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

This article provides a full description of the Bank of England's arrangements for its money market operations. No changes to the operations are being announced at this time: the article updates the description provided in the May 1997 Quarterly Bulletin[(1)] *to take account of adaptations that have occurred over the past five years. This article has also been published as a separate paper, which can be found on the Bank of England's web site at www.bankofengland.co.uk/markets/money/stermm3.htm*

Full and definitive technical details of the Bank of England's operations in the sterling money markets, and of related settlement procedures, are contained in the Operational Notice, available at www.bankofengland.co.uk/markets/money/mmopnot.htm

I Introduction

The primary aim of the Bank of England's operations in the sterling money markets is to implement the Monetary Policy Committee's interest rate decisions, while meeting the liquidity needs, and so contributing to the stability of the banking system as a whole. Subject to meeting this aim, the Bank of England also seeks to promote sound practices, to encourage the development of private sector markets in which banks and other market participants can manage their liquidity and to foster efficiency and competition in these markets, given their importance in the wider financial system. These objectives reflect the Bank of England's three core purposes: maintaining the integrity and value of the currency, maintaining the stability of the financial system, both domestic and international, and seeking to ensure the effectiveness of the United Kingdom's financial services.

The Bank of England derives its influence over interest rates in the wholesale money markets from its monopoly of the supply of central bank money—that is, money which is a direct liability of the central bank (Bank of England bank notes and deposits at the Bank of England). There is natural demand for central bank money, also known as 'base money', as the only form of final settlement for sterling payments. The Bank of England meets this demand and is able to set the price (interest rate) at which it provides refinancing, by lending to its counterparties in the wholesale money markets. The interest (or repo) rate charged on this lending is often referred to as the Bank of England's 'official rate'[(2)] and is set by the Monetary Policy Committee (MPC), under powers set by the Bank of England Act 1998. The official repo rate changes only when the MPC decides that it should.[(3)] In its money market operations, the Bank of England satisfies the marginal liquidity demand of the banking system as a whole, through open market operations conducted transparently in high credit quality market instruments. The operating procedures of the Bank of England are similar to those of many other central banks, though details differ slightly from country to country. In the United Kingdom, the Bank of England lends predominantly through transactions conducted under sale and repurchase (repo) agreements at a two-week maturity.[(4)]

(1) 'The Bank of England's operations in the sterling money markets', *Bank of England Quarterly Bulletin*, May 1997, pages 204–07.
(2) In the past, the Bank of England's official operational interest rate has also been termed the Bank Rate, the Minimum Lending Rate and the Minimum Band 1 Dealing Rate (see www.bankofengland.co.uk/mfsd/rates/baserates.xls for an historical series).
(3) In exceptional circumstances, Section 19 of the Bank of England Act 1998 gives the Treasury reserve powers, after consultation with the Governor, to give 'the Bank directions with respect to monetary policy if they are satisfied that the directions are required in the public interest and by extreme economic circumstances'.
(4) This article uses expressions such as 'lend', 'borrow' and 'collateral' for the sake of familiarity, but is not a reflection of the legal nature of the repo transactions undertaken by the Bank of England, which is determined by the Master Agreement. Full title to securities sold under sale and repurchase transactions and to securities transferred by way of margin passes to the recipient; the right of the party making the transfer is a right to receive equivalent securities in accordance with the Master Agreement and the Operational Notice.

Changes in the official repo rate influence other short-term sterling wholesale lending and deposit rates as well as commercial banks' base rates, and hence the structure of rates across the economy as a whole, including rates in the retail market such as those for variable-rate mortgages and savings deposits. However, these market interest rates may not always change by exactly the same amount as the official rate; other factors, including the extent to which the MPC's interest rate decision has been anticipated, and competitive pressures in the mortgage and retail deposit markets, also influence changes in and levels of such rates.(1)

