. .	. .	*12*
$/DM	22	*24*	30	*33*	12	*14*	*29*
$/yen	17	*12*	20	*22*	76	*67*	*27*
$/SwFr	6	*6*	7	*8*	. .	. .	*9*
$/other	25	*20*	21	*15*	6	*11*	. .
DM/yen	2	*3*	2	*3*	4	*4*	. .
DM/other	14	*16*	11	*7*	. .	. .	*23*
Other	4	*2*	—	*1*	2	*4*	. .

. . not available.

Note: Data are on a net basis, adjusted for double counting of domestic interbank business.

declined, while trading in US dollar/other EMS currencies—particularly the French franc—has increased sharply. However, London remains the most diversified foreign exchange market. For instance, in New York 64% of activity (74% in 1992) is between the US dollar and four major currencies (the Deutsche Mark, yen, sterling and the Swiss franc), compared with 55% in London (59% in 1992). In Tokyo, the range of currencies traded is particularly limited: 76% of turnover is accounted for by the US dollar/yen, up from 67% in 1992. Among the reasons for London's diversified activity may be its favourable time position between Asia and North America and the depth of its market, which allows business in previously little traded currency pairs to develop quickly.

Type of transaction

Table C shows that the significant shift in the balance of business between spot and forward, observed in 1992, has continued. By April 1995, only 41% of gross foreign exchange business transacted by principals in London was for spot value, compared with 52% in 1992, 64% in 1989

Table C
Proportion of total gross turnover by transaction type

Figures on a net basis, adjusted for double counting of domestic interbank business, are in italics

	Percentage of total turnover						Change
	1986	1989	1992		1995		1992–95
Spot	73	64	52	*51*	41	*40*	-11
Forwards: outright	27	35	6	*7*	7	*8*	1
Forwards: swaps			42	*42*	52	*52*	10
of which:							
Up to and for 7 days			33		42		9
7 days and up to and for 1 month		24	4		5		1
1 month and up to 6 months	26				6		
6 months up to and for 1 year		10	10		6		2
Over 1 year	1		—		1		1

and 73% in 1986. Around 80% of the increase in turnover between 1992 and 1995 was accounted for by the increase in forward transactions, up from $143 billion in 1992 to $278 billion in 1995. A similar shift in turnover was reported in most other centres. In Tokyo, the share of forward transactions rose from 64% to 75%; in New York, it increased by rather less, from 45% to 47%.

In London, spot business increased by 26% between 1992 and 1995, roughly in line with the growth in world trade[1] but not as fast as the recent expansion in international capital flows. The annual rate of growth in the spot market slowed to 8% between 1992 and 1995, compared with 14.5% between 1986 and 1992.

In the forward market, nearly 90% of transactions are foreign exchange swaps, which are used to convert a money-market instrument or security from one currency to another. For example, a dollar deposit can be converted into a sterling deposit using a sterling/US dollar swap—in effect simultaneously lending dollars and borrowing sterling for a specified period of time. This is done by selling dollars to buy sterling for spot value, and simultaneously agreeing to reverse the deal at a future date. Swaps require neither party

(1) IMF figures show that world trade grew by 13.6% between 1992 and 1994, and is forecast to grow by 8.3% in 1995.

to assume any foreign exchange risk in respect of the transaction, and are often used to manage liquidity and to hedge currency exposure.

The more widespread use of swaps suggests that investors are becoming increasingly sophisticated in their management of liquidity and currency risk. It also provides further evidence of the increasing integration of global currency and money markets and, by extension, asset markets. In the swap markets, liquidity—that is the ability to complete large deals without moving prices—is extremely important. As a result, market participants are attracted to those centres, such as London, that have the greatest liquidity, creating above average growth in the swap markets in those centres.

The maturity profile of forward transactions is much the same as in 1992, with business concentrated in the shorter maturities, primarily up to and including seven days.

Type of counterparty

As Table D shows, the proportion of principals' turnover accounted for by domestic and international interbank business declined from 78% in 1992 to 75% in 1995 (see Chart 4). Correspondingly, the share of business with other financial institutions rose by four percentage points.

Table D
Average daily turnover by counterparty

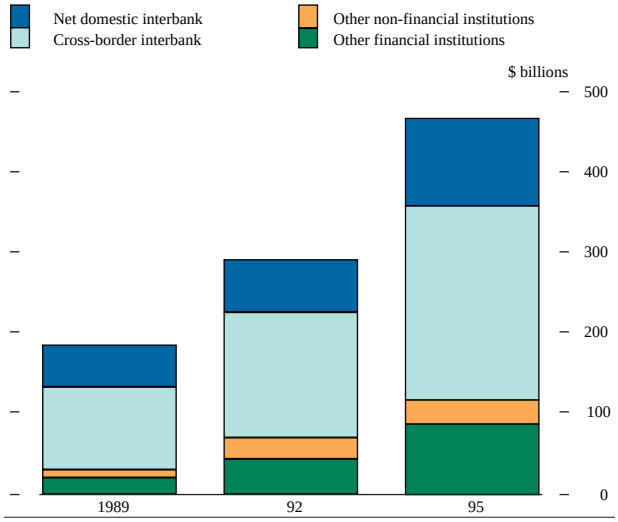
$ billions; *percentage of total net turnover in italics*

	1989		1992		1995	
Gross turnover	241		357		571	
of which:						
Domestic interbank	108		134		215	
Net turnover	187		290		464	
of which:						
Other financial institutions	16	*9*	42	*14*	85	*18*
Non-financial institutions	10	*5*	24	*8*	30	*7*
Cross-border interbank	107	*57*	158	*55*	241	*52*
Net domestic interbank	54	*29*	67	*23*	108	23
Share of net turnover arranged through brokers, per cent	38		34		35	

The decline in the relative share of interbank business, largely at the expense of business generated with other financial institutions, is probably related to the increased size and international focus of those institutions. Many pension funds and asset managers have started to look outside their domestic markets for investment opportunities, resulting in increased capital flows and associated foreign exchange activity.

The bulk of interbank business arises from secondary activity generated as a direct result of customer business, but of course it also includes some position-taking by market participants. For example, despite the increase in direct cross-currency trading, banks wishing to lay off the

Chart 4
Type of counterparty—principals' turnover



exchange rate risk they have taken on through cross-currency transactions with customers may do so by undertaking two deals, using the markets for each of the two currencies against the dollar. Furthermore, outright forward orders from customers are likely to be covered by means of a swap and a matching spot transaction. This means, for example, that a bank wishing to cover a forward sale to a customer of a currency other than the US dollar or Deutsche Mark against sterling may undertake at least four additional transactions (ie spot and swap deals in both sterling/US dollar and US dollar/the currency concerned). These additional transactions will have been reported by contributors to the survey, and serve to explain the high ratio of interbank transactions to transactions directly with customers.

Customer business in more detail

Table E gives a more detailed breakdown of customer business. It shows that spot transactions account for 35%, outright forwards for 15% and swaps for 49% of principals' business with customers. The growth of swaps with customers (up from 34% in 1992) highlights the increasing use of the foreign exchange market for liquidity and risk management.

Table E
Location of customer business by transaction type

	Percentage share of total customer business ($115 billion)		
	Other financial customers	Non-financial customers	Total customer business
Spot	26	10	35
of which:			
Local	14	5	18
Cross-border	12	5	17
Outright forward	11	4	15
of which:			
Local	8	2	11
Cross-border	2	2	5
Swaps	37	12	49
of which:			
Local	19	7	26
Cross-border	18	5	23
Total cross-border	**32**	**13**	**45**

A comparison of the currency distribution of customer business (Table F) with that of all business reported by principals confirms that customer business is slightly more diversified; the three most traded currency pairs account for 48% of business with customers, compared with 50% of the overall turnover of principals.

Table F
Percentage share of total customer business by currency trades

	Other financial customers		Non-financial customers		Total customer business	
	Spot	Forward	Spot	Forward	Spot	Forward
£/US$	1.9	5.9	1.1	2.8	3.0	8.7
US$/DM	6.6	7.3	2.7	2.7	9.3	10.0
US$/yen	4.2	8.4	1.4	2.5	5.6	11.0
US$/SwFr	1.9	3.3	0.4	0.7	2.3	4.0
US$/other EMS currencies	3.0	12.3	0.6	3.1	3.6	15.4
£/DM	1.1	0.4	0.5	0.4	1.5	0.8
£/other	0.4	—	0.4	—	0.8	—
DM/yen	0.7	0.3	0.3	0.2	1.0	0.5
DM/other EMS currencies	2.3	—	0.9	—	3.2	—

Methods of doing business

Principals in the foreign exchange market are able to conduct their business in essentially one of two ways: either directly with another interbank counterparty, via an automated dealing system or by using the telephone or telex; or by using the intermediation services of a foreign exchange broker. In the survey, London principals were asked to detail how much business they carried out through each channel.

Automated dealing systems

Automated dealing systems[1] are electronic systems which enable users to quote prices, and to deal and exchange settlement details, on screen. Principals indicated that about 31% of their gross turnover is arranged through such automated dealing systems, an increase of seven percentage points on 1992.

Foreign exchange brokers

In London, the proportion of principals' total foreign exchange business handled by brokers is 35%, little changed from the 34% in 1992.[2] However, that 35% includes business conducted both by traditional voice brokers—who quote prices over lines to principals' dealing rooms—and by the three electronic broking systems which have begun operating since the 1992 survey. The latter account for 5% of total turnover, with the voice brokers' share falling to 30%. In the United States, the proportion of principals' total foreign exchange business handled by electronic brokers was 13%; voice brokers have seen their share of the principals market fall from 30% in 1992 to 24% in 1995.

Although the communication medium differs, the service provided by the electronic brokers is broadly similar to that of the voice brokers—the prices quoted on screen are firm and can be 'hit' in the same way as those quoted by a voice broker, provided that the necessary credit lines are available—and, in London, they are supervised on the same basis by the Bank of England. Like the voice brokers, they are international organisations providing a trading service in all the major centres. But unlike the voice brokers, who achieve this international coverage by having a number of operations in different locations around the world, two of the three electronic brokers run international computer systems that serve all the trading centres.

The electronic brokers are currently active only in the spot markets; and their business is concentrated in a small number of currency pairs, although they offer the ability to trade in a range of currencies. This contrasts with the large foreign exchange voice brokers, which are normally active in both spot and forward business across a wide range of currency pairs. The limited scope of electronic brokers' business is illustrated by the fact that 77% of the deals conducted through the electronic systems are in three currency pairs: US dollar/Deutsche Mark (58%); Deutsche Mark/French franc (13%); and Deutsche Mark/Swiss franc (6%).

Within the markets in which they are active, the electronic brokers have taken business from the voice brokers and from direct dealing between banks. For example, between 1992 and 1995 the proportion of London interbank US dollar/Deutsche Mark spot business conducted through the voice brokers fell from 39% to 26%. Over the same period, the electronic brokers took 23% of the London market in the currency pair, indicating that nearly half of this turnover came from the creation of new brokered business—typically low-value interbank transactions.

The analysis of brokers' business excludes deals between principals abroad transacted by electronic brokers. Table G shows that between 1992 and 1995 the proportion of deals brokered between principals abroad has fallen to 7%, while the share of business between principals in the United Kingdom has increased to 38%. As Table H shows, the proportion of brokers' business that is for spot value has fallen to 46%, in line with the decline in the share of overall business done for spot value.

Table G
Counterparties to brokers' turnover

Percentage share

	1989	1992	1995
Between two principals in the United Kingdom	36	33	38
Between a principal in the United Kingdom and a principal abroad	50	49	52
Between two principals abroad	13	10	7
Involving other financial and non-financial institutions	1	8	3

(1) For the purposes of this survey, automated dealing systems included systems such as Reuters 2000–1.
(2) An estimate of the proportion of principals' business conducted through brokers can be derived from the survey responses of both principals and brokers. Since there was a discrepancy between the two, the figure of 35% in 1995 represents a best estimate.

Table H
Type of transaction—brokers' turnover

	Percentage of total turnover			Change
	1989	1992	1995	1992–95
Spot	55	52	46	-6
Forwards: outright	45	2	1	-1
Forwards: swaps		46	53	7
of which:				
Up to and for 7 days	} 25	31	35	4
7 days and up to and for 1 month		4	5	1
1 month and up to 6 months	} 18	9	8	-1
6 months up to and for 1 year		3	5	2
Over 1 year	2	1	1	—

Market concentration

The trend—evident in previous surveys—towards the concentration of business among the largest participants has continued, but slowed. As a result, business in the London market continues to be quite widely dispersed. 26 of the principals taking part in the survey each accounted for more than 1% of total gross turnover (24 in 1992); of these, 15 had a share of 2% (14 in 1992). The ten most active principals—seven of which were in the top ten in 1992—saw their overall market share rise by less than 1% to 44%. However, the top 20 banks increased their market share to 68%, up from 63% in 1992, as an increasingly active second tier of banks took business away from smaller banks. This shift also appeared in New York, where the top 20 increased their market share to 70% from 60% in 1992.

As in previous years, business is more widely dispersed in the most actively traded currencies than in other currencies. The top ten principals in US dollar/Deutsche Mark have 40% of the market; for the US dollar/Swiss franc market, the share is 66%. Table J shows the proportion of trading taken by the ten most active principals in particular currency pairs.

Table J
Percentage share of the ten principals most active in individual currency pairs

	1986	1989	1992	1995
£/US$	40	34	48	50
US$/DM	38	37	43	40
US$/yen	46	39	48	47
US$/Swiss franc	57	60	66	66
US$/French franc	70	61	54	51

Market share of foreign banks

As in 1989 and 1992, foreign-owned institutions operating in the London market account for 79% of principals' aggregate turnover. North American principals remain the most active, with a 42% market share, followed by UK principals (at 21%) and Japanese (at 10%). The share of business executed by banks from other developed countries fell by 5%, while that of other EU banks rose by 3% (but only as a result of the accession of Finland, Austria and Sweden at the start of 1995 and the consequent reclassification of their institutions).

The North American principals' dominance extends across the range of traded currency pairs. They have increased their share of US dollar/Swiss franc and US dollar/EMS currency business, continuing the trend seen between 1989 and 1992. It is interesting to note, however, that their share of the US dollar/Deutsche Mark market has fallen to 44%, as a number of European institutions have built up significant market share in that currency pair. More generally, although the majority of principals continue to specialise in their national currencies (see Table K), there is a clear trend towards the leading banks trading a whole range of currencies, not necessarily involving their domestic currency. For example, UK principals' share of the sterling/Deutsche Mark business has fallen further, to 31%, while their share of US dollar/Deutsche Mark business has risen to 18%.

