Markets and operations

This article reviews developments in global financial markets since the 2007 Q3 *Quarterly Bulletin* up to the end of November. The article also reviews the Bank's official operations during this period.

Global financial markets[1]

Overview

The 'Markets and operations' article in the previous *Quarterly Bulletin* reviewed a time of stress for international financial markets, and this continued into the latest review period. Conditions across credit markets remained difficult and this was accompanied by renewed volatility and impaired liquidity in many global financial markets more generally.

There were tentative signs of recovery in some markets during October, but November saw a retrenchment of investor risk appetite amid renewed concerns about marked-to-market losses on structured credit products, in part prompted by further ratings downgrades. Coupled with continued hoarding of liquidity by some banks in the face of uncertain funding needs, especially around the approaching year end, global money market conditions tightened sharply.

Against this background, as well as some signs of a weakening in the outlook for economic activity, some central banks cut their official policy rates. And market expectations of the future paths of official interest rates were revised downwards.

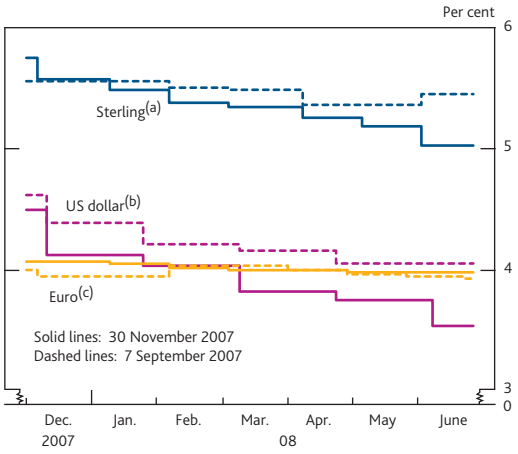
Recent developments in global capital markets

Monetary policy outlook

Faced with a deteriorating outlook for aggregate demand in the United States — principally reflecting the anticipated effects of further weakness in the housing market, higher oil prices and ongoing turbulence in financial markets — the US FOMC reduced its target for the federal funds rate by 75 basis points between September and November. After the data cut-off for this article the UK MPC reduced Bank Rate by 25 basis points to 5.5% and the FOMC reduced its target rate by a further 25 basis points to 4.25%.

Looking ahead, market expectations of the future path of official interest rates were revised downwards for the US dollar and sterling, but were little changed for the euro (**Chart 1**). Over the period, sterling and US dollar implied short-term interest rates initially rose but fell considerably in the second half of October and during November. Contacts suggested these later falls reflected expectations of future cuts in official interest rates linked to concerns about the potential impact on economic activity of a tightening in credit conditions.

Chart 1 International forward implied policy rates



Source: Bank calculations.

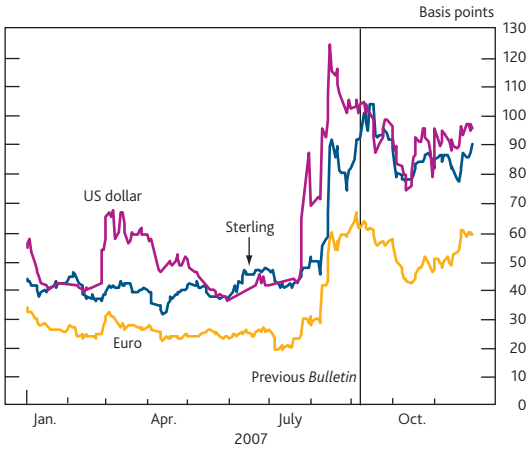
(a) Derived from sterling overnight index average (SONIA) swaps.
(b) Derived from overnight swaps that settle on fed funds effective rate.
(c) Derived from euro overnight index average (EONIA) swaps.

Uncertainty about the future path of short-term interbank interest rates, as inferred from options prices, remained elevated. Having fallen back a little in September, implied uncertainty picked up again in October and November, especially for short-term US dollar interest rates (**Chart 2**). This coincided with a period of heightened concerns across asset markets, although implied uncertainty remained below levels observed during the summer. Since these options settle on futures contracts for interbank fixings (Libor or Euribor), it is difficult to tell what proportion of the moves in implied volatility reflected uncertainty about expected policy rates and how much reflected uncertainty about the future spread between policy rates and interbank rates. This spread remained elevated and volatile, possible reasons for which are analysed in the box on pages 498–99.

