Markets and operations

- *The Bank's repo rate was raised by 25 basis points to 7.5% on 4 June.*
- *Sterling markets showed marked movements at times during the second quarter of 1998, in response to both international and domestic influences.*
- *The yen weakened sharply.*
- *Some minor, mainly technical, adjustments were made to the procedures for the Bank's open market operations.*

Overview

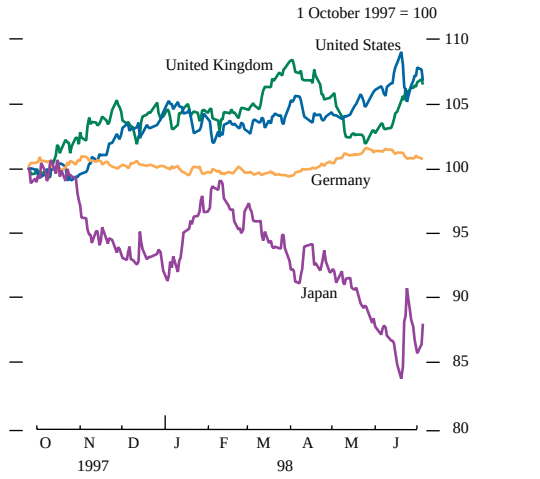
Sterling markets showed quite marked movements at times during the second quarter, in response to both international and domestic influences. Internationally, continuing problems in the Japanese economy and financial sector, and the associated weakness of the yen, were the major influences (see Chart 1). As the yen weakened, other currencies in the Asia and Pacific region also came under pressure at times. Financial market pressures were experienced in China, Pakistan, Russia and South Africa. Australia, Canada and New Zealand were also affected by the Asian crisis and by falls in commodity prices.

These international influences had two effects. First, the potential deflationary effect of slower growth in parts of the Asia and Pacific region led to a fall in international bond yields. Second, concern about financial fragility and credit considerations in some countries led to a 'flight to quality' to government bonds in western countries, as investors sought the safety and liquidity that these securities offered.

The sterling markets were affected by these international influences, especially during the first half of the quarter. For most of June, however, sterling markets were more affected by domestic factors—the rise in the Bank's repo rate and stronger-than-expected macroeconomic data.

UK and US equity markets mostly traded in a narrow range during the quarter, after very sharp rises in Q1. Continental European equity markets continued to outperform others, as markets anticipated faster economic growth and higher corporate earnings.

Chart 1
Effective exchange rate indices: United Kingdom, United States, Germany and Japan



Market developments

Short-term interest rates

The sterling money markets were relatively calm during the first two months of the quarter, with little change in actual or expected short-term interest rates. In June, however, sterling markets were unusually volatile, as they digested the news of a rise in the Bank's repo rate on 4 June, from 7.25% to 7.5%, and a number of

Chart 2
UK three-month Libor cash and futures markets

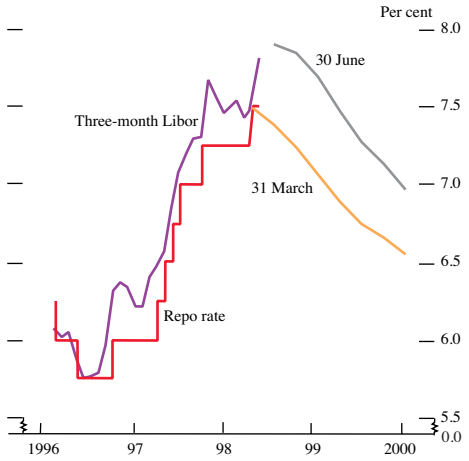


Chart 3
Interest rate announcements: change in nearest short sterling contract

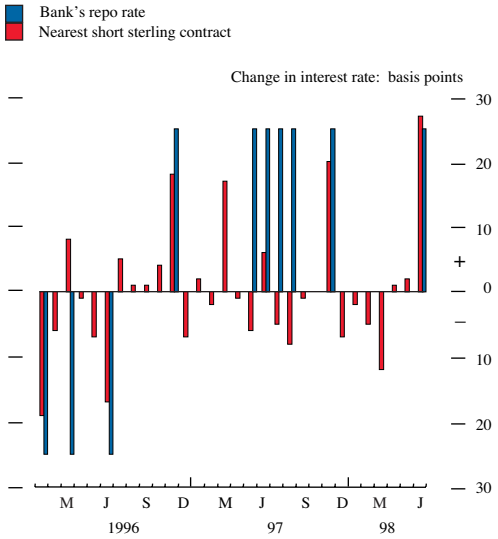
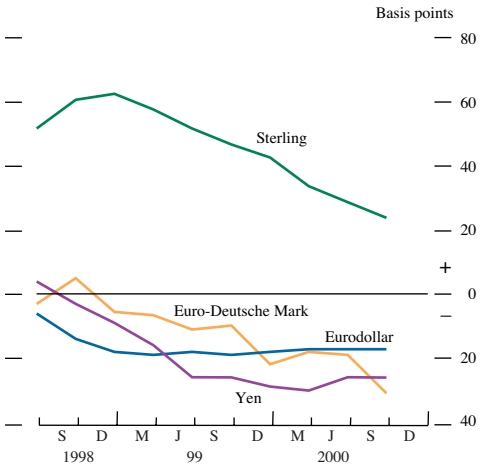


Chart 4
Changes between end March and end June in three-month interest rates implied by futures contracts



stronger-than-expected macroeconomic data releases later that month. Subsequently, interest rate expectations for the end of the year, derived from short sterling futures prices, rose by some 60 basis points. Chart 2 shows how much the short-term money-market yield curve moved up in the quarter.

The change in interest rate sentiment during June was particularly sharp. Before the monetary policy committee (MPC) meeting on 3–4 June, very few economists or traders thought that the repo rate would rise. Chart 3 shows one measure of the extent to which June's rate rise came as a surprise to the market: the nearest short sterling futures contract price fell—and so rate expectations rose—by more than the whole 25 basis point rise in the repo rate.

After the repo rate rise, the market was particularly nervous for the rest of the month, and rate expectations rose sharply in the next few weeks in response to stronger-than-expected data. The market also focused on comments and speeches by MPC members. The response of market interest rates to news depends on the market's perception of the significance of that news, and how it expects that the MPC might respond to it. There was a particularly sharp change in interest rate expectations in response to the RPI data, released on 16 June, and the average earnings data, released on 17 June. The accompanying box on pages 192–93 looks at the effect of other data releases on short-term interest rate expectations over a longer period.

The rise in short-term UK interest rate expectations in the quarter contrasted with falls in rate expectations in most of the other major international economies (see Chart 4). The fall in US rate expectations during the quarter reflected the market's interpretation of three developments: the weakness of the yen (which in turn reflected the market's view of the weakness of the Japanese economy and the likelihood of policy action); the effect of the Asian economic crisis; and the relatively low level of US inflation. The markets perhaps felt that, with the yen falling sharply during the quarter, and with the prospect that the Asian crisis might spread to other countries in the region, the US authorities would be unlikely to raise interest rates in the short term. Relatively benign domestic inflation data reinforced that view, although a number of commentators suggested that, on purely domestic grounds, the Federal Reserve was close to the point when rates might need to rise.

The focus of European short-term interest rate expectations continued to be the level at which EMU countries' rates would converge at the beginning of 1999. Overall, rate expectations for March 1999 (the first contract after the start of EMU) fell by about 5 basis points during the quarter, with three-month rates now expected to converge at, or just below, 4%.