Table K
Principals' shares of the London market in different currencies: by country grouping

Figures in 1992 are in italics

Per cent	US dollar against:																	
	£		DM		Yen		SwFr		FFr		Can$		Aus$		Other EMS currencies	
Nationality of principal																
United Kingdom	38	*36*	18	*14*	14	*14*	13	*18*	20	*15*	7	*10*	27	*19*	17	*14*
Other European Union	13	*9*	17	*12*	8	*2*	7	*2*	20	*26*	15	*2*	2	*1*	23	*32*
North America	33	*37*	44	*49*	40	*35*	54	*51*	49	*47*	69	*80*	34	*29*	52	*39*
Japan	6	*7*	10	*10*	30	*39*	2	*2*	5	*2*	1	*1*	1	*1*	1	*1*
Other developed countries	8	*10*	10	*14*	7	*9*	24	*27*	6	*9*	8	*7*	36	*50*	6	*14*
Developing countries	1	*1*	1	*1*	1	*1*	1	—	—	—	—	—	—	—	—	—

	Sterling against:				DM against:								Total	
	DM		Other currencies		Yen		SwFr		FFr		Other EMS currencies			
Nationality of principal														
United Kingdom	31	*37*	25	*37*	23	*18*	16	*9*	24	*27*	7	*16*	21	*20*
Other European Union	14	*12*	39	*11*	6	*3*	4	*2*	17	*23*	30	*22*	15	*12*
North America	36	*36*	19	*31*	28	*37*	42	*43*	39	*29*	45	*32*	42	*41*
Japan	7	*3*	3	*10*	31	*31*	2	*2*	1	*2*	4	*1*	10	*10*
Other developed countries	11	*11*	5	*9*	11	*10*	37	*43*	19	*19*	14	*29*	11	*16*
Developing countries	1	—	8	*1*	—	—	—	—	—	—	—	—	1	*1*

Table L
Principals' average daily turnover

US$ millions

	US dollar against:											Sterling against:				
	DM	Yen	SwFr	Aus$	Can$	FFr	ITL	PTA	Other EMS currencies	Ecu	Other	USD	DM	Yen	SwFr	Aus$
Spot	**67,747**	**33,699**	**9,276**	**2,450**	**3,160**	**4,697**	**2,233**	**1,107**	**4,123**	**2,014**	**6,662**	**20,834**	**18,725**	**710**	**269**	**38**
Interbank counterparties	57,080	27,290	6,665	1,989	2,314	2,760	1,585	745	2,892	1,530	5,416	17,434	16,967	459	168	11
Local	*25,675*	*14,638*	*2,679*	*942*	*1,348*	*959*	*498*	*185*	*761*	*473*	*1,837*	*12,565*	*11,792*	*342*	*88*	*5*
Cross-border	*31,405*	*12,652*	*3,986*	*1,048*	*967*	*1,801*	*1,087*	*560*	*2,131*	*1,058*	*3,579*	*4,869*	*5,174*	*117*	*80*	*6*
Other financial institutions	7,596	4,846	2,196	305	561	1,591	495	325	1,051	414	865	2,158	1,211	153	76	9
Local	*2,602*	*2,914*	*1,343*	*175*	*351*	*1,401*	*396*	*271*	*849*	*319*	*248*	*1,278*	*632*	*109*	*65*	*8*
Cross-border	*4,994*	*1,932*	*852*	*130*	*210*	*191*	*99*	*53*	*203*	*95*	*616*	*881*	*579*	*44*	*12*	*1*
Non-financial institutions	3,071	1,563	416	156	284	347	153	37	180	70	382	1,242	548	98	25	17
Local	*1,459*	*896*	*148*	*116*	*87*	*189*	*58*	*13*	*79*	*36*	*205*	*775*	*318*	*67*	*19*	*15*
Cross-border	*1,612*	*667*	*268*	*39*	*197*	*158*	*95*	*24*	*100*	*34*	*176*	*467*	*229*	*31*	*7*	2
Forward	**52,728**	**62,328**	**19,850**	**7,041**	**10,488**	**24,417**	**16,322**	**10,053**	**28,192**	**17,624**	**16,459**	**52,392**	**2,471**	**3,392**	**201**	**89**
Outright	**6,577**	**6,180**	**2,265**	**467**	**2,061**	**2,706**	**1,824**	**828**	**2,016**	**1,177**	**1,524**	**3,676**	**823**	**2,684**	**57**	**36**
Interbank counterparties	4,032	2,883	1,079	221	1,271	1,343	1,216	523	983	768	1,065	2,335	482	1,278	8	2
Local	*1,575*	*1,407*	*381*	*104*	*1,116*	*439*	*750*	*247*	*340*	*529*	*429*	*1,640*	*303*	*1,263*	*1*	*1*
Cross-border	*2,457*	*1,476*	*698*	*117*	*155*	*903*	*466*	*276*	*643*	*238*	*636*	*696*	*179*	*15*	*7*	*1*
Other financial institutions	1,549	2,668	1,009	171	662	1,148	471	241	881	337	311	711	134	1,242	23	12
Local	*805*	*2,265*	*853*	*83*	*568*	*988*	*411*	*229*	*755*	*302*	*166*	*523*	*86*	*1,232*	*13*	*6*
Cross-border	*744*	*403*	*155*	*88*	*94*	*160*	*60*	*13*	*126*	*36*	*145*	*187*	*47*	*10*	*11*	*7*
Non-financial institutions	997	629	177	75	128	215	138	63	152	72	148	630	208	164	26	21
Local	*369*	*365*	*54*	*53*	*44*	*96*	*43*	*26*	*55*	*34*	*57*	*450*	*134*	*79*	*10*	*20*
Cross-border	*628*	*265*	*123*	*22*	*84*	*119*	*94*	*37*	*97*	*38*	*91*	*180*	*74*	*85*	*15*	*1*
Swaps	**46,151**	**56,149**	**17,586**	**6,574**	**8,426**	**21,711**	**14,498**	**9,225**	**26,175**	**16,447**	**14,934**	**48,717**	**1,648**	**708**	**144**	**53**
Interbank counterparties	37,222	46,840	14,225	5,374	6,532	17,694	10,554	7,572	21,372	14,490	12,163	40,072	1,033	258	86	28
Local	*13,945*	*18,268*	*4,614*	*2,825*	*2,590*	*6,221*	*4,543*	*2,869*	*8,744*	*8,577*	*5,298*	*25,954*	*609*	*120*	*40*	*25*
Cross-border	*23,277*	*28,572*	*9,611*	*2,549*	*3,942*	*11,473*	*6,012*	*4,703*	*12,628*	*5,913*	*6,865*	*14,118*	*423*	*138*	*45*	*3*
Other financial institutions	6,818	7,023	2,761	1,080	1,526	3,252	3,097	1,444	3,604	1,399	2,252	6,053	327	81	25	10
Local	*3,228*	*4,350*	*1,072*	*348*	*1,068*	*1,449*	*2,012*	*645*	*1,639*	*882*	*1,118*	*3,158*	*204*	*47*	*5*	*7*
Cross-border	*3,590*	*2,673*	*1,689*	*732*	*458*	*1,803*	*1,084*	*799*	*1,965*	*516*	*1,135*	*2,895*	*123*	*34*	*20*	*3*
Non-financial institutions	2,111	2,286	600	120	368	765	848	209	1,199	559	519	2,592	288	370	33	15
Local	*844*	*1,601*	*198*	*63*	*145*	*269*	*602*	*124*	*874*	*308*	*234*	*1,620*	*174*	*345*	*21*	*14*
Cross-border	*1,267*	*685*	*401*	*57*	*223*	*495*	*246*	*85*	*325*	*251*	*285*	*972*	*114*	*25*	*12*	*1*
Maturities of forwards:	52,728	62,328	19,850	7,041	10,488	24,417	16,322	10,053	28,192	17,624	16,459	52,392	2,471	3,392	201	89
Up to and for 7 days	*38,031*	*43,701*	*16,106*	*5,222*	*8,051*	*16,051*	*13,182*	*7,068*	*21,567*	*13,807*	*12,060*	*35,566*	*1,533*	*2,212*	*87*	*25*
Over 7 days up to and for 1 month	*4,244*	*5,607*	*1,037*	*418*	*820*	*2,039*	*690*	*708*	*1,749*	*843*	*893*	*5,646*	*248*	*281*	*33*	*20*
Over 1 month up to and for 6 months	*4,809*	*5,723*	*1,197*	*676*	*801*	*3,380*	*1,065*	*701*	*2,116*	*1,461*	*1,323*	*5,345*	*376*	*670*	*27*	*18*
Over 6 months up to and for 1 year	*5,052*	*6,874*	*1,401*	*701*	*732*	*2,714*	*1,134*	*1,484*	*2,523*	*1,359*	*1,996*	*5,437*	*286*	*225*	*52*	*26*
Over 1 year	*592*	*424*	*109*	*23*	*84*	*233*	*251*	*92*	*237*	*153*	*187*	*399*	*29*	*4*	*2*	—

Key:

USD = US dollar
DM = Deutsche Mark
SwFr = Swiss franc
Aus$ = Australian dollar
Can$ = Canadian dollar
FFr = French franc
ITL = Italian lira
PTA = Spanish peseta

							Deutsche Mark against:										
Can$	FFr	ITL	PTA	Other EMS currencies	Ecu	Other	Yen	SwFr	FFr	ITL	PTA	Other EMS currencies	Ecu	Other	Ecu/ other currencies	Residual	Total
43	**241**	**118**	**83**	**266**	**58**	**251**	**12,165**	**7,052**	**14,832**	**3,870**	**2,859**	**4,770**	**3,525**	**3,768**	**591**	**2,031**	**234,269**
22	103	28	36	136	29	117	11,027	6,154	12,974	3,231	2,334	4,082	2,968	3,350	504	1,218	193,616
11	*78*	*19*	*18*	*72*	*24*	*92*	*6,859*	*2,448*	*5,000*	*1,174*	*952*	*1,178*	*1,334*	*1,038*	*140*	*500*	*95,718*
10	*26*	*9*	*17*	*64*	*5*	*25*	*4,168*	*3,707*	*7,974*	*2,056*	*1,382*	*2,905*	*1,635*	*2,312*	*364*	*718*	*97,897*
10	48	68	25	54	21	46	836	749	1,394	451	399	439	354	297	40	602	29,684
7	*39*	*65*	*19*	*48*	*2*	*40*	*360*	*278*	*542*	*172*	*140*	*150*	*130*	*184*	*24*	*461*	*15,622*
3	*9*	*4*	*6*	*6*	*19*	*6*	*476*	*471*	*852*	*278*	*258*	*289*	*224*	*113*	*16*	*141*	*14,062*
12	90	21	23	76	9	89	302	149	463	189	127	248	203	121	47	211	10,969
10	*72*	*16*	*20*	*66*	*7*	*60*	*134*	*42*	*109*	*49*	*43*	*60*	*37*	*27*	*3*	*103*	*5,338*
2	*18*	*5*	*3*	*10*	*2*	*29*	*168*	*108*	*355*	*140*	*84*	*188*	*166*	*94*	*43*	*109*	*5,631*
153	**461**	**123**	**77**	**370**	**69**	**501**	**1,683**	**555**	**1,936**	**851**	**677**	**1,270**	**372**	**1,116**	**429**	**2,349**	**337,039**
98	**172**	**37**	**33**	**107**	**18**	**80**	**904**	**153**	**511**	**378**	**286**	**286**	**56**	**334**	**70**	**1,222**	**39,645**
40	14	8	2	23	3	7	674	84	333	231	191	136	33	154	35	737	22,192
39	*9*	*4*	*1*	*11*	*1*	*5*	*449*	*26*	*122*	*74*	*67*	*46*	*9*	*88*	*24*	*171*	*11,671*
1	*5*	*4*	*2*	*12*	*2*	*2*	*226*	*58*	*211*	*157*	*124*	*89*	*24*	*65*	*11*	*566*	*10,521*
46	56	10	7	28	4	18	129	44	115	62	44	45	9	55	22	306	12,569
34	*53*	*7*	*6*	*23*	*2*	*7*	*43*	*11*	*57*	*16*	*15*	*28*	*5*	*9*	*18*	*106*	*9,725*
13	*3*	*3*	*1*	*5*	*1*	*11*	*86*	*33*	*58*	*46*	*29*	*17*	*5*	*46*	*4*	*200*	*2,844*
12	102	19	24	56	11	55	101	25	63	85	50	106	14	126	13	178	4,883
8	*98*	*18*	*23*	*44*	*10*	*48*	*44*	*12*	*26*	*20*	*20*	*43*	*5*	*17*	*1*	*56*	*2,382*
4	*5*	*1*	*1*	*12*	*2*	*7*	*56*	*14*	*37*	*64*	*30*	*63*	*9*	*109*	*12*	*123*	*2,501*
55	**289**	**87**	**45**	**263**	**51**	**421**	**779**	**402**	**1,426**	**473**	**391**	**984**	**315**	**781**	**359**	**1,127**	**297,394**
26	118	36	16	90	24	264	470	278	859	303	230	690	240	566	203	757	240,684
24	*65*	*28*	*10*	*69*	*11*	*206*	*249*	*138*	*291*	*122*	*117*	*444*	*131*	*339*	*21*	*180*	*107,686*
2	*53*	*8*	*6*	*22*	*14*	*59*	*221*	*140*	*568*	*181*	*112*	*246*	*108*	*227*	*183*	*577*	*132,997*
9	38	21	5	34	9	80	173	101	414	102	57	149	47	107	79	191	42,367
6	*27*	*14*	*2*	*23*	*5*	*30*	*93*	*33*	*200*	*39*	*33*	*57*	*23*	*53*	*60*	*65*	*21,995*
3	*11*	*7*	*3*	*11*	*4*	*50*	*81*	*67*	*214*	*63*	*24*	*92*	*24*	*54*	*19*	*126*	*20,372*
20	134	30	24	138	17	77	135	24	153	68	104	145	29	109	77	179	14,343
15	*102*	*26*	*21*	*112*	*17*	*52*	*93*	*6*	*40*	*34*	*40*	*33*	*3*	*18*	*3*	*66*	*8,117*
5	*31*	*4*	*3*	*26*	*—*	*25*	*42*	*18*	*113*	*33*	*65*	*112*	*26*	*91*	*74*	*113*	*6,226*
153	461	123	77	370	69	501	1,683	555	1,936	851	677	1,270	372	1,116	429	2,349	337,039
109	*118*	*40*	*16*	*113*	*23*	*188*	*1,004*	*351*	*1,429*	*521*	*440*	*459*	*269*	*623*	*342*	*821*	*241,133*
17	*125*	*25*	*18*	*94*	*10*	*77*	*366*	*31*	*143*	*143*	*54*	*128*	*17*	*189*	*28*	*517*	*27,257*
20	*122*	*25*	*17*	*89*	*19*	*108*	*161*	*102*	*210*	*82*	*71*	*195*	*23*	*160*	*34*	*702*	*31,827*
6	*90*	*30*	*18*	*65*	*17*	*126*	*127*	*66*	*152*	*104*	*112*	*488*	*58*	*143*	*26*	*286*	*33,909*
—	*6*	*3*	*9*	*10*	*1*	*3*	*25*	*5*	*2*	*1*	*1*	*1*	*4*	*—*	*—*	*22*	*2,913*

Mezzanine finance

By Mark Pratt and Alex Crowe of the Bank's Business Finance Division.

Mezzanine finance has been widely used in the United Kingdom recently in the financing of management buy-outs and other large corporate transactions. This article[1] briefly describes the circumstances in which it is used, and considers its prospects.

Mezzanine finance is used in the financing of major transactions, such as company acquisitions and large investment projects. It comprises *middle-ranking* financial instruments—such as subordinated debt and preference shares—which form the central layer of a financing package that also includes equity and senior-ranking debt. As such, it offers investors an intermediate rate of return and carries a corresponding intermediate risk.

