

# Markets and operations

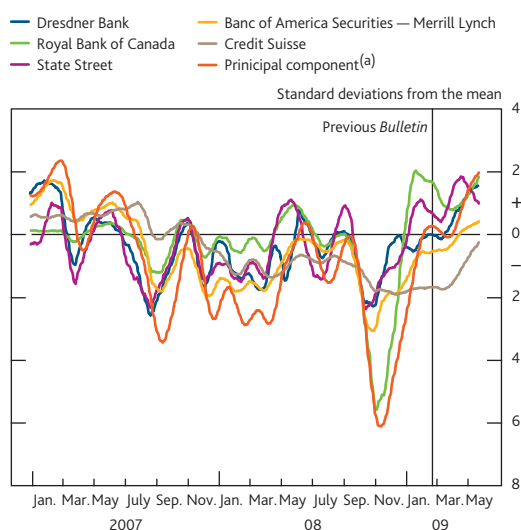
This article reviews developments in sterling financial markets since the 2009 Q1 *Quarterly Bulletin* up to 22 May 2009. The article also reviews the Bank's official operations during this period.

## Sterling financial markets<sup>(1)</sup>

### Overview

Financial markets generally recovered from their recent lows in early March, amid signs that the rate of contraction of economic activity in the United Kingdom and elsewhere may have slowed and reduced concerns about the fragility of banks. Conditions in bank funding markets reportedly improved a little, with short-term interbank borrowing spreads narrowing toward levels observed prior to the failure of Lehman Brothers last September. More generally, contacts reported some modest pickup in investor risk appetite (**Chart 1**), which helped to boost the prices of risky assets such as equities and corporate bonds both in the United Kingdom and other countries. This was accompanied by a pickup in capital market issuance as firms raised alternative forms of finance to bank credit.

**Chart 1** Proxy measures of risk appetite



Sources: Banc of America Securities — Merrill Lynch, Credit Suisse, Dresdner Bank, Royal Bank of Canada, State Street and Bank calculations.

(a) Principal component analysis was applied to 20-day rolling moving averages of the five individual measures of risk appetite produced by selected financial institutions.

UK government bond yields were volatile, which contacts said partly reflected news about actual and prospective sales and purchases of gilts by the official sector. In particular, the Bank

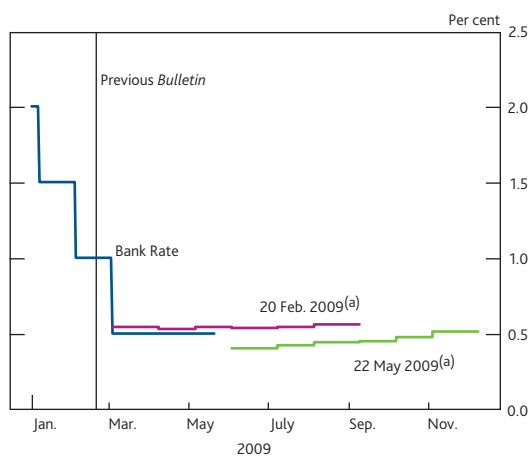
commenced its programme of asset purchases financed by central bank reserves in March and the planned scale of these purchases was subsequently increased by the Bank of England's Monetary Policy Committee (MPC) at its May meeting. In addition, the UK Government outlined its plans for increased public sector borrowing.

The UK (and global) macroeconomic outlook, however, remained highly uncertain with significant upside and downside risks. As a result, contacts suggested that sentiment in sterling markets remained fragile and that the actions of the UK authorities to support financial systems and ease overall credit conditions remained important to sustaining the improvement in the outlook for the UK economy.

### Recent developments in sterling capital markets Monetary policy implementation

The MPC announced on 5 March that Bank Rate would be reduced by 0.5 percentage points to 0.5%. Interest rates on sterling overnight index swaps (OIS) suggested that market participants expected Bank Rate to remain at 0.5% until at least the end of 2009 (**Chart 2**).

**Chart 2** Bank Rate and forward market interest rates



(a) Implied forward overnight interest rates derived from sterling overnight index average (SONIA) swaps.

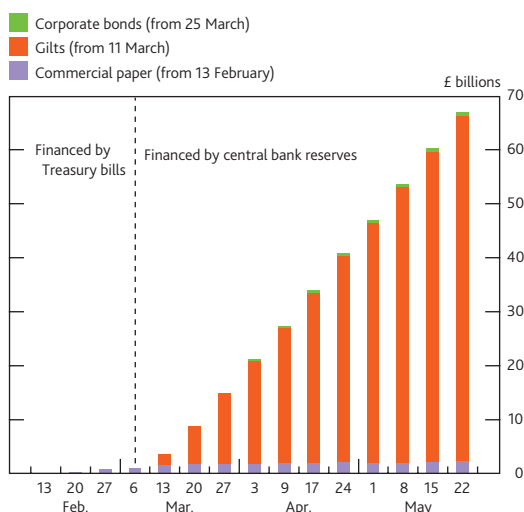
(1) The data cut-off for this section is 22 May.

Earlier in the year, the Bank had established an Asset Purchase Facility (APF) with the initial objective to improve the functioning of corporate credit markets by making purchases of high-quality private sector assets financed by the issuance of Treasury bills. In addition to reducing Bank Rate on 5 March, the MPC also announced that the Bank would use the APF as a monetary policy tool and undertake a programme of asset purchases financed by the issuance of central bank reserves.<sup>(1)</sup> This purchase programme involved purchasing £75 billion of assets within three months. Subsequently, on 7 May the MPC voted to increase the scale of purchases by £50 billion to a total of £125 billion by early August.

The purpose of these asset purchases was to boost the supply of money in the economy, ease conditions in corporate credit markets and, ultimately, to raise the rate of growth of nominal demand to ensure inflation meets the 2% inflation target in the medium term.<sup>(2)</sup> To this end, the Bank started buying UK government debt and high-quality private sector assets. In order to reach the specified total for asset purchases, the majority of purchases were UK gilts.

As of 22 May, asset purchases totalled about £67 billion, of which about £66 billion were financed by central bank reserves (Chart 3). And further asset purchases were made in the final week of May to bring the total of assets purchased to £73.5 billion. More details of these purchases are provided on pages 81–83. In addition, the box on pages 70–71 reviews the APF's purchases of private sector assets.

**Chart 3** Cumulative APF asset purchases by type



### Changes to the Bank's sterling monetary framework

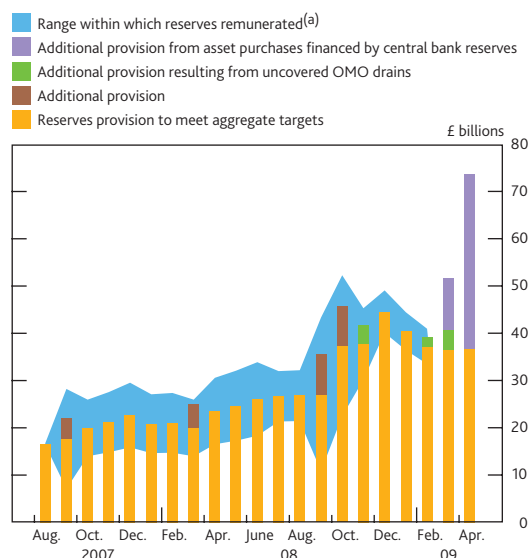
As a consequence of the MPC's decision to finance asset purchases through the issuance of central bank reserves, the Bank announced a number of changes to the sterling monetary framework. In particular, with effect from 5 March, *all* reserves balances held by commercial banks at the Bank were remunerated at Bank Rate. And the usual system, in which

these banks choose monthly reserves targets to achieve on average over a maintenance period, was suspended.<sup>(3)</sup>

The Bank also announced that its operational approach would be, broadly, to ensure a net supply of reserves around the aggregate level of reserves targets initially set by participants for the March maintenance period, plus the amount of reserves injected via the Bank's programme of asset purchases.

Prior to these changes, aggregate reserves targets for the February maintenance period decreased but remained high relative to their average since the launch of the reserves scheme in May 2006 (Chart 4). Reserves subsequently increased broadly in line with the amount injected by asset purchases. The Bank's market operations are described in more detail on pages 81–86.

**Chart 4** Aggregate reserves targets and reserves provision



(a) With effect from 5 March, all reserves balances held by reserves banks were remunerated at Bank Rate.

### Short-dated market interest rates

Before the changes to the sterling monetary framework described above, with the exception of a brief spike on 16 February, sterling secured overnight interest rates tended to trade a little below Bank Rate during the February maintenance period (Chart 5).

The decision to remunerate any positive level of reserves balances at Bank Rate removed the interest rate incentive for reserves scheme members to lend funds in the overnight

- (1) The Asset Purchase Facility is described in more detail on page 26 of the 'Markets and operations' article in the 2009 Q1 *Quarterly Bulletin*.
- (2) This use of asset purchases for monetary policy purposes is described in the May 2009 *Inflation Report*, pages 16–17 and the February 2009 *Inflation Report*, pages 44–45 and is discussed in more depth in the article on pages 90–100 of this *Quarterly Bulletin*.
- (3) However, this article continues to use the term 'maintenance period' for convenience to refer to the period between one MPC decision date and the next.

## Purchases of private sector assets by the Bank's Asset Purchase Facility

The objective of the Bank's purchases of high-quality private sector assets is to improve the liquidity in, and increase the flow of, corporate credit. This box reviews the purchases of private sector assets, and describes some measures that may help to assess progress against the objectives of the Asset Purchase Facility (APF).

The Bank began purchasing commercial paper (CP) on 13 February and the first purchases of corporate bonds were made on 25 March. Initial purchases of CP were financed by the issuance of Treasury bills. Since 6 March, private sector asset purchases were financed by the issuance of central bank reserves.<sup>(1)</sup>

### Commercial paper facility

The APF offers to purchase, at a minimum spread over risk-free rates, CP in the primary market via dealers, and from other eligible counterparties in the secondary market. The aim is to channel funds directly to parts of the corporate sector in the United Kingdom while also underpinning secondary market activity, and so removing obstacles to corporate access to capital markets. In particular, it was anticipated that issuers could sell CP to the APF if it were economic for them to do so. But if spreads demanded by other investors were to fall, in due course corporates' usage of the APF might decline.

As of 21 May, net purchases of CP amounted to £2.2 billion. The vast majority of purchases were in primary markets. On average, the total amount outstanding of non-bank sterling CP was a little higher than in the period before the previous *Bulletin*, but the sterling corporate CP market remained small (**Chart A**).

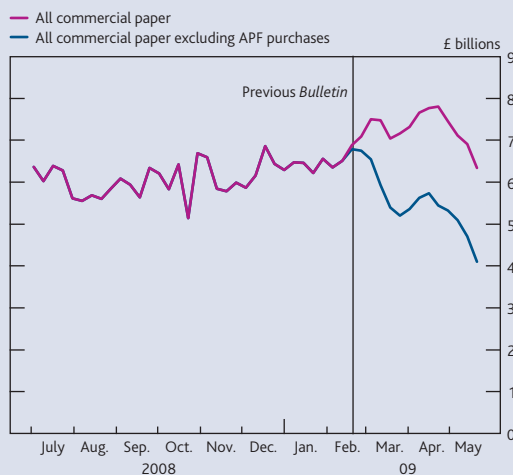
The APF offers to purchase CP with a minimum short-term credit rating of A3/P3/F3. The stock of lower-rated CP outstanding increased, suggesting the APF facilitated access to short-term finance for these issuers. The APF's purchases of higher-rated CP have, in contrast, partly substituted for issuance to other investors, suggesting that the APF reduced the cost of funding for issuers of those securities.