II The liquidity requirements of the sterling money markets

The fulcrum of the system is the underlying demand for Bank of England money as the final settlement asset for sterling payments, principally in the form of Bank of England bank notes and banks' settlement accounts held with the Bank of England. Settlement banks are obliged to maintain a minimum balance of zero on their Bank of England settlement accounts at the end of each day(2) (ie there is, in effect, a one-day maintenance requirement in the United Kingdom, and, unlike in some other countries' systems, there are no positive reserve requirements and no reserve averaging over a maintenance period). Although the Bank of England holds accounts for some other commercial banks, the vast majority of banks in the United Kingdom hold accounts with the settlement banks. Settlement of sterling obligations between settlement banks occurs in the United Kingdom's Real Time Gross Settlement (RTGS) system, operated by the Bank of England. Whether payments are between customers of different banks, between settlement and/or non-settlement banks, through whichever payment system (CHAPS Sterling, CREST, BACS, Cheque or Credit clearings),(3) or whether between the Bank of England and the rest of the system, settlement ultimately occurs over the accounts that settlement banks hold at the Bank of England. In its money market operations, the Bank of England, by providing the liquidity needed by the banking system for same-day settlement, enables the settlement banks to achieve positive end-of-day balances on these accounts. In this way it acts as the marginal supplier of money to the banking system, enabling effective system-wide liquidity management in normal market conditions.

The Bank of England manages its balance sheet in such a way that participants in the wholesale money markets normally seek refinancing (ie borrow money) from it on a daily basis: this can be illustrated by the structure of its balance sheet, shown in Figure 1.(4) Its principal liabilities are the bank notes in circulation and the deposits made by commercial banks and other customers (eg other central banks).(5) These liabilities are largely matched by two assets: the stock of money market refinancing(6) (which consists of the short-term assets acquired by the Bank of England in its open market operations) and the Ways and Means advance (which represents the stock of borrowing by the government from the Bank of England).

Figure 1
Simplified version of the Bank of England's balance sheet as at 28 February 2001

£ billions

Liabilities		Assets	
Bank note issue	27	Stock of refinancing	16
Sterling-denominated deposits from banks and other customers and the Bank of England's capital and reserves	5	Ways and Means advance	13
		Other sterling-denominated assets	3
Foreign currency denominated liabilities	7	Foreign currency denominated assets	7
Total	**39**	**Total**	**39**

(1) For further details about the way in which changes in the Bank of England's repo rate affect other interest rates and their collective impact on economic activity, see 'The transmission mechanism of monetary policy', *Bank of England Quarterly Bulletin,* May 1999, pages 161–70. See also 'Asset prices and inflation' by Roger Clews on pages 178–85 of this *Bulletin*.
(2) In practice, the settlement banks prefer their end-of-day balances to be slightly greater than the bare minimum of zero, in order to cover themselves against uncertainties in their daily cash flows. Consequently, the Bank of England targets a small positive level of bankers' operational balances within its overall forecast of the system's liquidity position each day.
(3) For further details on sterling payment systems see *Oversight of Payment Systems*, available at www.bankofengland.co.uk/fsr/payment.htm
(4) The Bank of England is required by the Bank Charter Act 1844 to separate the note issue function from its other activities. Accordingly, for accounting purposes, the balance sheet is divided into two accounting entities: the Issue Department and the Banking Department. The Issue Department comprises solely of the note issue and the assets backing it. The Banking Department comprises all the other activities of the Bank of England. For illustrative purposes only, Figure 1 shows a consolidated version of the Bank of England's balance sheet at a high level of aggregation, without the accounting split between the Issue and Banking Departments. Details of the Issue and Banking Department balance sheets can be found in the Bank of England's *Annual Report*, the weekly *Bank Return* and Table B1.1 of the Bank of England's *Monetary and Financial Statistics* (all are available on the Bank's web site).
(5) These deposits include balances on settlement accounts (used to settle payments between banks) as well as the non-interest bearing Cash Ratio Deposits that deposit-taking institutions in the United Kingdom are required to place with the Bank of England. The latter deposits are used by the Bank of England to finance its unrecovered costs associated with its monetary policy and financial stability activities.
(6) The stock of money market refinancing can be an asset of both the Issue and Banking Departments.