Long-term interest rates

Government bond markets in most of the major countries benefited from further 'safe-haven' flows in the second quarter as a result of the problems in East Asia, Russia, South Africa and Pakistan. Disappointment about Japan's measures to stimulate its economy, reflected in the depreciation of the yen, raised concerns about China's possible response and the deflationary impact on western economies. Economic problems in Russia and South Africa also

Chart 5
International ten-year bond yields

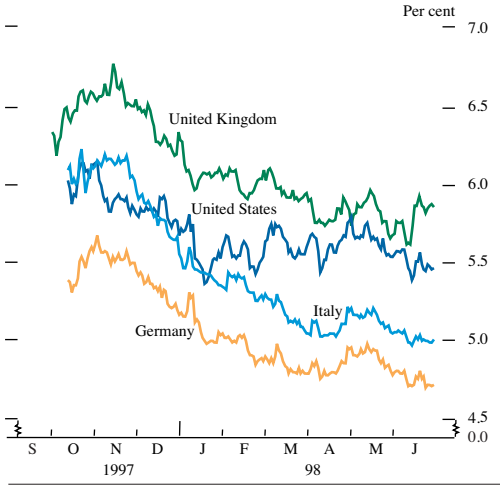


Table A
Official transactions in gilt-edged stocks

£ billions: *not seasonally adjusted*

	1997/98	1998		
	Apr.–Mar.	Apr. (a)	May	June
Gross official sales (+) (b)	25.8	0.2	3.4	0.2
Redemptions and net official purchases of stock within a year of maturity (-)	-19.5	-0.9	-1.0	0.0
Net official sales (c)	6.3	-0.7	2.4	0.2
of which net purchases by:				
Banks (c)	-7.7	0.4	1.2	0.0
Building societies (c)	0.4	-0.2	0.1	0.0
M4 Private sector (c)	10.5	-1.4	-0.5	-2.3
Overseas sector	2.7	0.4	1.3	1.1
LAs & PCs (d)	0.4	0.0	0.3	1.4

(a) From April 1998, gilt sales are no longer measured net of changes in holdings by the Issue Department and Banking Department of the Bank of England. This follows the creation of a central bank sector in the UK statistical framework, under the 1995 European System of Accounts. Transactions by the central bank sector are included with those by banks.
(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.
(d) Local Authorities and Public Corporations.

weighed on confidence. As a result, bond yields fell further (see Chart 5).

In the United States, the ten-year par yield ended the second quarter around 15 basis points lower, at 5.44%. During June, the ten-year yield had reached a record low of 5.36%. US yields have fallen most at long maturities, causing the yield curve to flatten further. This has also been a feature of other bond markets: the UK yield curve inverted further and the German curve flattened. A box in the May 1998 *Quarterly Bulletin* discussed some of the implications of this.(1) In short, yield-curve flattening, which has been a feature of the UK (and US) bond markets for the past year, is consistent with a view that the market expects a slowdown in economic growth in the coming year in the United Kingdom and United States.

In the ERM countries, long-term interest rates also fell modestly. The successful negotiation of an eleven-member EMU at the beginning of May led to a greater expectation of interest rate reductions in some countries (Spain, for example, cut its repo rate immediately after the agreement). But uncertainty remained about whether interest rates would need to rise in lower interest rate countries, and consequently the convergence in long-term interest rates was more limited in the second quarter than in the first. For example, German ten-year par yields fell by 25 basis points to 4.60%, and the comparable yield on Italian bonds fell by 9 basis points to 4.95%.

Gilt-edged market

Both international and domestic factors supported gilts prices during the second quarter. Safe-haven flows, related to the Asian crisis, were mainly into the short end of the gilt market, where yields are highest. Gilts continued to be supported by lower prospective gilt supply: in April, there was a net repayment by the public sector of £3.3 billion; and the Chancellor's June *Economic and Fiscal Strategy Report* forecast that the debt to GDP ratio would continue to fall in the next few years. Reflecting these plans, the UK Debt Management Office (DMO) announced the cancellation of an auction scheduled to take place in November/December this year. The redemption of some £8.2 billion of 7¼% Treasury Stock 1998 also led to greater demand for other gilts, as market participants reinvested the proceeds from the redemption. These factors helped the ten-year par gilt yield fall to 5.60%, its lowest since the 1960s. The strength of sterling has also encouraged buying of gilts by international investors for much of the year, though as sterling began to fall in April and May, this influence began to fade.

Domestic macroeconomic factors became more prominent in the gilts market toward the end of the quarter. The MPC's decision to raise rates in June was not expected by the market, and yields rose at shorter maturities. However, longer-maturity gilts remained well supported. Subsequently, strong data releases in June led to a greater expectation that the MPC might raise rates in July, causing gilt yields to rise across all maturities, but especially at the short end. These factors led to earlier price rises being partly reversed near the end of the quarter, and the ten-year par gilt yield ended the quarter 8 basis points lower, at 5.82%.

(1) See the May 1998 *Quarterly Bulletin*, page 105.

News and the sterling markets

There were some large daily movements in UK interest rates in June 1998, particularly after the MPC's announcement of a rise in the Bank's repo rate and after publication of the RPI data. This box considers how unusual these movements were, and which news items have tended to move the markets in recent years.

Market movements

Table 1 shows the distribution of daily changes in the three-month interest rate implied by the nearest short sterling contract.(1) The table covers the period since the beginning of 1996, and shows the distribution of changes: (a) on all working days, (b) on days on which selected data series were published by the ONS—retail sales, industrial production, RPIX, average earnings, producer prices and GDP, and (c) on days on which interest rate announcements were made (including 'no change' announcements) following Chancellor/Governor or MPC meetings.

Table 1
Percentage distribution of daily changes in rates(a)

Percentages, except for the number of days

	All working days	Selected data days	Interest rate days
Rate rose by 25 basis points or more	0.2	0.0	3.0
Rate rose by between 15 and 25 basis points	1.8	2.4	10.0
Rate rose by between 5 and 15 basis points	5.0	9.5	0.0
Rate moved within plus or minus 5 basis points	86.1	76.8	70.0
Rate fell by between 5 and 15 basis points	6.1	8.3	16.7
Rate fell by between 15 and 25 basis points	0.6	3.0	0.0
Rate fell by 25 basis points or more	0.2	0.0	0.0
Number of days in sample	620	168	30

(a) Implied by nearest short sterling contracts.

On most days, rate movements are confined within a band of plus or minus 5 basis points, but that this is less true of days when data are published or when interest rate announcements are made. Large changes (in this period, large upward changes) have tended to be concentrated on days when rate announcements are made.

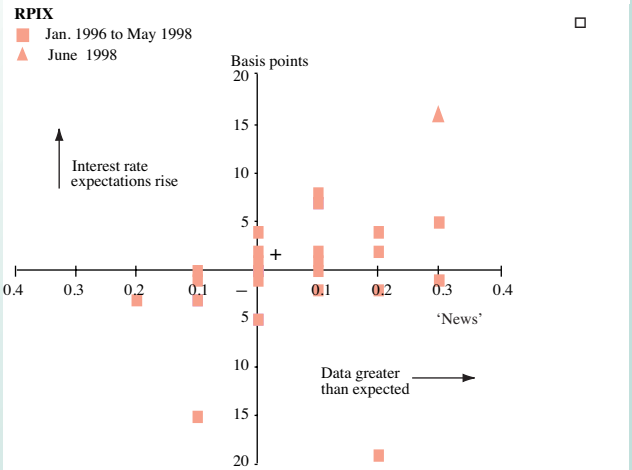
The rate used in the table moved by 27 basis points on 4 June after the MPC announcement; the first row of the table shows that this was the only occasion when the rate rose by more than 25 basis points in the entire period since the start of 1996. The rate moved by 16 basis points on the day that the RPI data were announced; the table shows that even on data days, movements of more than 15 basis points are rare.

Market surprises

The market ought not to react to data that come out as expected. But the scale of reaction to any 'surprises' may vary, as the market takes particular indicators more or less seriously. So the market reaction to a piece of news is not in itself an adequate measure of its surprise. To get an independent reading, it is possible to compare the outturns for particular indicators with the median market expectation.(2)

The scatter diagram, Chart A, plots (horizontally) this measure of surprise for announcements of the twelve-month change in RPIX against the movement in the rate implied by the nearest short sterling contract (vertically). Plots to the right of zero indicate that RPIX was stronger than the market had expected. Plots in the top half of the chart indicate that interest rate expectations rose. There is a clear tendency for bad inflation news to be associated with higher interest rate expectations. The chart helps to put in context the market reaction to the June RPIX data (the triangular plot in the NE quadrant). These data were a big surprise to the market (against the benchmark of its past forecast errors for this series); the plot is on the far right of the chart. But the market also reacted more strongly to this surprise than to earlier surprises of the same magnitude.

Chart A
Effects of data releases on interest rate expectations: RPIX from January 1996 to June 1998(a)



(a) 'News' is measured as data outturn less expectation. Interest rate expectations are measured by nearest short sterling contract.

Reproducing this chart for the other five data releases over the period 1996–98 shows that RPIX, average earnings and retail sales have more impact on rate expectations than PPI, industrial production and GDP.

Charts of this kind involve a number of choices. Some data are always published as part of a package. For

(1) These contracts mature on the third Wednesday of March, June, September and December. Because contracts tend to lose liquidity just before they mature, we switch contracts at the beginning of the final month. For example, we take the September contract as the 'nearest' from 1 June, even though the June contract has a short while still to run.
(2) From a survey by Bloomberg News of around 20 City economists, taken before the data are released each month.

example, the labour market data include average earnings, employment and unemployment; the market currently focuses most on the earnings figures. Similarly the choice between using market forecasts of monthly, quarterly or annual growth was made on the basis of a judgment as to which rate of change the market typically focuses on for each series from month to month. The chart uses close-of-business rates, but on some days, rate expectations are affected not only by UK data releases but also by other influences such as MPC minutes, US data releases in the afternoon, or policy speeches. Although the scatter diagrams can pick up general tendencies, one extension of this work would be to look at changes in interest rate expectations within a few minutes of each announcement to try to avoid some of the 'noise' from other factors.