Indicative data for issuance prices of CP in primary markets to non-APF investors suggests that spreads narrowed, particularly for lower-rated corporates, towards the rates at which the APF offers to purchase CP. Some corporates benefited from issuing to other investors at these lower rates.

### Corporate bond secondary market scheme

On 25 March the Bank began purchases of high-quality corporate bonds. The focus of the corporate bond scheme is

**Chart A** Sterling commercial paper outstanding for UK corporates and non-bank financial firms<sup>(a)</sup>



Sources: CP Ware and Bank calculations.

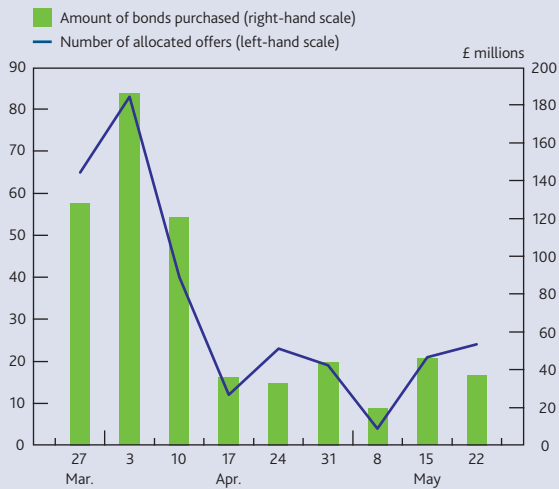
(a) Public issues recorded in Euroclear.

to facilitate secondary market activity, to help to reduce liquidity premia on high-quality corporate bonds, and so improve firms' access to capital markets. Secondary markets for corporate bonds had become impaired during the financial crisis partly due to greater reluctance by banks to hold bonds on their balance sheets between buying bonds and selling them to other investors. This resulted in the pricing of securities becoming increasingly opaque. It was anticipated that the APF could help to improve price discovery and transparency by offering to make regular small purchases of a wide range of high-quality corporate bonds. This would help to establish pricing points and potentially improve secondary market liquidity. In turn this should act to reduce illiquidity premia in corporate spreads and so the cost of finance to corporates in the primary issuance markets.

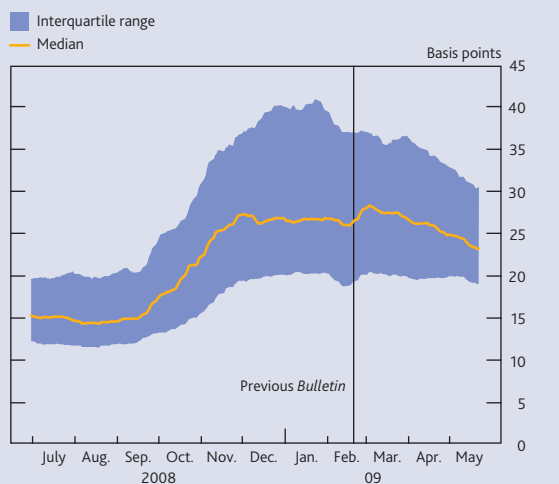
Consistent with the objective to make frequent but small purchases, in the first three weeks of the Scheme, the APF established prices for on average of around 60 bonds per week. These initial sales allowed holders of those bonds to readjust their portfolios. Subsequently, the APF on average made around 17 purchases a week (**Chart B**).

There is some evidence that the Bank's purchases helped to improve price transparency in secondary markets. Contacts reported that the disclosure of auction results reduced the uncertainty for all investors in valuing their portfolios. Consistent with that, the distribution of dealers' offers within the auctions for each security narrowed. And there were some indications that bid-ask spreads for eligible sterling corporate bonds started to narrow slightly (**Chart C**).

Sterling corporate bond spreads declined over the period of the scheme. However, the reduction in spreads occurred

**Chart B** Weekly purchases of sterling corporate bonds

Source: CP Ware.

**Chart C** Bid-ask spreads on sterling corporate bonds<sup>(a)</sup>

Source: UBS Delta

(a) Ten-day moving average of bid-ask spreads for sterling corporate bonds eligible for the APF.

alongside an overall improvement in sentiment in global credit markets (Chart 17 on page 78) and the improvement in liquidity conditions in the sterling corporate bond market may not simply reflect the increased demand for bonds linked to the Bank's purchases. Primary issuance was strong since the beginning of 2009 and this trend continued since the launch of the APF. Market contacts suggested that credit market functioning improved more generally. And lower-rated corporates were seen to be better able to issue and there were tentative signs of new issuance premia starting to fall.

### Credit Guarantee Scheme bonds

The Bank did not make any purchases of bonds issued under HM Government's Credit Guarantee Scheme from the secondary market, but stands ready to do so should conditions in that market deteriorate.

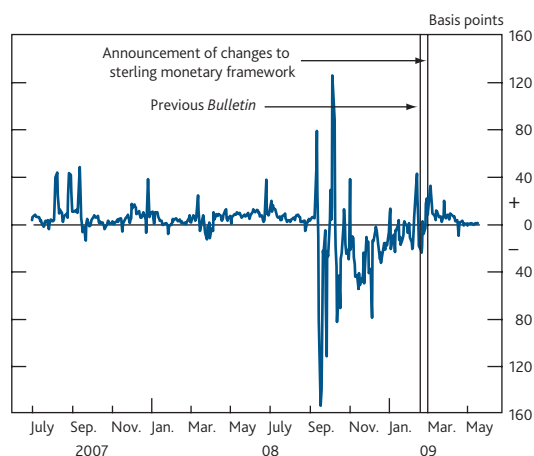
### Proposals for working capital facilities

On 8 June, the Bank released a consultative paper setting out proposed extensions to the APF. The Bank announced that it intended to introduce in the near future a secured commercial paper facility to support the provision of working capital to a broad population of companies. The facility would be designed to contribute to the APF's objectives of improving liquidity in credit markets that were not functioning normally.<sup>(2)</sup>

(1) This use of asset purchases for monetary policy purposes is described in the May 2009 *Inflation Report*, pages 16–17 and the February 2009 *Inflation Report*, pages 44–45 and is discussed in more depth in the article on pages 90–100 of this *Quarterly Bulletin*.

(2) For further details see [www.bankofengland.co.uk/markets/apf/consultation090608.pdf](http://www.bankofengland.co.uk/markets/apf/consultation090608.pdf).

**Chart 5** Spread to Bank Rate of secured sterling overnight interest rate



Sources: BrokerTec and Bank calculations.

market at rates below Bank Rate. On the other hand, the rate paid on the Bank's Operational Standing Deposit Facility was reduced to zero, so non-reserves scheme members would have found it attractive to lend overnight at any positive interest rate.

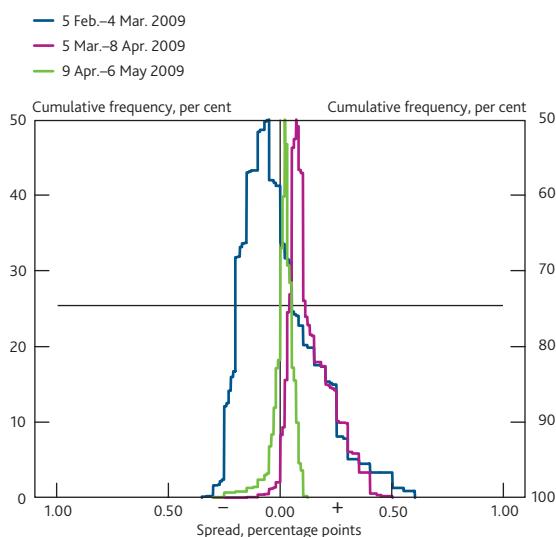
On balance, sterling secured overnight rates generally traded above Bank Rate during March. But as an increasing amount of reserves was supplied through the asset purchase programme, the secured overnight rate fell and traded close to Bank Rate during April and May (Chart 5). There was also a narrowing in the distribution of the spread of sterling secured overnight interest rates to Bank Rate (Chart 6).

Secured overnight interest rates continued to be higher than unsecured overnight interest rates, as measured by sterling overnight index average (SONIA) rates (Chart 7). In principle, one might expect market participants to finance secured lending by borrowing in the unsecured market in order to profit from this difference, which would tend to eliminate or at least reduce such a spread. As mentioned in previous *Bulletins*, fragmentation of money markets may have prevented this.<sup>(1)</sup> In particular, the type of participant in each market may influence observed market interest rates. For example, borrowers whose access to unsecured funds has been restricted due to credit concerns may have been constrained to borrow in the secured market. At the same time, unsecured markets may contain proportionately more participants without access to reserves accounts at the Bank, such as non-bank financial institutions, seeking to lend cash balances. Taken together, both factors may have lowered unsecured rates relative to secured rates.

However, an alternative measure of sterling unsecured funding rates — the overnight London interbank offered rate (Libor) — tended to be closer to secured rates than SONIA. This may have reflected differences in the way the two measures of

unsecured overnight rates are compiled. Specifically, SONIA is a weighted average of interest rates on transactions conducted via brokers each day. In contrast, overnight Libor reflects quoted interest rates collated across a panel of 16 banks which are surveyed at a particular time each morning.

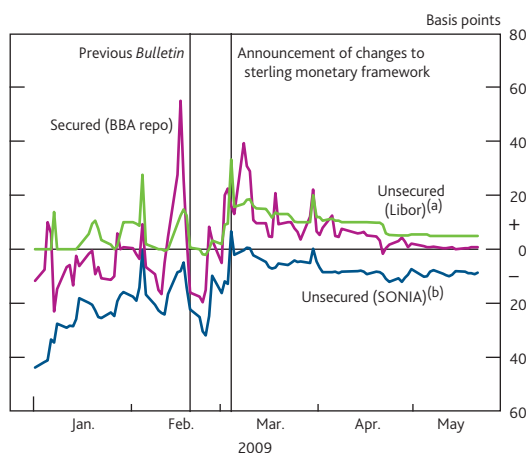
**Chart 6** Folded cumulative distribution<sup>(a)</sup> of spread of sterling secured overnight interest rate (trade weighted) to Bank Rate



Sources: BrokerTec and Bank calculations.

(a) Distribution of the spread between overnight interest rate at end-of-day and Bank Rate. The distributions are folded at the median so that cumulative probabilities for values above (below) the median are indicated by the right-hand (left-hand) scale.

**Chart 7** Spread to Bank Rate of sterling overnight interest rates



Sources: Bloomberg and Bank calculations.

(a) London interbank offered rate.  
(b) Sterling overnight index average.

## Bank funding markets

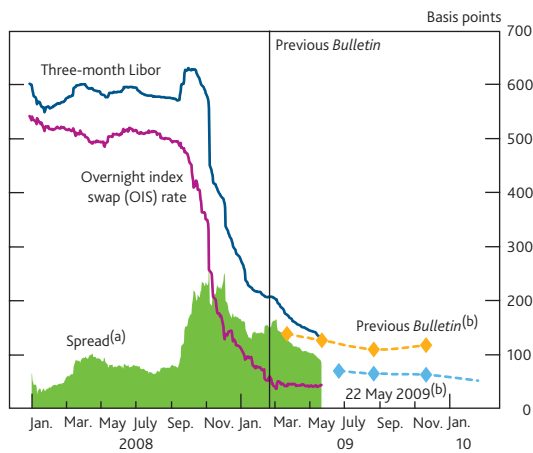
Conditions in sterling interbank money markets at slightly longer maturities reportedly improved noticeably over recent

(1) For example, see the box, 'Why have secured funding spreads increased recently?', on page 260 of 2008 Q3 *Quarterly Bulletin*.

months. And perhaps consistent with that, there was reduced demand for three-month loans in the Bank's May long-term repo operations against extended collateral. The results of these operations are reported on pages 83–84.