Although middle-ranking financial instruments have long been used, the *specialist* provision of mezzanine finance developed in the 1980s, following the sharp growth in management buy-outs (MBOs). This article describes the circumstances in which mezzanine finance is used and outlines the terms on which it is provided. It focuses on the United Kingdom, but also refers to its use in continental Europe and the United States.

Uses and characteristics of mezzanine finance

Most large corporate financial transactions—such as buy-outs and major capital expenditure projects—are funded using a combination of finance provided by their sponsors and finance from other sources, such as banks and venture capitalists. The challenge is to obtain a blend of different types of finance that meets the objectives of the two sources. The sponsors will be concerned mainly about keeping the overall cost of finance to a minimum, and the external financiers about the viability of the planned transaction—in particular, the likelihood of its providing them with a competitive return on their investment.

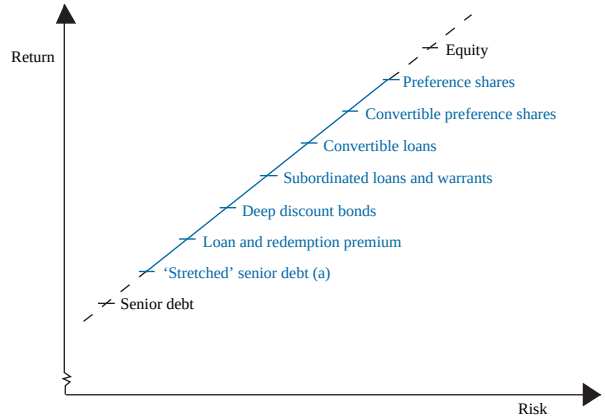
Most corporate transactions can be satisfactorily financed by a suitable mix of equity (share capital) and senior-ranking debt—that is debt which has first claim on a borrower's income and assets for repayment. But the availability of mezzanine finance or (as it is sometimes called) intermediate capital widens the range of financing opportunities. In particular, it offers scope for the overall cost of finance to be reduced by allowing a closer correspondence between risk and return and the preferences of different types of investor. This is usually the main motivation for using mezzanine finance; but the fact that (unlike equity) mezzanine instruments do not carry ownership rights can be as important a consideration for some sponsors—for example, the owners of a private business seeking to expand its capital base while retaining full ownership and management control. Mezzanine finance came to prominence in the 1980s, when it was widely used in the financing of MBOs; these grew rapidly in number during the decade. The management teams involved usually did not have sufficient resources themselves to buy outright the businesses that they were either already managing or planning to manage; they had to include other investors. Their main options were to raise equity from venture capitalists or senior debt from banks and other types of lending institution, such as insurance companies. But it often proved impossible to find all the finance needed from just these sources.

The management teams generally had a preference for senior-ranking debt rather than equity, because it was less expensive. The amount of senior debt that could be raised was invariably limited, however, by the fact that potential lenders had to be confident that their loans would be well secured and repaid on schedule. The availability of equity was similarly constrained: investors had to be assured that the MBO would generate sufficient earnings both to service the planned borrowing and give them the returns they expected. Where these two forms of finance left a financing shortfall, managements were prompted to consider types of finance which, in terms of risk and return, spanned the divide between secured debt and equity. For many MBOs, adding an intermediate layer of finance was the key to finding a viable financing structure.

Chart 1 outlines the main varieties of mezzanine finance available; the form taken depends on the particular features of the transaction being financed. In some cases, it comprises a subordinated loan paying a relatively high interest rate. In others, it takes the form of preference shares accompanied by protective covenants to reduce risk, or even a combination of financial instruments that together offer a middle return/middle risk position. It is, perhaps, only in the context of MBOs that some standardisation has emerged: here mezzanine finance usually takes the form of a subordinated loan allied to an 'equity kicker'. The loan commands an interest rate of Libor plus 3%–4% and the return on the 'kicker' is linked to the success of the business

(1) The Bank is grateful to the mezzanine financiers who helped in the preparation of the article.

Chart 1
Forms of mezzanine finance



(a) 'Stretched' senior debt begins to be repaid once other senior debt has been fully repaid.

being financed. There are a number of varieties of 'kicker': the most common are warrants, but preference shares convertible into equity and 'back-end fees'—payable when the related mezzanine loan is paid off—are also used. At present, mezzanine financiers typically expect an annual return in the range of 16%–20%, compared with about 10% for senior-ranking lending and 25%–30% for equity. Mezzanine finance may be provided by a single lender but, in larger transactions, it is usually syndicated.

As subordinated lenders, mezzanine financiers undertake detailed due diligence, paying particular attention to the quality of a borrowing company's management and its projected cash flows; indeed mezzanine finance is sometimes described as lending against cash flow. Mezzanine financiers are also active investors: they monitor closely the performance of companies in which they have invested, and often appoint an observer to a company's board or offer support and advice in other ways. In these respects, they are more like venture capitalists than senior-ranking, bank lenders.

The ideal profile for a borrowing company is one with experienced management, well-established products, low borrowing and predictable cash flows. These requirements mean that start-up companies and others without much of a track record need to be able to demonstrate exceptional prospects to receive serious consideration from mezzanine financiers. The need for detailed due diligence, the cost of which is largely invariant to the intended size of investment, rules out the provision of mezzanine finance to small firms; most mezzanine financiers will not supply less than £1 million, and prefer to commit at least £2 million.

Mezzanine loans typically have a maturity of seven to ten years, with repayment scheduled to begin after the senior-ranking debt has been repaid. But the expectation is that the lending will be repaid before maturity. In the case of buy-outs, for example, it has been common for mezzanine loans to be repaid after some three to five years, once the equity investors have realised their investment by a trade sale, flotation or refinancing. As mentioned above, mezzanine financiers regard it as especially important that a borrower's projected cash flow should be more than adequate to service its borrowing. They might contemplate allowing interest to be rolled up in the early years of a loan, but only if they are confident that this is not a sign of underlying weakness.

Mezzanine financiers usually take a second charge over a borrower's assets in support of their lending. This improves the likelihood that some of a loan will be recovered in the event of the borrower's insolvency, by entitling them to any remaining proceeds from the sale of charged assets after the first charge-holder—normally the senior lender—has been repaid. Perhaps more importantly, a second charge also allows the provider of mezzanine finance to influence events should the borrower default. The borrower is, furthermore, required to observe a range of financial covenants, which are jointly agreed with the senior lenders. More generally, relations between senior and mezzanine lenders are governed by a *deed of priority*. This applies, for example, if a borrower defaults, when the mezzanine lenders would be obliged to observe a standstill period to allow the senior lenders to decide how to deal with the situation—that is whether to appoint a receiver or to attempt a financial rescue.

Mezzanine finance in the United Kingdom

Mezzanine finance was introduced into the United Kingdom in the 1980s by American banks active in the financing of MBOs. As it became widely used, a number of British and overseas banks, among other investors, began to arrange and participate in mezzanine facilities for MBOs and other types of leveraged transaction. This business was then regarded as relatively low risk, but offering the prospects of good returns and quick exits. Subsequently, however, a number of the high-profile deals suffered collapses, with the mezzanine lenders sharing in the large losses. This led a number of firms to withdraw from mezzanine lending. It also encouraged a more cautious approach to leveraging; and since the late 1980s the bad debt experience on deals financed has generally been quite good.

Table A
Leading UK mezzanine finance arrangers(a)

1 January 1990–31 March 1995

	Number of deals	Total amount invested (£ millions)	Average amount invested (£ millions)
3i	22	72	4
Intermediate Capital	17	210	12
NatWest Markets	10	54	5
Legal and General/Mithras	9	92	10
First Britannia	4	42	11
Samuel Montagu	4	20	5
Phildrew Ventures	4	13	3
Chase Manhattan	3	24	8
Kleinwort Benson	3	19	6
Bank of Scotland	3	7	2
Others	32	228	7
Not known/(duplication)	(9)	(87)	
Total	**102**	**694**	**7**

Source: *KPMG Corporate Finance*, 1 April 1995.

(a) Qualification: deals of £10 million or more; firm led in at least three deals.

Table A lists the main mezzanine financiers currently active. There are three independent specialist firms, whose capital

Mezzanine finance outside the United Kingdom

The mezzanine finance market in the *United States*, which originated in the 1960s, is more developed than the United Kingdom's. Its general characteristics are much the same, though there is more extensive use of mezzanine finance for general corporate financing. There is also a limited secondary market on which private mezzanine debt is traded; there is no UK equivalent of this. The most important difference, however, is that in the United States mezzanine finance exists alongside, and indeed is overshadowed by, high-yield debt or *junk bonds*—middle-risk, middle-return securities which since the early 1980s have become an important form of corporate finance. These are similar to mezzanine finance in many ways, but offer the additional advantage of liquidity.

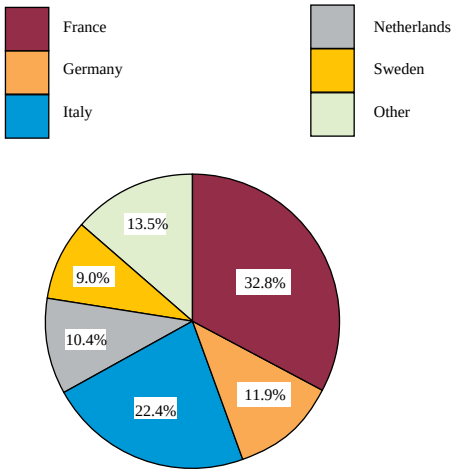
Chart A
Continental European and UK MBOs(a)

Source: KPMG.

(a) MBOs of £10 million or more.
(b) Figures for first six months annualised.

In *continental Europe* the use of mezzanine finance, having lagged behind that in the United Kingdom, has grown strongly in recent years, driven by increases in the number of MBOs. In 1985, there were just three MBOs, but by 1993 there were almost as many as in the United Kingdom—see Chart A. The main mezzanine providers are British and American firms—for example, almost half of Intermediate Capital Group's portfolio is continental European. As Chart B shows, France has been the largest market. But there, as elsewhere in Europe, the use of mezzanine finance has been held back by an unfavourable legal framework; for example, it is difficult for a lender to take security directly over assets.

Chart B
Continental European buy-outs using mezzanine finance, 1987–93(a)



Source: KPMG.

(a) MBOs of £10 million or more.

To date, there have been comparatively few MBOs in Germany, but it is thought to be a market of considerable potential, as growing numbers of the middle-sized *Mittelstand* firms founded in the post-war period face succession problems. This has, however, been a difficult market for foreign firms to penetrate, because of the close relationship between German banks and their corporate customers. In recent years, however, these relations have loosened and increasing numbers of investment opportunities have begun to appear.

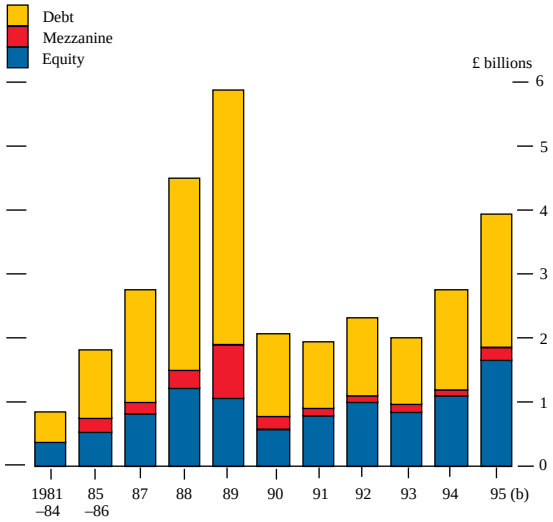
comprises equity subscribed by shareholders, loans from banks and funds placed by other financial institutions. The others are divisions of venture capital firms or banks, and usually offer mezzanine finance as part of a wider financing package which also includes equity and senior-ranking debt. Such 'strip' financing can, however, produce conflicts of interest for the lender and when this happens, the firm concerned may cede the leadership of a mezzanine syndicate to another participant. Generally, firms offering strip financing guard against conflicts of interest by organising their mezzanine lending separately from their other financing operations.

The specialist nature of mezzanine finance is reflected in its quite limited use. It is estimated that, between 1990 and the end of March this year, a total of £694 million was provided in 102 transactions (see Table A). The financing of MBOs was by far the most important area of use, accounting for roughly 75% of the total invested. The other two main areas of application were the financing of private businesses and of large capital expenditure projects.

The use of mezzanine finance in MBOs

Activity in the MBO market peaked at about £6 billion in 1989; since then, it has been running at about £2–3 billion a year (see Chart 2). The 1989 total was, however, inflated by a few very large transactions, and (as Chart A in the box above shows) the number of MBOs was quite stable during the subsequent recession—reflecting increased sales of

Chart 2
Value of UK MBOs(a)



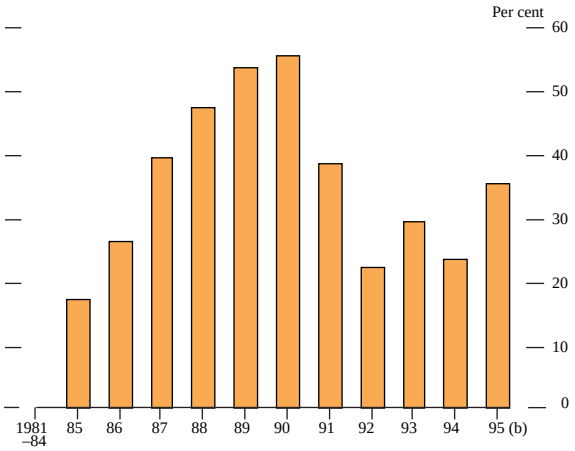
Source: KPMG.

(a) MBOs of £10 million or more.
(b) Figures for first six months annualised.

businesses by receivers and hard-pressed companies—before increasing sharply during 1994.

Roughly 33% of the MBOs since 1990 have used mezzanine finance. The proportion has shown no clear trend in recent years (see Chart 3); this is mainly because of intense competition from banks and venture capitalists, as well as a trend towards smaller MBOs which can usually be financed using just senior debt and equity. In addition, there has been a tendency for companies selling subsidiaries to provide some of the finance needed. Such *vendor finance* usually takes the form of a subordinated loan or a residual equity stake and, in many deals, has been an alternative to mezzanine financing. The box opposite offers a brief description of vendor finance.

Chart 3
Percentage of MBOs using of mezzanine finance(a)



Source: KPMG.

(a) MBOs of £10 million or more.
(b) To 31 March.

In the transactions in which it is used, mezzanine finance accounts for some 12%–15% of overall financing; this relatively small contribution reflects its role as a supplement to equity and senior-ranking debt (see Chart 2).

Other applications

In recent years, many providers of mezzanine finance have sought to become less dependent on MBOs by diversifying into new fields of lending. One promising area is the *financing of 'middle-market' firms*. The borrowers are typically private companies that need funds for expansion: their owners are unwilling to concede a dilution of their equity but they have insufficient assets to support further conventional bank borrowing.