In addition, though Chart A allows us to show the impact of one series of data releases at different points in time, it does not really allow a comparison across different data releases on a like-for-like basis. A forecast error of, say, 0.2 percentage points is more significant for a series such as annual RPIX inflation than for the more volatile monthly industrial production. This can be seen from Table 2, which shows the standard deviation of past surprises in the six data releases looked at here. Dividing each surprise by the standard deviation of surprises in that series gets round this problem. Chart B, showing the impact of data releases this June, is drawn up on this basis. Outturns for retail sales and for RPIX were both big surprises, but RPIX appeared to have a much bigger impact on rates.

Table 2
Standard deviation of data surprises

Series	Change	Standard deviation of past surprises since Jan. 1996 (a)
Average earnings	12-month	0.25
RPIX	12-month	0.12
PPI	12-month	0.19
Retail sales	1-month	0.47
Industrial production	1-month	0.48
GDP	Quarterly	0.09

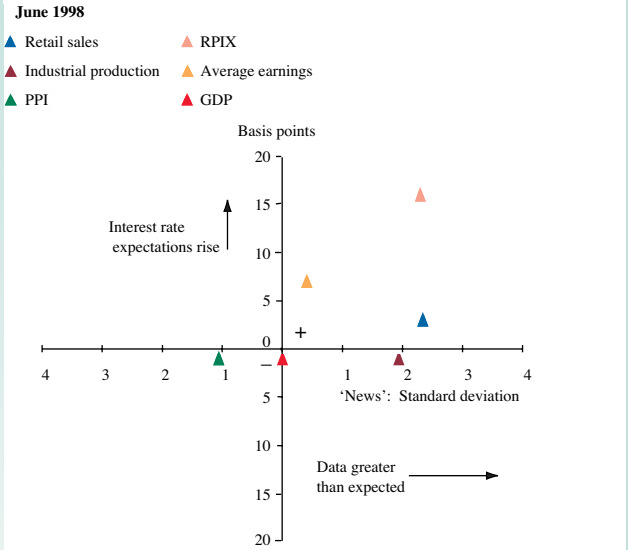
(a) Standard deviation of actual outturn less expectation.

Have reactions changed over time?

The question arises as to whether the response of interest rate expectations to data releases has changed over time, if for example markets learn about the reaction function of policy-makers to data releases.

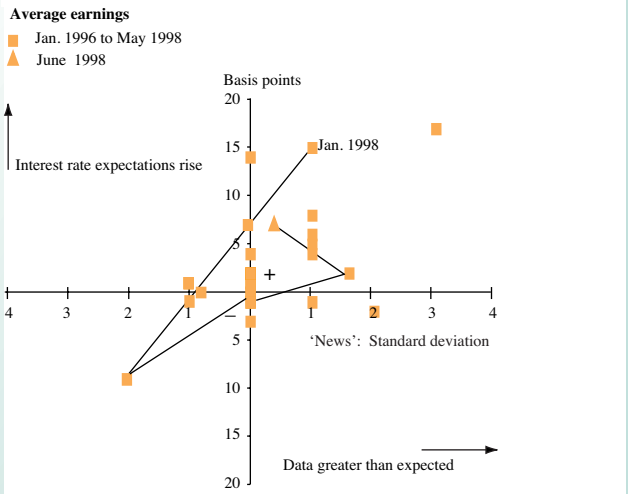
One test of this is to see whether markets have become more sensitive to average earnings data, given that recent MPC minutes, the *Inflation Report* and other statements of policy have all pointed to the importance of average earnings data for the interest rate outlook. Chart C shows a scatter plot of average earnings surprises (scaled by their standard deviation) and the change in short sterling. The large triangle again represents June's data. The dots for the latest six months are joined up in chronological order. There is no obvious pattern to the latest six observations—it is not clear that the impact of average earnings has increased over this very short time span.

Chart B
Effects of data releases on interest rate expectations: six data releases for June 1998(a)



(a) 'News' is measured as data outturn less expectation, divided by standard deviation of past errors. Interest rate expectations are measured by nearest short sterling contract.

Chart C
Effects of data releases on interest rate expectations: average earnings from January 1996 to June 1998(a)



(a) 'News' is measured as data outturn less expectation, divided by standard deviation of past errors. Interest rate expectations are measured by nearest short sterling contract.

Summary and conclusions

The market appears to take RPIX, average earnings and retail sales releases more seriously than other data releases. But on the measures used here, the market's apparent reaction to news in the data is in no case completely uniform from month to month. It is hard to detect changes in the relative importance that the market attaches to different indicators, although RPIX seems to have become more important since the Bank was given operational independence in May 1997.

Table B
Gilt issuance

Auctions

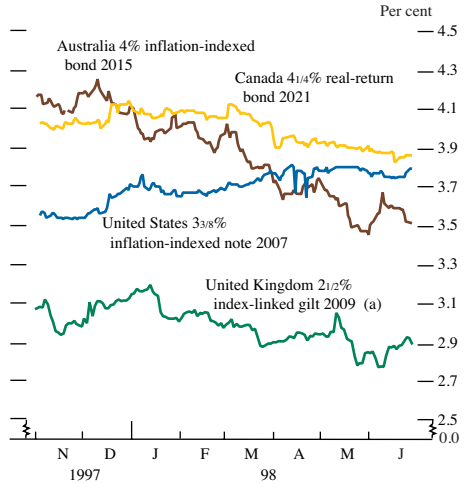
Date	Stock	Amount issued (£ millions)	Non-competitive price	Yield at non-competitive price	Average yield	Cover	Tail (basis points)
20. 5.98	6% Treasury Stock 2028	3,000	103.03125	5.79%	5.79%	2.26	0

Taps

Date	Stock	Amount issued (£ millions)	Issue price	Issue yield	Price at exhaustion	Yield at exhaustion	Average yield	Exhaustion date
3. 4.98	2½% Index-linked 2024	150	151.0625	2.85	151.375	2.84	2.84	3. 4.98
21. 5.98	2½% Index-linked 2016	150	184.8125	2.90	185.250	2.88	2.88	21. 5.98
12. 6.98	4⅛% Index-linked 2030	150	159.8750	2.53	160.750	2.50	2.50	12. 6.98

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

Chart 6
Real yields on index-linked securities



(a) Assuming 3% inflation.

Chart 7
UK and US ten-year breakeven inflation rates since 1 February 1997(a)

(a) Derived by comparing conventional and index-linked bond yields.

Index-linked yields and inflation expectations

Yields on index-linked gilts fell further in the second quarter. Continued strong institutional demand, combined with an expectation by the market that the outlook for the supply of index-linked gilts would be limited, contributed to these falls. The amount of index-linked gilts outstanding in the market rose by £450 million in the quarter, as the DMO made three successful 'taps' of long-maturity index-linked gilts (see Table B). These taps met with strong demand, and encouraged buyers into the market. The revised financing Remit in June maintained the absolute level of funding intended for the index-linked sector, by increasing the target for index-linked issuance to 30% of overall gilt issuance in 1998/99, though the target issuance of £3.6 billion is lower than issuance in the recent past. Partly as a result, long-term real yields fell: the 25-year index-linked gilt yield fell from 2.91% at the beginning of the quarter to 2.57% at the end. The real yield curve, derived from index-linked gilts, became more inverted this quarter, as short yields rose. The rise in short yields partly reflected selling of the 2½% Treasury Stock 2003 index-linked gilt, once the stock dropped out of the over 5 years' index. This lengthened the duration of the basket, and 'index-matchers' were obliged to switch longer to match the indices against which their performance is measured.

Real yields in Australia and Canada also fell in the quarter, as Chart 6 shows, while US yields were broadly unchanged. The fall in Australian real yields partly reflected fear of a slowdown in activity associated with weak Asian markets.

Inflation expectations derived from the gilt market were broadly unchanged during the quarter at, or just below, 3%. Chart 7 compares the ten-year breakeven inflation rate in the United Kingdom and United States (the breakeven rate is the rate needed for investors to be indifferent between holding nominal or index-linked bonds). On these calculations, US inflation expectations have fallen relative to those in the United Kingdom. Relatively benign price indicators in the United States, commentary from the Federal Reserve—for example, Chairman Greenspan's testimony to Congress on 10 June—that was interpreted by the market as implying that inflation appeared to be under control, and the continuing East Asian crisis, all appear to have put downward pressure on derived inflation expectations in the United States. (However, consumer surveys of US inflation expectations are much higher than expectations derived from financial markets.)