Three-month Libor fell further and the spread to equivalent maturity OIS rates narrowed towards levels observed before the failure of Lehman Brothers in September 2008 (**Chart 8**).

**Chart 8** Three-month interbank rates and spreads relative to OIS rates



Sources: Bloomberg, British Bankers' Association and Bank calculations.

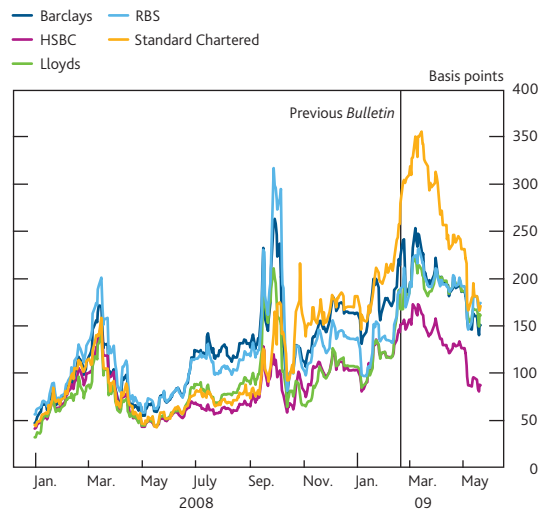
- (a) Three-month London interbank offered rate (Libor) spreads over equivalent-maturity OIS rates.  
 (b) Three-month Libor forward spreads over equivalent-maturity forward OIS rates.

Contacts suggested a number of reasons for the narrowing of this spread. The general improvement in market sentiment and risk appetite may have lowered the required risk compensation for lending to other banks. Some contacts also suggested that APF purchases from asset managers may have resulted in part of the proceeds being placed as term deposits with banks. Similarly, the sharp increase in banks' holdings of central bank reserves (**Chart 4**), as a result of the Bank's asset purchases, might have made banks more comfortable with lending, or reduced their need to borrow, at short horizons in the term interbank market.

Contacts reported, however, that the scale of lending, particularly at maturities beyond three to six months, remained limited. And the dispersion in borrowing rates submitted by banks that make up the sterling Libor panel increased, indicating continued differentiation across borrowers in interbank markets.

Alongside the compression in Libor-OIS spreads, major UK banks' credit default swap (CDS) premia fell, but remained elevated (**Chart 9**). Contacts attributed these recent falls at least in part to the various official policy measures which appeared to stabilise perceptions about the creditworthiness of the UK banking sector.

**Chart 9** Selected major UK banks' credit default swap premia<sup>(a)</sup>

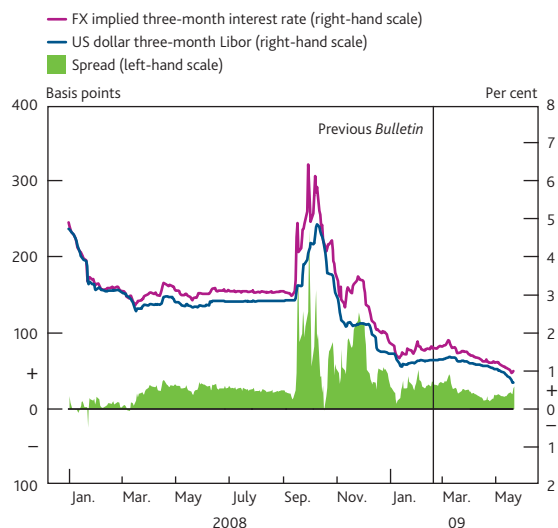


Source: Markit Group Limited.

- (a) Five-year, senior CDS premia.

Pressures associated with obtaining US dollar funding in cross-currency swap markets also continued to abate, albeit only gradually. Indicative of that, the spread between the implied interest cost of borrowing US dollars via cross-currency swaps and US dollar Libor narrowed, having widened in early March (**Chart 10**). Participation in the Bank's US dollar repo operations also fell (**Chart 33** on page 86).

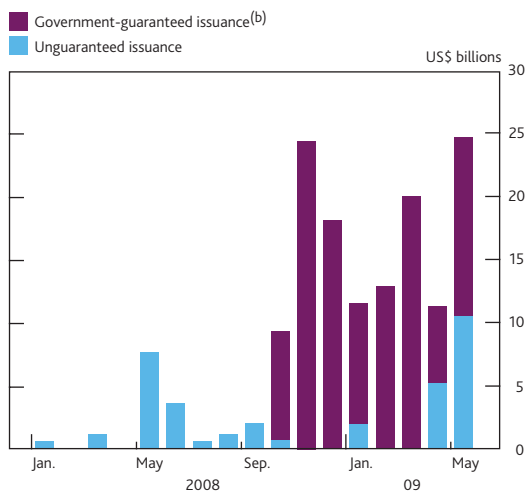
**Chart 10** Three-month US dollar Libor rates and implied three-month rates from exchange rate forwards<sup>(a)</sup>



Sources: Bloomberg, Reuters and Bank calculations.

- (a) For more details, see 2008 Q2 *Quarterly Bulletin*, page 134, Chart 26 and BIS *Quarterly Review* March 2008, pages 73–86.

Funding conditions for banks also improved in debt markets. Senior debt issuance by UK banks continued. Moreover, in contrast to previous months, a larger proportion of this debt was issued without a government guarantee (**Chart 11**).

**Chart 11** UK bank senior debt issuance<sup>(a)</sup>

Source: Dealogic.

(a) Issuance with a value greater than US\$500 million equivalent and original maturity greater than one year.

(b) Senior debt issued under HM Treasury's Credit Guarantee Scheme.

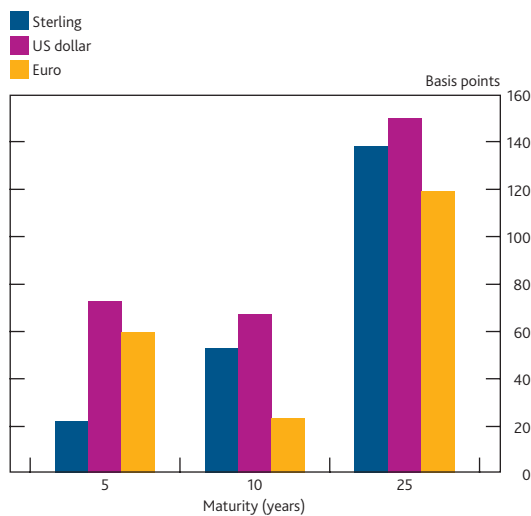
Despite these signs of improved funding conditions, securitisation markets, which had been an important source of longer-term funding for banks prior to the financial crisis, displayed few signs of recovery. The primary market for UK residential mortgage-backed securities (RMBS) remained closed. Likewise there was only limited activity in secondary markets.

In April, the UK Government announced a guarantee scheme for newly issued RMBS backed by UK mortgages. For a fee, eligible issuers can choose between a credit guarantee (ensuring the timely payments of all amounts due) and a liquidity guarantee (whereby in the event that the issuer fails to meet a call or purchase obligation, the Treasury will purchase the instrument from the holder). RMBS issued under this scheme will be guaranteed for up to five years.

### Long-term interest rates

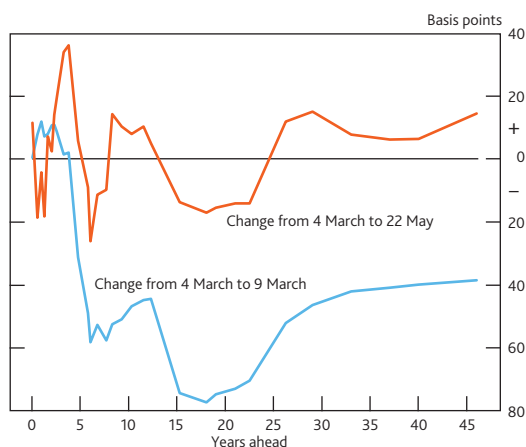
Gilt yields, which reflect the cost of borrowing for the UK Government, were volatile but ended the period higher at all but the very shortest horizons. These developments were echoed in US dollar and euro government bond markets as yield curves steepened internationally. In particular, similar upward moves were observed for long-term forward rates at maturities beyond 20 years (Chart 12).

Contacts suggested the changes in international yield curves reflected some portfolio adjustments in favour of riskier assets as investor risk appetite improved, as well as a global re-evaluation of fiscal prospects in the major economies. In the United Kingdom, the Government revised up its projected borrowing in its 2009 Budget and the UK Debt Management Office subsequently announced £220 billion of gilt issuance this financial year (well above earlier market forecasts).

**Chart 12** Changes in international nominal forward rates since previous *Bulletin*<sup>(a)</sup>

(a) Calculated from instantaneous forward rates derived from the Bank's government liability curves.

Market contacts also suggested that gilt yields were affected by news about the Bank's programme of gilt purchases through the APF. Following the announcement of the Bank's programme of gilt purchases in early March, yields fell substantially, particularly at the maturities eligible for purchase (5–25 years) (Chart 13). And since the previous *Bulletin*, gilt yields at short to medium maturities (including the range of maturities eligible for purchase by the APF) increased by significantly less than at longer maturities (Chart 14).

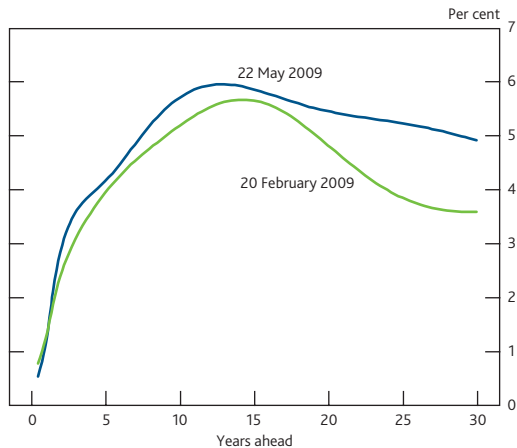
**Chart 13** Changes in sterling government bond yields since the announcement of APF gilt purchases

Sources: Bloomberg and Bank calculations.

Finance theory would suggest that if financial markets operated perfectly yields would only react to news about 'official sector' gilt sales and purchases if the information prompted investors to revise their expectations about future short-term interest rates, or adjust their required

compensation for the uncertainty associated with future interest rates. That might have occurred if investors reassessed the prospect of higher desired savings to meet the increased financing needs of the government. And investors may have focused more on how the injection of central bank reserves via the Bank's asset purchases would, if appropriate for meeting the UK inflation target, ultimately be withdrawn.

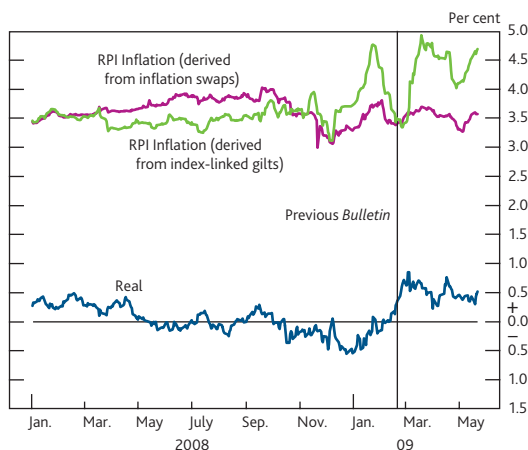
**Chart 14** Sterling nominal forward rates<sup>(a)</sup>



(a) Instantaneous forward rates derived from the Bank's government liability curve.

However, long-term real interest rates remained low. Similarly, while long-horizon implied inflation rates (that reflect both expected inflation plus any associated inflation risk premia) inferred from index-linked gilts increased, corresponding long-term forward inflation rates derived from inflation swaps remained broadly stable (**Chart 15**). According to contacts, inflation swaps were less affected by changes in market conditions over recent months. And survey evidence also indicated little change in medium-term inflation expectations.

