
Markets and operations

- *During the fourth quarter of 1998, the Bank's repo rate was reduced three times, by a total of 125 basis points.*
- *Three-month interest rates implied by short sterling futures fell sharply, by around 100 basis points at dates up to September 1999 and around 50 basis points for dates in late 2000 and early 2001.*
- *Nominal gilt yields fell to their lowest levels since the 1950s, and real yields on index-linked gilts fell to the lowest levels since they were introduced in 1981.*
- *Sterling weakened during the fourth quarter, influenced by the yen's rally, a narrowing of the United Kingdom's positive interest rate differentials, and selling of the currency resulting from arbitrage trades related to the transition from the Ecu to the euro.*
- *The US Federal Reserve lowered interest rates, and there were coordinated interest rate reductions in the prospective European single currency area to a common rate of 3% by end December.*
- *The FT-SE 100 recovered almost in full from its fall in the late summer, while the Dow Jones Industrial Average set a record high.*
- *Volatility peaked in many markets in October, and declined thereafter.*

Overview

Financial market turmoil in the third quarter continued into the final quarter of 1998, particularly in early October, when the yen appreciated sharply against the dollar and the Deutsche Mark, as market trading positions were quickly adjusted. For some time, hedge funds and others had borrowed yen at low Japanese interest rates, used the proceeds to invest in higher-yielding overseas assets, and enjoyed a positive investment return.⁽¹⁾ But the Russian default prompted the closure of many of these positions, and more were closed as the yen started to appreciate; investors had to buy the Japanese currency to repay yen debt, which put upward pressure on the yen exchange rate.

The major bond and equity markets were also significantly affected, as leveraged funds in particular swiftly liquidated higher-yielding non-Japanese assets. Several abrupt market moves resulted from this, against a background of relatively illiquid market conditions. Previously, yields in major bond markets had fallen to the low-points for the year. Concentrated sales of government bonds in a short period were reflected in yields moving sharply higher.

Shortly after these leverage-driven trades were unwound, the US Federal Reserve lowered interest rates in mid October. This rate cut, and the expectation that US interest rates would be lowered

(1) These trades are commonly referred to as 'yen carry' trades.

further, helped markets to recover slightly. (UK interest rates were lowered at the beginning of October.)

Equity markets began to recover almost immediately after the sharp yen appreciation. Far Eastern markets rallied on news that an agreement to recapitalise Japanese banks had been reached. UK and US equities were also supported by this news through October and, later in the quarter, by increased merger and acquisition activity.

As the quarter progressed, there were tentative signs that investor confidence was recovering, although trading turnover remained modest. Measures of market volatility declined from their early October peaks, gilt yields fell steadily through November and December, and corporate bond and swap spreads also narrowed, although not to their previous levels. The second lowering of official interest rates in the quarter in the United Kingdom and United States, in early and mid November respectively, and an early-December coordinated round of interest rate cuts in Europe (in preparation for the launch of the euro), helped to support these market moves.

By the end of the quarter, UK asset prices had risen but market liquidity remained fragile. A third cut in interest rates in early December bolstered investor sentiment, and encouraged the market view that UK interest rates would continue to be lowered swiftly. Implied interest rates, as derived from short sterling futures contracts, fell sharply during the three-month period—by more than 100 basis points for short-dated contracts and by more than 50 basis points for longer dates. Gilt yields fell by around 75 basis points for shorts and 30 basis points for longs. In other major international government bond markets, yields fell by less, and in some cases rose. In parallel, by the year-end, the FT-SE 100 had virtually recouped the previous quarter's losses, performing very similarly to US equities.

Chart 1
UK three-month Libor cash and futures markets

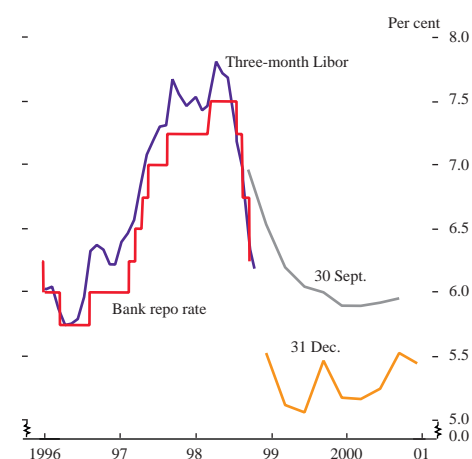
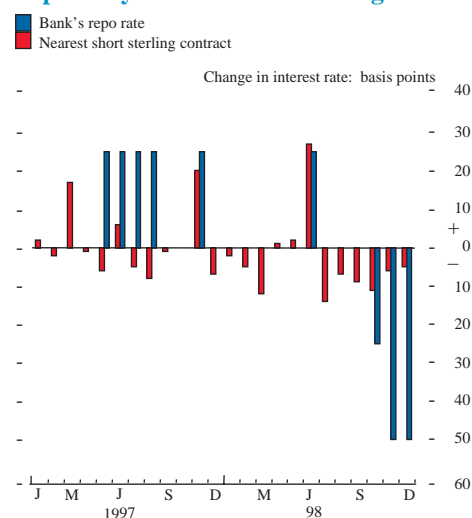


Chart 2
Interest rate announcements: change in rate implied by nearest short sterling contract



Market developments

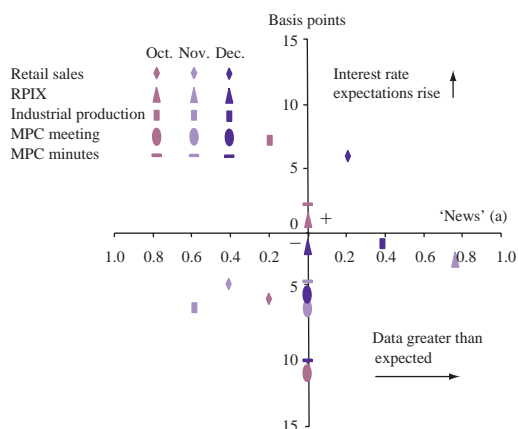
Short-term interest rates

The official repo rate, UK cash Libor rates, and implied interest rates fell sharply in the fourth quarter of 1998, and the degree of inversion in the money-market curve reduced (see Chart 1). Implied rates derived from the March and June 1999 short sterling contracts fell by more than 100 basis points, and rates implied by the late 2000 and early 2001 contracts fell by around 50 basis points. By year-end (excluding the end-1999 spike),⁽¹⁾ short sterling futures discounted three-month Libor falling to around 5.0% by the end of 1999, and rising gently to near 5.5% by 2002.