Real yields and the RPI

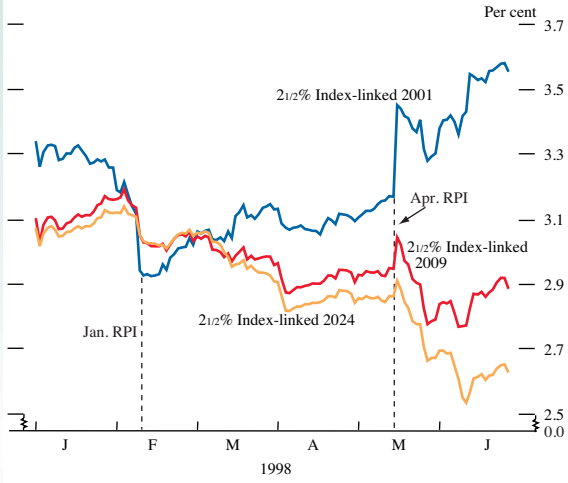
Real yields on index-linked bonds are affected by inflation releases. This may influence the interpretation of real yields and derived inflation expectations. This box explains why.

To calculate the real yield on an index-linked gilt, an assumption must be made about the rate of inflation between now and the maturity of the gilt, because for the eight months before the date on which they are due, the cashflows have no inflation protection. Index-linked gilts (IGs) are indexed to RPI inflation, so the assumption is made about RPI inflation, not RPIX inflation. The current market convention is to assume an RPI inflation rate of 3%, roughly equivalent to a monthly rate of 0.25%.[1] This assumed rate is used to project the value of future coupons and the final redemption value. The assumed coupon and capital uplift are calculated by taking the latest known value of the RPI and compounding that by projected 0.25% monthly increases. Once a new RPI figure is released, the new known level is used in the calculation, so the inflation uplift is calculated from a new known figure. So unless the monthly change in the RPI turns out to be 0.25%, then the reported real yield will change for any given price of the stock. (It is worth noting that the RPI is not seasonally adjusted, and that the assumed 0.25% per month increase makes no allowance for seasonality.)

The January RPI was released on 10 February, revealing a fall in the RPI of 0.3%. A fall has been quite rare recently—the last fall was in July 1996. So the actual RPI in January turned out 0.55 percentage points lower than had been 'assumed' the day before it was released. The inflation uplift started from a lower base, and that led to a fall in calculated real returns. By contrast, the April RPI, released on 19 May, rose by 1.1%. That led to a sharp rise in real yields.

The effect is larger for shorter-maturity than longer-maturity IGs, because the eight-month unprotected period is a larger proportion of the overall period to maturity. That was borne out on 10 February and 19 May, as the chart shows.

Real yields on UK index-linked bonds



Note: Real yields are calculated assuming 3% inflation.

The announcement of an RPI figure is of course 'news' to which financial markets may be expected to react. The assumed 0.25% rise in the RPI is a technical assumption, not a forecast by analysts or economists of the expected change in the RPI. In the case of the April RPI, the market was expecting a rise of 1.0%, mainly because changes in excise duty were known about in advance. So the release of the data was barely 'news' and, as a result, index-linked prices hardly changed on the day. Nevertheless, the conventionally-calculated real yield rose on the 2001 index-linked gilt yield by 28 basis points. This shows that real yields need to be interpreted carefully when the RPI turns out to be materially different from the 0.25% assumption.

(1) Strictly, $\left(\sqrt[12]{1.03}-1\right)$, ie 0.2466%.

The published real yield on UK index-linked bonds can move sharply on the days when the retail prices index is released. This means that interpretation of published real yields and any inflation expectations derived from them needs to be treated carefully. The box above explains the relationship between real yields and RPI releases.

Credit indicators and spreads

In the final few weeks of June, bond market credit spreads for UK corporate borrowers widened by about 10–15 basis points at ten years. Spreads had widened initially in 1997 Q4 as fears about the Asian crisis increased; spreads narrowed in the first quarter as concern about Asia lessened.

Chart 8
Equity indices

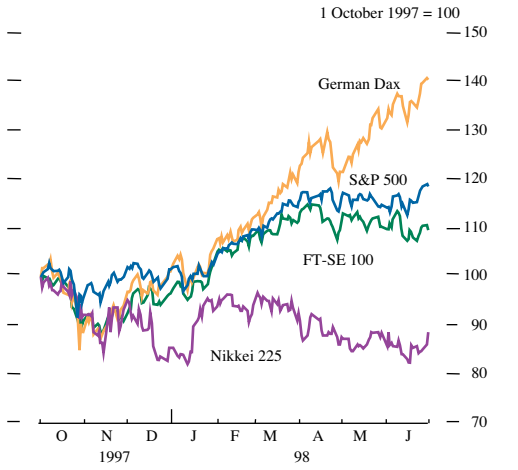


Chart 9
Japanese yen exchange rates

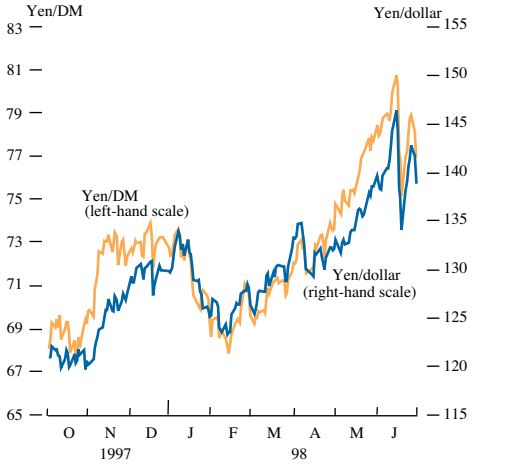


Table C
Exchange rates and effective exchange rate indices

	1992	1996	1998		Percentage changes between 31 Mar. and 30 June 1998
	15 Sept.	1 Aug.	31 Mar.	30 June	
£ ERI	99.5	84.7	108.8	107.0	-1.7
£/DM	2.78	2.29	3.10	3.01	-2.8
£/$	1.89	1.56	1.67	1.67	-0.4
$/DM	1.47	1.47	1.85	1.81	-2.4
$/Yen	123.8	106.8	133.3	138.8	4.1
$ ERI	93.7	95.6	110.7	112.2	1.4
¥ ERI	113.5	135.6	117.2	112.0	-4.4
DM ERI	103.1	109.5	102.4	103.7	1.3

The widening in credit spreads toward the end of Q2 reflected higher swap spreads. Swap spreads show the rate at which fixed-rate funding may be transformed into floating-rate, and depend on banks' credit risk—since banks are often the counterparties to the swap—as well as the demand and supply of fixed-rate payers/receivers in the swap market. So as bank risk deteriorated in June, due to concern about Japanese/emerging market bank risk, swap spreads (and hence credit spreads) widened.

Two other factors have also led to wider swap spreads in the past year. First, lower government bond supply has pushed down gilt yields relative to corporate/bank yields in the bond market. Second, there has been a preponderance of fixed-rate payers in the swap market, caused by the continuing demand for fixed-rate mortgages. Because banks' and building societies' liabilities are mainly floating-rate, they have entered the swap market to hedge these new fixed-rate assets.(1)

Money-market credit spreads also widened toward the end of June. Heightened concern about the Japanese banking sector led to a rise in the funding premium paid by Japanese banks in the sterling interbank market, to about 50 basis points. However, in contrast with Q4 last year, the gap between unsecured interbank rates and secured repo rates in the money market as a whole was not affected much by credit concerns about Japanese banks. The secured/unsecured spread did widen in Q2, however, in response to pressures at the end of the half year.

Equities

Equity prices in the United Kingdom and United States traded in a relatively narrow range in the second quarter, after rising sharply in Q1. By contrast, continental European markets continued to rise and the Japanese market drifted down (see Chart 8).

UK and US markets were reportedly affected by expectations of slower corporate profits growth, as these two countries entered a period of cyclically slower growth. (Expectations of rising interest rates may also have dampened market sentiment.) The stronger performance of continental European markets mainly reflected the cyclical recovery in growth prospects for European countries, and also the finalisation of the arrangements for EMU at the beginning of May. Within Europe, stock markets in Ireland, Spain and Portugal—where short-term interest rates are expected to fall to converge at the lower levels of other EMU members—have risen particularly strongly. The Japanese market drifted down after the Japanese year-end in March, but rose toward the end of June after the yen's sharp fall was arrested.