Information from options prices also indicated that the skew of the implied distribution of future short-term interest rates was

(1) This article focuses on global capital market developments. The data cut-off for this section is 30 November.

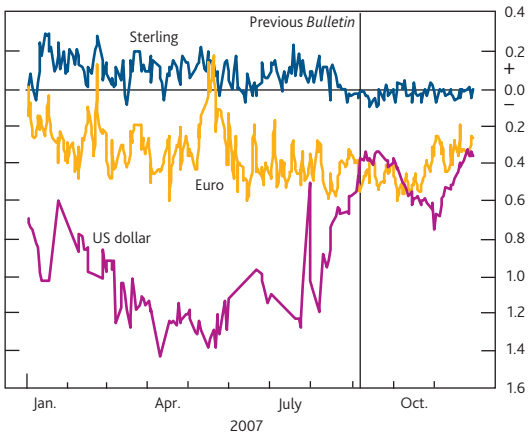
Chart 2 International six-month implied volatility from interest rate options



Sources: Bank of England and Euronext.liffe.

little changed for sterling and slightly less negative for euro. The balance of probabilities surrounding future US dollar interest rates moved further to the downside during October, prior to the FOMC cutting its target for the fed funds rate on 31 October, before returning close to the level at the beginning of the period (**Chart 3**).

Chart 3 International six-month skews from interest rate options

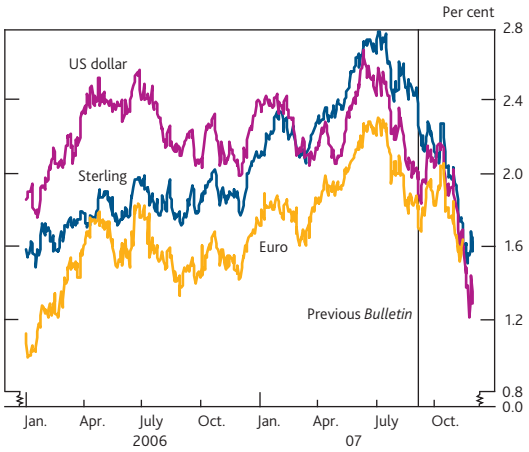


Sources: Bank of England and Euronext.liffe.

Short to medium-term US dollar, euro and sterling real interest rates fell further over recent months (**Chart 4**). This was perhaps consistent with downward revisions to market participants' outlook for economic growth in the major economies. Consensus forecasts were for economic activity in the United States, the United Kingdom and the euro area to decelerate in 2008 (**Chart 5**).

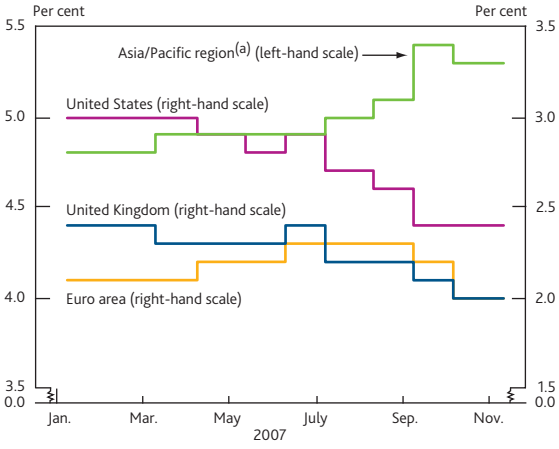
In contrast, forecasts for Asian economies, and other emerging markets, remained strong (**Chart 5**). This is widely thought by market participants to have been a key factor underpinning the overall strength in commodity prices (**Chart 6**).

Chart 4 International three-year real instantaneous forward rates[a]



(a) Real component of euro rates implied by nominal government bond yields less inflation swap rates. Sterling and US dollar real rates derived from the Bank's government liability curves.