Domestic factors played a significant role in the fall in implied future interest rates. During the course of the fourth quarter, interest rates reacted to the outcome of MPC meetings, the publication of MPC minutes, economic figures and surveys, and growth projections by public and private forecasters. The official repo rate was lowered by 25, 50, and 50 basis points on 8 October, 5 November, and 10 December respectively, ending the year at 6.25%. On each of these occasions, the resulting fall in implied

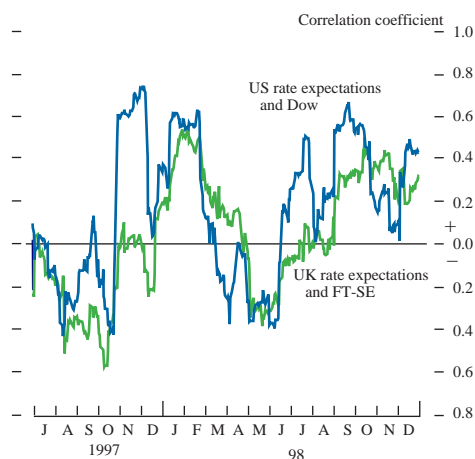
(1) Implied interest rates from futures for the three months spanning end 1999 have been pushed higher in the UK and overseas markets, possibly reflecting speculation that anticipation of systems difficulties could lead to tighter liquidity conditions.

Chart 3
Effect of data releases on interest rate expectations from October to December 1998



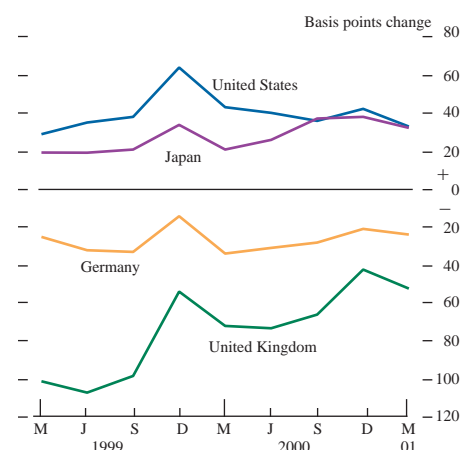
(a) 'News' is measured as data outturn less expected, divided by standard deviation of past surprises. Interest rate expectations are measured by the impact on the nearest short sterling contract.

Chart 4
Correlation between UK and US stock markets and domestic interest rate expectations^(a)



(a) A 30-day rolling correlation is used, and rate expectations are given by short sterling and eurodollar futures contracts.

Chart 5
Changes in three-month interest rates implied by futures contracts^(a)



(a) Change between end September and end December.

interest rates was less than the change in the repo rate, suggesting either that the market had anticipated the move, or, in November and December, took the view that a larger-than-expected cut brought forward a move that would otherwise have been expected to follow (see Chart 2). The minutes of the MPC discussions also influenced markets; at times they were seen by the market as suggesting that further reductions in the repo rate would be forthcoming. Implied future interest rates rose, however, when the November *Inflation Report* was published; some market participants had expected lower projections for output and inflation, although the expansionary effect of the November rate cut was allowed for within the forecast. The largest fall in implied rates came with the first cut in the quarter, even though it was the smallest.

Domestic economic data releases appeared to have a diminishing influence on short-term interest rates as the quarter progressed. Market responses on the day of data releases were limited to a maximum +/- 6 basis points in October and November, reducing to +/- 3 basis points in December for the short sterling contracts (as shown in Chart 3), with the exception of stronger-than-expected November retail sales.⁽¹⁾ Surveys (seen by the market as forward-looking indicators of the economy and so sometimes more significant than contemporaneous data) continued to attract close market attention through the quarter. For instance, both the November GfK Consumer Confidence survey and the CBI Industrial Trends survey for December (released on the same day as November retail sales) were stronger than markets expected, which prompted a temporary rise in implied interest rates. Official and private forecasts for UK growth were mainly revised downwards during the quarter, tending to underpin expectations of lower interest rates.

Trading remained disturbed in the early part of the quarter. Implied volatility—one measure of market uncertainty—was high; for the December 1998 short sterling contract, the peak was reached in early October.⁽²⁾ Implied volatility eased later, and ended the quarter at levels closer to those in the first half of the year.

International events also influenced UK short-term interest rates, though to a lesser extent than domestic developments. Much of the international influence came from the United States. As the Dow Jones Industrial Average (DJIA) weakened, the market expectation that US interest rates would be lowered tended to grow, which is consistent with the positive rolling correlation evident in the second half of 1998 (see Chart 4). A similar relationship emerged between the FT-SE 100 and sterling interest rate expectations. The US Federal Reserve lowered both the federal funds target rate and the discount rate in two separate 25 basis point moves on 15 October and 17 November, leaving them at 4.75% and 4.50% respectively. US implied rates derived from eurodollar futures contracts rose by between 10 and 60 basis points during the quarter (see Chart 5), reflecting recovery in stock markets and continued robust economic data. Implied future interest rates also rose in Japan, by up to 40 basis points as measured by euro-yen futures contracts.

(1) These market changes are measured from close of business on the preceding day to close on the day of publication. October and November's moves relate to the December 1998 contract, and the December moves relate to the March 1999 contract.
 (2) Implied volatilities are calculated from the price of options on futures contracts, and represent the annualised standard deviation of the percentage changes in interest rates.

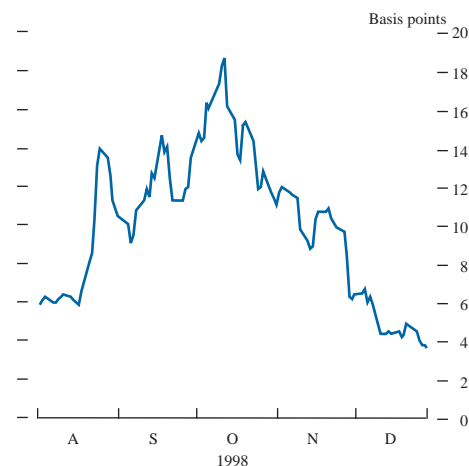
The coordinated cut in euro-area interest rates on 3 December prompted a stronger rally in short sterling futures. Both Germany and France lowered official short-term market interest rates by 30 basis points to 3%. With the exception of Italy, all other prospective euro-area national central banks simultaneously lowered their key money-market rates to 3%. Germany announced that the initiative was based on the economic outlook for the euro area, and that it had been made with the approval of the ECB. On 23 December, Italy moved its discount rate for the second time in the month, lowering it to the common 3% euro-area rate. Three-month interbank rates converged from respective highs of 4.79%, 4.24%, 4.25% and 5.5% in Italy, Spain, Portugal and Ireland at the start of the period (by comparison with 3.56% in Germany and 3.38% in the Netherlands) to year-end levels of around 3¹/₄%.

Long-term interest rates

Government bond markets in industrialised countries were particularly volatile in early October, with yields commonly dropping to low levels, but then spiking sharply higher. Much of this movement was associated with portfolio adjustments, as a result, or in anticipation, of flows from leveraged investors. For much of the period, bond prices continued to move inversely to equities, but they were also influenced by falling short-term interest rates. US and Japanese yields finished the quarter higher, significantly so in the case of the latter.