Foreign exchange

(i) International background

The yen dominated developments in the foreign exchange markets in the second quarter, as in the first. With little sign of a recovery in the Japanese economy, continuing concerns about the stability of the Japanese financial sector, and uncertainties about fiscal policy, the yen continued to weaken (see Chart 9). Table C shows the

(1) These two factors have meant that UK swap spreads have been much wider than US swap spreads.

extent of the yen's decline against the dollar. Although it ended the quarter at ¥139 against the dollar, roughly 5½ yen lower than at the end of March, the yen traded in a wide range, between ¥128 and ¥147.

The yen rose in early April to around ¥131, following successful passage of the 1998/99 Japanese Budget, and market belief that a further package of fiscal stimulus measures would be forthcoming. However, Japanese Prime Minister Hashimoto's announcement on 9 April of ¥4 trillion of tax cuts as part of a ¥12 trillion stimulus package disappointed the market. The yen weakened until intervention by the Bank of Japan led to a recovery to around ¥130 against the dollar. With most of the European market closed on 10 April for Good Friday, the Bank of Japan again intervened in support of the yen. Large sales of dollars by the Japanese authorities took the yen to its firmest for the quarter—¥127½ against the dollar. But by the close, the dollar had recovered, ending Tokyo trading at ¥129. Daily turnover in the Tokyo market reached $41.3 billion on the day.

This bout of intervention succeeded in introducing greater 'two-way risk' into the market, but was unable to alter the downward trend of the yen significantly, mainly because the market saw little change in economic fundamentals. Investors, though nervous of the possibility of further intervention by the Japanese authorities, continued to sell the yen. The yen fell gradually during the following month, eventually moving back beyond the pre-intervention level against the dollar. The yen continued to weaken in May and early June, with its downward path stemmed only by occasional fears of further intervention.

Co-ordinated intervention by the Bank of Japan and the New York Federal Reserve Bank on 17 June put a significant brake on the yen's depreciation. By 15 June it had fallen to an eight-year low of ¥147. Profit-taking had helped the yen to recover ground against the dollar, reaching ¥142 in afternoon trading on 17 June. The Federal Reserve Bank sold dollars against the yen at this level, acting both as agent for the Bank of Japan and on its own account—the first concerted intervention in the foreign exchange markets since August 1995. Simultaneously, Japan announced measures designed to restore confidence in the Japanese financial system. The yen strengthened immediately, closing at ¥138 against the dollar and ¥77 against the Deutsche Mark, 6 and 3 yen firmer respectively on the day.

Dollar/yen is one of the two most actively traded currency pairs in the world. Many other rates in the rest of Asia are related to, and affected by, the dollar/yen rate. In fact, the exchange rate of Korea held up well during the quarter, while the exchange rates of Malaysia and Thailand fell less far than in previous quarters (see Table D). Yen weakness seemed mostly to affect the Australian and New Zealand dollars, both of which fell sharply during the quarter.

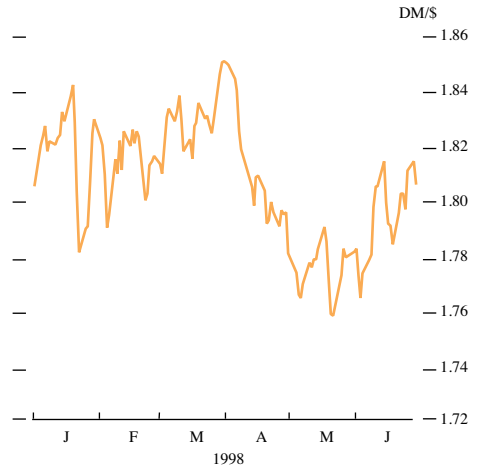
Indonesia's currency depreciated sharply (by around 40%), mainly because of domestic problems. Social unrest brought the country's financial system to a halt on 13 May. Markets remained closed until 18 May, when limited trading in the rupiah resumed, but spreads remained very wide and the currency continued to weaken.

Table D
Emerging market currencies versus US dollar

	1997		1998		Percentage changes between 31 Mar. and 30 June 1998
	1 July	31 Dec.	31 Mar.	30 June	
Indonesian rupiah	2,432	5,402	8,500	14,650	-42.0
Thai baht	24.4	47.0	38.9	42.1	-7.6
Korean won	888	1,600	1,384	1,370	1.0
Malaysian ringgit	2.53	3.88	3.64	4.13	-11.9
Philippine peso	26.4	39.5	37.7	41.5	-9.2
Singapore dollar	1.43	1.68	1.61	1.69	-4.7
Russian rouble (a)	5,782	5,958	6.12	6.20	-1.5
South African rand	4.53	4.85	5.03	5.92	-15.0
Australian dollar	0.75	0.65	0.66	0.62	-6.6
New Zealand dollar	0.68	0.58	0.55	0.52	-6.1

(a) The Russian rouble was devalued against the US dollar (effective from 1 January 1998). On that day, the rouble/dollar rate was rescaled with the new rate equivalent to the old rate divided by 1,000.

Chart 10
Deutsche Mark/dollar exchange rate



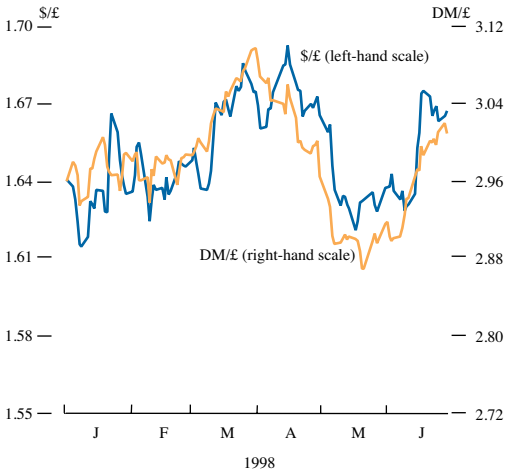
The US dollar weakened against the Deutsche Mark in the second quarter (see Chart 10), ending the period 4 pfennigs lower at DM 1.80½. Increasing optimism about the euro, and signs of increasing German economic activity, supported the Deutsche Mark during April and May. While weaker-than-expected US payroll data in early April led the market to revise down its interest rate expectations, the dollar weakened against the German currency in the first two months of the quarter, trading down from DM 1.85 at the beginning of April to a low of DM 1.75½ on 21 May. But the dollar recovered ground in June, as concerns about Russia's financial stability grew, weakening the Deutsche Mark. Germany is Russia's largest trading partner among the industrialised economies, and also has sizable banking and direct investment exposure to the region.

EU member states met on 2–3 May to decide which countries would join the single currency at the beginning of 1999, and at what bilateral rates. Immediately before that weekend, demand for the Deutsche Mark increased, as the market started to anticipate an orderly start to the single currency, and market participants 'traded back' into Europe. As a result, the Deutsche Mark gained 3 pfennigs against the dollar between 30 April and 6 May, to around DM 1.76½.

(ii) Sterling

Sterling fell by 1.7% to 107.0 on the effective exchange rate index between the end of the first and second quarters. The pound fell most markedly against the Deutsche Mark, losing nearly 9 pfennigs during the quarter; against the dollar, sterling fell by less than 1 cent. As Chart 11 shows, though sterling fell against both major currencies in the first half of the quarter, it recovered ground in June as market participants reassessed their view of sterling's likely progress, in the light of the increase in the Bank's repo rate at the June MPC meeting.

Chart 11
Sterling exchange rates



Sterling had reached a peak against the Deutsche Mark of DM 3.11 on 31 March, its highest since May 1989, but then weakened steadily during April and May. Profit-taking in early April took the pound lower against both the dollar and Deutsche Mark. Sterling fell further as the market increasingly took the view that the United Kingdom's interest rate cycle might have reached its peak. This view appeared to be confirmed in early April, when an OECD report argued that there was little need for a further rise in UK interest rates.

With rates left unchanged following May's MPC meeting, the pound fell further. But expectations of relative interest rates cannot wholly account for sterling's sharp decline against the Deutsche Mark in May. Between 30 April and 21 May, sterling lost more than 13 pfennigs against the Deutsche Mark, falling below DM 2.87. This may have been because investors had previously purchased sterling as a 'safe haven' while uncertainty about the single currency continued. After the 'EMU weekend', these trades were unwound, pushing the pound lower.