When commercial banks and the public increase their holdings of bank notes, they purchase them from the Bank of England, creating a liquidity shortage in the banking system, as the Bank of England debits the banks' settlement accounts with the cost. As Figure 1 illustrates, commercial banks and money market participants need to seek refinancing from the Bank of England when the demand for bank notes rises or if the level of sterling-denominated deposits held at the Bank of England by banks or other customers increases. Such a financing requirement can be offset either by a reduction in the size of the settlement banks' operational deposits at the Bank of England or by an increase in the stock of refinancing (which would be achieved through the Bank of England's open market operations) or a combination of the two. In practice, however, changes in settlement banks' operational deposits held at the Bank of England are generally small. This is because the settlement banks usually seek to keep their operational deposits as close to zero as possible, as they are non interest bearing. In normal circumstances, the Bank of England does not permit these operational accounts to have a balance below zero at the end of the day; any such unauthorised negative balance (which would need to be collateralised by eligible securities) would normally be charged a penal rate of interest.(1) In rare circumstances, if normal market mechanisms were impaired (eg because of infrastructure or confidence problems), the Bank of England's operational deposit-taking and open market operations could be used to intermediate between firms with liquidity shortages and surpluses.

Until April 2000, the UK government's short-term financing needs were met by varying the size of the Ways and Means advance from the Bank of England. The government's cash position was thus managed as a component of the Bank of England's overall management of system liquidity through its open market operations. From 3 April 2000, when the UK Debt Management Office (DMO) assumed responsibility for managing the Exchequer's cash position, the government ceased to use the Ways and Means advance in this way;(2) the level of the advance has been frozen since then. Consequently, the principal counterpart to the growth in the stock of bank notes is an increase in the stock of refinancing provided in the Bank of England's open market operations. In recent years, the stock of bank notes has been growing by around £2 billion a year, matched by a similar rise in the stock of refinancing. In essence, the Bank of England's sterling liabilities structurally drain liquidity from the banking system, while the purchase of assets provides liquidity. Some assets (eg the Ways and Means advance or the Bank of England's holdings of gilts) provide liquidity on a long-term or semi-permanent basis. Other assets (the stock of refinancing) provide liquidity on a short-term basis, given their short maturity.

The Bank of England chooses to provide the refinancing required by money market participants by lending to its counterparties for a short maturity in the form of repos or by purchasing bills. When these repos or bills mature, or when commercial banks acquire additional bank notes, a payment is made to the Bank of England. This creates a liquidity shortage in the banking system and, as a result, market participants have to seek refinancing from the Bank of England to enable the settlement banks to achieve positive end-of-day balances on their operational accounts. The short-term nature of the refinancing provided by the Bank of England ensures that the banking system almost always has a net shortage of funds each day. This refinancing is largely, although not entirely, conducted via repo transactions, which usually have a maturity of two weeks (ten working days), by which the Bank of England provides liquidity to market participants in exchange for eligible collateral. On average, around one-eighth of the lending that makes up the stock of refinancing matures each day(3) (about £2–£2.5 billion) and is usually the largest influence on the day's shortage. In this way the Bank of England turns over the short-term assets acquired in its money market operations and has an opportunity each day to influence the levels of wholesale and retail market interest rates. Chart 38 in the 'Markets and operations' article on page 145 shows the size of the stock of refinancing and the daily net liquidity needs of the banking system (or shortages) from April 1997 to March 2002.

(1) During the business day, the settlement banks' operational accounts in the RTGS system often run a collateralised negative balance so that payments can be made between banks in real time (no charge is made for intra-day liquidity).
(2) For further details see the DMO's publication *Exchequer cash management: a DMO handbook*, February 2002, available at www.dmo.gov.uk/cash/public/cmbook200202.pdf
(3) The average maturity is less than ten working days because the Bank of England's counterparties can also choose to obtain refinancing by selling bills on an outright basis with less than a two-week residual maturity, or can obtain overnight repo refinancing at a penal interest rate.

III Open market operations

The Bank of England's ability to influence market interest rates depends principally on it supplying the marginal liquidity required by the banking system (ie the liquidity shortage), rather than on the way in which liquidity is supplied. The Bank of England uses open market operations to supply liquidity because it wishes to foster the development of private sector markets in high credit quality securities, thereby giving banks and other market participants an incentive to use these markets to manage their liquidity. As noted in Section II, the short-term maturity of the Bank of England's lending operations ensures that its counterparties regularly need to come back to refinance the lending. As a result, on most days the banking system is short of liquidity, which the Bank of England provides via open market operations. It seeks to provide the system's daily liquidity requirement at its principal rounds of operations at 9.45 am and 2.30 pm, which are conducted at the official repo rate, set by the MPC. Sometimes, however, liquidity may need to be provided later in the day: further rounds of operations, conducted at 3.30 pm and 4.20 pm, are designed to square off any remaining imbalances in the banking system in as orderly a manner as possible, usually at a penal rate of interest.