**Chart 15** Sterling 25-year real forward interest rates and forward inflation<sup>(a)(b)</sup>



(a) Instantaneous real forward rates derived from the Bank's government liability curve.  
(b) Instantaneous forward inflation rates derived from the Bank's government liability and inflation swap curves.

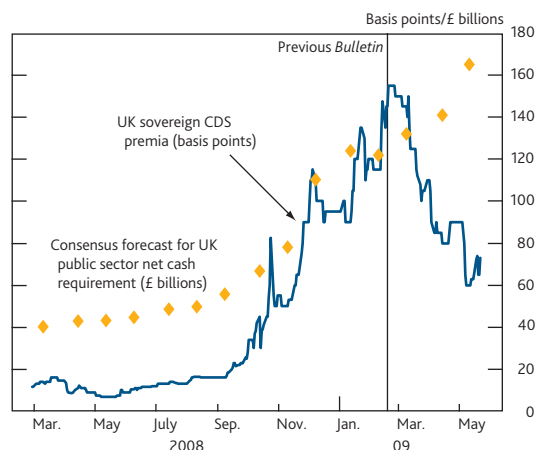
Contacts indicated that news about the Bank's gilt purchases limited recent upward moves in gilt yields. To the extent that investors prefer to hold particular bonds, perhaps to match the duration of their own liabilities, bonds of different maturities may be imperfect substitutes. As a result, investors might be prepared to pay more for those bonds relative to others and, other things being equal, lower their yield. In this way, by changing the mix of available gilts the Bank's purchases may have affected the required premia on UK government bonds at different maturities.

Moreover, although the gilt market is typically liquid (at least compared to other asset classes) it is possible that changes in demand and supply of gilts could have affected investors' perceptions about their ability to buy and sell them in the future. That is, the recent moves in gilt yields could have reflected shifts in required liquidity premia on gilts. This is discussed in the box on pages 76–77.

Another possible contributory factor to the recent moves in gilt yields could be that investors perceived that the credit risk associated with UK government debt increased. For example, investors may have reassessed the likelihood of future downgrades to the UK government's credit standing. Indeed, gilt yields picked up in late May following a decision by S&P to lower its medium-term outlook on the triple-A rating for the United Kingdom's debt to 'negative' from 'stable'.

But any investor concerns about the ease with which the UK Government could service a higher level of debt did not seem to affect financial markets significantly. For example, gilt yields did not move substantially more than yields on other developed countries' government bonds, and CDS premia on UK government debt fell markedly since the previous *Bulletin*, largely reversing the increases since last autumn (**Chart 16**).

**Chart 16** UK sovereign CDS premia and Consensus forecast for the UK public sector deficit in 2009/10



Sources: Bloomberg and Consensus Economics Inc.



## Liquidity in the gilt market

In general the liquidity of an asset — such as a government bond — refers to the ease with which that asset can be transformed into money without loss of value. But measuring this concept can be difficult in practice. One common proxy measure is the bid-ask spread — the difference between the prices quoted by market makers to buy and sell an asset. This spread corresponds to the transaction cost faced by an investor trading the asset and will reflect, to some extent, the ease with which the market maker can match buyers and sellers.

However, quoted bid-ask spreads will typically only be valid for relatively small transactions and so may not give a good guide to the ease with which large quantities of an asset can be sold (or bought), and hence the depth of liquidity in the market. One way to gauge depth of liquidity is by looking at the quantity of the asset that is transacted in the market on a regular basis — the market turnover.

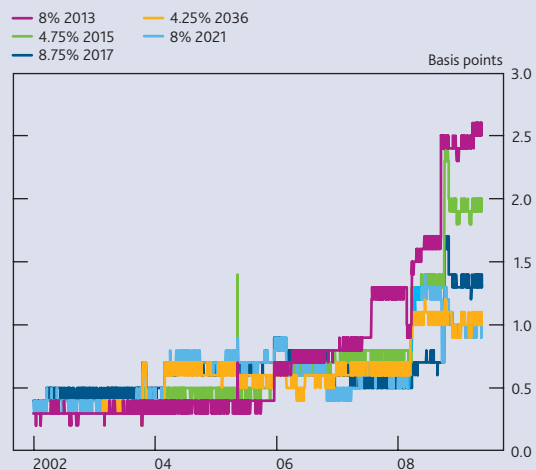
Measures such as bid-ask spreads and market turnover provide indicators of *current* market liquidity, but investors might also demand a premium for expected *future* illiquidity and the uncertainty around those expectations. This liquidity premium, which is typically positive, will be reflected in the yield on the asset.

### Measures of current gilt market liquidity

Charts A and B show the bid-ask spreads for a range of conventional and index-linked gilts at different maturities. Bid-ask spreads for gilts were fairly stable from 2002 until mid-2007, at around 0.5 basis points for conventional (nominal) bonds and 1 basis point for index-linked. But following the start of the financial turmoil in August 2007, bid-ask spreads generally widened. This increase in transaction costs for gilts was particularly significant following the collapse of Lehman Brothers in September 2008, suggesting liquidity conditions deteriorated quite sharply, and wider bid-ask spreads have generally persisted since. One factor behind this could have been increased balance sheet constraints faced by banks which prompted gilt market makers to reduce the scale of their activities.

The widening in spreads was most pronounced in the index-linked gilt market. Spreads on conventional gilts, though wider than previously, remained narrow compared to other sterling asset markets suggesting this continued to be a liquid market. For example, prior to the financial crisis the average bid-ask spread on sterling investment-grade corporate bonds was around 6 basis points. That was more than double the recent levels of bid-ask spreads on conventional gilts.

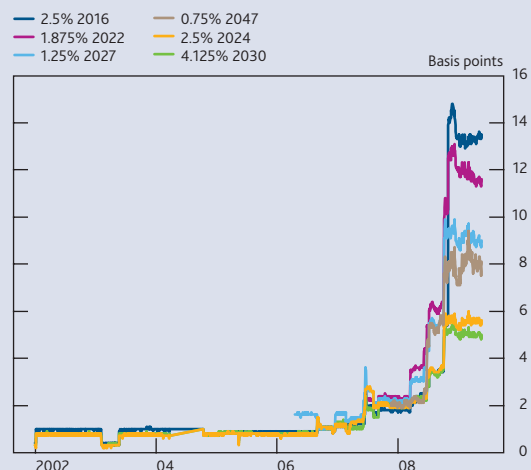
Chart A Quoted nominal gilt bid-ask spreads<sup>(a)</sup>



Source: Bloomberg.

(a) Bid-ask spread in yield-to-maturity.

Chart B Quoted index-linked bid-ask spreads<sup>(a)</sup>

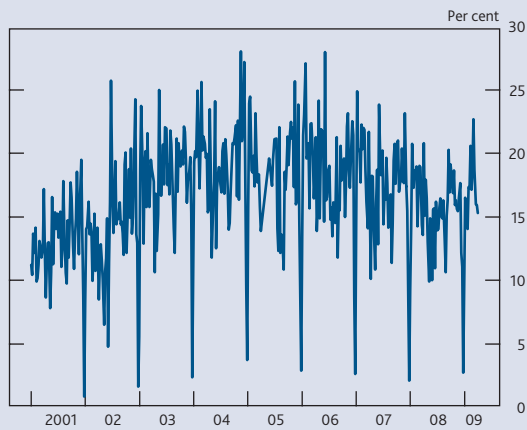


Source: Bloomberg.

(a) Bid-ask spread in yield-to-maturity.

Chart C shows weekly gilt market turnover, combining trade in conventional and index-linked bonds, measured as a proportion of total gilts outstanding. The pattern of turnover is clearly seasonal, with amounts traded generally lower during the summer and Christmas periods. But looking through that seasonal pattern suggests two distinct sustained phases. From 2001 to 2005, gilt market turnover increased steadily, almost doubling over the period. After 2005, the level of turnover started to decline as net issuance increased. Most recently, since the start of February 2009, turnover picked up again. This recent increase could have been due to portfolio rebalancing by investors in anticipation of purchases of gilts by the Bank's Asset Purchase Facility (APF). And this higher level of turnover appears to have been sustained during March when the APF began making purchases.

**Chart C** Weekly gilt market turnover as a proportion of total gilts outstanding<sup>(a)(b)</sup>



Source: DMO.

(a) Calculated using monthly issuance data.  
(b) Data to end-2009 Q1.

### Measures of gilt market liquidity premia

As noted above, gilt prices (and therefore yields) will also incorporate investor perceptions about future illiquidity. One way to estimate such liquidity premia is to compare the yield on a gilt with a sterling interest rate that does not contain material liquidity or credit premia. A common benchmark measure for such comparisons is the rate implied by overnight index swaps (OIS). OIS are swaps where one party exchanges a compounded floating overnight interest rate for a fixed rate determined in advance with the counterparty. The swap is collateralised and has no upfront payment and so, as the overnight rate has very little credit risk associated with it, the fixed rate on the swap is likely to be a close to a genuinely risk-free interest rate.<sup>(1)</sup> Moves in gilt-OIS spreads may therefore proxy changes in liquidity premia in gilt prices, although they could also reflect changes in investors' preferences and other risks associated with holding gilts.

**Chart D** shows the spread between gilt yields and OIS rates at various maturities. Moves in gilt-OIS spreads suggest that premia in gilt yields have been volatile since last summer. They increased following the collapse of Lehman Brothers in September 2008, perhaps reflecting greater uncertainty about future gilt market liquidity. Spreads between gilt yields and OIS rates initially decreased somewhat following the announcement that the APF would purchase gilts, possibly consistent with increased demand for gilts eligible for purchase by the APF, although they remained volatile.

**Chart D** Gilt-OIS spreads



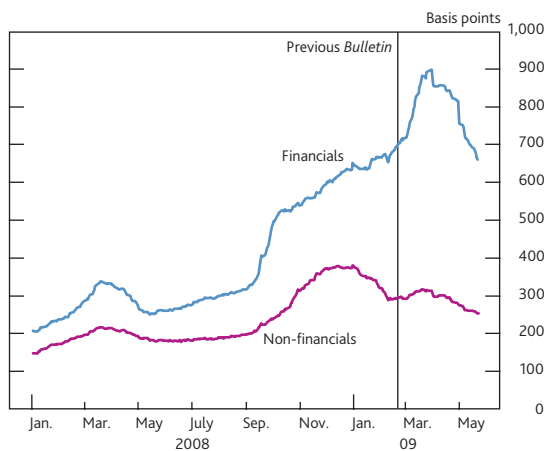
Sources: Bloomberg and Bank calculations.

(1) At longer maturities this may be less true, as these OIS contracts can be much less well-traded and so may themselves include liquidity premia. For more details on OIS, see the box, 'Overnight index swaps' on page 281 of the 2008 Q3 *Quarterly Bulletin*.

## Corporate credit

Despite the pickup in gilt yields, the cost of debt capital for firms fell, albeit modestly, as corporate credit spreads ended the period narrower than earlier in the year. Sterling-denominated investment-grade corporate bond spreads initially widened in late February and early March, as weak macroeconomic data and corporate earnings results hit investor confidence. However, credit spreads narrowed thereafter, particularly for financial firms (Chart 17), in tandem with the general improvement in investor risk appetite.

**Chart 17** Sterling investment-grade corporate bond spreads by sector



Sources: iBoxx indices, UBS Delta and Bank calculations.