On 4 June, the MPC raised the Bank's repo rate by 25 basis points to 7.5%. The decision had a sharp (intra-day) effect on the pound. Before the announcement, sterling had traded just below $1.63¾ and DM 2.89½; within minutes of the news, the pound had gained more than 1 cent and more than 3 pfennigs to trade above $1.65

Table E
Average daily money-market shortages

£ millions

1996	Year	900
1997	Year	1,200
1998	April	1,400
	May	1,500
	June	700

Chart 12
Noon shortages and SONIA less repo rate

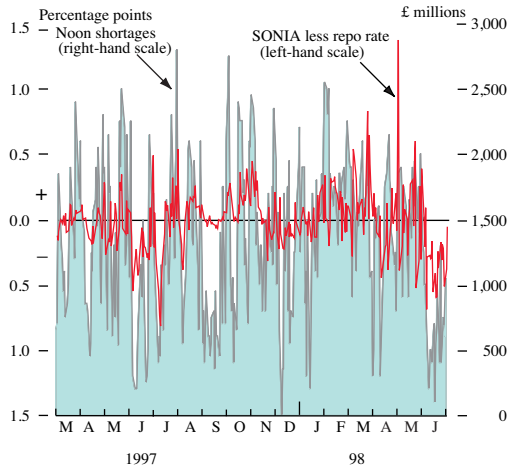


Table F
Influences on the cash position of the money market

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

	1997/98	1998		
	Apr.–Mar.	Apr.	May	June
CGNCR (+) (a)	3.4	-2.7	2.7	6.4
Net official sales of gilts (-) (b)	-6.3	0.7	-2.4	-0.2
National Savings (-)	-1.6	-0.1	-0.1	-0.1
Currency circulation (-)	0.8	-0.6	-1.5	1.6
Other	-4.0	2.6	0.0	0.9
Total	**-7.7**	**-0.1**	**-1.4**	**8.6**
Outright purchases of Treasury bills and Bank bills	1.5	0.2	-0.7	-0.6
Repos of Treasury bills, Bank bills, and British Government stock and non-sterling debt	1.8	-0.6	1.7	-5.9
Late facilities (c)	0.3	-0.2	-0.1	-0.1
Total refinancing	3.6	-0.5	0.9	-6.5
Foreign exchange swaps	0.7	0.8	0.5	-2.0
Treasury bills: Market issues and redemptions (d)	-2.9	0.0	0.0	0.1
Total offsetting operations	**7.3**	**0.2**	**1.4**	**-8.6**
Settlement banks' operational balances at the Bank	-0.4	0.1	6.0	0.0

(a) Central government net cash requirement. Formally known as the CGBR, the CGNCR came into being following the publication of the *Economic and Fiscal Strategy Report* in June. Its definition, however, remains unchanged.
(b) Excluding repurchase transactions with the Bank.
(c) Since 3 March 1997, when the Bank introduced reforms to its daily money-market operations, discount houses and settlement banks have been eligible to apply to use the late facilities.
(d) 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.

and DM 2.93. Volatility on this scale led to a drop in market liquidity in afternoon trading as funds briefly withdrew from the market, having earlier scrambled to close out any positions that they had held. Small-scale sterling sales by the few funds that were able to take profit from the rise led the pound lower in afternoon trading. Sterling closed the day at $1.64^{1}/_{4}$ and DM $2.89^{3}/_{4}$.

The stronger-than-expected macroeconomic data released during June, and the weakness of the Deutsche Mark following concerns about Russia, both helped to support the pound for the rest of the month. Sterling strengthened steadily against the Deutsche Mark, appreciating by 4%, to end the quarter at DM 3.01. However, it rose by less against the dollar. Before the release of May's inflation data, on 16 June, sterling had remained broadly unchanged against the dollar as it firmed against both the yen and Deutsche Mark. But the unexpected increase in UK inflation in May took sterling back above $1.65 against the dollar, $1^{1}/_{2}$ cents up on the day. From that point on, the pound appreciated steadily against the dollar, reaching $1.66^{3}/_{4}$ at the end of the quarter.

Open market operations and gilt repo

Operations in the sterling money market

The short-dated interest rate market was characterised by occasionally tight money-market conditions during the first two months of the quarter and easier conditions in June. The shift reflected changes in the size of money-market shortages and in the stock of refinancing (money-market assets) held at the Bank (see Table E), which in turn reflected shifts in the monthly pattern of government receipts and payments. There was a sharp fall in the stock of refinancing, from £11.9 billion at the end of May to £5.4 billion at the end of June, for example.

Changes in the size of the money-market shortage/stock of refinancing have affected technical money-market conditions at very short maturities in recent years. Chart 12 plots the size of the money-market shortage against the sterling overnight index average (SONIA) less the Bank's repo rate. Large shortages tend to coincide with a high overnight rate relative to the Bank's repo rate (the correlation between the shortage and SONIA less the repo rate is 0.5). On 8 June, there was a large payment of interest on strippable gilts, which reduced the stock of refinancing and market shortages sharply. This led to easier money-market conditions for most of June. This also happened in June last year when the shortages were small.

Earlier in the quarter, when the shortages were larger, there were occasional days when the early round of operations brought few bids. As the discount houses had moved out of transition over the year since the new open market operations (OMOs) began, the capacity to borrow late in the day from the Bank (after the final 2.30 pm round of OMOs) had dwindled. If the system was not cleared by that time, it was susceptible to occasional late spikes in interest rates, though in most cases little trading took place at these higher overnight rates.

The Bank took the opportunity of the extension of CHAPS trading hours, and the phasing out of the discount house facility, to make some minor, mainly technical, adjustments to the procedures for its OMOs. From 1 June, all Bank OMO counterparties have had

Chart 13
OMOs—instrument overview

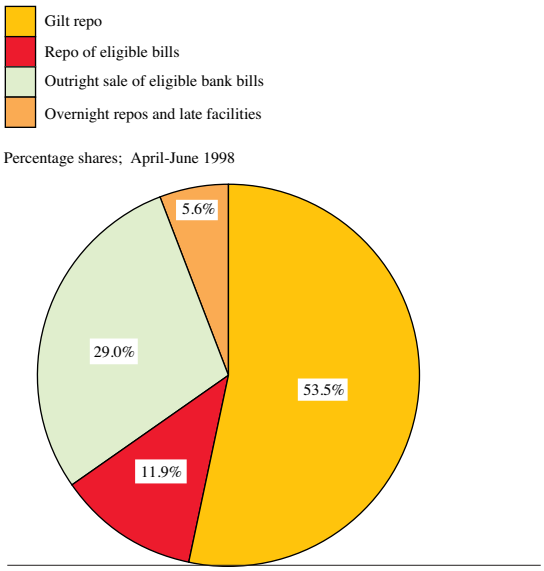


Chart 14
Weekly average stock of refinancing and gilt repo as a share of OMO

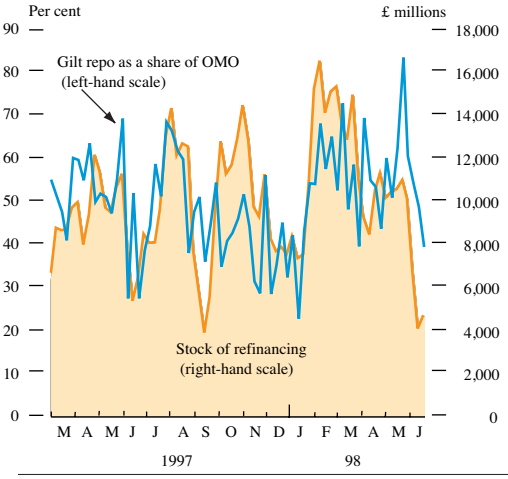
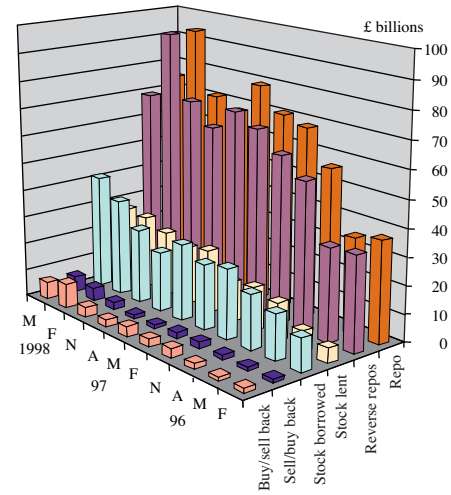


Chart 15
Gilt borrowing and lending markets



access to overnight repo at 3.30 pm without quota restrictions. That is designed to 'cap' any late spike in the overnight rate, caused by the limited access to late lending under the old system. The Bank also introduced higher penalty rates if counterparties borrowed after the normal OMO rounds. The tougher and more transparent late-lending penalties were intended to encourage counterparties to square their positions earlier in the day, and so prevent volatile conditions later. In the first month of the new arrangements, the adjustments appear to have achieved their desired effect: the overnight rate has not traded as high as it occasionally did in the last few months of the transitional arrangements. To simplify its operations, the noon round of the Bank's OMOs was also abolished. The box on page 202 describes the changes in more detail and sets out the new OMO timetable.