Eligible collateral

In its repo operations to supply funds to market participants, the Bank of England purchases eligible securities from its counterparties and agrees to sell back equivalent securities at a predetermined future date, around two weeks later. The interest rate charged on these two-week repos is the official repo rate.(1) Alongside this technique, the Bank of England also offers its counterparties the option to sell it bills on an outright basis. In this case, the amount the Bank of England pays for the bills is less than their nominal value: the discount factor used in such operations is set at a level equivalent to the official repo rate. The securities purchased are required to be of high credit quality; actively traded in a continuous, liquid market; held widely across the financial system; and available in adequate supply. The choice of obtaining liquidity by repo or outright sale of securities, and the particular eligible instrument provided as collateral, are normally at the counterparty's discretion, subject to settlement constraints.

In its repo operations to supply funds to market participants, the Bank of England is willing to purchase (and then resell) the following types of securities:(2)

- gilts (including gilt strips);
- HM Government non-sterling marketable debt;
- sterling Treasury bills;
- Bank of England euro bills and euro notes;
- eligible bank bills;(3)
- eligible local authority bills;
- sterling-denominated securities issued by European Economic Area (EEA) central governments and central banks and major international institutions; and
- euro-denominated securities issued by EEA central governments and central banks and major international institutions that are eligible for use in the European System of Central Banks' monetary policy operations.

The total stock of securities eligible for open market operations is around £2½ trillion and, typically, some £15–£20 billion of these will be held by the Bank of England as collateral for open market operations at any one time. Chart 40 in the 'Markets and operations' article on page 146 shows the broad categories of instruments that have been held as collateral for open market operations from January 2000 to April 2002.

The market prices of these eligible securities can change during the life of a repo transaction. Any fall in the price of a security would pose a credit risk to the Bank of England if one of its counterparties were to fail to complete the second leg of a repo transaction. To help protect itself against loss in such a situation, it requires its counterparties to provide securities with a greater market value than the amount of liquidity provided. The size of the initial mark-up margin required currently varies between 0.5% and 9%, depending on the type of security, its currency of denomination and its residual maturity.(4) Each day the Bank of England compares the market values, after adjusting for the appropriate margin, of the securities it is holding in repo operations with their current repurchase prices; if the market value falls

(1) The Bank of England could choose to operate on a variable-rate basis through a tender process. If it were to conduct a variable-rate tender, the form of the tender would be announced at the time or in advance.
(2) The full list of securities eligible to be used in the Bank's open market operations is available on the Bank's web site at www.bankofengland.co.uk/markets/money/eligiblesecurities.htm
(3) For further details see www.bankofengland.co.uk/markets/money/eligiblebanks.htm
(4) Details of these margins are contained in the Operational Notice.

below the repurchase price by a certain trigger amount the Bank of England requires its counterparties to provide additional securities sufficient to eliminate the margin deficit.

The range of securities that the Bank of England is willing to purchase on an outright basis in its open market operations is narrower:

- sterling Treasury bills;
- eligible bank bills; and
- eligible local authority bills.

The maximum residual maturity of the bills that the Bank of England is willing to purchase outright is no longer than the maturity of the longest-dated repo for which bids have been invited that day (usually around two weeks). The minimum residual maturity for outright bill purchases is one day.

The 9.45 am and 2.30 pm rounds of operations

As noted in Section II, any change in the stock of bank notes in circulation (or other sterling movements across the Bank of England's balance sheet) will generate an equal and offsetting financing requirement for the banking sector. The Bank of England closely monitors these flows across its balance sheet in order to know how much liquidity to supply to market participants each day. Similarly, the Bank of England's counterparties find this information useful in informing their view of market conditions. To facilitate this process, the Bank of England publishes a forecast of the daily system liquidity shortage (the expected amount of refinancing likely to be required) on its wire service pages each day.(1)