The disturbed trading conditions of the third quarter continued into the early part of the fourth quarter. Investors still sought the high credit quality offered by government bonds, and this helped to drive ten-year benchmark yields to record lows of around 4.16%, 0.70% and 3.73% in the United States, Japan, and Germany respectively. The yen's sharp appreciation in early October (see the foreign exchange section on page 10) occurred in conjunction with an unwinding of yen carry trades and consequential sales of government bonds, principally US Treasuries, but Bunds and gilts were also affected. During this period, yields on benchmark ten-year US Treasuries, Japanese government bonds (JGBs) and German Bunds spiked around 60, 20 and 45 basis points higher respectively, although a significant 'technical' correction followed. Implied volatilities were unusually high in all these markets during October.

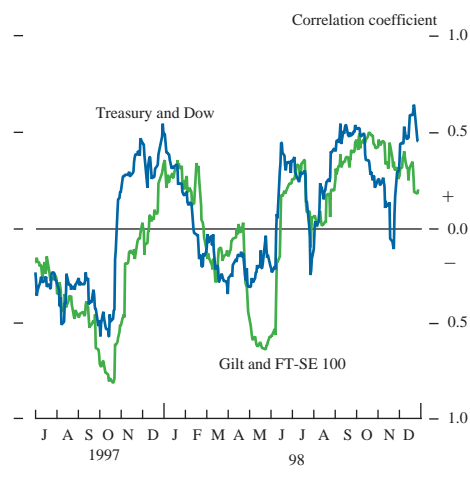
Chart 6
US Treasury five-year on/off-the-run spread



A feature of this period was the volatility of the premium attracted by the most liquid 'on-the-run'⁽¹⁾ benchmarks in the US Treasury market, which typically have a lower bid-ask spread than less liquid 'off-the-run' stocks. The yield spread was already wide compared with historical levels at the start of the quarter, having increased sharply in the run-up to Russia's debt default in August, and again in the market disturbances of late September and early October (see Chart 6). The premium reached a peak of 19 basis points on 15 October ahead of the Fed easing, when acute illiquidity and large-scale selling afflicted the long end of the Treasury market. The liquidity premium steadily declined thereafter, to 4 basis points by year-end. Some market participants suggested that as leveraged funds reduced their capital dedicated to arbitrage/convergence

(1) An 'on-the-run' bond is generally classified as the most recently issued, actively traded, and liquid bond; 'off-the-run' bonds are those issued prior to the most recent refunding, less actively traded, and so less liquid.

Chart 7
30-day rolling correlations between ten-year yields and equities for the United Kingdom and United States



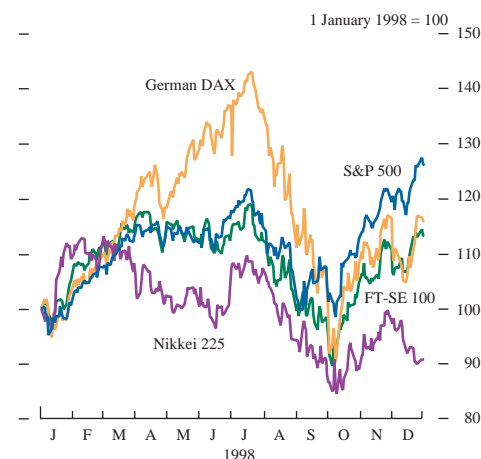
plays, their ability to provide liquidity and assume market risk was reduced, resulting in the widening of trading spreads.

Early in the quarter, bond prices frequently moved inversely to equity prices (see Chart 7). This appeared partly to be a ‘flight-to-quality’ phenomenon, with investors attempting to switch out of equities into bonds, but may also have reflected an expectation that equity price weakness, if severe, would ultimately result in an easier monetary stance, particularly in the United States and the United Kingdom. Anticipation of monetary easing had a powerful impact on US Treasuries in October and November, but as the year-end approached, markets increasingly thought that the easing in the United States had run its course. There was some evidence of switching out of US Treasuries and into equities as US economic performance remained buoyant. By quarter-end, yields had risen by around 30 and 10 basis points at the short and long end of the curve respectively.

Japanese government bond (JGB) yields fell to record lows in early October, then rose gradually in the weeks that followed—and sharply in December. Concern about fiscal and debt management policy affected the market increasingly during the second half of the quarter. Initially, the cabinet agreed a larger-than-expected expansionary budget in mid November; then the government warned of a potential shortfall in central and local taxes, giving rise to increased monthly bond sales. In December, it was announced that the Trust Fund Bureau would cease outright purchases of JGBs from January 1999 onwards. After falling to a record low of 0.70% in early October, the yield on the ten-year benchmark JGB rose to 2.22% at end December, the high for the quarter. This was accompanied by a steepening of the yield curve; the differential between two and ten-year yields rose from 42 to 145 basis points.

Trading in the euro-area government bond markets was significantly influenced by the launch of the euro at year-end. Differentials between different countries’ government bond yields narrowed within the euro area with the prospective elimination of currency risk. Relative valuation increasingly focused on credit and liquidity issues, rather than domestic economic fundamentals. Bond yield convergence within the prospective euro area continued during November and early December, narrowing ten-year differentials against German Bunds to 10–25 basis points, alongside falling Bund yields and the lowering of German interest rates.

Chart 8
Equity indices (in local currencies)



Equities

UK equities rallied in the fourth quarter, in line with international markets, after a weak start. By quarter-end, the FT-SE 100 had nearly fully reversed the previous quarter’s sharp decline, largely mirroring the performance of the US sector. The FT-SE 100 finished 15% higher on the year, but some 300 points (5%) below the year’s record high, reached on 20 July. This was in spite of slowing UK economic growth in the fourth quarter, and continuing investor concern about earnings potential.

The performance of UK equities during the fourth quarter was heavily influenced by international events, especially those in the United States. During October and November, the DJIA responded positively to the easing of US interest rates. The performance of

Chart 9
US dollar exchange rates in 1998

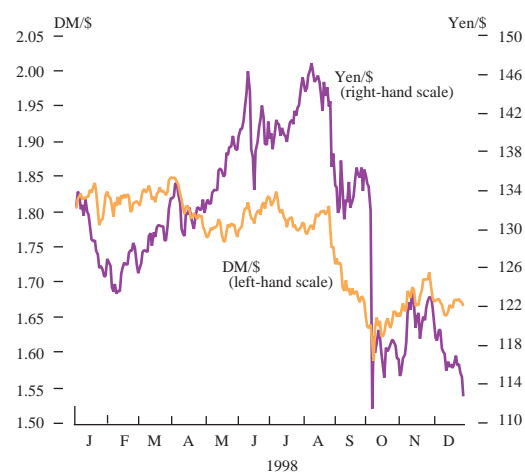


Table A
Emerging market currencies versus the US dollar

	1997		1998		Percentage changes between 30 Sept. and 31 Dec. 1998 (a)
	31 Dec.	30 June	30 Sept.	31 Dec.	
Indonesian rupiah	5,550	14,800	10,700	7,950	34.6
Thai baht	47.1	42.2	39.6	36.4	8.7
Korean won	1,695	1,373	1,391	1,203	15.6
Philippine peso	40.50	41.70	43.75	39.05	12.0
South African rand	4.87	5.97	5.95	5.86	1.6
Brazilian real	1.12	1.16	1.18	1.21	-2.3
Mexican peso	8.07	8.97	10.28	9.92	3.7
Venezuelan bolivar	504.3	553.0	573.5	564.0	1.7

(a) A positive number represents local currency appreciation.