The share of different instruments in the Bank's refinancing during the quarter is shown in Chart 13. Gilt repo continued to be the dominant source of refinancing, accounting for more than 50%, with outright sales of bills accounting for 29%. The February *Bulletin* noted that gilt repo had taken over from bills as the 'swing' element in the OMOs, because of its flexibility and more widespread availability. Chart 14 supports this by showing how the share of gilt repo varies with changes in the stock of money-market refinancing.

Gilt repo market

The repo market contracted between end February and end May, from £94 billion outstanding to £75 billion, according to the Bank's survey (see Chart 15). The maturity of repo and reverse repo also fell at the 9 day–1 month maturity. Two factors that had boosted the market in February had unwound by the end of May, and account for the fall in outstandings and maturity. First, (seasonally) large shortages in the money market in the early part of the year had required counterparties to 'reverse in' collateral to deal in the Bank's OMOs. Because the Bank's OMOs are at a maturity of two weeks, this may have also boosted the share of repo activity between nine days and one month. By the end of May, however, the shortages were much smaller and that effect was reversed (see Table G). Second, toward the end of February, there had been a lot of repo activity related to 9% Treasury 2008 stock and its delivery into the long gilt futures contract expiring in March.(1) Participants reversing in stock at the end of February would have wanted to span the delivery period for the futures basket, which ran until 9 March. This activity had ceased by the end of May.

Other factors may have played a part in the fall in repo outstandings and the shortening of trades. Money-market rates were tight at the end of May, deterring participants in the market from holding assets that they might normally have funded in the repo or unsecured markets. In addition, the yield curve was flat, reflecting expectations that interest rates would be unchanged for much of the rest of the year. So less use was perhaps made of repo to take interest rate views. The box on page 203 looks at some of the longer-term trends that the gilt repo survey reveals.

A new version of the Gilt Repo Code of Best Practice was issued at beginning of August, and copies are available from the Bank.(2) In

(1) See the May 1998 *Quarterly Bulletin*, pages 111–12.
(2) From the Secretariat at the Bank's Gilt-Edged and Money Markets Division, telephone: (00 44/0) 171 601–3604.

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

		Total (per cent)						Total
		On call and next day	2–8 days	9 days to 1 month	1–3 months	3–6 months	Over 6 months	£ billions
Repos								
1996	Feb.	41	24	16	14	3	0	37
	May	20	34	23	15	7	1	35
	Aug.	19	33	33	11	4	1	56
	Nov.	19	36	22	19	2	2	68
1997	Feb.	20	29	33	15	3	0	71
	May	27	23	27	18	4	1	79
	Aug.	25	21	24	24	4	1	67
	Nov.	22	22	19	22	11	4	72
1998	Feb.	16	21	29	18	10	5	94
	May	20	24	19	19	12	8	75
Reverse repos								
1996	Feb.	41	21	13	21	4	0	34
	May	20	30	20	23	6	2	34
	Aug.	22	29	29	14	5	1	54
	Nov.	21	34	21	20	3	2	60
1997	Feb.	18	32	26	21	3	0	67
	May	23	21	30	20	6	1	71
	Aug.	17	20	26	26	6	1	63
	Nov.	17	25	17	25	11	5	71
1998	Feb.	14	30	24	17	10	5	94
	May	22	28	17	13	12	10	69

(a) From the data reported under the voluntary quarterly arrangements.

the preparation of the new version, two of the main areas of debate were partial deliveries and substitutions. On partial deliveries, the emphasis is now to encourage counterparties to agree bilaterally whether or not partialling is acceptable. The new Code also acknowledges more widespread existence of rights of substitution.

Technical developments

Gilt strips(1)

Activity in the strips market has remained low. The total nominal outstanding of strippable stock increased to £89 billion, with the auction of £3 billion of 6% 2028 gilts on 20 May. That means that strippable stocks constituted about one third of the total nominal of gilts outstanding at the end of June. But very little of this stock has so far been stripped—about 2½% by the end of June. As the total nominal outstanding of the 6% 2028 stock has now reached the previously-announced threshold of £5 billion, the new 30-year benchmark is now strippable, and about 3% is held in stripped form. This long-dated stock was not made strippable when first issued, so as to avoid creating small and illiquid long coupon strips.

Turnover in strips has also been low: in the first seven months of this year, weekly strips turnover averaged £190 million, about ½% of turnover in the coupon gilts market.(2)

From 27 April this year, gilt strips have been eligible in deliveries-by-value (DBV) used as collateral in the Bank's daily money-market operations. Before accepting strips in DBVs, the Bank looked at the fluctuation in strips prices once trading began in December 1997. The Bank concluded that, as DBVs are assembled daily for overnight collateral, the 2.5% margin applied to DBVs is adequate to provide for daily price fluctuations.

The Bank now also accepts strips as eligible securities in intra-day repos for liquidity in the real-time gross settlement (RTGS) system. The authorities plan to review experience with strips trading during 1998, and, in the light of the volatility and liquidity of the strips market, may broaden the uses of strips to include them in member-to-member transactions in its money-market operations.

Other issues

HM Government Euro/Ecu issues

On 21 April, the Bank reopened the UK Government Euro Treasury note maturing on 29 January 2001 with a further tender for €500 million, raising the amount of this note outstanding with the public to €1.0 billion. There was strong cover at the auction, of 3.5 times the amount on offer, and accepted bids were in a range of 4.24%–4.29%. The total of notes outstanding with the public under the UK note programme thus rose from €4.5 billion in the first quarter to €5.0 billion in the second quarter of 1998. Further reopenings are contemplated for July and October 1998.

The United Kingdom continued to hold regular monthly tenders of ECU 1 billion of Ecu Treasury bills during the second quarter, comprising ECU 200 million of one-month, ECU 500 million of

(1) For further background on gilt strips, see pages 15–18, 58–59, and 66–67 of the February 1998 *Quarterly Bulletin*, and pages 119–120 of the May 1998 *Quarterly Bulletin*.
(2) For an analysis of factors contributing to low levels of activity in the strips market, see page 120 of the May 1998 *Quarterly Bulletin*.

The Bank of England's operations in the sterling money market

The Bank made minor, and mainly technical, amendments to its operations in the sterling money markets from 1 June. The latest changes built on the reforms that took place in March 1997, which included the use of gilt repo in the Bank's daily money-market operations and the creation of a wider range of counterparties.(1) Those reforms also included the provision of a late repo facility for settlement banks, and the end of the requirement that the discount houses and gilt-edged market makers be separately capitalised specialist intermediaries. The recent adjustments take account of longer trading hours in the money market now that APACS—the umbrella body for the UK payments industry—has extended the period of the day during which members can make use of the facilities of CHAPS, the clearing company responsible for operating a 'same-day' electronic funds transfer system for its members. The recent changes were also intended to further improve sterling market participants' ability to manage their day-to-day liquidity effectively; this should promote efficient and competitive sterling money markets.

Changes to daily open market operations

The Bank has reduced the number of open market operations (OMO) rounds from three to two, by no longer operating at noon. The 9.45 am and 2.30 pm rounds are retained: they are viewed by the sterling market as the times most appropriate for the Bank to operate to meet the market's needs efficiently. The Bank invites its counterparties to bid for funds by repo of gilts, Treasury bills, eligible local authority and bank bills, marketable HM Government foreign currency debt, and/or outright sale of bills. In addition, the Bank extended its operations earlier in the year to include gilt strips in DBVs, following the successful upgrade of the Central Gilts Office and Registrar's systems. The maturity of the Bank's operations in repo remains around two weeks, although minor variations from day to day may occur to help smooth the future pattern of daily shortages/surpluses; the Bank is prepared to purchase outright eligible bills with a residual maturity up to the longest-dated repo invited.

Monetary Policy Committee announcements

The Bank has adjusted its timetable on the days when there is a Monetary Policy Committee announcement on interest rates; there is a round at 12.15 pm instead of 9.45 am, following the MPC announcement at noon.

End-of-day arrangements

The extended trading hours may require the Bank to adjust for any late imbalances in the market, to reduce the need for access to late financing. At 3.30 pm, an overnight repo operation may be conducted if the market still needs liquidity from the Bank; all counterparties will be invited to bid for funds at a rate above the Bank's repo rate, by way of repo of gilts, eligible bills and HM Government foreign currency debt. A form of late overnight repo will be available at 4.20 pm for settlement banks, which provide wholesale payment services to the rest of the market and need to balance their accounts at the Bank at the end of the day. A similar facility, previously available to discount houses in transition, has ceased.