The Bank of England's main daily open market operations are normally conducted at 9.45 am and 2.30 pm.(2) At 9.45 am, the Bank of England releases a forecast of the market's liquidity position for the day on its wire services pages together with some accompanying information about the principal factors contributing to the forecast, including changes in the note issue, the amount of maturing refinancing to be repaid that day, and the deviation from target (on the previous day) of the settlement banks' balances on their accounts at the Bank of England. The box (on page 158) provides an example of the daily information released about open market operations. If, as is normally the case, the market is forecast to be short of liquidity, and if the forecast shortage exceeds a minimum threshold, the Bank of England invites its counterparties to submit offers for repos and/or outright sales of bills. The Bank of England also states the interest rate at which it is prepared to operate (the repo rate) and the maturity date or dates for the repos. Repos are normally invited to one or two dates;(3) the Bank of England selects these dates from the two-week forward date and the working days either side of that forward date. If the Bank of England offers repos to two or more maturity dates, the total amount of funds allotted to each participant is normally split approximately equally between these dates, or at the Bank's discretion.

Counterparties wishing to participate in the round have five minutes in which to bid for the funds that they wish to obtain through repo and/or outright sales of bills. No single counterparty is permitted to bid for more than the total amount of the forecast shortage. The Bank of England normally announces the results within 15 minutes of the start of the round, publishing the total amounts allotted via repos and through outright purchases.

At the 9.45 am round, the Bank of England normally does not relieve all of the forecast shortage (even if this amount is fully bid for) since it may need to revise slightly its forecast during the course of the day in the light of updated information. If the aggregate bids for funds exceed the amount the Bank of England wishes to allot, it allocates the bids pro rata. The amount by which the Bank of England seeks to leave the market short of funds after the 9.45 am round is determined principally by the likely scale of revisions to the forecast shortage, but may also be adjusted in the light of the behaviour of short-dated interest rates relative to the official repo rate.

A similar process is repeated at the next round of operations, at 2.30 pm. The Bank of England publishes an update of the day's forecast shortage as well as the residual shortage after allowing for liquidity supplied at the 9.45 am round. If there is still a residual shortage, a further round of bids is invited from the Bank of England's counterparties and the results are once again announced within 15 minutes. The 2.30 pm round is

(1) Available on Reuters BOE/MONEYOPS1-6; Moneyline Telerate 3868-3873; Knight-Ridder 3286-3292; Thomson Financial Topic3 44731-44736; Bloomberg BOE.
(2) On the days of MPC decisions the first round is delayed until 12.15 pm.
(3) Very occasionally, the Bank of England may invite repos to three or four maturity dates in order to smooth the pattern of future daily shortages.

The Bank of England's wire services announcements on 27 March 2002

9.45 am Initial liquidity forecast Stg 1750 million shortage
A round of fixed-rate operations is invited. The Bank's repo rate is 4.0%.
The operations will comprise repos to 11 April and outright offers of bills maturing on or before 11 April.
Principal factors in the forecast:
Maturing outright purchases -109
Maturing bill/gilt repo -1402
Bank/Customer transactions +120
Rise in note circulation -315
Maturing settlement bank late repo facility -75
Bankers' balances above target +10

9.51 am Total amount allotted—Stg 1550 million
of which—outright Stg 0 million, repo Stg 1550 million

2.30 pm No revision to liquidity forecast. Residual shortage—Stg 200 million
A round of fixed-rate operations is invited. The Bank's repo rate is 4.0%.
The operations will comprise repos to 11 April and outright offers of bills maturing on or before 11 April.

2.36 pm Total amount allotted—Stg 200 million
of which—outright Stg 0 million, repo Stg 200 million

3.30 pm No residual shortage.
Deposit Facility: bids are invited for the purchase from the Bank of overnight DBV at a rate of 3.0%.

3.36 pm No use has been made of the Deposit Facility.

4.20 pm Final liquidity forecast revision—Stg 1800 million
Residual shortage—Stg 50 million
The settlement bank late repo facility is available.

4.31 pm Stg 50 million has been provided in the settlement bank late repo facility.

timed so as to enable the Bank of England to make use of a later and more accurate forecast of the market's liquidity needs. By the completion of the 2.30 pm round, the Bank of England aims to have supplied the market with enough liquidity to enable all of the settlement banks to maintain positive balances on their operational accounts at the end of the day. In practice, however, further operations later in the day at 3.30 pm and 4.20 pm (described below) are sometimes required to achieve this, because market participants do not always bid for enough funds at 2.30 pm to relieve the residual shortage, or there may be a late revision to the liquidity forecast.