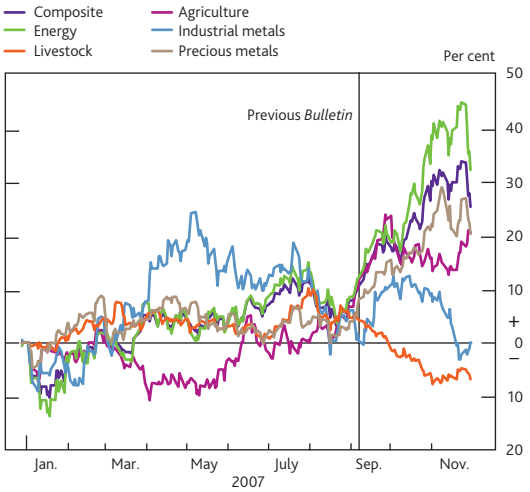
Chart 5 Expected real GDP growth for 2008



Source: Consensus Economics.

(a) Comprises 16 countries.

Chart 6 Cumulative changes in selected commodity price indices[a] since January 2007



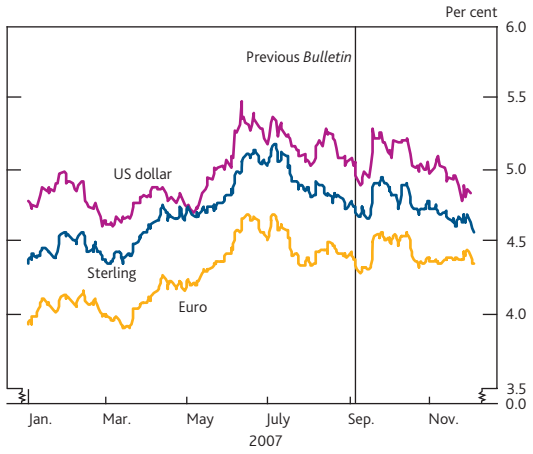
Source: Goldman Sachs.

(a) Indices refer to S&P GSCI total return index.

Long-term interest rates

At longer horizons, US dollar and sterling nominal forward interest rates fell slightly (**Chart 7**). The lower levels of these rates may be consistent with market expectations of official rates remaining lower for a prolonged period. But they may also reflect investors being willing to pay an increased premium for government bonds. In particular, given heightened uncertainty about the global economic environment, investors may have become more willing to pay a premium for long-dated government bonds to be certain of fixed default-free cash flows, as well as to use as collateral for secured borrowing.

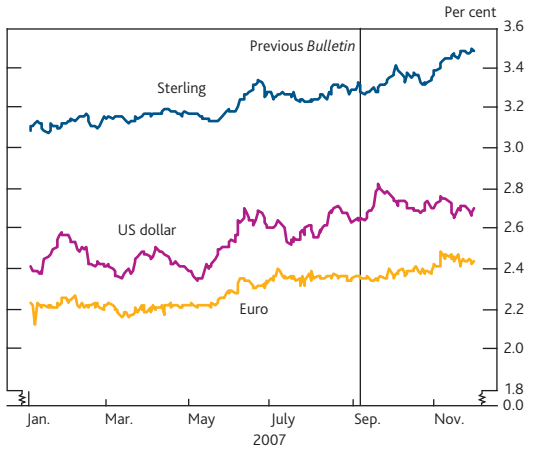
Chart 7 International five-year forward interest rates(a)



(a) Five-year rates starting five years forward, derived from the Bank's government liability curves.

Long-term inflation forward rates drifted slightly higher internationally (**Chart 8**). However, it is not clear how far this reflected a pickup in inflation expectations, increased uncertainty about future inflation or the effects of particular market factors. For example, market contacts reported continued strong demand for sterling index-linked bonds, which could have affected sterling inflation forward rates that are derived from the difference between yields on nominal and index-linked bonds.