Chart 10
Hong Kong dollar and Brazilian real: twelve-month implied volatility against US dollar



the two indices (in national currencies) was strikingly similar during the quarter; the FT-SE 100 and the Dow index rose by around 16% and 17% respectively during the three-month period. Merger and acquisition activity increased in both markets, which helped to boost valuations. The rebound also reflected broader international developments. Early in the quarter, the Japanese authorities announced a mechanism allowing banks to recapitalise, and news soon followed of banks applying for public funds to boost their capital bases. These events, together with the nationalisation of Long Term Capital Bank, underpinned the Nikkei 225 rally during October and November. The rally was also helped by the mid-November approval of the supplementary budget.

Though the DJIA reached a record high in the quarter (on 24 November) and the FT-SE 100 rebounded, the recovery was not uniform through the three-month period in the world's major stock markets. The Nikkei 225 fell sharply in December, reacting adversely to the strong yen and to concern that the sharp rise in JGB yields might forestall economic recovery. Some Latin American stock markets were showing signs of weakness by the end of the quarter; Brazil's Congress did not endorse some elements of the government's austerity package, upon which the IMF aid package was partly conditioned.

Foreign exchange

(i) International background

The yen strengthened dramatically against other major currencies in early October. The yen's rally may have been influenced by optimism about the prospects for Japanese bank restructuring reforms being passed by the Diet, and concerns about the size of the US current account deficit. But the rapidity and extent of the yen's appreciation also reflected the illiquid market conditions and unwinding of short yen positions associated with the carry trades.⁽¹⁾ The dollar fell from around ¥132 to an intraday low at ¥111.50 between 7 and 8 October, and one-month implied volatility reached an unprecedented level of around 40%. The Japanese yen finished the fourth quarter around 17% stronger against the US dollar and Deutsche Mark.

Chart 9 shows that until the end of November, the US dollar's depreciation against the Deutsche Mark was similar to its fall against the Japanese yen since the start of 1998. But it recovered from its 1998 intraday low against the Deutsche Mark at DM 1.59 (reached on 8 October) to DM 1.67 by the end of the year. Expected interest rate differentials moved in favour of the dollar during the same period, despite cuts in the US target federal funds rate. The recovery in the US stock market towards the end of 1998 was seen by the market as reducing the likelihood of further rate cuts early in 1999.

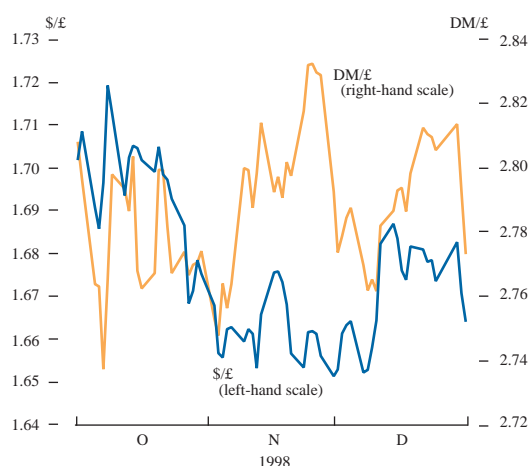
Emerging market currencies generally appreciated against the US dollar during the fourth quarter (see Table A). The appreciation of East Asian currencies against the dollar partly reflected the yen's rise. In Hong Kong, there was a decline in the expected future volatility of the exchange rate (see Chart 10). Latin American currencies generally benefited from a recovery in Brazilian markets. On 13 November, the International Monetary Fund

(1) For further details, see the article by Neil Cooper and James Talbot on pages 68–77.

Table B
Irrevocable euro conversion rates

	Conversion rate
Belgian franc	40.3399
German Mark	1.95583
Spanish peseta	166.386
French franc	6.55957
Irish punt	0.787564
Italian lira	1,936.27
Luxembourg franc	40.3399
Netherlands guilder	2.20371
Austrian schilling	13.7603
Portuguese escudo	200.482
Finnish markka	5.94573

Chart 11
Sterling exchange rates during the fourth quarter



announced the terms of a \$41.5 billion support package for Brazil. The Brazilian stock market recovered in advance of the announcement, and official interest rates were lowered on 12 November: the key lending rate was cut from 50% to 42%. Expectations of a significant devaluation of the Brazilian real lessened in the fourth quarter, and this was reflected in a pronounced fall in twelve-month implied volatility against the US dollar from the high levels in September (see Chart 10). In the event, the real was devalued in January 1999.

The final stages of convergence of the euro-area countries' exchange rates to the pre-announced bilateral parities went smoothly. On 3 December, as mentioned earlier on page 8, euro-area countries lowered their key official interest rates to a common level of 3%,⁽¹⁾ and exchange rates subsequently remained close to their bilateral parities. On 31 December, the irrevocable conversion rates to the euro were announced by the European Council (see Table B). The final official Ecu rates published by the Commission, which can be regarded as the euro's value at its launch, were US\$1.1667 and £0.7055 against the US dollar and sterling respectively.

The oil price weakened further in the fourth quarter, and oil-exporting countries' currencies came under pressure.⁽²⁾ For example, the Norwegian currency weakened to an all-time low against the Deutsche Mark at NOK 4.7368 on 15 December. It recovered somewhat towards the end of the year.

(ii) Sterling

Sterling's effective exchange rate depreciated by 3½% during the fourth quarter. Chart 11 shows sterling's decline against the US dollar and Deutsche Mark (both by around 2%–2½%) during the quarter. The quarter can be split into three distinct phases: from the beginning of October to the start of November, sterling depreciated considerably; from then through to Christmas, sterling largely reversed that fall; and finally, sterling depreciated further at the end of the year.

Three main factors affected sterling's exchange rate in the fourth quarter. First, sterling's 17½% fall against the yen accounted for more than one third of the decline in the effective exchange rate index during the fourth quarter.

Second, interest rate differentials moved significantly against sterling, although sterling's immediate reaction to reductions in the repo rate was limited. The larger decline in UK interest rates (both at the short end and further out along the yield curve), compared with overseas interest rates, contributed to sterling's depreciation in the fourth quarter.

Third, there was a significant unwinding of arbitrage positions relating to the Ecu market premium over its basket of currencies. The official Ecu was a basket of twelve currencies, in which sterling had a weight of roughly 12%. On 1 January 1999, the Ecu was to convert one-for-one into euros. Until that date, holders of private Ecu were exposed to sterling to the extent of roughly 12% of their Ecu position, while those who were short of private Ecu

(1) Italy lowered its discount rate to 3.5%, and subsequently cut it to 3% on 23 December.

(2) See 'The international environment' article on pages 20–32 for discussion of commodity markets.