Banks have already shown some interest in this market. They have, for example, begun to provide mezzanine-like instruments—such as the 'equity overdraft' or 'royalty overdraft', in which interest payments are linked to profits or sales. Banks' branch networks help them to identify and approach those middle-market companies that are candidates for mezzanine finance; persuading their owners to use it may, however, be difficult, as few may be aware of mezzanine finance, and they may initially baulk at its high cost compared with mainstream bank lending. In addition, the skills and training of many branch bankers may not always fit them for the detailed due diligence and active monitoring required for mezzanine lending. For all these reasons, there is likely to be a role for specialist providers of

Vendor finance

Vendor finance can be particularly helpful in MBOs, where the management team purchasing the business often has an informational advantage over the vendor about the value of the company. By retaining a stake in the business, the vendor can recognise this advantage and share in any subsequent unforeseen upturn in value. Some sellers like to retain a stake in their former subsidiaries for other reasons. Buyers may, however, be reluctant to accept this, particularly if the two companies will be competitors.

Vendor finance takes a number of forms: most common is a residual equity stake or a subordinated loan note (usually bearing minimal interest, few covenants and a long maturity). It is often an alternative to mezzanine finance, but one that is usually offered on less onerous terms. In some cases, it can be regarded as deferred payment.

The use of vendor finance depends very much on the particular circumstances of a deal, and the needs and bargaining strengths of the parties involved. As a result, trends in vendor finance are unclear. But there is little sign at present that it is a long-run competitive threat to mezzanine finance, though it has been a significant source of finance at certain periods (in 1991, for example, it was the source of 15% of finance for MBOs valued at over £10 million).

mezzanine finance to middle-market firms. They may, however, need to improve their marketing in order to make a real impact on the market.

Although to date mezzanine finance has not been used widely for the financing of *large capital projects*, this is seen to be a particularly attractive field for expansion. It has been suggested, for example, that mezzanine finance could play a significant role in the financing of infrastructure projects within the Government's Private Finance Initiative. One difficulty, however, is that these projects often entail some rolling-up of interest, to which mezzanine financiers are reluctant to agree.

Other possible uses that have been raised for mezzanine finance include *bridging finance*—whereby funds are committed to a deal for a short period until permanent refinance is arranged—and *property development*.

Prospects

To date, mezzanine finance has been used mainly in company buy-outs. Buy-out activity has shown no sign of diminishing; indeed, at present it is probably on an upward trend. It is not at all certain, however, that this will lead to an increased use of mezzanine finance, since most recent buy-outs have been modest in size and could be adequately financed using just equity and senior-ranking debt. In addition, mezzanine financiers face intense competition from senior-ranking lenders (banks) and equity investors, which are currently well endowed with funds for investment. Banks' capital resources have increased as the recession has ended, and a number of equity houses have recently raised new funds. There is also no shortage of available mezzanine finance (two of the independent specialist providers were floated in 1994).

There is a risk that the intense competition to provide capital to companies may erode mezzanine financiers' standards of due diligence. It is particularly important that mezzanine finance is not used injudiciously as a substitute for equity, as happened in certain deals arranged in the late 1980s. The subsequent failure of some of those deals, however—with investors bearing large losses—has led to a more cautious attitude towards highly leveraged financing structures.

A number of mezzanine financiers are seeking to diversify away from lending for buy-outs. There would seem, for example, to be considerable untapped demand for mezzanine finance among private companies whose shareholders are reluctant to concede a dilution of ownership. Mezzanine finance may also be helpful to those companies with good long-term prospects that have emerged from the recession heavily indebted and consequently face difficulty in raising additional senior debt; however, it continues to be a financing technique that is relatively little known among business people. A further area of potential may be continental Europe, where a large number of privately owned businesses might be candidates for buy-outs. UK-based mezzanine lenders would seem to be well placed to expand into these markets.

The pricing of over-the-counter options

By Shelley Cooper and Stephanie Weston of the Bank's Banking Supervisory Policy Division.

Earlier this year, the Bank carried out a survey of firms involved in trading over-the-counter options to investigate how they price and manage the risk associated with the instruments, and to assess the extent of differences in their approaches. This article explains the background to that survey, and outlines its main results.

Over-the-counter (OTC) derivatives—and OTC options in particular—are part of a growing financial market, and one which raises particular challenges for participating institutions and their supervisors. Assessment and management of the risks incurred in trading these products are not straightforward.(1) Accordingly, earlier this year the Bank undertook a survey to investigate how different institutions priced options and related instruments in the OTC market. It circulated a list of equity, foreign exchange and interest rate option and swap instruments to banks active in derivative markets and to several leading securities firms. Participants were asked to provide the prices and hedging risk parameters on each of the instruments; about 35 banks and securities firms responded. This article explains the background to the survey and presents its main findings.

Just as it is vitally important for institutions trading in the derivatives markets to verify the accuracy of their pricing and risk management models, it is important for the Bank of England to know how the banks that it is supervising price and manage these products, since for many they are a significant and growing part of their business.

The survey allowed the Bank to assess the uniformity of both the pricing and risk assessment parameters of a range of products. It also allowed it to identify those banks that priced products differently from their peers, for closer scrutiny as part of its prudential role, particularly in implementing the Capital Adequacy Directive (CAD) for UK banks. Within the CAD framework, banks will be required to allocate capital against the market risks arising from their trading activities; the directive requires that the models employed by banks to price option products be recognised by the competent authorities before they are used to calculate how much capital a bank must set aside against market risk. The survey was one of several methods employed to assess the option-pricing models used by banks.

The survey was also useful to the organisations taking part. All the participating institutions were sent information about the mean, range and standard deviation of the price and delta for each of the instruments that they priced.

Option products and the OTC market

Derivative instruments are contracts whose value is derived from the value of some underlying asset. The underlying asset may be a debt instrument, bond, share, share index, exchange rate, futures contract or commodity price. An *option* is a derivative contract that gives the purchaser the right, but not the obligation, to buy or sell an underlying asset at a certain price (the *exercise* or *strike price*) on or before an agreed date. For this right, the purchaser pays a premium to the seller. The seller (or writer) of an option has a duty to buy or sell at that price, should the purchaser exercise the right.

Derivatives are extremely important in risk management because they allow risks to be separated and traded. For example, a company buying raw materials in US dollars may face difficulties if the dollar rises in value above a certain level. The firm's risk can be minimised if it buys an option giving it the right to buy dollars at that rate. If the dollar stays below the rate, the firm pays only the premium; but if it rises above it, the firm can exercise the option and buy dollars at the price agreed earlier below the market rate. The firm in effect purchases insurance against the risk of a high dollar exchange rate by trading the risk in the derivatives market.

A number of standardised derivative products are traded through exchanges. However, if their risks cannot easily be hedged using these standardised contracts, customers can purchase tailor-made—or 'over-the-counter'—contracts.

The pricing of options

The prices of exchange-traded derivatives are highly transparent and readily available; by contrast, price information is less easily obtainable for OTC derivatives. This is partly because OTC transactions are tailored to the requirements of the individual customer; however, some OTC derivative transactions have become increasingly standardised over time. Because they are traded in liquid competitive markets, market forces will ensure that the pricing of these individual products remains relatively

(1) An article in the May 1995 *Quarterly Bulletin*, 'Statistical information about derivatives markets', set out current initiatives to encourage firms to disclose information about their derivatives business, and steps being taken to improve the availability of aggregate statistics about over-the-counter derivatives markets.

Options: some terminology

Like a number of areas of the financial markets, the options market has generated a good deal of its own terminology. This box provides an explanation of some of the main terms used in this article.

Some basic definitions

An *option* is a derivative contract that gives the purchaser the right to buy or sell an underlying asset at a certain price on or before an agreed date.

The *underlying* asset is the variable on which a futures or option contract is based. The *strike* or *exercise price* is the price at which the buyer of the option has the right to buy or sell. The *pay-off* is the amount that an option pays out at expiry. A *call option* gives the holder the right to buy the underlying asset by (or sometimes *on*) a certain date at a certain price. A *put option* gives the holder the right to sell the underlying asset by (or sometimes *on*) a certain date at a certain price.

European options are options that can be exercised only on the expiry date itself. *American options* can be exercised at any time up to the expiry date.

Volatility is the variability of the price of the underlying asset. The *term structure of volatility* is the curve describing the implied volatilities of options with different maturities.

An option is *in the money* if the exercise price is more favourable than the current market price of the underlying—that is the current market price is lower if it is a put and higher if it is a call. An option is *at the money* (spot) if the exercise price is equal to the market price of the underlying. And it is *out of the money* if the strike price is less favourable than the current market price.

A *vanilla option* is a loose term for a simple and widely traded option. An *exotic option* is one with an unusual underlying asset, pay-off, exercise price, expiry condition or some combination of these; however, the definition of which products are 'exotic' varies from institution to institution, and some products thought of as exotic some years ago are now seen as 'vanilla'.

Risk and risk parameters

The *sensitivity* is a measure of how much a derivative changes in value in response to a change in the price (or the volatility) of the underlying asset.

Dynamic hedging is the process of rehedging an option position in response to market movements.

The partial differentials used to describe and manage option risk are sometimes known as 'the Greeks', because they are named after Greek letters: delta, gamma, kappa, rho and theta. An option's *delta* is the rate of change in its valuation with respect to a change in the price of the underlying asset. *Gamma* measures the rate of change of the rate of change in the value of an option with respect to a change in the price of the underlying asset.

An option's *kappa* (or *vega*) is the rate of change in its valuation with respect to a change in the volatility of the price of the underlying asset. Its *rho* is the rate of change in its valuation with respect to a change in the (risk-free) interest rate used to discount the value of the option. And its *theta* is the rate of change in its valuation with respect to time.

Some option products

Purchasing a *straddle* involves buying a call and a put with the same strike price and expiry date.

A *cap* guarantees that the rate charged on a loan at any given time will be the lesser of the prevailing rate and the cap rate. A *floor* places a lower limit on the interest rate that will be charged. *Collars* specify both upper and lower limits for the rates that will be charged. A *collarlet* is a collar for an individual period.

A *down and out option* is similar to an ordinary option, except that if the underlying asset's price reaches a certain barrier the option ceases to exist. It is also known as a *knock-out*. An *up and in option* is the converse of a down and out: it comes into existence only when the barrier is reached.

A *quanto option* is a cross-currency option in which the pay-off is denominated in a different currency to the underlying asset. An *Asian option* is one where the pay-off depends on the average price of the underlying asset during at least some part of the life of the option. A *digital* or *binary option* pays off nothing if the asset price is above (or below) the strike price and pays a fixed amount if it ends up below (or above) the strike price.

In its simplest form, a *swap* is a transaction in which one party, A, agrees to pay the other party, B, cash flows equal to interest at a predetermined fixed rate on a notional principal for a number of years. At the same time, party B agrees to pay party A cash flows equal to interest at a floating rate on the same notional principal over the same period. In a *forward starting swap* the two parties agree to enter into such a transaction, but at a predetermined future date.

A *swaption* is an option on an interest rate swap. It gives the holder the right to enter into a certain interest rate swap at a certain time in the future.

uniform. Alongside these more standardised products, 'structured' or 'exotic' deals—which are individually constructed to meet the needs of the buyer—are also growing in importance. These products are often traded at a premium over their 'theoretical' valuation. And in their case, market forces may not be so effective in ensuring uniformity of pricing.

It is widely accepted that the price of an option is influenced by five factors: the price of the underlying asset; the exercise price of the option; the volatility of the price of the underlying asset; the time to expiry of the option; and the rate of interest. There is less consensus about how these factors should be combined to price individual products, especially the more 'exotic' variants. So the prices of options quoted by different firms at a particular time vary, for several reasons: differences in the inputs to models used in pricing, reflecting differences in traders' views about market prices and volatility; differences in the choice of the model used to value a product or to construct the yield curve; differences in the credit quality of the counterparties; and differences in traders' risk appetite.

One of the objectives in designing the survey was to isolate the pricing variability that was due to the choice of model. For this reason, participants were asked to give prices based on standardised market data and credit quality, so that the only source of pricing variability would be the models used. For about half the products, participants were provided with market data to use as inputs to their pricing models, including complete yield curves for two currencies. To standardise the credit quality dimension, they were asked to assume that prices were being made to a good-quality interbank name (with a rating of A or better) with whom the quoting institution had ample credit lines available. Most of the exotics chosen were products with widely available and generally accepted (although not necessarily unique) pricing formulae. There would have been much more diversity in the results if products for which there is no consensus on the choice of pricing model had been included.

Although Black and Scholes were not the first to provide a formula to value options, their model was the first to be widely accepted and is still by far the most commonly used approach for valuation, especially for simpler products.(1) But although variants of the model are commonly used even for the more 'exotic' products, the assumptions necessary within the Black-Scholes framework are considered by some market practitioners to be too restrictive for many of the more complex products, especially where the underlying instrument is the yield curve. In these cases, institutions have either developed in-house models or adopted models from the academic literature which they consider to be more accurate than the original Black-Scholes framework.

Pricing models can be categorised according to the method by which a price is obtained. Almost all option-pricing models are variants of Black-Scholes, but some are analytical models, some are based on simulation techniques and others are solved using numerical methods. Within the latter category, so-called 'lattice' models are the most common: these are of two types, binomial models and trinomial models. Lattice models are particularly useful for American options and interest rate options; they model the path of the price of the underlying asset by dividing the exercise period up into a number of sub-periods and assuming that during each the price of the underlying asset will either move up or down (in the case of a binomial model), or move up or down or stay the same (in the case of a trinomial model). Using these paths for the price of the underlying asset, the option can be valued.

Option risk management

An institution that buys or sells a derivative has to address the issue of how to hedge the risks arising from the trade. Options are particularly difficult to deal with, partly because they must be continually rehedged. The need for rehedging arises because the risk on an option changes as markets move (because the probability that the option will be exercised changes) and with the passage of time, even if markets are static. In addition, unlike other derivative instruments—such as futures, forward rate agreements and swaps—the value and risk position on an option change as the volatility of the underlying asset changes. As a rule, it is riskier to sell an option than to buy one, because the amount at risk with a bought option is limited to the premium. Also in general, most 'exotic' options are more difficult and risky to manage than straightforward 'vanilla' options, although there are exceptions to this rule.

In deciding how to hedge any derivative instrument, market practitioners assess how the instrument changes in value in response to small changes in the market price. For most products, a hedge based on this sensitivity can be effective in protecting the value of the portfolio from small market movements. In the case of option products, this process (known as 'delta hedging') is only the first step in protecting the value of the portfolio. The complicating factor with options is that the relationship between their market value and that of the underlying asset is not linear, and so it is also necessary to consider how the value of the portfolio changes in response to larger changes in the value of the underlying asset. The variable used to measure the non-linear component of the change in value is termed the option's gamma, and practitioners try to minimise risk by keeping the gamma value positive or close to zero. The third risk that it is particularly important to manage is an option's vega: the change in its value as a result of a change in the volatility of the price of the underlying asset. This risk is minimised by keeping the vega close to zero.

For both actively traded derivatives and the more exotic products, there is no market information about the current risk assessment of the product: the risk parameters are not quoted. But it is important that option traders calculate them accurately, and recalculate them on a timely basis as market conditions change. If the delta, gamma or vega is incorrectly

(1) See Black, F and Scholes, M, 'The pricing of options and corporate liabilities', *Journal of Political Economy*, *81*, May–June 1973, pages 637–59.

estimated, the resulting option hedges will be incorrect—leading to unexpected gains or losses in the value of the hedged portfolio.