Chart 8 International implied inflation forward rates(a)

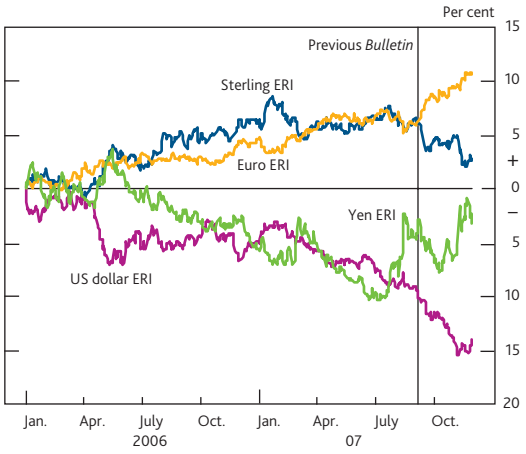


(a) Implied inflation over five years starting five years ahead. US dollar and sterling rates derived from the Bank's government liability curve. Euro rates derived from inflation swap rates. Sterling rates referenced to RPI, dollar rates referenced to CPI and euro rates referenced to HICP.

Foreign exchange

Since the beginning of 2007, the US dollar effective exchange rate index (ERI) fell by around 10% with around half of this fall since early September (**Chart 9**). In general, the main counterpart to the dollar depreciation had been an appreciation of the euro and sterling. But in October and November the yen appreciated sharply while the sterling ERI depreciated by around 1.5%.

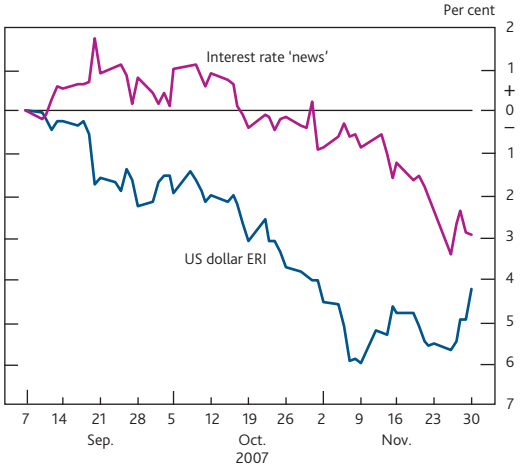
Chart 9 Cumulative changes in exchange rate indices since January 2006



Sources: Bank of England and Bloomberg.

A proportion of the recent changes in exchange rates was consistent with developments in relative interest rates. Based on uncovered interest rate parity, **Chart 10** suggests that changes in relative interest rates were broadly consistent with a fall in the dollar ERI, if not the magnitude observed.

Chart 10 Implied contribution of interest rate 'news' to cumulative change in the US dollar ERI since previous *Bulletin*(a)

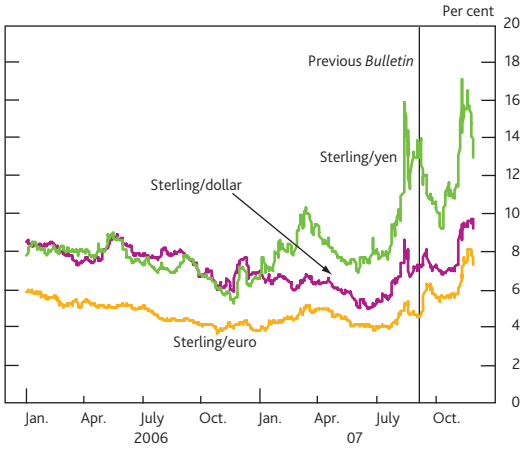


Source: Bank calculations.

(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 rate parity condition', *Bank of England Quarterly Bulletin*, November, pages 377–89.

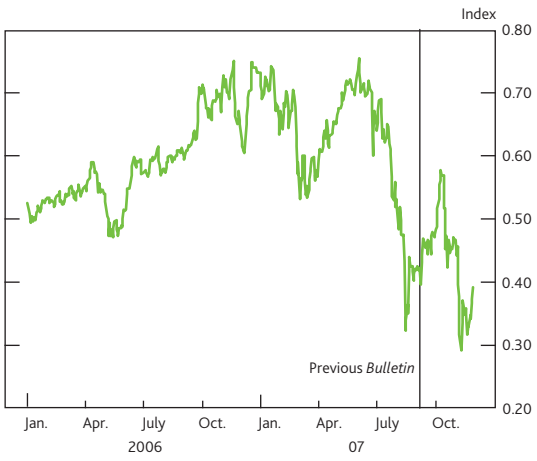
Market contacts have also suggested that some of the recent decline in the US dollar could be attributed to investors seeking to unwind their foreign exchange carry-trade positions. This may partly reflect an increase in the perceived riskiness of these trades, consistent with sharp increases in foreign exchange implied volatilities (**Chart 11**). An indicator, which compares the difference between US and Japanese short-term interest rates and the implied volatility of the yen-dollar exchange rate, suggested that the attractiveness of yen-funded carry trades fell sharply (**Chart 12**).