Chart 12
Market Ecu premium over basket of currencies

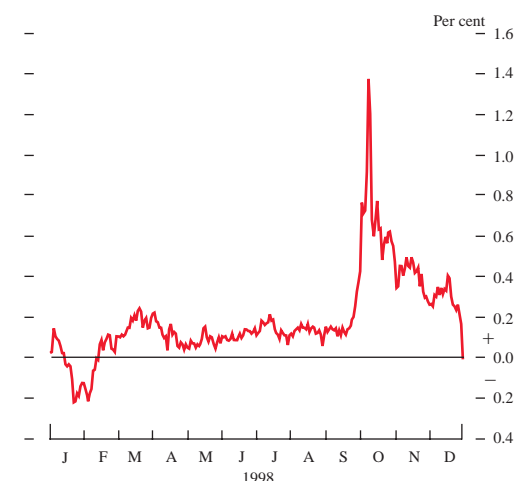


Table C
Official transactions in gilt-edged stocks

£ billions; not seasonally adjusted

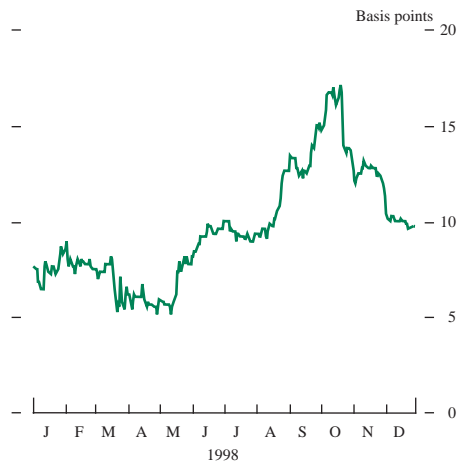
	1998/99	1998		
	Apr.-Sept.	Oct.	Nov.	Dec.
Gross official sales (+) (a)	6.4	0.1	0.8	0.0
Redemptions and net official purchases of stock within a year of maturity (-)	-2.7	0.0	-3.8	0.0
Net official sales	3.7	0.1	-3.0	0.0
of which net purchases by:				
Banks (b)	5.1	-0.6	-4.4	-0.6
Building societies	-0.2	0.1	-0.1	0.0
M4 Private sector	-5.2	-1.0	1.2	1.0
Overseas sector	3.0	1.6	0.3	-0.4
LGs & PCs (c)	1.0	0.0	0.0	0.0

(a) Gross official sales of gilt-edged stocks are defined as official sales of stock with more than one year to maturity, net of official purchases of stock with more than one year to maturity, apart from transactions under purchase and resale agreements.

(b) Including the central bank.

(c) Local Government and Public Corporations.

Chart 13
UK ten-year gilt: on/off-the-run spread



were exposed to sterling in the opposite way, to the same extent. At the turn of the year, these exposures to sterling (and the Danish krone and the Greek drachma, which were also component currencies of the Ecu)⁽¹⁾ were transformed automatically into exposures to the euro. Those holders of Ecu who wanted to retain their exposure to sterling had to buy sterling against DM or some other participating currency, while those who were short of Ecu and wanted to retain their exposure to sterling had to sell sterling against DM. To achieve precise retention of net exposure, these transactions had to be carried out on 31 December at the exchange rates used to calculate conversion rates into the euro.

Since the private Ecu was a synthetic currency, long and short positions in it were equal and there was no intrinsic reason why transactions in sterling on 31 December should have been expected to generate pressure on the exchange rate in one direction rather than the other. However, the private Ecu had for some time been trading at a premium to the official Ecu (see Chart 12), and active market participants had borrowed private Ecu, in the expectation of convergence at the end-year, in order to generate low-cost funding. These market participants needed to sell sterling to maintain their currency exposures. In practice, these sales began well before the end of December, but their effect on the exchange rate was particularly noticeable towards the end of the year, as trading volumes diminished and such sales were no longer offset by corporate demand. This helps to explain the 1½% depreciation in sterling during the last two days of 1998.

The gilt-edged market

Conventional gilts

The gilt market, like other major bond markets, experienced some turbulence in October. Yields then fell to their lowest levels since the 1950s. The fall in gilt yields was large by comparison with other major bond markets, where yields in some cases had risen. Although remaining downward-sloping, the yield curve disinverted slightly during the quarter.

During the first half of October, yields fell to new lows for the year, and then spiked sharply higher; from the low-point, the yield on the ten-year gilt rose by nearly 70 basis points in just over a week. The gilt yield curve (given by the ten to two-year spread) disinverted by about 40 basis points. At that time, the sharp moves experienced in the gilt market were broadly common to the other major bond markets, as a result of the unwinding of yen carry trades by leveraged funds. Measures of implied volatility were high, but declined to more usual levels thereafter.

Investors reassessed the value of liquidity across a range of marketable instruments. Just as in the US Treasury market, there is typically a liquidity premium in the gilts market, so that the yields on the most widely held and traded stocks are generally lower than on comparable but less frequently traded stocks. In the past, the yield spread between the most and less liquid gilts has typically averaged around 5 to 6 basis points. Last autumn, this increased to around 17 basis points for UK gilts (see Chart 13), as investors sold instruments that they feared would become difficult to trade. By

(1) Sterling, the Greek drachma and the Danish krone were the three currencies in the Ecu basket not converting to euro; sterling had a much larger share in the basket than the other two currencies.

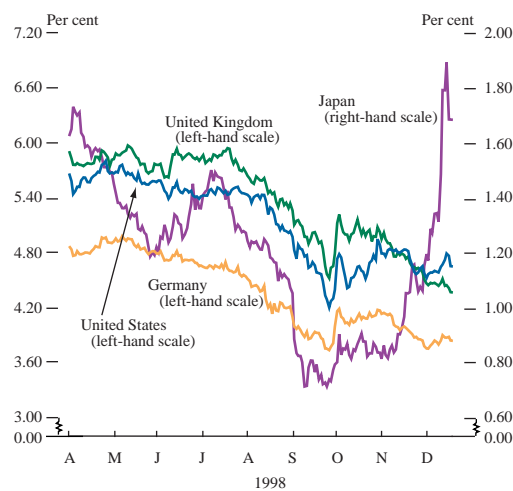
year-end, confidence had returned, but the liquidity premium did not fall to pre-turbulence levels.

A number of factors help to explain the fall in gilt yields since their early October high:

- Market confidence that interest rates would fall grew during the quarter, influenced by the easing of interest rates in the United Kingdom, United States and on the Continent, and the conjecture of lower growth prospects.
- Following the reduced PSNCR forecast in the 3 November pre-Budget, the Debt Management Office (DMO) cancelled the conventional auction scheduled for March 1999.
- Underlying demand for gilts remained steady, and participants spoke of reinvestment of large redemption and coupon payments.
- The launch of the euro may have played a role. As yields within the euro area converged, largely on German levels, the relative yield attractiveness of gilts increased. There was some suggestion in markets that gilts were used as a 'hedge against uncertainty' while the euro was being launched, and spreads over Bunds declined over the quarter.