The Bank of England also reserves the right to scale down its allotment of funds to individual counterparties. Such action may be taken to reduce what the Bank of England considers to be an undue concentration of its operations in the hands of a few of its counterparties and so help ensure that access to the liquidity provided by the Bank of England is available as smoothly as possible to a wide range of market participants.

The techniques described above are employed when the banking system is forecast to be short of liquidity, but, very occasionally, a surplus of liquidity is forecast. On these days the Bank of England absorbs the market surplus by inviting its counterparties to place money with it in a short-maturity repo transaction. These repo transactions are conducted on a competitive rate tender basis. If the forecast surplus exceeds a minimum threshold, tenders are held at both 9.45 am and 2.30 pm; otherwise a single tender is held at 2.30 pm.

Counterparties provide their offers to the Bank of England within five minutes of the invitation and the Bank then ranks them in interest rate order and accepts the offers with the lowest interest rates, up to the amount of the forecast liquidity surplus. At a 9.45 am tender, the Bank of England would normally not absorb the entire forecast surplus (even if this amount is fully offered) since it may need to revise its forecast during the course of the day in the light of updated information. If the aggregate offers for funds exceed the amount the Bank of England wishes to absorb, it allocates the bids pro rata. Such repos are invited with one or more specified maturity dates; the dates chosen will normally be days on which a significant liquidity shortage is forecast. Alternatively, the Bank of England can pre-empt a forecast liquidity surplus by asking the DMO to issue extra Treasury bills at its weekly tender and deposit the proceeds with the Bank; this would drain structurally any surplus liquidity from the money market for a period.

The Bank of England can also use foreign exchange swaps to supply liquidity to the sterling money market. Such swap transactions have occasionally been used to help smooth the forecast pattern of future daily liquidity shortages and are then reported in the 'Markets and operations' article of the *Bank of England Quarterly Bulletin*.

3.30 pm overnight repo facilities

The Bank of England aims to supply the net amount of liquidity needed by the banking system (ie the forecast daily shortage) by the end of its 2.30 pm round of open market operations and expects its counterparties to manage their individual liquidity needs sufficiently closely to enable it to meet this aim. Nonetheless, unforeseen variations in market participants' positions may mean that the banking system as a whole may still be short of liquidity, or some individual participants may have long positions. For these reasons, the Bank of England makes an overnight lending facility available at 3.30 pm, if there is still a residual market shortage, and an overnight deposit facility.

In the event of a residual liquidity shortage remaining after the 2.30 pm round of operations, the Bank of England publishes a forecast of the shortage remaining at 3.30 pm and invites bids for overnight repos. The rate applied to these overnight repos is set normally at 100 basis points above the official repo rate. This margin is intended to encourage the market to participate fully in the principal rounds of two-week operations at 9.45 am and 2.30 pm. The amount of liquidity the Bank of England provides at this round does not normally exceed the residual forecast shortage.[1]

Also at 3.30 pm, the Bank of England makes available a daily overnight deposit facility. This provides counterparties with a standing invitation to make (collateralised) overnight deposits with the Bank of England and so helps to moderate undue softness in overnight market interest rates at the end of the day, as counterparties have an option to lend surplus liquidity. To ensure that this facility does not discourage active trading between market participants, the interest rate paid on overnight deposits is set normally at 100 basis points below the official repo rate. The deposits made by counterparties are collateralised against gilts.

The 100 basis point upper and lower 'band' is designed to allow active trading in the sterling money markets but to moderate undue volatility in market interest rates, which might complicate banks' liquidity management and deter the use of money markets by non-financial companies. Chart 37 in the 'Markets and operations' article on page 144 shows the spread between SONIA,[2] the two-week and one-month interbank rates and the official repo rate from January 2001 to April 2002.

4.20 pm settlement bank late repo facility

If, after the conclusion of the above open market operations, a residual liquidity shortage remains, the Bank of England makes available an overnight repo facility to the settlement banks at the end of the day, after market trading has finished, to prevent one or more of them ending the day with a negative balance on their operational accounts. These institutions are invited to apply for funds between 4.20 pm and 4.30 pm. No settlement bank is permitted to apply for more than the amount of the residual shortage. When the 3.30 pm deposit facility has been used, the amount of refinancing available at 4.20 pm is increased by the size of the deposit(s), thereby ensuring that this liquidity is recycled to settlement banks. The Bank of England

(1) However, the Bank of England reserves the right to supply funds in excess of the forecast remaining shortage.
(2) The sterling overnight index average: a weighted average of rates on all unsecured sterling overnight cash transactions brokered in London between midnight and 4.15 pm each day.

allots bids for funds from the settlement banks pro rata if, in total, they exceed the amount of the residual shortage.