Chart 11 Three-month implied sterling exchange rate volatility



Sources: Bank of England and Bloomberg.

Chart 12 A yen-funded carry-trade indicator(a)



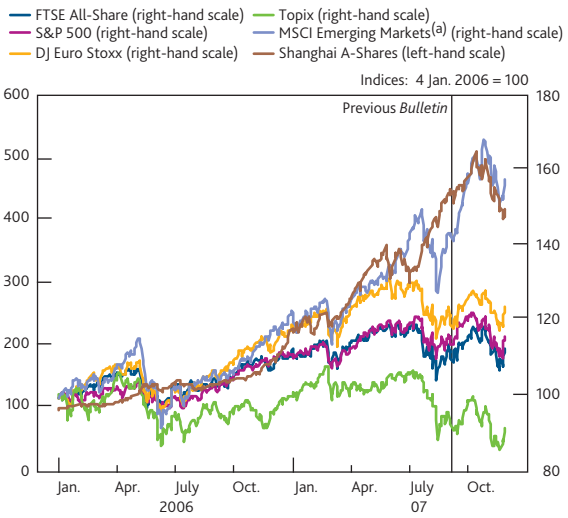
Sources: Bloomberg and Bank calculations.

(a) Spread between US and Japanese three-month interest rates per unit of three-month implied volatility of the US$/¥ exchange rate.

Equity markets

The depreciation of the dollar meant that, in US dollar terms, the main US equity indices tended to fall relative to the main European indices over recent months. However, in domestic currency terms, at the end of November the major equity indices were much the same as at the time of the previous *Bulletin* (**Chart 13**).

Chart 13 International equity indices (domestic currencies)



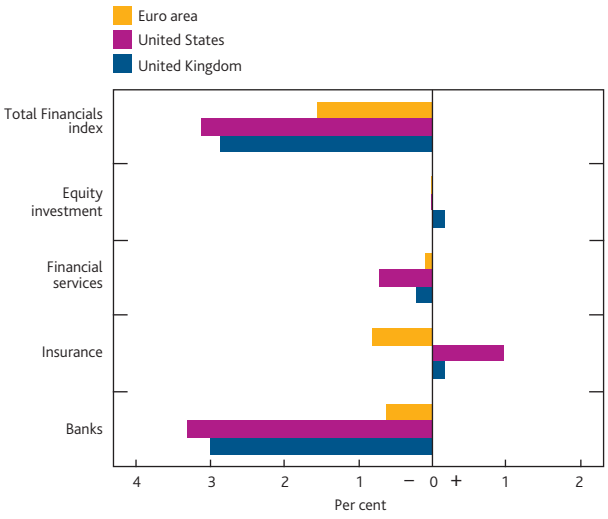
Sources: Bank of England and Bloomberg.

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

Nonetheless there was considerable volatility in equity markets over the period. During September and October, international equity price indices generally rose despite the ongoing turmoil in credit and interbank lending markets. This was especially true of emerging market stock prices — for example the MSCI Emerging Markets index rose by around 10%. However, in November equity prices fell globally as worries intensified about the wider implications of the problems in structured credit markets.