By the end of the quarter, two, ten and thirty-year benchmark gilt yields had fallen by 77, 54, and 30 basis points to 4.89%, 4.36%, and 4.26% respectively, reducing the degree of inversion of the curve. The fall in yields for the gilt market was large when measured against moves in other major markets (see Chart 14). In the middle of the quarter, ten-year gilt yields fell below ten-year US Treasury yields for the first time since 1985/86.

Chart 14
International ten-year government bond yields



During the third quarter, net investment fell sharply to £2.9 billion from £19.0 billion in 1998 Q2 and £13.9 billion in 1997 Q3. There was heavy net disinvestment by UK institutions during the third quarter of last year, for the first time since the third quarter of 1991.⁽¹⁾ Institutions sold a net £4.5 billion of gilts during the period, just over 2% of their total stock of gilts. This compares with net investment by institutions of £3.2 billion and £4.9 billion in the previous quarter and the same quarter of 1997 respectively. There was a record £2.7 billion net disinvestment in gilts by long-term insurance funds, which represented about 3% of their total gilt stock. General insurance funds were the next-largest net sellers of gilts, at £1.4 billion, with pension funds (self-administered) and trusts making up the balance during the period.

UK institutions added net £3.1 billion, £2.9 billion, £0.8 billion, and £0.6 billion of UK corporate, overseas, other, and short-term assets respectively to their portfolios in the third quarter of 1998. The increase in overseas assets included a net purchase of £3.2 billion in government securities.

Index-linked gilts

Index-linked gilt (IG) yields largely followed the move in nominal yields during the quarter, falling then rising sharply in early

(1) 'Institutions' comprise insurance companies, pension funds, and trusts.

Chart 15
UK implied spot inflation rates



Chart 16
UK implied spot inflation rates as at
30 September and 31 December

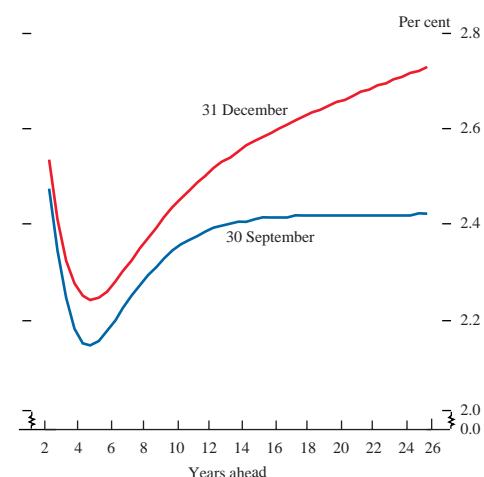
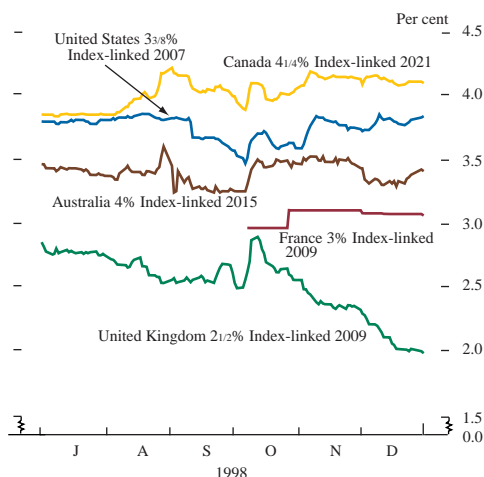


Chart 17
Real yields on index-linked gilt yields



October, only to decline steadily throughout the rest of the period. Record lows were reached at end-year—the ten-year IG yield dipped below 2% for the first time since IGs were launched in 1981, down by 63 basis points during the three-month period. Implied inflation rate expectations, derived from the index-linked and nominal (zero-coupon yield) curves were heavily influenced by the abrupt market moves of early October. After touching record lows of around 2% in early October, implied inflation rates rose to around 2.75% in the first half of November (see Chart 15). As confidence began to return to financial markets following the US and UK interest rate cuts, institutional demand for IGs re-emerged. The UK market may also have been supported by continuing limited government funding needs and the successful first auction. Real yields on IGs fell, whereas in the same period, real yields on other government bond index-linked markets were little changed. With conventional gilt yields also falling, implied inflation stabilised just below the Government's 2½% target in December.

Although the financing requirement was revised down following the Chancellor's pre-Budget Report on 3 November, the DMO announced that it would proceed with the two scheduled index-linked auctions to meet its Government commitment of a minimum index-linked issuance of £2.5 billion cash for 1998/99. It also announced that it would be prepared to issue a further £0.5 billion via taps, if this was necessary to relieve any overall shortage. Consequently, planned sales of IGs for the rest of the year were between £1.6 billion and £2.1 billion in cash terms. The first auction was held on 25 November for £450 million nominal of 2½% 2013. The common strike price of £183.20 gave a real yield of 2.42% (using the market convention of assuming a 3% inflation rate), and cover was 2.29 times. The other auction, for £450 million 2½% 2024, took place on 27 January.

In October, the United States re-opened its ten-year inflation-linked note; \$8 billion was sold at a yield of 3.65%, with cover of 1.92 times. From 1999, the United States will auction a ten-year in January and July, and a thirty-year in April and October. France also auctioned its ten-year OATi for the first time in November. Although cover was at 2.8 times, the yield was a little higher at 3.16% than the 2.98% achieved when the bonds were initially syndicated in September. However, the yield has subsequently fallen to just over 3% by the end of the year—the bonds are the only euro-denominated index-linked bonds and, as a result, may have attracted a premium.

Strips

The total nominal amount of potentially strippable stock rose from £95 billion at end September to £98.5 billion at end December. This followed the November conversion of the non-strippable 8% Treasury Stock 2009 gilt into the strippable 5¾% 2009 Treasury Stock gilt. Turbulence and risk-aversion in world financial markets deterred activity, particularly in less liquid instruments. Consequently, the percentage of stock held in stripped form fell slightly in the last quarter of 1998, to 2.5% of outstanding strippable gilts, and average weekly strips turnover fell to £77 million from £150 million in Q3. Strips turnover continues to average less than ½% of turnover by value in the rest of the gilts market.⁽¹⁾

(1) A section on strips on pages 38–39 looks in more detail at activity and pricing in the UK strips market.

Table D
Gilt issuance

Auctions				
Date	Stock	Amount issued (£ millions)	Cover	Yield at lowest accepted price
25.11.98	2½% Index-linked Treasury Stock 2009	450	2.29	2.42%

Note: Real yields are calculated using a 3% inflation assumption.

Table E
Average daily money-market shortages

£ millions		
1996	Year	900
1997	Year	1,200
1998	Year	1,400
	October	1,900
	November	1,700
	December	1,300

Sterling market operations

Open market operations

The Bank's open market operations (OMOs) proved relatively smooth during the final quarter of the year, despite the turbulence and illiquidity that characterised much of the international financial markets. The stock of money-market refinancing held at the Bank rose sharply in October to £15 billion, because of the seasonal CGNCR surplus that month. The stock fell in November and December, ending the year at £10 billion. As Table E shows, the daily shortages were consequently high in October, at an average of £1,900 million, and then fell in the next two months.