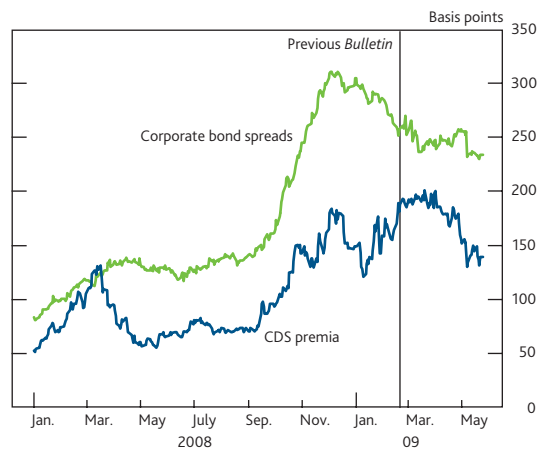
In fact, CDS premia fell by more than corresponding corporate bond spreads (Chart 18). To some extent this could have been due to moves in bond spreads lagging their more liquid CDS counterparts — previous Bank research found that, in the short run at least, price discovery typically takes place faster in CDS markets compared with corporate bond markets.<sup>(1)</sup>

Alternatively, a widening in the difference between CDS premia and corporate bond spreads could have reflected an increase in investors' desired compensation for liquidity risk associated with holding sterling corporate bonds. However, as noted in the box on pages 76–77 in relation to gilts, measuring liquidity conditions in asset markets is difficult.

One metric for gauging current liquidity conditions is the bid-ask spreads on secondary market transactions. These narrowed slightly for sterling corporate bonds, which may suggest improved secondary market conditions, possibly linked to the Bank's purchases of corporate bonds via the APF (as described in the box on pages 70–71).

The narrowing in corporate credit spreads coincided with further gross corporate bond issuance by UK companies (Chart 19). Though issuance remained skewed towards higher-rated borrowers, contacts reported increased interest

**Chart 18** Non-bank companies' sterling denominated corporate bond spreads and corresponding CDS premia<sup>(a)(b)</sup>

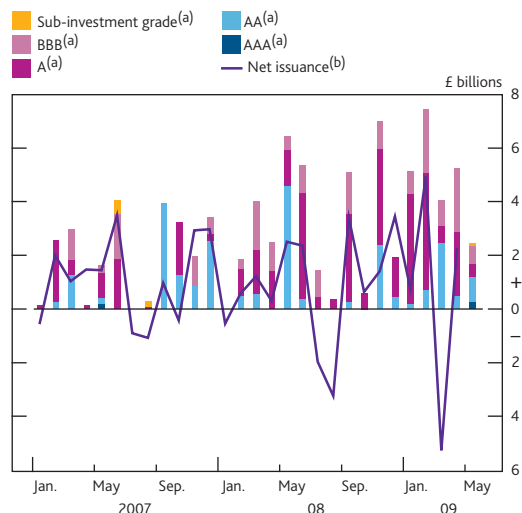


Source: UBS Delta.

- (a) Based on 144 investment-grade sterling bonds issued by non-bank firms.  
(b) The maturity of the chosen bond may not necessarily match that maturity of the CDS, as data are typically only available for five-year CDS.

on the part of lower-rated companies to issue into the market. Indeed, May saw the first sub-investment grade issuance by a UK firm since June 2007. However, in part the increased bond issuance offset debt repayments. Net bond issuance, which takes account of repayments, was more subdued.

**Chart 19** Gross<sup>(a)</sup> and net bond issuance by UK non-financial corporates (all currencies)



Sources: Bank of England, Dealogic and Bank calculations.

- (a) Gross issuance data refer to bond issuance by UK private non-financial corporations (PNFCs) in all currencies by rating. Data for May 2009 include issuance until 22 May.  
(b) Net issuance data cover bond issuance by UK resident companies and sterling-denominated bonds issued in the United Kingdom by non-resident companies.

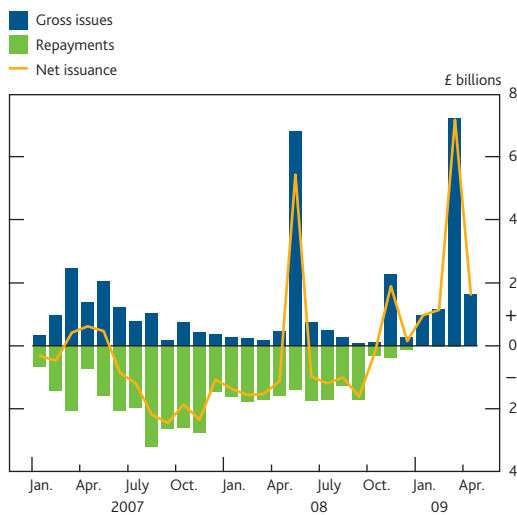
(1) For more details see Blanco, R, Brennan, S and Marsh, I (2004), 'An empirical analysis of the dynamic relationship between investment-grade bonds and credit default swaps', *Bank of England Working Paper no. 211*.

To some extent, the increased gross corporate bond issuance could have been due to firms making the most of investor demand by front-loading their 2009 issuance. However, increases in gross primary issuance could be part of a more persistent move in favour of capital market funding given the on-going constraints on the availability of bank credit.

## Equities

Consistent with greater use of capital market finance by companies, total equity issuance picked up sharply, largely due to a number of rights issues (**Chart 20**). Contacts reported that firms, including some from sectors that had earlier struggled to access corporate debt markets, were able to raise equity finance.

**Chart 20** Equity issuance and repayments by UK PNFCs<sup>(a)</sup> (all currencies)



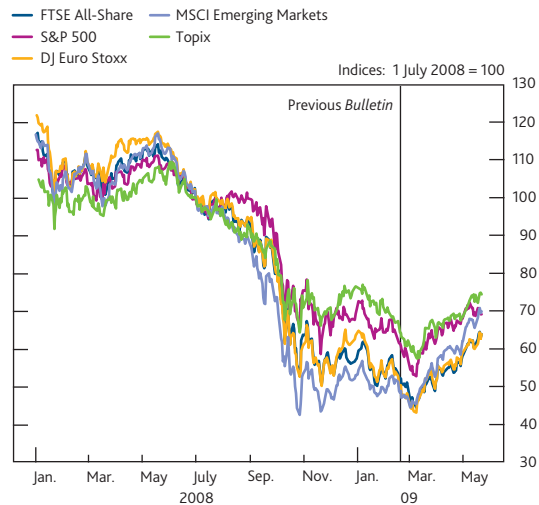
(a) Private non-financial corporations.

Alongside increased equity issuance, UK equity prices rebounded sharply during April and May, albeit to levels well below those observed prior to the failure of Lehman Brothers. This pickup in UK equity prices was part of a global recovery in equity markets following a period of retrenchment that lasted until early March (**Chart 21**).

Among firms in the FTSE 350 index, the equity prices of mining companies, banks and life insurance companies increased most (**Chart 22**). Contacts reported that reduced fears about the failure of financial institutions, as official sector actions were implemented, generally increased investor confidence in financial company stocks. In addition, contacts noted the improved trading performance of some large banks, which posted stronger-than-expected trading updates.

More generally, a Bank of America/Merrill Lynch survey suggested that global fund managers' expectations for earnings improved in May. And the prices of dividend swaps (albeit for firms in the Euro Stoxx index) increased (**Chart 23**),

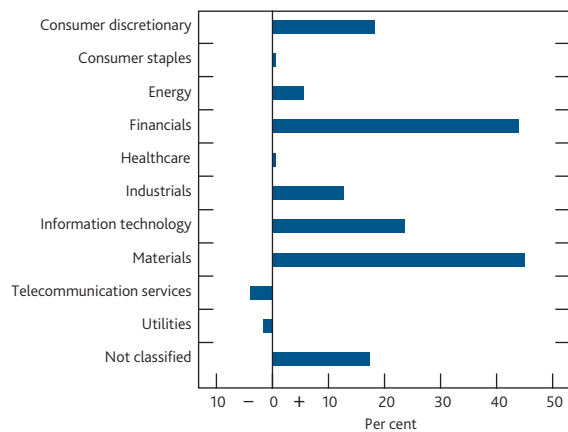
**Chart 21** International equity indices (in US dollars)<sup>(a)</sup>



Sources: Bank of England and Bloomberg.

(a) The MSCI Emerging Markets Index is a capitalisation-weighted index that monitors the performance of stocks in emerging markets.

**Chart 22** Changes in UK equity prices by sector since previous *Bulletin*<sup>(a)</sup>



Sources: Bloomberg and Bank calculations.

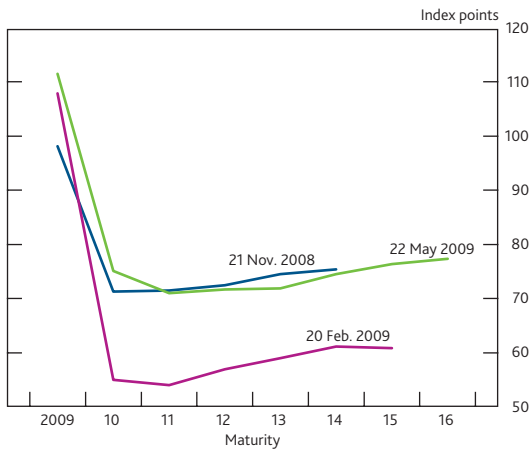
(a) Using share prices for FTSE 350 companies weighted by their market capitalisation. The FTSE 350 index accounts for around 99% of the FTSE All-Share index by value.

suggesting that investors perceived the outlook for corporate earnings to have improved (either because earnings expectations increased or the uncertainty about those future earnings fell). A caveat is that the market for dividend swaps is relatively new and continued to react to changes in market liquidity.

Surveys of financial analysts' expectations of UK companies' earnings growth were, however, revised down, at least for short horizons. Earnings per share for FTSE 100 companies were expected to decline by 34% in 2009, compared with declines of 14% and 19% for S&P 500 companies and Euro Stoxx companies respectively.

Abstracting from changes in earnings expectations, about which there were mixed signals, equity price changes should

**Chart 23** DJ Euro Stoxx dividend swap prices<sup>(a)(b)</sup>



Sources: Bloomberg and Bank calculations.

(a) From exchange-traded futures contracts.  
 (b) For more details on dividend swaps see the box 'Dividend swaps' on page 371 of the 2008 Q4 Quarterly Bulletin.

reflect changes in risk premia and/or moves in default-free interest rates. Given that government bond yields generally rose, most of the recovery in the FTSE 100 index over the past few months seems likely to be accounted for by falls in implied equity risk premia. Perhaps consistent with that, the implied volatility derived from options on futures for the FTSE 100 index fell, toward levels last seen prior to the collapse of Lehman Brothers, echoing similar developments in overseas equity markets (Chart 24).

**Chart 24** Implied volatilities for international equity indices<sup>(a)</sup>



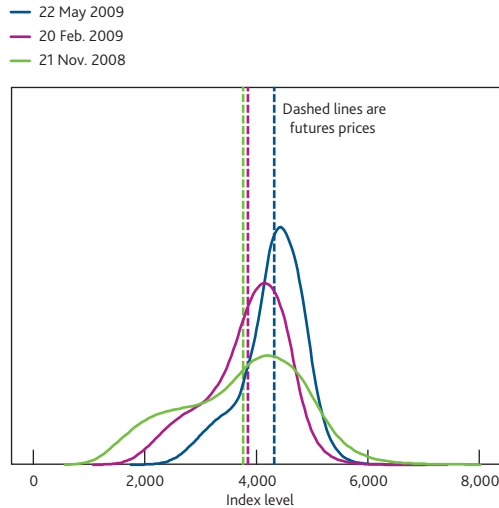
Sources: Bloomberg, Chicago Mercantile Exchange, Euronext.liffe and Bank calculations.

(a) Three-month (constant maturity) implied volatility derived from options.