Results of the survey

In the survey, participants were asked to price and provide hedge parameters for twelve different derivative products. These varied considerably in complexity and standardisation. A number were actively traded derivative products, and the majority of these positions were at-the-money. Most respondents priced these products, and the price and risk estimates provided showed relatively small variations for most positions. Other positions were in more 'exotic' derivative products—for example barrier options and digital options, both of which are traded in less competitive, less transparent markets. A number of these deals were not currently at-the-money. For these, there was, as expected, less consensus about the prices, risk parameters and the techniques used to obtain them. And fewer firms gave responses for these more sophisticated products, reflecting the fact that exotic option trading is a specialised activity that tends to be concentrated in a small number of institutions.

Table A
Products used in the survey

Products priced using market rates (as at 4.00 pm on 6 February 1995)

1 *Equity straddle*: an at-the-money straddle on 100,000 BAT Ords with expiry in one year's time, priced:
(a) as an American-style straddle.
(b) as a European-style straddle.

2 *Equity digital option*: a call option on 100,000 BAT Ords, with expiry in one year's time.

3 *Equity quanto option*: an at-the-money call option on the Standard and Poor's index with expiry in 18 months' time, priced:
(a) at-the-money with the strike and spot rate of the Standard and Poor's index assumed to be $450.
(b) at-the-money with the strike and spot rate assumed to be the prevailing level of the Standard and Poor's index on 6 February.
(c) out-of-the-money with a strike of $450 and taking the spot rate as the prevailing level of the Standard and Poor's index on 6 February.

4 *American foreign exchange option*: an option currently at-the-money on the US dollar/sterling exchange rate with expiry in three months' time.

5 *Collar*: a collar on sterling interest rates where the cap was 1% above, and the floor was 1% below, prevailing three-month Libor rates, priced:
(a) as a single collarlet three months forward for a period of three months.
(b) as a single collarlet six months forward for a period of six months.
(c) as a single collarlet three months forward for a period of six months.
(d) as a collar with two fixings each for a three-month period.

6 *Swaption straddle*: a short swaption straddle, currently at-the-money with expiry in two years' time.

7 *Bond option*: a put option on the 7¼% March 1998 UK Treasury, with expiry in 18 months' time.

Products priced with inputs provided by the Bank of England

8 *Foreign exchange option*: an option at-the-money on the US dollar/sterling exchange rate with expiry in one year's time, priced:
(a) as a dollar put, using yield curve data given.
(b) as a dollar call, using yield curve data given.
(c) as a dollar put, using own yield curve data.

9 *Foreign exchange barrier option*: an option on the US dollar/sterling exchange rate, with expiry in one year's time, priced:
(a) as a down and out sterling call.
(d) as an up and in sterling put.

10 *Foreign exchange Asian option*: a put option, currently at-the-money on the US dollar/sterling exchange rate, with expiry in one year's time, priced:
(a) as a sterling call, assuming flat volatility.
(b) as a sterling put, assuming flat volatility.
(c) as a sterling call, assuming term structure of volatility.
(d) as a sterling put, assuming term structure of volatility.

11 *Forward starting swap*: a four-year swap, starting in two years' time, using:
(a) own discount factors and yield curve given.
(b) both discount factors and yield curve given.

12 *Swaption*: a put on the swap described in 11, using:
(a) own discount factors and yield curve given.
(b) both discount factors and yield curve given.

The survey divided the products into two groups: those to be priced using market rates at 4.00 pm on the specified day; and those to be priced using rates (for foreign exchange spot rates, volatilities, yields curves, etc) specified by the Bank. A brief summary of the individual products is given in Table A.

The results of the survey are summarised in Table B. The figures in the table are the standard deviations of the price and delta of each of the positions, measured as a percentage of the average sterling valuation of the option or the average sterling equivalent risk parameter. So, for example, where the standard deviation of the price of a position was £600 and the average price quoted was £60,000, the price variation figure is 1%; the smaller the percentage standard deviation, the less the variability in the price or Greek risk parameter.

The dispersion in the results reflected differences in the products. As explained above, for those products for which standardised market data was used (products 8 to 12), the variation in pricing should have reflected the choice of pricing model only, and accordingly there should have been less variability in the results. This was, generally, what was observed. The notable exception was the foreign exchange up and in option, which was so far out of the money that it was in effect worthless. Many respondents assigned a value to the option somewhat arbitrarily—for example 0.01% of the nominal value—which produced some dispersion in the responses.

Within the narrower variability of prices for products for which standardised data was used, there were still differences in the values assigned. These largely reflected modelling differences. A range of about 20 models was used by respondents, a figure which would have been still higher if small variations in the models had been counted.

At present, there are only a small number of products for which there is almost complete consensus among practitioners about the method for pricing. These are the collar (where the Black model is used) and the 'vanilla' European foreign exchange option (where the Garman-Kohlhagen version of Black-Scholes is used). A range of models was used to value the forward starting swap, but most of these were mathematically equivalent. For the other products, a range of models was used, but in general they did not lead to very large differences in pricing. With the exception of the collar and the forward starting swap, the range was wider for interest rate products than for equity or foreign exchange products. This reflected the fact that there are many ways of representing the movements of the yield curve and there is little consensus within the market about how this is best achieved.

There was considerably more variation in the prices of the products for which market data were not provided. Analysis showed that generally the variation resulted from differences

Table B
Variations in the survey prices and risk parameters

Instrument	Price variation (a)	Delta variation (a)	Sample size	Models used
1 (a) American equity straddle	6%	14%	20	Black-Scholes; Cox-Ross; Cox-Rubenstein; Cox-Ross-Rubenstein; Binomial; Trinomial.
1 (b) European equity straddle	6%	27%	20	Black-Scholes; Cox-Ross-Rubenstein; Binomial; Trinomial.
2 Equity digital	6%	33%	19	Black-Scholes variants; Garman.
3 (a) Equity quanto	9%	7%	5	Black-Scholes variants; Trinomial (Jarrow Rudd parameters); Garman.
3 (b) Equity quanto	1%	2%	4	
3 (c) Equity quanto	2%	4%	12	
4 American foreign exchange	2%	2%	31	Black-Scholes; Cox-Ross-Rubenstein; Binomial; Odd even Cox-Ross.
5 (a) Collar	26%	26%	18	Black; Binomial.
5 (b) Collar	10%	9%	14	
5 (c) Collar	10%	9%	12	
5 (d) Collar	6%	8%	15	
6 Swaption straddle	3%	85%	32	Black; Hull & White; Binomial.
7 Bond option	38%	39%	17	Black-Scholes; Forward yield diffusion model; Black-Derman-Toy; Black; Binomial.
8 (a) Foreign exchange option	0%	4%	24	Black-Scholes; Garman-Kohlhagen.
8 (b) Foreign exchange option	1%	3%	8	
8 (c) Foreign exchange option	1%	4%	5	
9 (a) Foreign exchange barrier	4%	3%	14	Black-Scholes variants; Cox-Ross-Rubenstein; Rubenstein and Reiner; Binomial.
9 (b) Foreign exchange barrier	20%	71%	19	Black-Scholes variants; Cox-Ross-Rubenstein.
10 (a) Foreign exchange Asian option	1%	3%	7	Black-Scholes variants; Cox-Ross-Rubenstein.
10 (b) Foreign exchange Asian option	1%	3%	13	
10 (c) Foreign exchange Asian option	1%	2%	8	
10 (d) Foreign exchange Asian option	1%	2%	3	
11 (a) Forward starting swap	4%	3%	34	Discounted cash flows.
11 (b) Forward starting swap	3%	2%	17	
12 (a) Swaption	1%	4%	27	Black; Black-Scholes; Hull & White; Binomial.
12 (b) Swaption	1%	7%	12	

(a) The standard deviation of the responses as a percentage of the average valuation offered.

in the volatilities assumed in pricing the product. Some of the variation was because some respondents modelled a product using a term structure of volatility—that is using a model which assigned different volatilities to options of different terms—rather than assuming that volatility was the same for options with different periods to maturity. The other source of the dispersion in prices was the use of different yield curve interpolation techniques to derive market interest rates for dates in the future for which no market rates were available.

Another way in which the variations in the results can be explained is to draw the distinction between 'exotic' and 'vanilla' products. This distinction is based on the complexity of the product and the frequency with which it is traded. In the survey portfolio, the equity digital, equity quanto, foreign exchange barrier option and the foreign exchange Asian option would be defined by most market participants as 'exotic', and the bond option would be defined as difficult.(1) As a general rule, there was considerably more variability in both the prices quoted by respondents for 'exotics' and their estimates of the delta parameters.

There were, however, some anomalies. For example, although the American equity straddle was a relatively straightforward option product, it showed more variability than other 'vanilla' products. This may have been because it was based on a single equity, rather than an index, and information on the volatility of this underlying asset may have been less readily accessible. In addition, the instrument was priced by many institutions that did not actively trade options on individual equities. The dispersion in the pricing of product 5 appears anomalous since there was little variation in the models chosen and it was a 'vanilla' product. The dispersion reflected the range of market rates used to price the product and the fact that, because product 5(a) had a low market value and delta, the absolute level of variability in the pricing was much less than that indicated by the percentage variability.

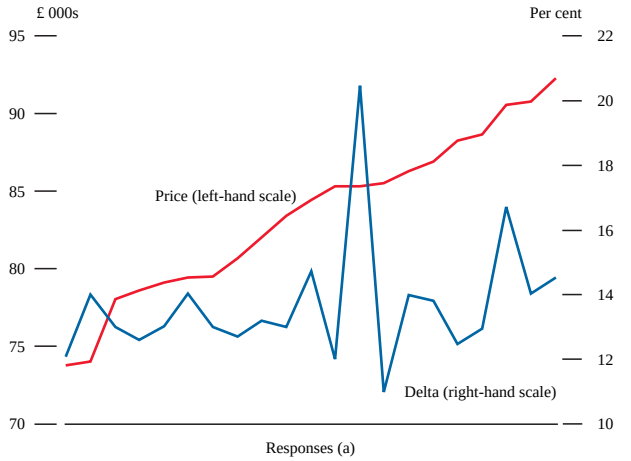
Equity options

Products 1 to 3 were options on an individual stock or an equity index. Only about 20 institutions priced these products and several that submitted responses for certain instruments indicated that they did not trade the instruments. This was the case particularly for the American equity straddle, where the underlying asset was an individual equity. In general, the estimates for the risk parameters were quite uniform; Chart 1 shows an example of the variation in the price and delta of the American equity option product. The exception was the quoted deltas for the equity digital. This was not surprising, however, since the product featured a discontinuous pay-off function; some institutions chose not to quote a delta because they felt it was too unstable. Although the equity quanto was categorised as 'exotic', it showed less price volatility for positions 3(b) and 3(c) than the other equity options. One explanation for this may have been that the market liquidity for Standard and Poor's options is deeper than for individual stock options and

(1) Although instrument 7 was a straightforward bond option, it had some features which led to particular pricing problems.

therefore that the volatility assumptions were more uniform than those for the options on individual stocks. Most of the sample used variants of the same, Black-Scholes model to price all of the equity options.

Chart 1
American equity option

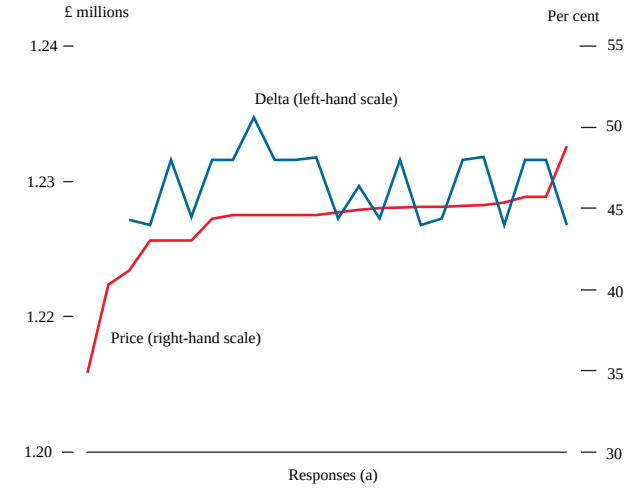


(a) The responses received are ordered on the *x*-axis from lowest to highest price quoted.

Exchange rate options

The foreign exchange options were products 4, 8, 9 and 10. With the exception of the up and in option (discussed above), these products showed uniformity of pricing across the sample—see the example in Chart 2. This may in part have been because the products themselves were quite

Chart 2
European foreign exchange option



(a) The responses received are ordered on the *x*-axis from lowest to highest price quoted.

straightforward, but it may also have reflected the liquidity of the foreign exchange market. As a result of this liquidity, there was more consistency in the volatility estimates than in the equity or fixed-income markets. An additional factor was that a large number of respondents used the same commercial software package to price the products.

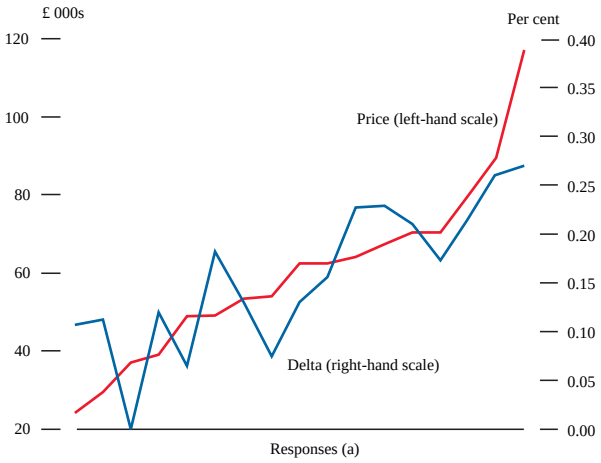
Interest rate products

Of the products covered in the survey, the interest rate products (instruments 6, 7, 11 and 12) were both the most difficult to model and those priced most differently. This was not because the products were particularly 'exotic' or because the inputs varied, but rather because of differences in estimating the yield curve and modelling its variability. For interest rate options, the underlying asset is a series of points on the yield curve, rather than a single point as in the case of equity and foreign exchange products. Rates are available for certain maturities; others must be interpolated from available market data.

There is a range of approaches for constructing the current market yield curve, based on different combinations of market deposit rates, futures prices and swap rates, and different interpolation techniques. And there is little market consensus on how to model the random movements in the yield curve. Models range from very simple representations of yield curve volatility to multi-factor models.

The impact that these differences in yield curve modelling made on the dispersion of the price and delta volatility was quite substantial. For example, there was price variation of 3%–4% in the simple forward starting swap (a product with no option component), despite the fact that all the input parameters were provided. The range of prices and deltas on the collar reflected the range of volatility assumptions across the sample. And the variation in the price of the bond option was a combination of the range of modelling

Chart 3
Bond option



(a) The responses received are ordered on the *x*-axis from lowest to highest price quoted.

assumptions and of assumptions about the bond's volatility, which were from 14% to 20%. Chart 3 shows the resulting price and delta variations for the bond option; the product incorporated a number of features that made it particularly difficult to price.

Conclusions

The objectives in conducting the survey were twofold: to increase further the Bank's knowledge of market practice in the pricing and risk management of derivative positions; and to contribute to its supervisory oversight of banks' traded derivatives activity.