In December, the Bank conducted swaps out of sterling into euro to finance its provision of €3 billion of intraday liquidity, on a secured basis, to participants in CHAPS euro, as part of the arrangements for TARGET. The net money-market effect of the provision of sterling under these swaps was to reduce the stock of refinancing by around £2 billion. These swaps will be unwound from April 1999 onwards, as Bank of England Euro Bills are issued to act as a permanent source of the financing of intraday liquidity in CHAPS euro.

During the quarter, the Bank announced that from 26 October 1998, it was extending the collateral that it would accept in OMOs (and in the real-time gross settlement system) to include certain sterling bonds issued by other central governments and international financial institutions, held in the central gilts office (CGO). In due course, the pool of eligible assets will be widened further to include certain euro-denominated securities issued by these entities.⁽¹⁾ Towards the end of the quarter, the final discount house emerged from the transitional arrangements put in place at the time of the reform of the Bank's OMOs in March 1997.

The share of instruments used in the Bank's refinancing remained broadly as in previous quarters. During October, the share of gilt repo in the refinancing rose, as repo often acts as the 'swing' element when refinancing rises sharply. The Bank also made use of foreign exchange swaps to provide sterling liquidity. There were £3 billion of swaps outstanding at the end of October, when the stock of refinancing was high; the amount of swaps outstanding fell to £1.1 billion at the end of the year as the stock of refinancing fell.

In December, the DMO issued a paper outlining its plans for a new framework for government cash management.⁽²⁾ The paper gives details of how the DMO and Treasury intend to operate government cash management when it transfers from the Bank to the DMO. The DMO's operations are intended to offset the

(1) For more detail on this change and on the Bank's OMOs in 1998, see the article on pages 33–39.
(2) *The Future of UK Government Cash Management*, UK Debt Management Office, 4 December 1998.

Table F
Influences on the cash position of the money market

£ billions; *not seasonally adjusted*

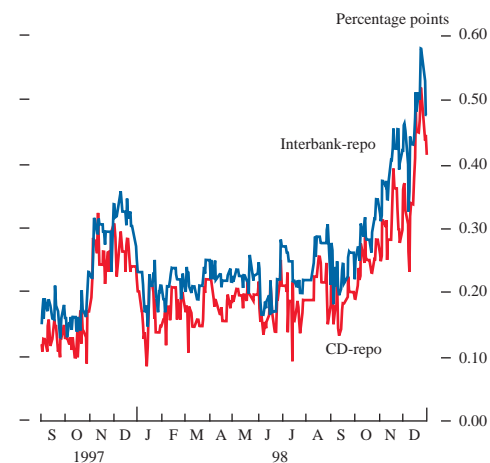
Increase in settlement banks' operational balances (+)

	1998/99	1998		
	Apr.-Sept.	Oct.	Nov.	Dec.
CGNCR (+)	5.2	-8.0	1.6	2.5
Net official sales of gilts (-) (a)	-3.7	0.5	2.4	0.0
National Savings (-)	-0.6	-0.3	0.0	0.1
Currency circulation (-)	-1.0	-1.7	1.0	-3.2
Other	3.2	0.5	-1.3	4.3
Total	3.2	-8.8	3.7	3.7
Outright purchases of Treasury bills and Bank bills	-1.0	0.8	-0.1	-0.6
Repos of Treasury bills, Bank bills, and British Government stock and non-sterling debt	-1.9	5.6	-2.0	-2.4
Late facilities	-0.2	0.1	-0.2	0.0
Total refinancing	-3.0	6.5	-2.2	-2.9
Foreign exchange swaps	-0.1	2.4	-1.5	-0.5
Treasury bills: Market issues and redemptions (b)	0.0	0.1	0.0	0.0
Total offsetting operations	-3.1	8.8	-3.7	-3.4
Settlement banks' operational balances at the Bank	0.0	0.0	0.0	0.3

(a) Net of transactions by the central bank.

(b) Issues at weekly tenders plus redemptions in market hands. Excludes repurchase transactions with the Bank (market holdings include Treasury bills sold to the Bank in repurchase transactions) and tap Treasury bills.

Chart 18
Interbank and CD offer rates vs GC repo (three months)



influence of government spending and revenue flows on overall money-market liquidity.

Gilt repo market

According to the Bank's regular market survey, the value of repo outstanding was £94 billion at end November, compared with £103 billion at end August. The fall may be attributed to the reduction in repo activity towards the end of the year, which may have reflected two factors:

- In the wake of third-quarter market disturbances, participants may have become more risk-averse, reluctant to enter fresh deals and keen to end the year by booking profits (or limiting losses) already made.
- A reduction in balance sheet positions as the year-end approached.

Figures showed that reverse repo remained static over the period from August to November, at £89 billion.

The proportion of transactions in overnight to eight-day regular and reverse repo mainly fell in the November quarter, by comparison with the earlier August period. This may have reflected a reluctance to repo over this period due to some participants' financial year-ends falling in November. In addition, the need for short-term secured borrowing may have been lower than in August. In late summer, the market turmoil and the resulting credit concerns were at their height, and these concerns tailed off to some extent by the end of November.

Chart 18 shows how the spread between three-month interbank deposit rate and the generalised collateral (GC) repo rate widened over the quarter. At the start of the quarter, the spread was 22 basis points; it peaked at 58 basis points, and ended at 48 basis points. A similar trend was noted for one-month rates. In the fourth quarter of 1997, the peak spread for three-month repo versus interbank was around 35 basis points.

The widening of these spreads in the fourth quarter may have reflected greater perceived interbank risk, with a reduced willingness to lend unsecured, and a greater appetite for asset-backed lending. There was also a desire to hold more liquidity, whether raised by unsecured borrowing or reverse repo, over the euro conversion weekend. There were reports of some interbank credit lines being reduced, and this too may have contributed to spread-widening. Technical factors tend to be particularly influential at the year-end, when interbank and CD rates are usually pushed higher by a reduced willingness to acquire assets with a high capital weight, and a desire to reduce balance sheet holdings. But overall, the sterling interbank market functioned smoothly during the fourth quarter. Since the New Year, spreads have narrowed, consistent with the usual seasonal pattern.

This year's trend of lengthening repo maturities was continued in the fourth quarter, as shown in Table G. Outstanding repos of maturity three months or more represented some 22% of the market in November, little changed from the previous two quarters, but up quite sharply from the 1997 average of 6%. This is similar to the

Table G
Maturity breakdown of outstanding repo and reverse repo over time^(a)

Per cent	On call and next day	2–8 days	9 days to 1 month	1–3 months	3–6 months	Over 6 months
Repos						
1996 year average (b)	20	34	26	15	4	1
1997 year average	24	24	26	20	5	1
1998 Feb.	14	23	25	19	11	7
May	20	24	19	19	12	8
Aug.	27	15	17	18	11	11
Nov.	23	18	20	16	12	10
Reverse repos						
1996 year average (b)	21	31	19	23	4	2
1997 year average	19	25	25	23	6	2
1998 Feb.	14	29	23	19	10	5
May	22	28	17	13	12	10
Aug.	28	20	18	15	7	12
Nov.	24	14	19	20	11	11

(a) From the data reported under the voluntary quarterly arrangements.
 (b) The 1996 year average is calculated by using data from May, August and November.