As a result, the implied probability distribution for UK equity prices narrowed (Chart 25), which would tend to suggest that equity price uncertainty fell. In addition, the implied distribution became less negatively skewed, suggesting that investors became less worried about a large fall in the

FTSE 100 index relative to a large rise. Contacts also noted a lack of institutional demand for hedging.

**Chart 25** Three-month option-implied FTSE 100 probability density functions<sup>(a)</sup>



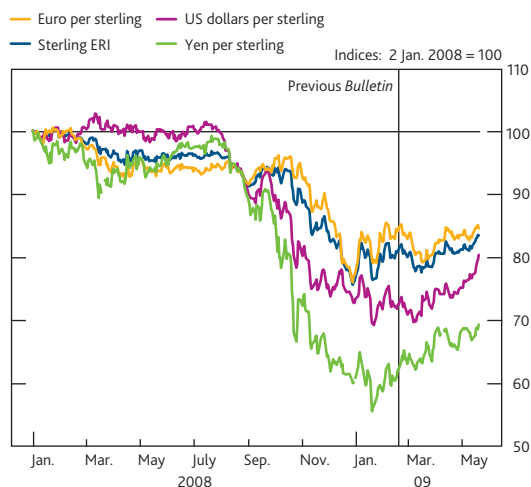
Sources: Euronext.liffe and Bank calculations.

(a) For more details, see Clews, R, Panigirtzoglou, N and Proudman, J (2000), 'Recent developments in extracting information from options markets', Bank of England Quarterly Bulletin, February, pages 50–60.

**Foreign exchange**

The sterling effective exchange rate index (ERI) rose by 2.7% since the previous Bulletin, partly recovering its falls during the latter part of 2008. Sterling appreciated against both the US dollar and the yen (by around 11% and 12% respectively) but was largely unchanged against the euro (Chart 26).

**Chart 26** Cumulative changes in sterling exchange rates since 2 January 2008

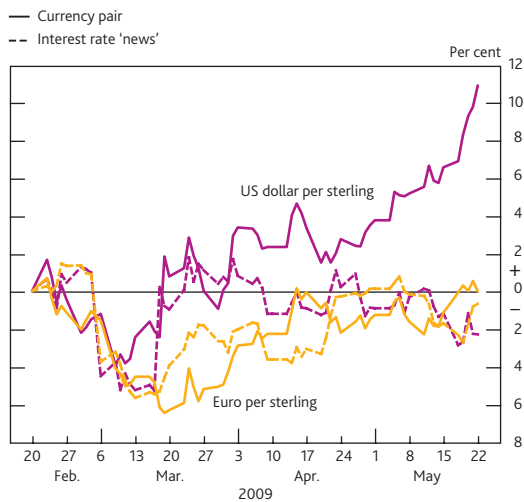


Sources: Bloomberg and Bank calculations.

Developments in relative interest rates, as indicated by movements in international yield curves, seemed broadly to account for most of the moves in sterling against the euro

through the period. However, sterling appreciated by more against the US dollar than would be suggested by the shifts in relative interest rates, especially since late March (**Chart 27**). A possible explanation could be that investors revised downwards their required risk compensation to hold sterling assets relative to dollar assets. Consistent with this, estimates of such currency risk premia, based on combining information on interest rate differentials and surveys of forecasts for exchange rates, indicated that sterling risk premia fell marginally for the sterling-dollar bilateral exchange rate. In contrast, implied risk premia for the sterling-euro exchange rate were little changed (**Chart 28**).

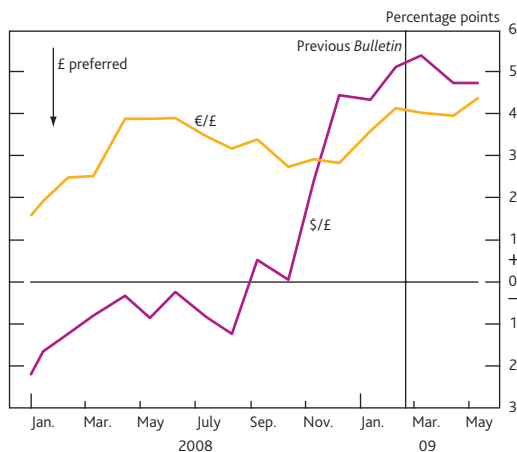
**Chart 27** Implied contribution of interest rate 'news' to cumulative changes in the sterling bilateral exchange rates since the previous *Bulletin*<sup>(a)</sup>



Source: Bank calculations.

(a) For more information on the analytics required to isolate the impact of interest rate 'news' on exchange rates, see Brigden, A, Martin, B and Salmon, C (1997), 'Decomposing exchange rate movements according to the uncovered interest parity condition', *Bank of England Quarterly Bulletin*, November, pages 337–89.

**Chart 28** Three to 24-month risk premia estimates for sterling exchange rates<sup>(a)</sup>



Sources: Consensus Economics Inc. and Bank calculations.

(a) Risk premia estimate the expected rate of return required by foreign investors to invest in a domestic risk-free asset, over the foreign risk-free rate of return. A positive risk premium implies that the currency is expected to appreciate relative to the path implied by the interest rate differential.

Similarly, forward-looking measures of currency uncertainty inferred from options — which might provide an alternative read on investors' perceptions of risk associated with holding sterling assets — decreased markedly. However, implied volatilities also fell for all the other sterling bilateral exchange rates. According to market contacts, the recent depreciation of the US dollar against sterling could perhaps have reflected investors switching back into sterling-denominated assets following a 'flight to liquidity' (with US dollar assets considered more liquid) during the second half of 2008 and early 2009.

## Bank of England operations

### Asset purchases

Purchases of assets under the Asset Purchase Facility (APF) were made by the Bank of England Asset Purchase Facility Fund (BEAPFF), a wholly-owned subsidiary of the Bank. They were financed via a deposit from the Bank. Initially, this deposit was financed in turn through the issuance of Treasury bills by the Debt Management Office (DMO). Following the decision by the MPC on 5 March to use the APF as a monetary policy tool, the deposit was financed by the issuance of central bank reserves.<sup>(1)</sup> **Chart 3** on page 69 and **Table A** summarise the assets purchased each week.

### Commercial paper

Purchases of commercial paper (CP) began on 13 February. Initially these purchases were financed through the issuance of Treasury bills by the DMO. But from 6 March they were financed by the issuance of central bank reserves. The aims of the Bank's purchases of CP and developments in the CP markets are described in the box on pages 70–71.

The Bank offered to purchase sterling-denominated CP issued by companies (including their finance subsidiaries) that make a material contribution to economic activity in the United Kingdom. The CP required a minimum short-term credit rating of A3/P3/F3 from at least one of S&P, Moody's and Fitch, but issuers with split ratings where one or more rating was below the minimum were not eligible.<sup>(2)</sup>

The Bank purchased newly issued eligible CP in the primary market via dealers at a specified spread above the OIS curve. This spread varied according to the credit rating of the issuer (**Table B**). The Bank also offered to purchase previously issued CP in the secondary market.

(1) For further details of the Asset Purchase Facility and changes to the sterling monetary framework see *Bank of England Quarterly Bulletin*, 2009 Q1, page 26.

(2) For more information see the Bank's Market Notice of 13 February 2009 at: [www.bankofengland.co.uk/markets/marketnotice090213.pdf](http://www.bankofengland.co.uk/markets/marketnotice090213.pdf).

**Table A** Asset purchase by type (£ million)

Week ending <sup>(a)</sup>	Commercial paper	Gilts	Corporate bonds	Total <sup>(b)</sup>
19 February 2009	340	0	0	340
26 February 2009	480	0	0	480
5 March 2009	164	0	0	164
12 March 2009	561	2,000	0	2,561
19 March 2009	345	4,993	0	5,337
26 March 2009	76	6,000	128	6,204
2 April 2009	50	6,000	186	6,236
9 April 2009	15	6,000	121	6,136
16 April 2009	345	6,503	36	6,884
23 April 2009	125	6,503	33	6,661
30 April 2009	0	6,508	44	6,552
7 May 2009	50	6,501	20	6,571
14 May 2009	174	6,493	46	6,713
21 May 2009	394	6,494	37	6,925
Total financed by Treasury bills <sup>(c)</sup>	784	–	–	784
Total financed by central bank reserves <sup>(c)</sup>	1,456	63,994	625	66,074
Total asset purchases	2,240	63,994	625	66,859

(a) Week-ended amounts are in terms of the proceeds paid to counterparties, on a trade-day basis, rounded to the nearest million. Data are aggregated for purchases from the Friday to the following Thursday.

(b) Weekly values may not sum to totals due to rounding.

(c) In terms of proceeds paid to counterparties less redemptions at initial purchase price on a settled basis.

**Table B** Primary purchase spreads

	Rating		
	A1/P1/F1	A2/P2/F2	A3/P3/F3
Spread to maturity matched OIS rate	75 basis points	125 basis points	300 basis points

As of 21 May, purchases of CP net of maturities amounted to £2.2 billion, of which around 65% were financed by central bank reserves. The majority of the Bank's purchases were in the primary market.

## Gilts

In order to meet the MPC's objective for total asset purchases, it was announced on 5 March that the Bank would also buy gilts in the secondary market. These purchases, financed by the issuance of central bank reserves, began on 11 March.

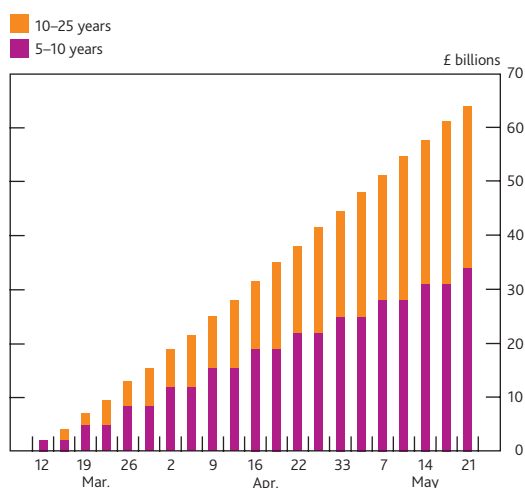
The Bank made these purchases via a series of reverse auctions, for conventional gilts with a minimum residual maturity of five years and a maximum residual maturity of 25 years. In each auction the Bank offered to buy a fixed total of gilts, but the amount of each stock the Bank bought was not pre-determined.

Each auction had both a competitive and a non-competitive element. In the competitive auction, offers for different stocks were allocated based on their attractiveness relative to market yields for each stock, as published by the DMO, at the close of the auction. Purchases were undertaken at prices determined

in a variable-rate auction on a discriminatory-price basis. There was no minimum allocation to a particular stock.

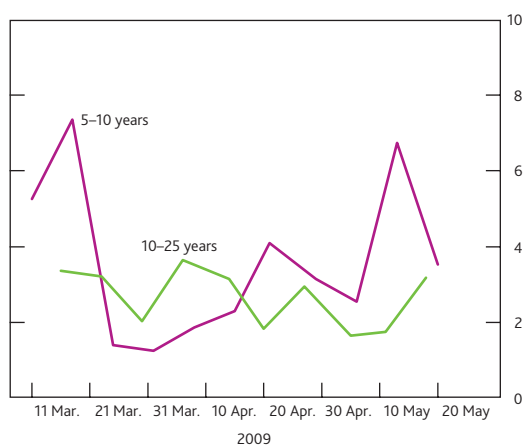
Non-competitive offers for each stock were also invited, and the aggregate amount allocated to non-competitive offers announced, ahead of the start of the competitive auction. Offers in the non-competitive part of the auction were subsequently accepted at the weighted-average price at which the relevant stock was allocated in the competitive auction.