The survey provided valuable information on the choice of pricing models and yield curve construction techniques, and the use of commercially available software. The importance of the method of yield curve construction for interest rate swaps and options was particularly striking, and was identified as a main contributor to the variation in prices in these products. The survey results also highlighted those products that were particularly difficult to price—such as the bond option—and those where the risk was not easily quantifiable. And they indicated the range of techniques used by different institutions to estimate the risk parameters.

On the supervisory side, the survey was useful in identifying several banks that were pricing products very differently from the rest of the market. Participants to the survey were provided with feedback on the mean, range and standard deviation of the prices and deltas of the products that they priced. This information has been useful both to the banks themselves and to their supervisors in the work in preparation for the implementation of the Capital Adequacy Directive in the new year.

More generally, the survey confirmed the Bank's preliminary views that there is significant variation in the pricing of different OTC products and that for some products the potential risk is not easily or uniformly quantifiable. Most institutions are aware of this uncertainty when pricing products and managing the risk in their derivative portfolios; but it is an issue which the Bank, as a supervisor, will need to continue to monitor.

A code of practice for Bank of England statistics

Earlier this year, the Government Statistical Service (GSS) published a code of practice for official statistics. In this short report, Philip Turnbull, Head of the Bank's Monetary and Financial Statistics Division, outlines the code of practice that the Bank is introducing in response to the GSS initiative.

A code of practice for official statistics, endorsed by the Prime Minister, was published by the Government Statistical Service (GSS) in April of this year. The GSS code applies to statistics produced by policy departments of government, as well as to statistical agencies such as the Central Statistical Office and the Office of Population, Censuses and Surveys. It is intended to enhance the professional integrity of professional statisticians and their independence from ministerial or other policy-related pressures. The International Monetary Fund is also developing a code of practice for statistics which it would expect member states to follow.

The Bank of England is not a government department or an agency. Nevertheless, it is a public sector body, and outside observers regard the statistics produced by the Bank as 'official statistics'. The Bank therefore believes that it is right to produce and follow a version of the code of practice, adapted to suit the circumstances of a central bank. The philosophy of this new statistical code is consistent with the Bank's principles of openness and integrity.

The key principles to be followed in the new code are the same as in the GSS code, ie:[1]

Professionalism

- Operate with *integrity*.
- Produce statistics in an *objective*, *scientific* and *unbiased* manner.
- Be *open* about all aspects of the statistical process, and *invite and respond promptly* to *comment*.
- Continuously seek to improve *professional competence*, with respect to both technical and management skills.
- Set challenging *service and quality* standards and seek always to achieve them.
- Continuously seek to provide better *value for money*.

In respect of data users

- Maintain the *relevance* of statistical activities to the needs of the Bank, government and the wider community.
- Provide statistics that are *fit for the purpose intended*.
- Complement statistics with *interpretation and statistical advice*.
- Make statistics *accessible* to all, in accordance with Bank and open government procedures.

In respect of data suppliers

- Place the *minimum load* necessary on data suppliers, and treat them with honesty.
- Respect the *confidentiality* of all information given in confidence.

All of these are principles which the Bank's Monetary and Financial Statistics Division has followed for many years. In particular, existing practice and the new code require publication of statistics to pre-announced publication dates, limited circulation of the figures in advance of publication, and careful assessment of the costs imposed on respondents by any new statistical requirements.

Some changes from current practice will also be required, however. The most important of these are:

(i) A formal submission to the Governor/ Deputy Governor to approve new statistical returns or significant changes to existing returns.

(ii) Release (on request) of previously unpublished weekly estimates of M0 (see the box opposite).

(iii) Estimation, where possible, of the compliance costs of the Bank's data collection.

(iv) Extension of the code to statistical surveys conducted by parts of the Bank outside Monetary and Financial Statistics Division.

(1) A full version of the Bank of England code of practice for statistics is available on request from Monetary and Financial Statistics Division, HO-5, Bank of England, Threadneedle Street, London, EC2R 8AH.

Monthly and weekly M0

The M0 aggregate comprises four components:

(i) Bank of England notes in circulation outside the Bank of England. The total for this is available from the Bank Return published each Thursday, relating to close of business on Wednesday. It includes notes in banks' and building societies' tills, notes held abroad and notes held as backing for issues of Scottish and Northern Irish bank notes (see below).

(ii) An adjustment to include notes issued by Scottish and Northern Irish banks, net of Bank of England notes held as backing. The levels of these notes are provided by the individual issuing banks a week after the Wednesday to which they relate.

(iii) Coin in circulation. These data are provided by the Royal Mint. Account is taken of wastage and coins held in permanent (over six months) collections. The data are provided each Thursday, relating to the previous day.

(iv) Banks' operational deposits with the Bank of England. These are the total deposits with the Bank of England of banks operating in the United Kingdom (as shown on the published Bank Return) less cash ratio deposits. Operational deposits mainly reflect funds placed voluntarily for clearing purposes. Cash ratio deposits are non interest bearing deposits that banks meeting certain criteria lodge with the Bank of England; adjustments to these balances are made twice a year, normally in late April and late October.

The total of (i) to (iii) is described collectively as notes and coin in circulation outside the Bank of England, or simply 'notes and coin'. The total of (i) to (iv) provides a weekly total for M0.

The published monthly levels of M0 and of notes and coin are the average of the levels for all the Wednesdays that fall in the month. This has been the case since October 1990. Before that date, the level for the Scottish and Northern Irish banks' adjustment was only the third Wednesday's observation. The monthly flow is the difference between these monthly averaged levels after allowing for occasional breaks in the series, which are listed in the Bank's annual Statistical Abstract (Part 2, Section B).

To aid statistical interpretation, the levels of each Wednesday's observations for the notes and coin components are seasonally adjusted. Banks' operational deposits are erratic but not seasonal, and are therefore not seasonally adjusted. The seasonal adjustments are updated each week, except during December and early January because of the difficulty of assessing any change in seasonality before the large rise in the note circulation has unwound. From time to time, a significant non-seasonal event affects the level of notes and coin in circulation. In these cases, outlier adjustments are made to the series before the seasonal adjustments are calculated. Examples of outliers include one-off bank holidays such as the Queen's Silver Jubilee in 1977. Outliers are listed in the Bank's annual Statistical Abstract (Part 2, Section E).

The Bank's current seasonal adjustment programme, known as GLAS, essentially uses a short, three-year window so that recent changes in seasonality can be picked up quickly. It uses a linear and additive model, so that the components sum to the total even after seasonal adjustment (see Section 4 of the Report of the *Seasonal Adjustment Working Party, October 1992, Occasional Paper No.2*).(1) The seasonal adjustments for notes and coin are not constrained to sum to zero over a financial year (unlike those for M4 components and counterparts). Bank holidays have a significant influence on notes and coin; the dates of these are not all fixed (in particular, the long Easter weekend can fall in March or April, or straddle the two) and their precise timing in relation to the weekly Wednesday observations is taken into account so that the seasonal movements can be correctly identified. Seasonally adjusted monthly levels and flows are calculated from the weekly data in the same way as for the unadjusted figures.

The weekly levels (both seasonally adjusted and unadjusted) for M0 and notes and coin will, in future, be available on request from 9.30 am three working days after the Wednesday to which they relate. To obtain these data, please contact the Monetary Statistics Group, Monetary and Financial Statistics Division (HO-5), either in writing or by telephoning 0171 601 5465. The first set of these data will be available on Monday 13 November, relating to Wednesday 8 November.

Each release will cover the weeks that comprise the previous month and as many weeks as are available for the current month. For the latest week, an estimate that is neutral for seasonally adjusted monthly flows will be included for the missing observation for the Scottish and Northern Irish banks' adjustment.

(1) Available from Publications Group, Monetary Analysis, HO-4, Bank of England, Threadneedle Street, London, EC2R 8AH.

Trends in the global economy

*The **Governor** discusses[1] the impact on the provision of housing finance of recent trends in the world economy—both in approaches to economic management and the revolution in financial services. There is now widespread agreement that monetary policy should be directed to achieving and maintaining permanently low inflation. If that succeeds, the demand for housing as a hedge against inflation should decline, so that real house prices may tend to rise more slowly over time; by moderating the economic cycle, it should also lead to greater stability in these prices. On the microeconomic side, the **Governor** discusses the formidable challenges presented to financial institutions—and to their regulators—by the continuing process of competition and innovation.*

I have been asked to contribute some thoughts on trends in the global economy and what they might imply for housing finance. I will comment on two broad trends in the global economy which seem to me to have an important bearing. I will speak first about current approaches to economic management, and in particular about the worldwide efforts to achieve greater price stability. And then I will discuss some of the implications of the continuing global financial services revolution.

Economic management

Let me begin then with some observations on current approaches to economic management.

If you look back over a longish period of, say, 10 to 15 years or more, you can, I think, see a distinct change in many countries—all around the world—in their approach to economic management, with the emphasis generally moving away from government intervention. Of course, the radical shift away from central planning in the countries of the former Soviet Union or Eastern Europe is a dramatic example of this. But it goes much wider. In a whole range of both industrial and industrialising countries, the emphasis before was on short-term demand management, with both monetary and fiscal policy directed to managing the short-term trade-off between growth and employment on the one hand, and inflation and external imbalance on the other.

Now, the emphasis generally tends to be on providing a stable medium and long-term macroeconomic environment. Monetary policy is typically allotted the specific task of achieving and maintaining permanently low inflation, while overall fiscal policy is increasingly concerned with budgetary consolidation and maintaining sustainable levels of public sector debt. Then, macroeconomic policy was typically supported by direct administrative controls of various kinds, and also by specific taxes and subsidies on particular forms of activity; whereas now the trend is towards deregulation and fiscal neutrality, with increasing recognition of the possible economic costs that need to be weighed alongside the social benefits of various forms of intervention. Then, it was widely accepted that there should be direct public sector involvement across a range of microeconomic activities; whereas the tendency now is to transfer many such activities to the private sector through various forms of privatisation, or for the public sector to undertake them in conjunction with private sector finance and management.

Now I do not suggest that we have all suddenly discovered the Holy Grail—a single blueprint for policy that is of universal application. Individual countries start from different positions and their policy approaches, of course, reflect differences in their national circumstances and different social priorities. Nevertheless, to varying degrees certainly, I suspect that most of you will recognise a shift of emphasis in the general direction I have described.

Now, to the extent that this is true, your business—the business of housing finance—is likely to be particularly affected in all sorts of ways, because housing and the provision of housing finance have typically in the past enjoyed very considerable government support reflecting the special social importance attaching to them. Deregulation—including, particularly, deregulation of financial services—may, for example, radically change the financial environment within which you operate, increasing competition on both sides of your balance sheet from other financial intermediaries or new instruments or techniques. I will return to this question when I come on to my second main theme—the continuing revolution in financial services.

Privatisation, in its broadest sense, may substantially change the balance between public and private sector housing. In the United Kingdom, for example, the sale of publicly owned houses to their occupants since 1980 has increased the proportion of the total housing stock that is owner-occupied by nearly 10% to some 67%; and private

(1) In a speech on 12 September to the World Congress of the International Union of Housing Finance Institutions in London.

finance these days accounts for roughly 40% of the funding available to housing associations, which are the main providers of social housing. Such trends could certainly have important implications for you. So too would any reduction in tax or other incentives to homeownership, whether as a result of changing social priorities or of overall budgetary restraint.

What I should like to focus on are the effects on the housing market and on housing finance of the current approach to monetary policy. This, as I say, is nearly everywhere now directed to achieving and maintaining permanently low inflation—not simply as an end in itself, but as a means to the ultimate objective of steady and sustainable economic growth over the medium and longer term—as a means, in other words, of moderating what have in the past been exaggerated fluctuations in the economic cycle. If we can indeed achieve greater stability in this broad sense, then this could radically change the environment in which you have to operate—especially those of you from countries, such as the United Kingdom, with a history of relatively high and variable inflation.

Almost throughout the industrial world, housing has been a very reliable investment over a long period. Although subject to cyclical ups and downs, *real* house prices in the G7 countries, for example, rose by over 1½% a year on average during the 1970s and 1980s. In *nominal* terms, they increased almost without interruption at an average annual rate of no less than 8¾%. In the second half of the 1980s, real house prices in the G7 countries rose by over 5% a year, and nominal house prices by nearly 9%.

The United Kingdom was not untypical, although house prices in this country generally rose more rapidly than elsewhere—by 2½% a year in real terms from 1970–92, and by over 9% a year in real terms from 1985–90. The comparable nominal house price increases were 12½% and nearly 15%—and only twice in the last 50 years have nominal house prices actually declined in the United Kingdom (in the early 1950s and in the last three years).

The behaviour of real house prices is presumably to be explained in terms of steadily rising demand for owner-occupied housing coupled with a relatively inelastic supply of new houses associated, in some countries, with a limited supply of land. The demand resulted from a combination of demographics and rising real incomes, as well as from tax incentives and increasing availability of mortgage finance. But it was boosted to varying degrees too by the perception that houses were not just somewhere to live, but also a way to make money in an inflationary world. A large part—about half—of all personal financial wealth in the United Kingdom is accounted for by net housing wealth, accumulated by purchasing a rapidly-appreciating real asset with debt fixed in nominal terms. And the same is true in most other G7 countries (apart from the United States, where net housing wealth is only about one fifth of total personal wealth).

In these circumstances, housing was not only an attractive asset to the purchaser and mortgage borrower, it was also very attractive security for the mortgage lender.

What happens then if we *do* achieve greater long-term economic and price stability?

To a greater or lesser degree, most of the factors explaining the rising trend in real house prices will probably continue to apply. The main exception is that the demand for housing as a financial asset—as a hedge against inflation—should decline, so that overall real house prices may tend to rise more slowly over time.

And if we succeed in moderating the economic cycle real house prices should also become more stable. There should be less erratic demand for houses, where before buyers were sucked into the market by the prospect of rising prices during the boom phase, only to find they had difficulty in servicing their debt when interest rates had to be pushed sharply upwards to bring the economy back under control. Even so, because housing demand tends to be particularly sensitive to expectations, and because the supply of housing is likely to remain inelastic, at least in the short term, real house prices may still be more variable than other prices. And in an environment of general price stability, that could mean that falls in *nominal* house prices become somewhat more common than they have been in the past.

Greater economic and price stability should also make for less financial uncertainty—and for that reason to lower overall real interest rates as the uncertainty premium is reduced; and it may affect the form of mortgage finance, with more emphasis on fixed interest rates rather than variable rates, for example. Such trends too may help to improve the capacity of borrowers to service their loans.

Moving to a more stable, low-inflation environment can involve difficult problems of transition—which, as we are still seeing in this country, can be acutely painful for both mortgage borrowers and lenders. But it clearly also raises longer-term questions for you about the nature of your business: whether, or to what extent, it is appropriate to concentrate asset portfolios on housing, for example; questions about appropriate loan-to-value ratios or earnings multiples; and questions about the appropriate forms of housing finance. I can only say that I am very glad that my role in these proceedings is to identify the questions rather than provide the answers!

The financial services revolution

Let me turn now to my second theme—the continuing global financial services revolution—and I choose those words with care because, even though I have lived with the process here at the heart of it, in the City of London, for the past 15 years and more, I am still constantly amazed at the extent and pace of change in the financial services industry, and by the fact that it goes on and on, with wave after wave of innovation.