At the sectoral level, equity prices of financial companies and banks in particular, fell quite sharply over the period (**Chart 14**). This seemed to reflect downward revisions to the earnings prospects for these firms. A number of large global banks and broker-dealers reported significant write-downs on

Chart 14 Sectoral decomposition of changes in financial equity indices since previous *Bulletin*(a)



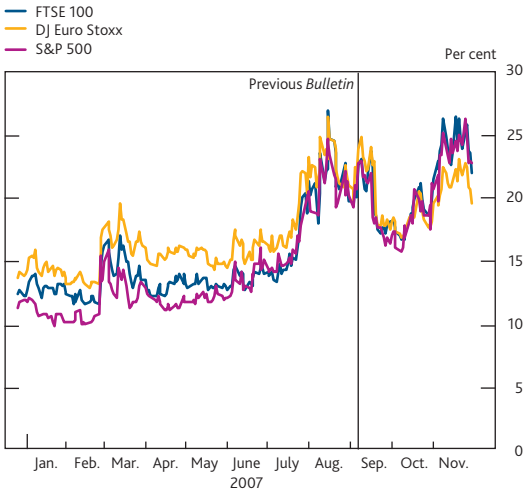
Sources: Bank of England and Thomson Datastream.

(a) Changes in price indices weighted by market value as at 7 September.

their structured credit exposures in 2007 Q3 and anticipated further write-downs in Q4. Perhaps reflecting this, IBES earnings forecasts for 2007 for US and UK financial companies were revised down. In contrast, earnings forecasts for non-financial companies generally remained robust.

Towards the end of November, the major equity indices recovered somewhat. This may partly have reflected the falls in risk-free interest rates. Other things being equal, lower risk-free interest rates would have boosted share valuations since they lower the rate at which future cash flows are discounted. However, potentially offsetting that, volatility in equity prices could have affected the required risk premium on shares. Indeed, information from option prices indicated that implied volatilities on the major equity indices remained elevated (**Chart 15**). Similarly, a simple dividend discount model indicates that the implied equity risk premium for the major equity indices picked up recently (**Chart 16**).

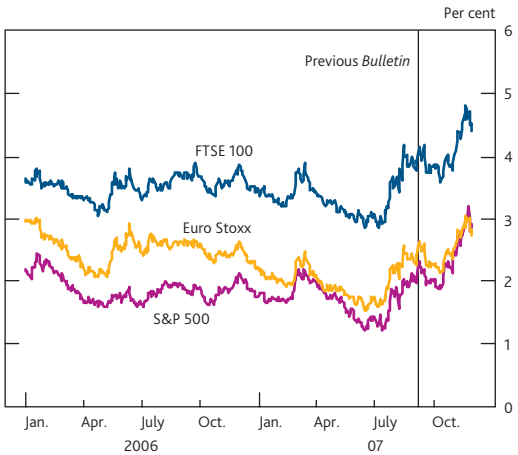
Chart 15 Three-month implied volatility from equity options[a]



Sources: Bank of England, Chicago Mercantile Exchange, Eurex and Euronext.liffe.

(a) Three-month (constant maturity) implied volatilities.

Chart 16 Implied equity risk premium[a]



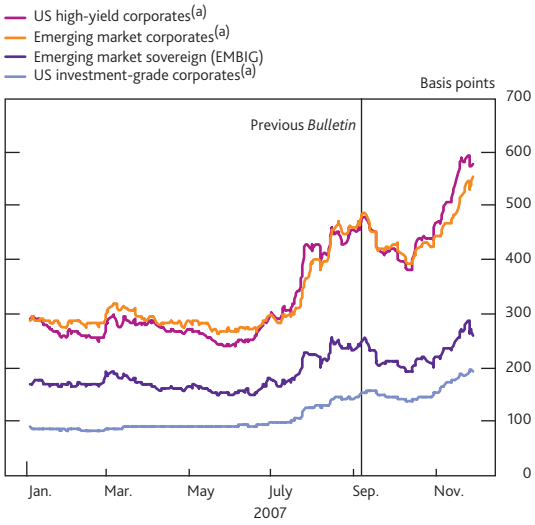
Sources: Bank of England and Thomson Datastream.

(a) Estimated using a one-stage dividend discount model with an exogenous long-term dividend growth rate equal to 3%. For more details of the dividend discount model see Vila Wetherilt, A and Weeken, O (2002), 'Equity valuation measures: what can they tell us?', *Bank of England Quarterly Bulletin*, Winter, pages 391–403.

Corporate and EME debt markets

Investors in corporate bond markets may also have sought greater compensation for absorbing risk given the uncertain macroeconomic environment. After narrowing a little in October, spreads on corporate credit default swaps and bonds widened sharply (**Chart 17**). This was particularly true for securities issued by non-investment grade companies and emerging market economy (EME) corporates, the spreads on which widened by around 100 basis points and 70 basis points respectively since September. Spreads on sovereign EME bonds also widened over recent months but by less than for EME corporates.