Chart 19
Sterling swap spreads—ten and two years^(a)



(a) These swap spreads are with reference to benchmark gilts.

pattern emerging for reverse repos. Outstanding reverse repos of maturity three months or more represented some 22% of the market in November, up slightly on the previous quarter, and up from the 1997 average of around 8%. This heavier use of longer-dated regular and reverse repo reflects new business entry into this area, rather than utilisation of the middle-maturity area of the market. A detailed account of the repo market's evolution is given in the article on sterling wholesale markets on pages 33–39.

Credit markets

Swap spreads

After widening sharply in September and early October, swap spreads over gilts narrowed somewhat in the fourth quarter, but remained wide in the context of a longer run of data. The move in swap spreads was largely in line with corporate bond spreads (see the section on sterling bond issues). The decline may have reflected three main factors:

- Falling short-term interest rates may have made investors more willing to receive fixed, rather than floating, coupon payments.
- A large number of high-grade sterling fixed-rate bond issues (by supranationals, sovereigns, and sovereign-backed) were brought to the market during the quarter. On issue, the borrowers simultaneously entered into interest rate swap transactions, so as to receive the relatively high fixed interest rate and to pay the relatively cheap floating interest rate. This increased demand to receive fixed-rate interest helped reduce the swap spread over gilts.
- Market confidence that leveraged-fund market disturbances, which peaked in early October, were diminishing.

Corporate bond and swap spreads had stabilised by the end of the year but remained well above the levels in the first half of the year, though significantly lower than the October peak.

Sterling bond issues

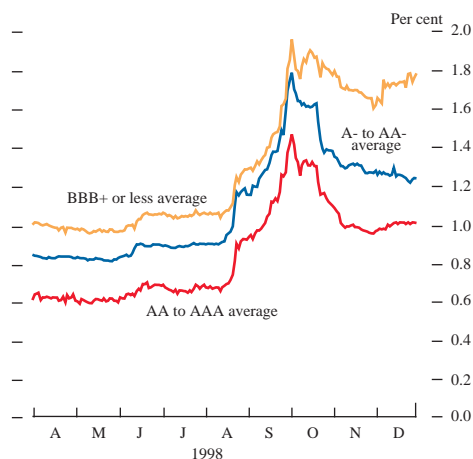
Total fixed-rate issuance in the quarter was £12 billion, bringing total issuance for calendar 1998 to a record £39 billion, up from £31 billion in 1997, itself a record. Short-dated issues in the quarter amounted to £5.5 billion, and issuance of mediums and longs totalled £3 billion and £3.5 billion respectively.⁽¹⁾

As in previous quarters, low gilt supply and relatively wide swap spreads have stimulated the supply of eurosterling issues, particularly from higher-rated borrowers whose issues are viewed as closely comparable with gilts. The reasonably stable sterling exchange rate also comforted investors. In addition, there were large reinvestment flows in the quarter, resulting from a high level of redemptions of both gilts and eurosterling issues (as the large number of five-year bonds issued in 1993 matured), as well as the 7 December coupons on the strippable gilts.

The market turbulence stemming from the economic and financial problems in the Far East and the Russian debt default continued

(1) Short-dated issues represent maturities of up to seven years, mediums seven to fifteen years, and longs over fifteen years.

Chart 20
Average yields spreads: UK companies vs benchmark gilts



into the fourth quarter, and debt issuance was again mainly by AAA-rated borrowers (supranationals, sovereigns or sovereign-backed) at relatively wide spreads over gilts. As a result of the market uncertainty and reduced liquidity, most issues in the early part of the quarter were pre-placed re-openings of existing issues, timed to take advantage of attractive swap rates (enabling the fixed-rate borrower to achieve cheap floating-rate finance).

A recovery in equity markets, together with increasing expectations of monetary easing and the smooth completion of Long Term Capital Management's auctions of its swap positions helped to restore some market confidence. As heavy swap-driven issuance also depressed swap rates, corporate bond spreads began to narrow and investors began to move back down the credit curve, switching out of the heavily supplied AAA-rated bonds into lower-rated bonds. Towards the end of October, market conditions were such that Thames Water was able to bring the first AA-rated sterling bond since end July. The spread of 180 basis points over the gilt was substantially higher than the 88 basis points achieved by the similarly rated Anglian Water in July, but was in line with the prevailing secondary market conditions. The issue met good demand, and the issue was increased from £200 million to £330 million, encouraging further corporate borrowing in subsequent weeks, mainly by higher-rated names, well known to UK domestic institutions, such as Tesco, BMW, Safeway, Railtrack, Bass, United Biscuits and Anglian Water.

In addition to the substantial fixed-rate issuance, £1.9 billion was issued in floating-rate notes, mainly securitised or asset-backed deals via highly rated special-purpose vehicles, or benefiting from insurance guarantees.

HM Government euro and Ecu issues

The Bank of England, on behalf of HM Treasury, held regular monthly auctions of euro and Ecu Treasury bills during the fourth quarter, each comprising ECU 200 million of one-month, €500 million of three-month and €300 million of six-month bills. The auctions continued to be oversubscribed, with cover averaging 4.2 times the amount on offer. During the fourth quarter, bids were accepted at average yields of 12, 20 and 22 basis points below the Ecu Libid rate for the one-month, three-month and six-month maturities respectively. Secondary market turnover averaged €1.0 billion a month in the fourth quarter and €1.1 billion a month for 1998 as a whole. There are currently €3.5 billion of UK Government euro Treasury bills outstanding.

On 20 October, the Bank reopened the UK Government Euro Treasury Note maturing on 29 January 2001 with a further auction for €500 million, raising the amount of this Note outstanding with the public to €2.0 billion. There was strong cover at the auction of 4.5 times the amount on offer, and accepted bids were in a range of 3.34%–3.36%. The total of Notes outstanding with the public under the UK Note programme thus rose from €5.5 billion in the second quarter to €6.0 billion in the fourth quarter of 1998.

Bank of England Euro Bills

On 5 January 1999, the Bank of England announced that during the course of 1999, it intended to take over from HM Treasury as the issuer of Euro Bills. The Bank plans to make its first issue of

Bank of England Euro Bills in April 1999. Apart from the change in issuer, there will be no other changes to the main features of the programme. The proceeds of Bank of England Euro Bills will be available to the Bank to finance its provision of intraday liquidity, on a secured basis, to participants in CHAPS euro, as part of the arrangements for TARGET. This source of financing for the intraday liquidity will replace the swaps out of sterling mentioned in the open market operations section above.

HM Treasury will replace the part of the financing of the Government's foreign exchange reserves that was previously provided by euro Treasury bills by foreign currency swaps out of sterling. The additional sterling financing requirement that this will create will be taken into account by HM Treasury in setting its sterling financing plans for 1999/2000. HM Treasury will continue to issue Euro Treasury Notes.