From my perspective, it is a self-sustaining, interactive process, with a number of distinct elements feeding on each other. Advances in information technology are an important part of it, but they facilitate innovation and encourage competition, which in turn generate the demand for further advances in technology. Innovation and competition, and the new financial instruments and techniques they create, lead to new forms of financial intermediation and increasing overlaps between previously distinct types of intermediation. This complicates financial regulation, which has typically been structured on the basis of established distinctions between financial institutions and instruments, but which becomes increasingly difficult to apply in the same form as those distinctions erode. Deregulation—or re-regulation along broader, functional lines—whether as a practical inevitability in this sense, or because it is regarded as desirable in principle, in turn encourages further innovation and competition, and so on.

And there is no place to hide. Although the process may have started in the more highly developed financial markets, affecting initially the more sophisticated wholesale transactions, it has spread—and continues to spread—into all areas of financial services activity, including the retail sectors. And no country can easily stand aside from it all for very long, even if it wished to, because wholesale financial activity that cannot be undertaken at home can increasingly easily be undertaken abroad—to the ultimate detriment of the local financial community. And once the process begins, it spreads remorselessly to other sectors.

Now there is good news and bad news for all of us in all of this—for both users of financial services and for you, the providers of such services. It is mostly bad news, I have to say, for the hapless financial regulators!

The good news for the users of financial services is that they are given access to a whole array of new services, on more competitive terms, from which they can choose those which most closely meet their needs. Businesses, for example, can now—if they choose to do so—protect themselves against virtually any kind of financial risk to an extent that was unimagined only a decade or so ago. And retail customers everywhere have access to an enormously greater range of deposit and investment products, payments and settlements media, and credit facilities. This includes, of course an enormously increased range of mortgage facilities, distinguished by their repayment terms, their interest rates, currency of denomination and so on, and offered by an increasing variety of lenders—from traditional specialists in housing finance, to banks and insurance companies and new types of centralised mortgage lenders—all competing more and more vigorously both among and between themselves.

The bad news for the customers is that they have more, and more difficult, decisions to make as to which products to use, how to use them and who to deal with. There have been some spectacular stories of non-financial businesses, whether intentionally or not, taking on financial risks and coming to grief. And there has been a growing number of incidents in which users of retail financial services have incurred financial losses on products which they did not fully understand.

This is bad news for financial regulators. The public looks increasingly to them for protection as the financial world becomes more complex. But by the same token, that growing complexity makes it increasingly difficult to monitor and maintain the expected high standards of business behaviour and financial prudence. These conflicting pressures tend to lead to a situation in which financial intermediaries are freer than before to undertake a wide range of activities in a variety of instruments, but subject to increasingly intrusive functional rules.

There is good news and bad news, too, for financial service providers. They generally now have almost boundless opportunities to extend the range of the services they offer, on or off balance sheets—subject, of course, to legal and regulatory constraints; and they have vastly increased opportunities also for own-account activities. In either case, they can use these new opportunities to limit the risks in their core activities, through diversification into new activities or investments, or using the new instruments available for hedging, for example; or they can take on additional risk.

But, of course, these opportunities are available to financial intermediaries *generally*, not just to particular intermediaries or particular types of intermediary. The effect is to intensify direct commercial pressure both within and across financial services sectors. This provides an increasing incentive to hold down costs. It creates increasing pressure to manage and control risks—including risks arising elsewhere in the financial system or in relation to counterparties. And it generates an increasing need to price services properly in relation to costs and risk, including the elimination of cross-subsidisation of one group of customer at the expense of others—for example borrowers at the expense of depositors. Increased competition tends, too, to erode the scope for collective agreements, for example on interest rates or other terms on which particular financial services are provided; and it tends to erode the scope for mutual support within particular financial services sectors.

I imagine that most of you will already have been faced with many of these difficult issues—and I am sure that, if you have not already done so, then you soon will! Choices cannot be avoided in a rapidly evolving situation: to stick to one's last and do nothing beyond traditional business is not necessarily an option; indeed it *could* prove fatal if the market-place moves on around you. But so too, of course, could ill-considered moves into new and unfamiliar territory. And no-one can make those choices for you—they can only be made at the level of the particular institution in the light of its local situation, wherever that happens to be. There is no stock answer.

If it is any comfort to you, I can say that the problems relating to risk and instability in financial institutions confronting financial regulators are at least as difficult. They must have regard to the risks to the stability of the financial system as a whole, as it evolves, as well as to the stability of individual intermediaries. And they must pursue these objectives without imposing unreasonable regulatory costs, or unnecessarily inhibiting innovation or distorting competition, which could take away much of the potential benefit of open markets to the wider economy. Happily, to some considerable degree, their interests and those of the businesses they regulate run in the same direction. Financial regulation can therefore help to reduce the risks you face. But it cannot be said often enough that it cannot eliminate them altogether.

Where then, Mr Chairman, does all that take us? What I have said—in perhaps an over-elaborate way—is that, given the way the world is going, you all face some formidable challenges. I hope that I have been able to throw some light on the nature of some of those challenges. In any event, I wish you all every possible success in coming to terms with them. I do so not simply as a politeness. I am very conscious that the more successful you are in your endeavours, the easier things will be for those of us involved in financial regulation!

Monetary policy realities

*The **Governor** explains[1] the background to—and the limited extent of—his disagreement with the Chancellor earlier in the year. This was neither about the aim of monetary policy—preserving the best prospect of sustained expansion for decades—nor about the means of achieving it: by maintaining permanently low inflation. It was a narrow difference of judgment about the need for a further rise in interest rates in order to achieve the inflation target, in a situation in which that judgment was particularly difficult. He underlines the need to distinguish this narrow difference of judgment from the seductive—and dangerous—position of some critics, who want monetary policy to be used to boost activity in the short term and are prepared to take bigger risks with inflation.*

It has been a long, hot summer for the Bank of England—though at least we avoided the drought. In fact, we have been in hot water most of the time. To judge from the media, we have been engaged in various forms of sporting contest with the Chancellor of the Exchequer. Each economic statistic, each twitch of the financial markets has been reported as if it were a crucial point in some sort of timeless tennis match:

Chancellor to serve
- weak domestic demand
- softer commodity prices
- steady earnings growth
- slower fall in unemployment
- slow rise in retail price inflation and falling retail sales

Bank returns
- rising exports
- increasing producer prices
- rising unit wage costs
- faster rise in money supply

Game and first set to the Chancellor!

Now, all of this is no doubt good, clean fun. As a matter of fact, I quite enjoy playing tennis. But there really is rather more to it than that.

What we in the Bank think we have been doing—and not just during the summer—is not *playing against* the Chancellor, but *working with* him to try to preserve the best prospect of sustained expansion that this country has had for decades. That is what the Chancellor thinks we have been doing too.

There is no difference whatsoever between us, either, on how to go about it. What we are both aiming to do is to put the British economy on to a permanent basis of low inflation. And we are not doing this for its own sake; we are doing it because permanently low inflation—a situation in which people can confidently rely upon the value of money—is the best contribution that monetary policy can make towards encouraging rational, long-term economic decision-making in this country and towards promoting the sustained growth of output and employment over the medium and longer term. I will come back to that.

This is why, in 1992, the Government adopted an explicit target for retail price inflation (measured after excluding the effect of changes in mortgage interest rates). And this is why the Chancellor decided in June this year to extend the inflation target into the indefinite future, with the intention that monetary policy should be consistently directed to achieving an inflation rate (as defined) of 2½% or less.

Under our present monetary arrangements, the Bank is required by the Chancellor to make—and to publish—an independent, quarterly assessment of the likely course of inflation over the next eighteen months to two years; and this we do in our *Inflation Report*. We are also required to advise the Chancellor, at our monthly meetings, on the monetary policy that we judge to be necessary to achieve the Government's inflation target over the same eighteen months' to two years' time horizon. The minutes of these monthly meetings are—as you may be aware—also published, so that everyone knows precisely what advice we give and what our reasons are for that advice.

The Chancellor must make his own assessment about the inflation prospect—which, of course, may differ from our own, and he has every right either to accept or reject our advice in reaching his decision. That decision is also explained in the minutes. We recognised from the outset that this unique transparency of the policy process would not be particularly comfortable for either of us; but it would surely concentrate the mind and, we hoped, improve the quality of the public debate. It has certainly achieved the first of these objectives—and, to be fair, also I think the second.

(1) In a speech to the North West Chamber of Commerce in Manchester on 18 September.

Beginning last autumn, we agreed that, if we were to have a reasonable chance of achieving the inflation target, monetary policy needed to be tightened. Interest rates were raised by 1½%, in three ½% steps, to their current level of 6¾% by February of this year. That tightening of policy was intentionally pre-emptive, in the sense that it came earlier in the expansion than it would have done typically in the past, and before the upward movement of retail prices became apparent in the statistics. By moving to tighten policy sooner rather than later in the expansion, we aimed to avoid the more violent, and ultimately larger, increases in interest rates—often made under the pressure of emerging crisis in the financial markets—that we have experienced so often before. And it is encouraging that after we started to tighten, expectations about future interest rates, reflected in the financial markets, in fact fell—from an expected peak of over 9½% in September last year to around 8½% by early May.

I have characterised this approach to policy elsewhere as 'a stitch in time to save nine'. I might perhaps have said 'to save eight'.

By May, our judgment remained that we were still more likely than not to exceed the inflation target, and that policy would accordingly need to be tightened somewhat further. The Chancellor—as is his right—took a somewhat more optimistic view of the inflation prospect and decided that interest rates should remain as they were and where they have stayed ever since, at 6¾%.

Now I would make two comments on this episode. The first is that there can be no certainty in any of this. Monetary policy operates with a time lag of some two years or so, so that in pursuing the inflation target we have to operate on the basis of what we expect inflation to be that far ahead. And what we are talking about the whole time is a balance of probabilities and a balance of risks. The people to beware of are those who claim to *know* what the outcome will be. The devil of it is that it can be many months before the prospect—or the effect of monetary policy decisions—becomes any clearer, and by then of course it may well be too late. The position is rarely black and white at the point where decisions have to be made, but varying shades of grey; and in this situation the real issue is not whether any particular decision is right or wrong: it is whether the outcome is better or worse on balance over time.

My second comment is that in these circumstances, the disagreement about the inflationary outlook—in and since May—has been well within the reasonable range of uncertainty. We have argued that it is more probable than not that inflation will turn out to be above the target 2½%, but we have not argued that inflation is likely to accelerate dramatically. And the Chancellor agreed that the decision was finely balanced.

In fact, the situation that confronts us is particularly difficult to judge at present—for two main reasons.

On the one hand, the immediate inflationary pressure has been coming essentially from higher input costs—largely associated with the rise in the prices of imported raw materials and semi-manufactures last year, aggravated by a fall in sterling's exchange rate in the spring. It has not been driven by excess demand in this country.

On the other hand, we are breaking new ground in terms of the domestic economy. We have no real previous experience of the economic effects of adjusting to permanently low inflation, particularly on the behaviour of the household sector; and we have little experience either of a 'dual' economy, with such a great divergence between some sectors which are stretched to capacity while others remain in the doldrums. Let me expand briefly on these two points.

Manufacturing input costs—especially the cost of imported raw materials and semi-manufactures—began rising quite sharply from the beginning of last year. Although the rate of increase apparently moderated during this summer, the cumulative rise in input costs up to last month was some 15%. This input cost pressure was initially offset by falling unit labour costs, resulting from rapid growth in manufacturing productivity. But over the past year, productivity has grown much less, so that labour costs rose almost as fast as average earnings in manufacturing—by just over 4% in the year to July. (This was at a time, incidentally, when unit labour costs in most of our main competitors were falling.)

Despite strong resistance at subsequent stages of the production/distribution chain, these cost pressures have increasingly passed through into manufacturing output prices and into retail prices. Output prices rose by some 4½% in the twelve months to August (compared with 2% a year earlier), and retail prices (on the target measure—RPIX) rose by 2.9% in the latest twelve months to August (compared with 2.3% a year earlier). (Again, incidentally, retail prices are rising faster in the United Kingdom than any other G7 country, except Italy.)

Now there are a number of caveats one might make about all this, but what it suggests is that there are still significant cost pressures in the pipeline (running from material and labour input costs to retail prices) that have either to be absorbed in profit margins or passed on in price increases. This is true notwithstanding the fact that some of those pressures may have started to abate at the earlier stages of the production/distribution chain.

Now these cost pressures are difficult to contain directly through monetary policy. In themselves, even if they *are* passed on, that would in principle result in a one-off higher level of retail prices but not necessarily a longer-term higher continuing rate of retail price inflation. But cost pressures cannot simply be ignored. The risk is that the initial price rise will trigger a rise in domestic costs—through higher wage demands, particularly—that *would* have a more lasting impact on the rate of inflation.

How far these pipeline cost pressures are in fact absorbed, and how far and how fast they are passed on, and to what extent that has knock-on effects on domestic costs, depends in the short term on the pressure of demand in the real economy, and in the longer term on the extent to which price pressures are accommodated by monetary policy.

Here, there is no dispute that the rate of growth of demand and output has slowed over the past year. Non-oil GDP growth had accelerated to an annual rate of over 4% in the summer of 1994, but slowed to a more sustainable rate of some 2½% in the first half of this year. The extent of the slowdown, which became more apparent as we went through the summer, was a little more than we would have expected, but not significantly more. What was more surprising, as the data emerged through the summer, was the *pattern* of demand. Earlier, domestic expenditure—particularly by the household sector—had been growing only modestly, but this was compensated by strong growth in net exports, so that while there was clearly spare capacity in the domestically oriented sectors of the economy, the export-oriented sectors became quite fully stretched. But in the first half of this year—taking the first two quarters together, to remove erratic variations between them—there was a marked decline in the rate of growth of final demand both domestically and through a smaller improvement in the balance on net external trade, partly offset by a sizable build-up of stocks.

The slowdown in net export demand growth we attribute largely to a pause overseas—associated with a mild stock cycle in the United States and continental Europe. The likelihood is that this will correct itself quite soon, though we cannot of course be sure. The build-up of stocks domestically, which appears in part to have been unplanned, suggests that we may go through—indeed may be going through—a similar stock adjustment in this country. But that too we would expect to be relatively short-lived. Meanwhile we would expect the growth of final domestic demand gradually to pick up. But again, of course, we cannot be sure.

In the meantime, underlying monetary growth remains quite strong. Broad money growth in particular has accelerated since the spring, to a three-month annualised rate of growth of some 10%, while credit has been growing at an annual rate of 8%–9% since the beginning of the year. This would be consistent with increasing demand and activity—though the monetary data are always difficult to interpret over comparatively short periods.

Now, I have gone over all of this—in more detail than you might perhaps have bargained for—to try to explain to you just how uncertain the process is. We have never pretended otherwise. In coming to a judgment, we have to take account of all the information available to us at the time, and of course then modify that judgment to take account of new information as it becomes available. In May, our judgment was that we were substantially more likely to exceed the inflation target without some further rise in interest rates than we were to achieve it. That judgment was wholly justified at the time, and was indeed shared by the great majority of commentators. In the light of all the information that has become available during the summer—and, in particular, of the information on the pattern of demand—we have, of course, modified our judgment.