Chart 17 Emerging market, US high-yield and investment-grade corporate bond spreads



Sources: JPMorgan Chase & Co. and Merrill Lynch.

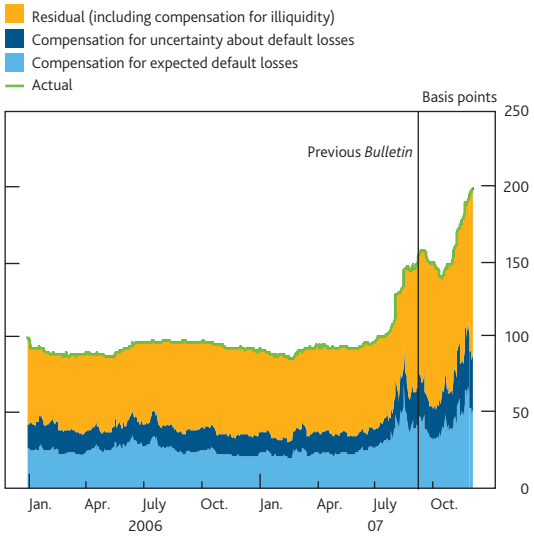
(a) Option-adjusted spreads.

A model-based decomposition of corporate bond spreads suggests that most of the recent widening reflected increased compensation for uncertainty about future defaults and other factors such as illiquidity (**Chart 18**).(1) Market contacts reported that liquidity in corporate bond markets was poor. Perhaps consistent with that, the difference between spreads on corporate bonds and the spreads on credit default swaps (the so-called 'CDS-bond basis') widened (**Chart 19**).

The impact of wider credit spreads on firms' cost of debt capital has to some extent been offset by the falls in default-free government bond rates. Indeed, US investment-grade and EME corporate bond yields were broadly unchanged (**Chart 20**). However, yields on US non-investment grade corporate bonds increased by around 40 basis points. The increased cost may have contributed to weaker bond

(1) This model-based decomposition is the subject of an article on pages 533–41 of this *Bulletin*.

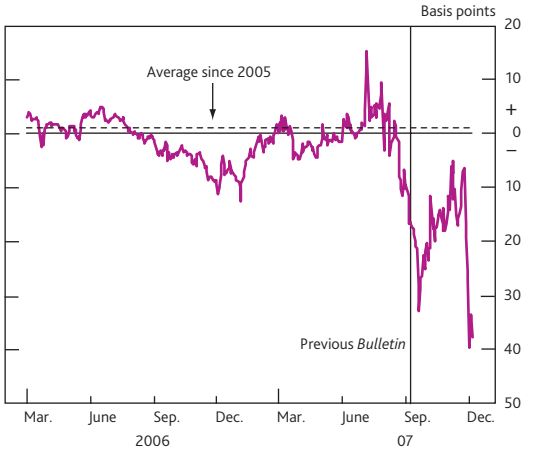
Chart 18 Decomposition of US dollar-denominated investment-grade credit spreads[a]



Sources: Bloomberg, Merrill Lynch, Thomson Datastream and Bank calculations.

(a) For details of the method underlying the decompositions see 'Decomposing corporate bond spreads' by Lewis Webber and Rohan Churm on pages 533–41 in this *Bulletin*.

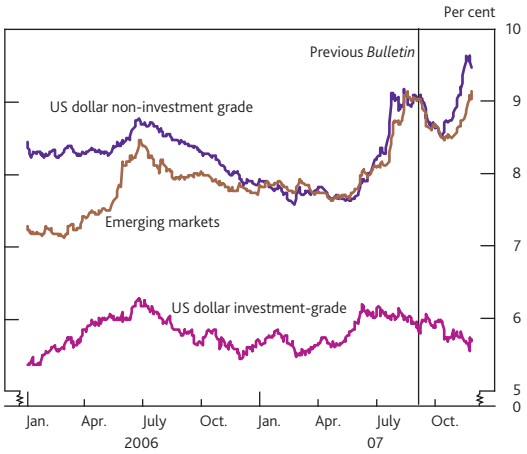
Chart 19 Indicative 'basis' between bond spreads and corresponding credit default swap spreads for US investment-grade corporates[a]



Source: JPMorgan Chase & Co.