As of 21 May, £64 billion of gilts had been purchased, of which £34 billion were in the 5–10 year residual maturity range and £30 billion in the 10–25 year range (**Chart 29**).

**Chart 29** Cumulative gilt purchases<sup>(a)</sup> by maturity

(a) Data based on settlement transactions

These gilt purchases took place over 21 auctions, which varied in size up to a maximum of £3.5 billion. Cover in the auctions varied but averaged 3.2 (**Chart 30**).

**Chart 30** Cover ratios in gilt auctions

## Corporate bonds

On 25 March the Bank began purchasing of high-quality corporate bonds, financed by the issuance of central bank reserves. The objectives and details of these purchases, as well as developments in sterling corporate bond markets, are described further in the box on pages 70–71.

A wide range of corporate bonds were eligible for purchase by the Bank. Eligibility criteria and other details were set out in the Bank's Market Notice of 19 March.<sup>(1)</sup> This included the specification that bonds should be sterling denominated and issued by companies (including their finance subsidiaries) that make a material contribution to economic activity in the United Kingdom.

The Bank made regular small purchases of corporate bonds via a series of reverse auctions. In each auction the Bank stood ready to buy up to £2 million of each bond from issues with under £250 million outstanding and up to £5 million of each bond from issues with £250 million or more outstanding.

Auctions were undertaken on a uniform price basis so that all successful offers in any individual bond were allocated at the same price. The Bank privately set, for each security, a minimum spread to the yield on a specified reference gilt and did not purchase securities at offers below this spread. Offers above this minimum spread were ranked and allocated until the fixed quantity the Bank was willing to purchase had been allocated, with offers at the clearing price pro-rated if necessary.

As of 21 May, total corporate bond purchases were £0.63 billion. Reflecting the aim of the programme to make frequent but relatively small purchases to help improve the functioning of the corporate bond secondary market, the Bank made 186 purchases of 91 different securities, buying the bonds of 42 different issuers.

## Credit Guarantee Scheme

The Bank did not make any purchases of bank debt issued under the Credit Guarantee Scheme (CGS) from the secondary market, but stands ready to do so should conditions in that market deteriorate.

## Proposals for working capital facilities

On 8 June, the Bank released a consultation paper setting out proposed extensions to the APF, to include a secured commercial paper facility.<sup>(2)</sup>

## Operations within the sterling monetary framework

By operating at a variety of maturities, in normal circumstances the Bank gives itself the flexibility to adjust the supply of reserves as needed without unnecessary 'churn' in its short-term repo open market operations (OMOs). Long-term financing is provided by means of long-term repo OMOs at

three, six, nine and twelve-month maturities and by means of gilt-purchase OMOs.

Since beginning to purchase assets financed by reserves, the Bank continued to provide reserves in its long-term repo OMOs, and also continued to drain reserves via the issuance of one-week Bank of England bills. The Bank's operational approach was to ensure a net supply of reserves around the aggregate level of reserves targets initially set by participants for the March maintenance period, plus the amount of reserves injected via the Bank's programme of asset purchases.

## Gilt-purchase OMOs

Ordinarily, the Bank conducts monthly OMOs to purchase gilts, in order to invest part of the proceeds of the note issue in longer-term assets.<sup>(3)</sup> Following the Bank's announcement that it would purchase gilts through the APF the Bank suspended these operations. During the period from 5 February to 6 May, the Bank conducted one gilt-purchase OMO, on 23 February (Table C).

**Table C** Issue Department gilt-purchase OMOs

	Amount purchased (£ millions)	Sector cover ratio	Weighted average accepted price	Highest accepted price	Lowest accepted price	Tail <sup>(a)</sup>
<b>23 February 2009</b>						
<b>Short</b>		4.05				
UKT 8% 27/09/13	105.91		124.748	124.760	124.730	0.012
UKT 5% 07/09/14	63.98		112.315	112.329	112.300	0.014
<b>Medium</b>		3.83				
UKT 8.75% 25/08/17	133.89		140.074	140.140	140.050	0.066
<b>Long</b>		2.27				
UKT 6% 07/12/28	95.92		123.111	123.160	123.075	0.049
Total purchased <sup>(b)</sup>	399.70					

(a) The tail measures the difference between the highest accepted price and the weighted average accepted price.

(b) Figures may not sum to total due to rounding.

## Long-term repo OMOs

Over the same period, the Bank offered to provide reserves in long-term repo OMOs according to its published monthly schedule. Repo operations at six, nine and twelve-month maturities were offered against routine OMO collateral. With the exception of the operation at six-month maturity on 14 April, all operations were fully covered (Table D)

(1) See [www.bankofengland.co.uk/markets/marketnotice090319.pdf](http://www.bankofengland.co.uk/markets/marketnotice090319.pdf).

(2) For further details see [www.bankofengland.co.uk/markets/apf/consultation090608.pdf](http://www.bankofengland.co.uk/markets/apf/consultation090608.pdf).

(3) Gilt-purchase OMOs are described in more detail in the box on pages 22–23 of the 'Markets and operations' article in the 2008 Q1 *Quarterly Bulletin*.



**Table D** Long-term repo operations

	Six-month	Nine-month	Twelve-month
<b>17 February 2009</b>			
On offer (£ millions)	750	400	150
Cover	2.31	1.88	4.93
Weighted average rate <sup>(a)</sup>	0.660	0.700	0.75
Highest accepted rate <sup>(a)</sup>	0.660	0.700	0.750
Lowest accepted rate <sup>(a)</sup>	0.660	0.700	0.750
Tail <sup>(b)</sup>	0.00	0.00	0.00
<b>17 March 2009</b>			
On offer (£ millions)	750	400	200
Cover	2.47	1.30	3.63
Weighted average rate <sup>(a)</sup>	0.735	0.660	0.861
Highest accepted rate <sup>(a)</sup>	0.860	0.750	0.870
Lowest accepted rate <sup>(a)</sup>	0.689	0.622	0.860
Tail <sup>(b)</sup>	0.05	0.04	0.00
<b>14 April 2009</b>			
On offer (£ millions)	750	400	200
Cover	0.89	1.25	2.25
Weighted average rate <sup>(a)</sup>	0.507	0.510	0.694
Highest accepted rate <sup>(a)</sup>	0.740	0.542	0.850
Lowest accepted rate <sup>(a)</sup>	0.340	0.456	0.642
Tail <sup>(b)</sup>	0.17	0.05	0.05

(a) Per cent.

(b) The yield tail measures, in basis points, the difference between the weighted average accepted rate and the lowest accepted rate.

In order to provide additional liquidity insurance, the Bank has since December 2007 held three-month long-term repo OMOs secured against a broader range of eligible collateral. Following the operation on 14 April, the Bank announced on 29 April that it would continue to hold these extended-collateral long-term repo OMOs regularly up to, and including, the scheduled operation on 14 July 2009.

This announcement included a change in the process for determining the minimum bid rate for extended-collateral long-term repo OMOs. For bids against routine OMO collateral, the minimum bid rate — which was previously set equal to the equivalent-maturity OIS rate shortly before the operation — was changed to the higher of the equivalent-maturity OIS rate and the maximum bid rate in the Bank's short-term OMOs to drain reserves via the issuance of one-week Bank of England sterling bills (currently, Bank Rate plus 10 basis points). For bids against the wider collateral pool, the minimum bid rate remained 50 basis points higher than that for collateral routinely accepted in short-term repo OMOs. The results of these operations are shown in **Table E**.

### Draining reserves via Bank of England bills

Gilt-purchase and long-term repo OMOs provide reserves for the maintenance period in which they are settled and for all subsequent maintenance periods until maturity.

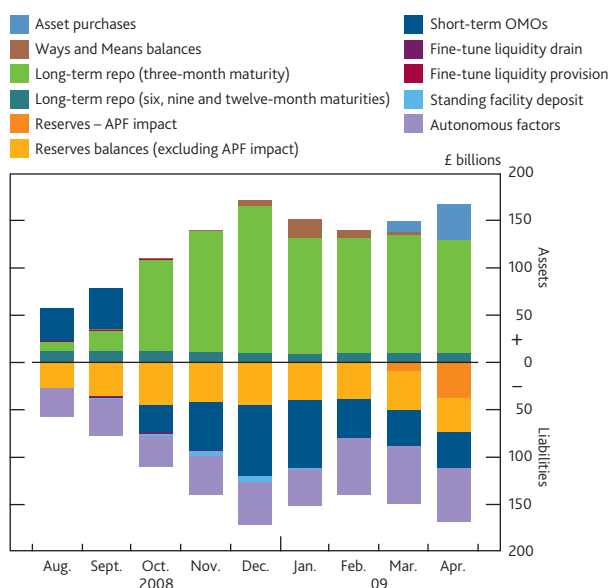
Since October 2008, reserves provided in extended-collateral long-term OMOs increased substantially (**Chart 31**). Following this, the Bank ceased to lend in its weekly short-term OMOs and instead sought to drain reserves.

**Table E** Extended-collateral three-month long-term repo operations

<b>17 February 2009</b>	
On offer (£ millions)	20,000
Cover	1.79
Weighted average rate <sup>(a)</sup>	0.859
Lowest accepted rate <sup>(a)</sup>	0.622
Tail <sup>(b)</sup>	24.00
<b>3 March 2009</b>	
On offer (£ millions)	20,000
Cover	1.55
Weighted average rate <sup>(a)</sup>	0.579
Lowest accepted rate <sup>(a)</sup>	0.475
Tail <sup>(b)</sup>	10.00
<b>17 March 2009</b>	
On offer (£ millions)	20,000
Cover	1.06
Weighted average rate <sup>(a)</sup>	0.649
Lowest accepted rate <sup>(a)</sup>	0.530
Tail <sup>(b)</sup>	12.00
<b>31 March 2009</b>	
On offer (£ millions)	20,000
Cover	1.15
Weighted average rate <sup>(a)</sup>	0.579
Lowest accepted rate <sup>(a)</sup>	0.524
Tail <sup>(b)</sup>	5.00
<b>14 April 2009</b>	
On offer (£ millions)	20,000
Cover	1.17
Weighted average rate <sup>(a)</sup>	0.595
Lowest accepted rate <sup>(a)</sup>	0.510
Tail <sup>(b)</sup>	8.00
<b>5 May 2009</b>	
On offer (£ millions)	20,000
Cover	0.55
Weighted average rate <sup>(a)</sup>	0.885
Lowest accepted rate <sup>(a)</sup>	0.600
Tail <sup>(b)</sup>	29.00

(a) Per cent.

(b) The yield tail measures, in basis points, the difference between the weighted average accepted rate and the lowest accepted rate.

**Chart 31** Factors affecting the supply of reserves (maintenance period averages)

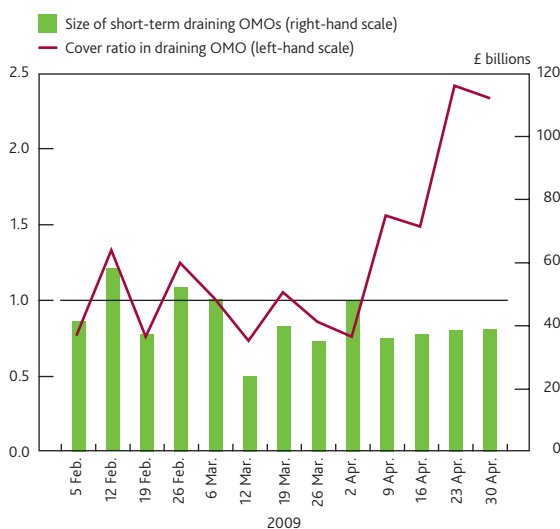
During the February maintenance period, the Bank continued to issue one-week Bank of England sterling bills to ensure that the net supply of reserves was consistent with the aggregate level of reserves targets. The Bank also held a routine fine-tuning operation to drain reserves at the end of the February maintenance period.