Bank timetable for OMO day

9.45 am	Publish forecast shortage and invite bids.
2.30 pm	Publish revised forecast shortage and invite bids.
3.30 pm	Publish any residual shortage and, if necessary, invite bids.
4.20 pm	Publish final forecast shortage and open settlement bank facility if necessary.

Counterparties

The Bank's range of counterparties was broadened in March 1997, enabling banks, building societies and securities firms that wished to participate in the Bank's daily operations to do so, providing that they met certain functional requirements. These criteria remain unchanged.

Next steps

The Bank continues to be prepared to take on new counterparties that fulfil the criteria at any time. Institutions interested in becoming counterparties should contact the Head of Gilt-Edged & Money Markets Division at the Bank.

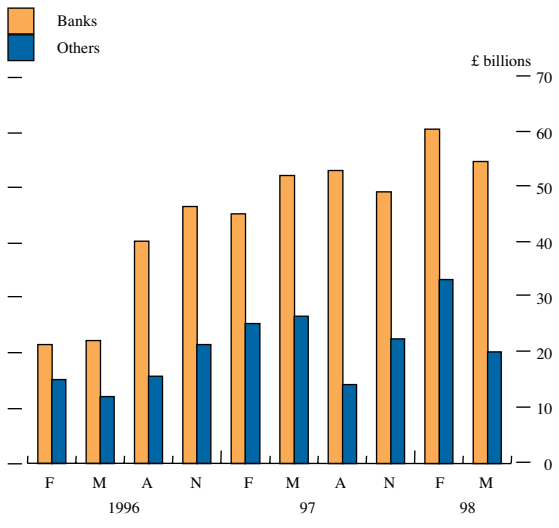
(1) See page 204 of the May 1997 *Quarterly Bulletin*.

The gilt repo market

The Bank started to undertake a quarterly survey of the gilt repo market soon after the market opened in January 1996. More than 80 companies active in the market send data to the Bank, in February, May, August and November. These respondents are banks, securities houses, building societies, GEMMs, fund managers and insurance companies. Chart 15 shows the growth in the various markets since the start of 1996. It shows that repo (and reverse repo) had grown to around £75 billion in May 1998. The minimum size quoted on brokers' screens of a general collateral deal is about £25 million, and the average size of trades is estimated to be around £50 million.

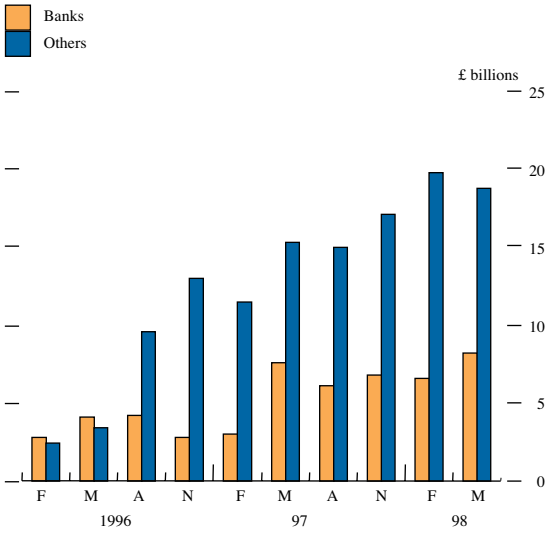
Charts A and B show that banks are still the major players in repo, while the other institutions dominate the stock loan market. This confirms anecdotal evidence that while repo is used to a large extent by banks and securities houses, many end-investors still prefer to use stock lending, which involves a flat fee rather than interest, and therefore requires no continuous market monitoring. One question is whether, and how, holders of stock, such as institutional investors, can become more involved in the market.

Chart A
Repos outstandings at banks and other institutions



The repo market is concentrated among the biggest players: in May, the top ten reporters accounted for 60% of total repo outstanding. Although the maturity of the market has increased since it began

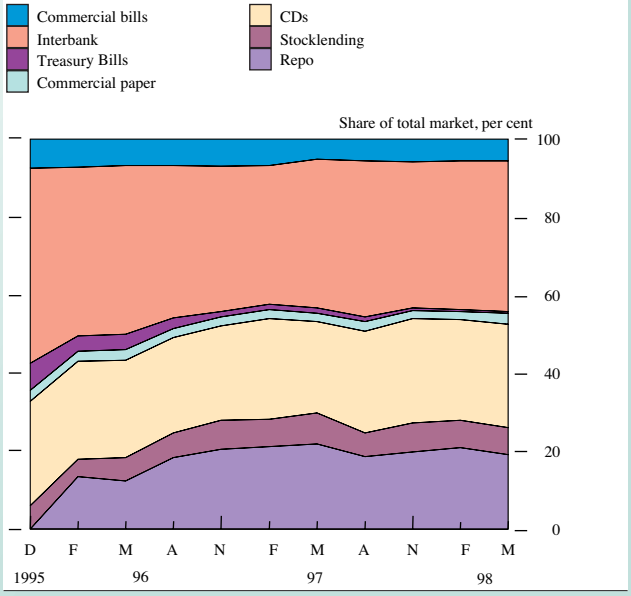
Chart B
Stock lending outstandings at banks and other institutions



in 1996, there is still little liquidity beyond three months.

Repo activity has not replaced borrowing through other money-market instruments such as CDs and interbank lending: both have continued to grow since the start of 1996. But as Chart C shows, the repo market now accounts for about one fifth of total money-market outstandings.

Chart C
Components of the sterling money market



three-month and ECU 300 million of six-month bills each month. The tenders continued to be oversubscribed, with issues being covered an average of 4.8 times the amount on offer in the second quarter of 1998, compared with average cover of 4.3 times during the first quarter of 1998 and 2.9 times in the second quarter of 1997. During the second quarter, bids were accepted at average yields of 11–24 basis points below the Ecu Libid rate of the appropriate maturity. There are currently ECU 3.5 billion of UK Government Treasury bills outstanding. Secondary market turnover averaged just under ECU 0.9 billion a month in Q2, compared with ECU 1.1 billion in Q1.

Following the Bank's consultation with market makers in both the Ecu Treasury bill and Euro Treasury note programmes, the Bank introduced a facility in April 1998 for both bill and note tenders allowing market makers to bid by telephone; the tenders continue also to be open to market makers and non market makers through the hand delivery of application forms. The introduction of telephone bidding has enabled the delay between the close of bidding and the announcement of results to be cut from 1½ hours in both cases, to 1 hour for bills and 45 minutes for notes.

Sterling bond issues

Sterling bond issues fell during the second quarter, after heavy borrowing in Q1. Total fixed-rate issuance in the quarter was £6.2 billion, slightly below that in 1997 Q2 and well below the previous quarter. Short-dated issues amounted to £3.0 billion, while issuance of mediums and longs totalled £1.2 billion and £2.0 billion respectively.

Although sterling fell from its peak of DM 3.11 at the end of March, investor demand for short-maturity fixed-rate bonds remained strong for much of the period, amid expectations that UK interest rates were close to their peak. A number of issuers, notably supranationals, tapped into this demand with short and ultra-short issues. However, the UK rate rise, and subsequent sterling strength, generated further demand for shorter-dated bonds, including a £500 million 14-month bond issued by the US agency FNMA.

Sterling bonds continued to benefit from switching out of prospective euro bonds, as investors sought to diversify their portfolios by buying bonds from currencies that were not in EMU. Ten-year spreads over gilts narrowed before, and just after, the weekend finalising initial EMU membership in early May.

Limited gilt supply provided continued support for longer-dated bonds early in the period. For example, with spreads over gilts remaining tight, KFW and Scottish Power brought large 30 and 25-year deals, which sold well. However, the further inversion of the yield curve following the June rate rise increased uncertainty and widened swap spreads. Although Midland Bank successfully launched a £200 million 25-year bond in June, the renewed strength of sterling and longer-dated gilts triggered profit-taking, notably in supranational issues, further widening spreads. Concerns about Asia also weighed on credit spreads, with Japanese names the worst affected (see earlier section).

Further high-yield bond issues were brought in the quarter by

William Hill, HMV and Middleweb. Although they were launched successfully, these issues resulted in some spread widening in secondary trading of other recently-issued high-yield bonds.

In addition, two convertibles, raising £110 million, and £3.1 billion of floating-rate notes (FRNs), were issued in the quarter. Most of the FRNs issued in the quarter were asset-backed, but straight five-year issues for RBC and Westpac benefited from rarity value.