On days when the residual forecast shortage reflects only a late revision to the day's forecast shortage by the Bank of England (including the recycling of 3.30 pm deposits), funds are normally provided to the settlement banks at the official repo rate. The forecast liquidity need may also be revised at 4.20 pm, should the DMO find that it has an Exchequer cash surplus at that late point in the day (the DMO is not able to settle transactions with its counterparties this late in the day). The Bank of England therefore provides the settlement banks with any additional refinancing necessary to balance their positions, at the official repo rate. However, on days when there is a remaining shortage but there has been no late change to the forecast (and, therefore, the settlement banks should reasonably have been able to take the necessary funds from the Bank of England earlier in the day) funds are provided at a higher rate, normally 150 basis points above the official repo rate. On days when a residual shortage at 4.20 pm reflects both a late forecast revision against the market and some remaining shortage from earlier rounds, a single composite rate is charged—normally a weighted average of the official repo rate (weighted by the share of the forecast revision in the residual shortage) and the official repo rate plus 150 basis points (weighted by the rest of the shortage).

Chart 39 in the 'Markets and operations' article on page 145 shows the refinancing provided at the 9.45 am, 2.30 pm and overnight rounds from January 1999 to April 2002.

IV Counterparties

The Bank of England stands ready to deal in its daily operations with a wide range of financial institutions, provided they satisfy a number of functional criteria, designed to ensure both that its operations function efficiently and that the liquidity supplied is then made available as smoothly as possible to other participants in the sterling money markets. The Bank of England is prepared to accept as counterparties banks, building societies and securities firms that are subject to appropriate prudential supervision and that meet the following criteria:

- Counterparties must have the technical capability to respond quickly and efficiently to the Bank of England's daily rounds of operations.

- Counterparties must maintain an active presence in the markets for at least one of the instruments eligible in the Bank of England's operations. Counterparties are expected to have an active trading presence in the core sterling money markets on a reasonably continuous basis and with a range of unrelated counterparties, on a scale that would enable them to contribute in a material way to distributing the liquidity provided by the Bank of England around the system.

- Counterparties are expected to participate regularly in the Bank of England's daily rounds of open market operations. This does not mean that counterparties are obliged to take part in the operations every day or in every round on any one day. But the Bank of England does expect them to participate on most occasions and, on average over time, on a reasonable scale.

- The Bank of England will look to its counterparties to provide useful information on a regular basis on market conditions and developments in the sterling money markets.

The Bank of England expects the functional requirements to be met on a continuous basis, and monitors compliance with them by its counterparties. It takes steps to ensure that the legal agreements it signs with counterparties are, and remain, at all times, fully valid and robust and wishes to be satisfied that counterparties continue to meet the prudential and other requirements of their relevant supervisory body. Applications to become a counterparty are invited from any institution that fulfils the functional criteria at any time.(1) The Bank of England reserves the right to cease dealing, temporarily or for longer periods, with any counterparty at its own discretion.

The Bank of England provides a regular report on its operations in the 'Markets and operations' article published in each issue of the *Bank of England Quarterly Bulletin*. It continues to monitor the workings of its open market operations and keeps under review the possible need for further adaptation. Developments

(1) In May 2002, there were 17 counterparties participating in open market operations. The Bank of England does not publish a list of these institutions. Institutions interested in becoming counterparties may apply to the Head of Gilt-Edged & Money Markets Division at the Bank of England.

are discussed with market participants at the quarterly meetings of the Sterling Money Market Liaison Group.[1] Any operational adaptations are announced in published Market Notices. In addition, the Bank of England publishes details of its operations in the sterling money markets in Tables D2.1 and D2.2 of the monthly Bank of England *Monetary and Financial Statistics* publication.[2]

(1) For more information see 'The Bank's contacts with the money, repo and stock lending markets', *Bank of England Quarterly Bulletin*, Winter 2001, pages 431–33. See also www.bankofengland.co.uk/markets/smmlg.htm
(2) See www.bankofengland.co.uk/mfsd/index.htm