As announced in the Market Notice on 5 March, with the system of reserves averaging suspended, the Bank did not conduct a routine fine-tuning OMO on the final day of the March and April maintenance periods. However, the Bank continued to hold weekly OMOs to drain reserves to keep the net supply of reserves around the aggregate level of reserves targets initially set by participants for the maintenance period starting on 5 March, plus the amount of reserves injected via the purchase of assets in the APF.

As part of these changes, the Bank's weekly OMOs to drain reserves were from the second such operation in the March maintenance period changed from fixed rate to variable rate subject to a maximum bid rate announced by the Bank prior to each operation. In the operations to date, this has been set at Bank Rate plus 10 basis points.

Cover in these operations was low during the March maintenance period. It rose during the April maintenance period as the increased injection of reserves through the APF made it more attractive for reserves scheme participants to receive a higher rate than they would receive by leaving reserves on their reserves accounts (Chart 32).

**Chart 32** Size of short-term draining OMOs and cover ratio<sup>(a)</sup>



(a) Size of OMOs shown as weekly average amounts outstanding.

## Operational Standing Facilities

As part of the changes to the sterling monetary framework the Bank announced on 5 March that, if Bank Rate was set at 0.5%

or below, the rate paid on the Operational Standing Deposit Facility would be zero, while the rate charged on the Operational Standing Lending Facility would continue to be set at 25 basis points above Bank Rate.

As a result of the change to remunerate all reserves balances at Bank Rate and (given the level of Bank Rate) the reduction in the rate paid on the Operational Standing Deposit Facility to zero, usage of the deposit facility fell from a daily average of £886 million in the February maintenance period to zero in the March maintenance period. Average daily usage of the lending facility was £43 million in each of the February and March maintenance periods.

## Ways and Means

On 29 December 2008, loans that the Bank had made to the Financial Services Compensation Scheme (FSCS) and to Bradford & Bingley were repaid. To fund this repayment, the government borrowed temporarily from the Bank using the 'Ways and Means' facility — its overdraft facility with the Bank. Following three partial repayments in February, HM Treasury repaid the remainder of the 29 December borrowing on 2 April. These repayments had the effect of draining reserves, thus reducing the amount that needed to be drained via the scale of Bank bills (Chart 31).

## Discount Window Facility

In October 2008 the Bank introduced a Discount Window Facility (DWF) as part of the framework for its operations in the sterling money markets.<sup>(1)</sup> The DWF is a permanent facility to provide liquidity insurance to the banking system and allows eligible banks and building societies to borrow gilts against a wide range of collateral. In line with its published disclosure arrangements, on 7 April the Bank reported that there had been no use of the facility for the period between 20 October and 31 December 2008.

## Other market operations

One objective of the Bank's market operations is to reduce the cost of disruption to the liquidity and payments services supplied by commercial banks. The Bank does this by balancing the provision of liquidity insurance against the costs of creating incentives for banks to take greater risk, and subject to the need to control the risk to its balance sheet.

Within the sterling monetary framework, the Bank provides liquidity insurance through the provision of reserves accounts, extended-collateral long-term repo OMOs and the Discount Window Facility described above. In addition, operations outside the sterling monetary framework, including US dollar repo operations and the Special Liquidity Scheme have also been employed.

(1) See the box 'Consultative document on the Development of the Bank of England's Market Operations' on page 380 of the 2008 Q4 *Quarterly Bulletin*.

### Special Liquidity Scheme

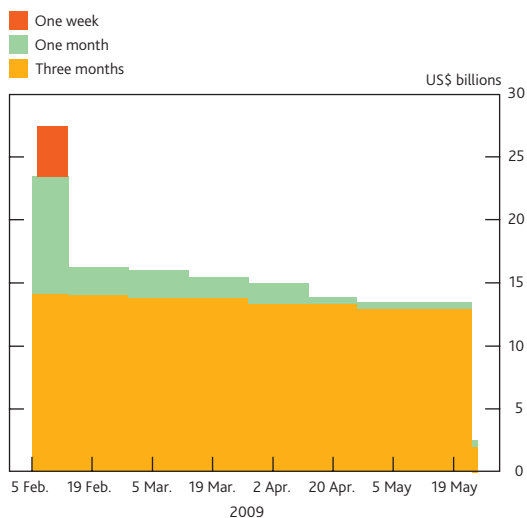
As previously announced the drawdown period for the Special Liquidity Scheme (SLS) closed on 30 January 2009. Although the drawdown window to access the SLS has closed, the Scheme will remain in place for three years, thereby providing participating institutions with continuing liquidity support and certainty.

### US dollar repo operations

In concert with other central banks, since 18 September 2008, the Bank has offered US dollar financing to financial institutions funded by a swap with the Federal Reserve. These measures are designed to improve the liquidity conditions in global financial markets. US dollar financing is currently offered at one-week, one-month and three-month maturities.

Since the previous *Bulletin*, there were no bids in the Bank's one-week US dollar operations. Bids also declined for funds at longer maturities. This led to a corresponding fall in the total stock outstanding; most recently in May, when funds offered in February matured (Chart 33).

**Chart 33** US dollar repo: stock outstanding by maturity<sup>(a)</sup>



(a) Stock outstanding is shown from settlement date.

On 6 April the Bank announced, in co-ordination with other central banks, swap arrangements that would enable the provision of foreign currency liquidity by the Federal Reserve to US financial institutions. Should it be required, the Bank would provide sterling via a swap arrangement with the Federal Reserve, similar to that which underpins the Bank's US dollar repo operations. Both swap arrangements run until 30 October 2009.

### Foreign exchange reserves

In March, the Bank issued a \$2 billion three-year bond and purchased an equivalent value of euro and US dollar-denominated assets with the proceeds. This was the

third bond issued by the Bank under the annual dollar bond issuance programme and completes the transition to financing the Bank's foreign exchange reserves via three three-year bond issues.

The new bond issue was announced on 27 February and executed on 10 March. The transaction which was marketed via BNP Paribas, Goldman Sachs International, HSBC and Morgan Stanley, priced 37 basis points above mid-swaps. The issue was successful, attracting a broad order book, with orders totalling \$3.5 billion. It sold to investors in Europe, the Middle East and Africa (52%), Asia (33%), and the Americas (14%). As with earlier issues in the programme, central banks and official institutions were the predominant buyers (45%), with bonds also being sold to commercial banks (37%), and the remainder sold principally to asset managers, insurance and pension funds (17%).

At the end of April the Bank's foreign exchange reserves comprised £4.1 billion of assets.

### Capital portfolio

The Bank holds an investment portfolio that is approximately the same size as its capital and reserves (net of equity holdings, eg in the Bank for International Settlements and European Central Bank, and the Bank's physical assets) together with aggregate cash ratio deposits. They are invested in a portfolio of sterling-denominated securities. Securities purchased by the Bank for this portfolio are normally held to maturity; nevertheless sales may be made from time to time, reflecting for example, risk management, liquidity management or changes in investment policy.

The bond portfolio currently includes around £2.5 billion of gilts and £1 billion of other debt securities. Purchases had generally been made once each month, with purchase details announced in advance on the Bank's wire service pages. Reflecting developments in the Bank's capital reserves and aggregate cash ratio deposits, these purchases have been increased in frequency and size. Over the period from 5 February to 6 May, gilt purchases were made in accordance with the quarterly announcement on 2 January 2009 (£20 million each in February and March) and 1 April 2009 (two purchase of £43 million each in April and in May).

### Bank of England balance sheet

The total size of the Bank of England's balance sheet averaged about £175 billion during the February maintenance period, down from a high of about £292 billion the week ending 22 October 2008. This reduction reflected the reduced frequency and size of extended-collateral long-term repo OMOs and the maturity of the reserves offered during 2008 Q4, along with the decreasing size of the Bank of England's US dollar swap facility with the Federal Reserve.

Purchases of commercial paper, corporate bonds and gilts under the APF were the main factor in the subsequent expansion of the Bank's balance sheet. Purchases were made by the Bank of England Asset Purchase Facility Fund (BEAPFF), a wholly-owned subsidiary of the Bank. Since 5 March, asset purchases were financed through a loan to the BEAPFF using central bank reserves. This loan to the BEAPFF was recorded as an asset, and the reserves provision was recorded as a liability, of the Bank's Banking Department.

## Developments in market structure

### CLS/Traiana joint venture

CLS Group and ICAP plc announced a joint venture to provide trade aggregation services to participants active in the over-the-counter FX market. The aggregation service will sum the 'buys' of a currency and the 'sells' of a currency between two eligible participants. Details of the aggregated trades will then be passed back to the banks for them to process through their systems as well as send to CLS for settlement.

The new service is designed to reduce the operational risk and costs associated with high volume FX trading. The joint venture will be a CLS subsidiary, 51% owned by CLS Group and 49% owned by ICAP, operating within the CLS regulatory framework. The trade aggregation service is expected, subject to regulatory approval, to become operational later this year.

### CDS protocol

On 8 April 2009, the International Swaps and Derivatives Association (ISDA) announced the successful implementation of changes to contracts and trading conventions for credit default swaps (CDS).

Three key changes were made to global CDS contracts:

1. Standardising the auction methodology used to establish investor pay-outs should there be a credit event in the reference entity. Only specific auction settlement terms for each credit event will be determined shortly prior to the auction.
2. Creating event determination committees, formed to make binding decisions of whether credit and succession events have occurred, as well as the settlement terms of any auction.
3. Changing the effective date for all CDS contracts to the current day less 60 days for credit events, and the current day less 90 days for succession events. Previously, protection against a credit event began only on the business day following the trade date.

The changes regarding auction method and determination committees took effect on 8 April 2009 for new and legacy transactions.<sup>(1)</sup> The changes regarding effective dates took effect for new transactions from 8 April, and are expected to take effect from 20 June for relevant legacy trades.

In addition, changes were introduced regarding new North American CDS. Specifically:

1. All single name CDS will trade with a fixed coupon.
2. CDS buyers will have to make a full coupon payment on the first payment date.
3. Standardisation of the restructuring clause to 'No Restructuring'.

The aims of the changes are to improve market transparency, facilitate the reduction of CDS gross notional amounts via trade compression, aid in the transition to same-day trade matching, and support central clearing of CDS contracts.

Proposals for the use of central counterparty (CCP) clearing in CDS markets have also advanced. Currently, ICE Trust is operating CCP clearing for US CDS indices and has cleared more than \$250 billion of CDS. Also, the Chicago Mercantile Exchange received approval to clear US CDS, though its launch was delayed until some larger investors in the market signed on as stakeholders. LCH.Clearnet launched a CDS clearing service in the United Kingdom, and both LCH.Clearnet and Eurex plan on launching a euro-based service.

Furthermore, the US Treasury released proposals for regulating the over-the-counter (OTC) derivatives market. Under the proposals, standardised OTC derivatives would be required to be cleared through a CCP, the regulatory framework would be strengthened, trade reporting enhanced and regulators given authority to set position limits to prevent market abuses.

### FTSE 100 dividend index futures

Liffe introduced the first FTSE 100 dividend index futures contract in May. The contract allows the trading and clearing of the dividend component of the FTSE 100 index on an independent basis, and enables investors to segregate trading and hedging of dividends (one of the principal determinants of equity valuations) into a separate asset class.

Dividend futures were introduced for the first time last year, on the DJ Euro Stoxx 50, by Eurex. Over time, these contracts have become increasingly liquid, currently seeing an average daily volume of 8,000 contracts. Eurex will launch four new dividend futures on European stock indices in June 2009.

(1) Changes affect legacy transactions for the 2,023 parties that agreed to make changes retroactively.