We now think that there is a somewhat greater chance that output growth will continue for a time to be weaker than we would have expected in May. This means that we see a somewhat better chance of achieving the inflation target over the next 18 months or so. We agree therefore that the case for an immediate rise in rates has become progressively less pressing, and we are not in fact pressing for one—and have not been doing so since before the summer break.

Nevertheless, we still think the chances are *against* achieving the inflation target over the next 18 months or so without some further rise, and both the financial markets and a majority of outside forecasts still appear to share that view. The markets are implying an inflation rate of about 4% in two years' time, rising subsequently to some 4½%. And of the 40 or so outside forecasts that we monitor, only five expect that retail price inflation (RPIX) will be below 2½% by the end of next year, and some of them assume higher interest rates in the meantime. Looking on the bright side, only three expect inflation then to be above 4%.

You are probably wondering at this point, 'If that's the extent of the difference, what's all the fuss about?' Well, I have been wondering that too! Given the degree of uncertainty, the difference between the Bank and the Chancellor is a narrow difference of judgment about the balance of risks. No-one will be more delighted than I will be if we do in fact hit the inflation target without some further rise in interest rates. I will happily then eat humble pie—I am told anyway that it is good for the digestion. But I will wash it down with champagne—because it would be the best possible news for the long-term health of the British economy.

But I am afraid that much of the fuss is not in fact about this narrow difference of judgment, it is about something more fundamental. Many of our critics are not actually saying they think our analysis is wrong and that we are in fact odds on to achieve the inflation target—or, if they are, they are keeping quiet about it. Many of them are really saying that we should not worry so much about the inflation target. They imply that the softening of the real economy and the slowdown in the fall in unemployment, in themselves, are enough to justify keeping interest rates unchanged—or even, now, reducing them—even if that means we do not hit the inflation target. They want monetary policy to be used to boost output and employment directly in the short term, rather than being consistently directed to the achievement of low inflation which, as I said at the outset, is the fundamental purpose of the inflation target.

This, I have to tell you, would be to turn the clock back to precisely the approach that lay at the heart of the boom and

bust which caused so much social, as well as economic, distress in the past and from which we now have a real opportunity to escape.

In its most seductive form, the argument runs that there is still a good deal of slack in the economy and, in that case, if the price of getting inflation down to 2½% or less is higher interest rates and slower growth now, then it is not worth paying. Let's take a chance on having 'just a bit' more inflation: it might even do us some good. I have also heard the argument put in less seductive terms—that we should deliberately aim for a bit more inflation because it would certainly make us feel good.

Well, Mr Chairman, we have been there before. The trouble with this approach—even in its seductive form—is that we do not actually know how to achieve 'just a bit' more inflation. Inflation is a dynamic process. You may for a time be able to get away with 'just a bit' more inflation in a country with a history of stability. But, given this country's track record, once you have signalled greater tolerance of inflation in the interests of sustaining activity, it is perfectly rational for people who can—producers in their pricing policies, employees in their wage claims and so on—to pitch in and grab what they can while the going is good. Inflation then accelerates, and at some point it *has* to be brought back under control. And at that point, the tightening of policy will almost certainly need to be more disruptive, and interest rates pushed higher, than would be necessary if inflation had been kept under control in the first place.

I realise, of course, that these questions are partly matters of degree. I would understand the (seductive) case for effectively relaxing the inflation target much better if, in order to achieve it, we were expecting to have to raise interest rates very substantially and to plunge the economy into recession. But that is not—as I explained in the earlier part of my lecture—the situation we believe we are in.

We are not, as I say, now pressing for an immediate interest rate rise—though some further rise may still be necessary. Nor are we expecting to fall back into recession, although we cannot rule out some further temporary slowdown in the rate of growth; and if there were clear signs that final demand was weakening substantially, that in itself would be likely to affect our view about the inflation prospect and that too would then naturally feed into our policy advice. The Bank has no interest in having interest rates even ¼% higher than they need to be to make it probable that we will achieve the inflation target. Our aim, in fact, is to keep interest rates below what they would otherwise be in anything other than the short term.

Mr Chairman, there is a lot going fundamentally right for the British economy. We are now into our fourth consecutive year of expansion and the likelihood is that that expansion will continue fairly steadily over the next couple of years—and that is as far ahead as one can realistically hope to see. That expansion is likely to be driven importantly by net exports and investment, particularly manufacturing investment in plant and machinery, and that should help to make it more robust.

Of course, there are uncertainties and, even on this scenario, there is a very long way to go. I understand the current concerns—the patchiness of the economy, with important sectors still struggling, having so far been hardly touched by the expansion. I understand the wider fears of a more general slowdown in output and employment growth, and I understand the temptation to look for more stimulus in the short term. But if that means, as it always has in the past, taking a risk on 'just a little bit more' inflation, then it would be extraordinarily short-sighted, putting at risk the best opportunity for sustained expansion that we have had for decades. I doubt whether that would do any of us very much good—even in the short run.

That is not the issue between the Chancellor and the Bank—which is on a much narrower point. We are, I repeat, working together to preserve the favourable medium-term prospect for the economy. The Bank will continue to direct its advice to that end. And that is what the Chancellor would expect—indeed requires—us to do.

Do inflation targets work?

Mervyn King, an Executive Director of the Bank and its Chief Economist, looks at the growing use of inflation targets:[1] *he considers what their use may achieve; what* has so far *been achieved; and how in the future they may help in the setting of monetary policy.*

Central banks, and especially central bankers, do not like to think of themselves as dedicated followers of fashion. Upholders of timeless values would be a more appropriate description. But there is little doubt that inflation targets have become fashionable. Following the example of New Zealand and then Canada, several European countries—including the United Kingdom—have adopted inflation targets.

But it is striking that of the countries which have turned to inflation targets, virtually all did so after a recent history of unacceptably high inflation. Countries with more successful track records—such as Germany—have not felt the need to abandon their intermediate monetary targets. Is this a case of 'better the devil you know', or is an inflation target a second-best substitute for a monetary target? As John Crow, the former Governor of the Bank of Canada, remarked: we did not abandon monetary aggregates, they abandoned us.

In trying to get to the bottom of the popularity of inflation targets, I would like to ask three questions. First, what is it that inflation targets can hope to achieve in principle? Second, what have they actually achieved in practice? Third, how will inflation targets help us to set monetary policy in the future?

In principle, an inflation target combines two distinct features. First, it acts as a nominal anchor for monetary policy. Second, it raises the cost of using inflation surprises to obtain a temporary boost to output and employment, and so reduces the inflation bias inherent in a monetary policy which relies—as it must to some extent—on the discretionary decisions of those responsible for setting official interest rates.

An inflation target is not the only way to achieve these two objectives. Money or nominal income targets could also provide both a nominal anchor and a form of precommitment not to engineer inflation surprises. But because an inflation target focuses attention directly on the ultimate objective of monetary policy—namely price stability—it provides a much clearer and more transparent framework for policy. Indeed, monetary targets can be seen as a special case of an inflation target when the velocity of money is completely predictable. And the political costs of missing an inflation target are likely to be more visible than those of overshooting the target for a monetary aggregate.

But two criticisms have been made of the use of inflation targets. The first is that by targeting the inflation rate, rather than the price level, no anchor is provided for the future price level. The target announced by the Chancellor in his Mansion House speech in June does not suffer from this problem. By aiming consistently for an inflation rate of 2½% or less, although the inflation rate in any particular year may be higher or lower as a result of temporary and unpredictable shocks, the inflation rate averaged over a long period should not exceed 2½%. And it is the predictability of the average inflation rate which provides the anchor for the future price level.

The second criticism is that the pursuit of an inflation target means that real output is more unstable than need be the case. I believe this to be incorrect. Everyone who has studied monetary policy knows that it affects inflation after long and variable time-lags. Unexpected supply shocks that have a one-off impact on the price level mean that inflation will deviate temporarily from the target level of 2½% or less. Monetary policy does not aim to contract or expand demand to offset such shocks to the price level. Rather, in the jargon of economists, the shocks are accommodated. But monetary policy can, and should, aim to prevent these shocks from feeding through to underlying inflation. That is why we target not next month's inflation rate, but the inflation rate some two years or so ahead.

For example, the fall in the sterling effective exchange rate of about 5% in the early part of this year will place upward pressure on retail prices over the next few months, as cost increases pass down the supply chain. RPIX inflation, at 2.9%, is already above the 2½% target. But the real question is how to prevent a temporary rise in measured inflation from having second-round effects which jeopardise the inflation target two years from now. Monetary policy must aim to prevent these second-round effects from taking hold.

So an inflation target does not imply that output must be destabilised in a vain attempt to offset shocks to the price level and keep the *current* inflation rate at exactly 2½%. Policy must be forward-looking. But surely, you might argue, if growth falters in one month or one quarter, should not policy be relaxed even if the outlook for inflation two years ahead remains unchanged? My answer is in two parts.

(1) In an address to the Centre for Economic Policy Research on 26 September.

First, if the fall in the growth rate is expected to persist, then it is very likely that the inflation outlook—and hence the appropriate monetary policy—would alter. Second, if, however, the decline was thought to be temporary, it would be tempting fate to try to fine tune output in this way. Our knowledge of the short-run dynamics of output and employment, and their response to changes in monetary policy, is wholly inadequate for us to behave as if monetary policy were just another application of control engineering. It would be a serious mistake for monetary policy to look backwards and respond simply to the latest quarterly growth rate, rather than look forward to what is likely to happen over the next two years, uncertain though that outlook is. And the attempt to fine tune in our present state of ignorance is likely to raise suspicions that an inflation surprise is on its way. I return to my earlier point. One of the virtues of an inflation target is that it raises the costs of an inflation surprise. A framework, or constraint, of this kind helps to keep the monetary authorities on the right long-term track. And if we want more long-termism in British industry, then there is no better place to start than to ensure long-termism in monetary policy.

What, then, has the inflation target achieved in practice? Let me point to one positive and one negative achievement. The positive effect is that the adoption of a formal inflation target has led to a more systematic and focused discussion of the monthly decisions on monetary policy, both inside and outside government. It has improved, I believe, the public debate on monetary policy and significantly improved the information provided to the public by the authorities about their analysis of the inflation outlook. This is true not just in the United Kingdom, but also in the other countries which have adopted inflation targets.

The negative effect has been that the need to look forward—because of the lags in monetary policy—has attracted some rather unsophisticated criticisms of forecasting. A simple, though unfortunately common view, is that forecasts are either right or wrong—a sort of spot the ball contest in which the winner takes all. This misses the point altogether. When setting monetary policy, it is necessary to assess the risks and uncertainties associated with the inflation outlook some two years or so ahead, when the lags between current actions and their consequences have unwound. It is about *probabilities*, not point estimates. That is why the Bank of England publishes an inflation forecast with an error band to give some idea of the uncertainties involved, and an explicit analysis of the risks to the outlook—in other words, a description of the probability distribution of future inflation. I would encourage others to do the same. The fact that we cannot foresee the future with perfect certainty is no reason to ignore it.

But we do not pretend to any superior forecasting ability. We pay great attention to expectations of inflation revealed in financial markets. And we are working to improve our estimates from the short end of the yield curve to give an independent market forecast of inflation over the time horizon relevant for monetary policy.

So let me assure you that the Bank of England is not trying to target a precise number for inflation, such as 2.5%, exactly two years ahead. Rather, our advice on interest rates is determined by looking at the balance of probabilities for inflation. We are *not* the Mr Micawber of the central banking world—inflation target 2.5%, inflation projection 2.4%, result happiness; inflation target 2.5%, inflation projection 2.6%, result misery. Monetary policy is about assessing probabilities.

What of the future? Inflation targets need to be seen as one—and only one—component of the institutional arrangements for monetary policy. Before I say something about how inflation targets fit into this wider view, I would like to comment briefly on two specific aspects. First, the role of the range of 1%–4% around the target of 2½% (or less). Second, the link between inflation targets and transparency in the conduct of monetary policy.

If we are consistent in our pursuit of the inflation target, then over a long period the average inflation rate in the United Kingdom will be 2½% or less. In order to monitor the performance of the authorities in achieving the target, it is necessary to look at the record. So it is tempting to evaluate our performance by looking solely at the recorded average inflation rate.

This will indeed be an important element in any evaluation of the monetary authorities. But the average realised inflation rate over any particular period is a rather inefficient way of monitoring their performance. The reason is simple—the average inflation rate is determined solely by a comparison of the price level at the beginning of the evaluation period and the price level at the end of the period. It takes no account of what happened in between, and, in particular, no account of how the authorities responded to various shocks as they occurred.

There is a clear parallel here with a famous lesson of finance theory. The only information needed to estimate the mean return on an asset is its price at the beginning of a period and its price at the end. Information about the behaviour of the asset price during the intervening period—which could be many years—provides no additional information about the mean rate of return. But it does provide enormously valuable information about the variability of asset prices within the period.

Similarly, monitoring of the authorities' determination to hit the inflation target requires an examination of how policy was set over the whole period. Decisions are taken once a month, and any outside observer is likely to look at all of those decisions in coming to an overall judgment on the success of policy. For this reason, it is helpful to have a range around the desired long-run average. It provides an indication of how variable inflation is likely to be if future shocks are similar to those in the past. That is why the description of the inflation target is embroidered with the words: 'setting interest rates consistently at the level judged necessary to achieve the inflation target of 2½% or less

should ensure that inflation will remain in the range 1%–4%'. Monitoring is enhanced if performance can be judged against a pre-announced range as well as the long-run average. From this, it should be clear that the existence of a range does *not* mean that an average outturn of 3.9% would be acceptable.

This leads naturally to transparency. Monitoring is feasible only with sufficient transparency. Publication of the monthly minutes makes it much easier for the outside world to monitor the advice given by the Bank. Indeed, there has been a much more lively and intelligent debate about monetary policy over the summer than would have been possible in the past when the Bank's advice was neither known publicly nor given quite so explicitly. However uncomfortable this makes life for us, it surely improves the quality of the public debate and the ability of the public to monitor the Bank.

Inflation targets are only part of a recent trend away from mechanistic rules for monetary policy, toward careful design of a framework within which discretion is exercised. Around the world, there have been moves to increase the accountability of monetary authorities, to create more transparency in the decision-making process and to give more independence to central banks. The United Kingdom is further along the road in some aspects—such as transparency—and less so in others, such as central bank independence. It is the set of measures as a whole, however, which matters more than any one element. An inflation target makes it more difficult for a monetary authority with a short time horizon to use an inflation surprise to boost output. In the end, though, such targets will work only if the goal of price stability has widespread public support.

This leads me to my final point. It concerns a paradox. There seem to be a number of people who believe the following three propositions:

- An inflation target of $2^1/_2$% or less is perfectly sensible.
- At current interest rates, it is more likely than not that RPIX inflation in two years will exceed $2^1/_2$%.
- Interest rates should be reduced.

How can we square this triangle? Leaving aside the technical issue of the inflation outlook, on which there can quite reasonably be differences of view, what concerns the Bank is that squaring the triangle means that some commentators at least are wavering in their commitment to permanently low inflation. Now that would be a return to a fashion of the 1960s.