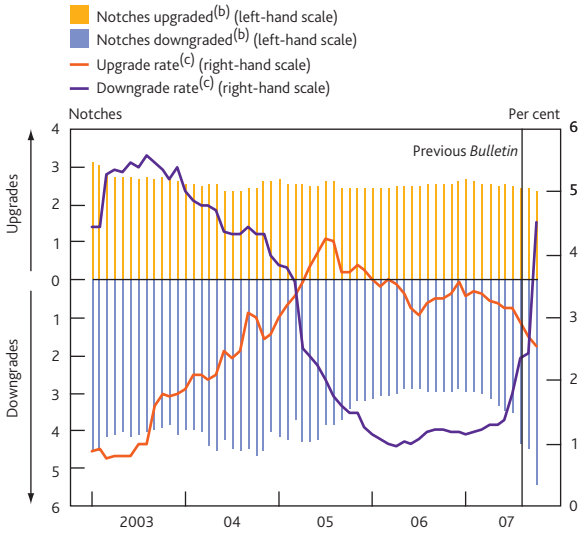
(a) Calculated as an equally weighted average of the basis between 550 investment-grade bond spreads and spreads on the corresponding credit default swaps.

Chart 20 Corporate bond yields



Source: Merrill Lynch.

Chart 21 Rating changes on global structured finance[a]



Source: Moody's Investors Service.

(a) This encompasses ABS, CMBS, RMBS and CDOs across the United States, EMEA, Asia Pacific and Latin America. It also includes some transactions outside of these sectors such as ABCP, SIVs, catastrophe bonds and derivative product companies.
(b) Average number of total notches upgraded/downgraded over a rolling twelve-month period.
(c) Upgrade (downgrade) rate is the number of securities upgraded (downgraded) over a rolling twelve-month period divided by the total number of outstanding securities at the beginning of the twelve-month period.

issuance. The latest BIS *Quarterly Review* noted that borrowing in international debt markets retreated sharply during 2007 Q3 — net issuance of $396 billion in bonds and notes was less than half that of the previous quarter.

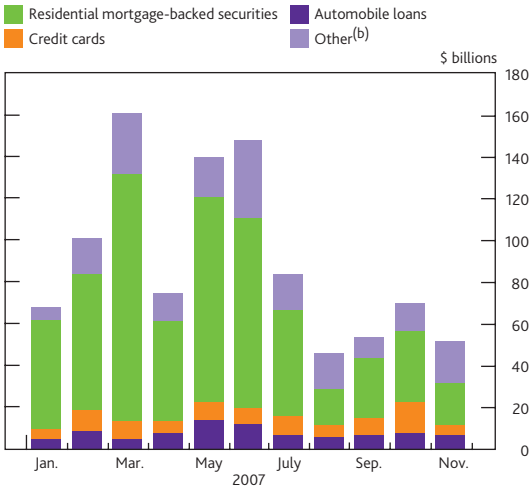
Asset-backed and structured credit markets

Against the backdrop of rising delinquencies and higher-than-expected correlation of defaults in the United States, the major rating agencies reviewed the ratings applied to global structured credit instruments. This generally resulted in significantly more downgrades than upgrades. And according to Moody's, the average size of downgrades increased sharply over recent months (**Chart 21**).

Primary issuance of asset-backed securities (ABS) slowed sharply over the past few months as the turmoil in securitisation markets persisted (**Chart 22**). Indeed, some mortgage-backed securities markets were largely closed to new issuance. There was some issuance of collateralised loan obligations (CLOs) related to high-yield loans. This probably reflected some repackaging of those loans that were unexpectedly caught on banks' balance sheets, particularly in the United States.

In secondary markets, spreads on mortgage-backed securities remained wide and indeed in Europe continued to widen over the past few months (**Chart 23**). However, these markets remained extremely illiquid with, according to contacts, few transactions actually taking place.

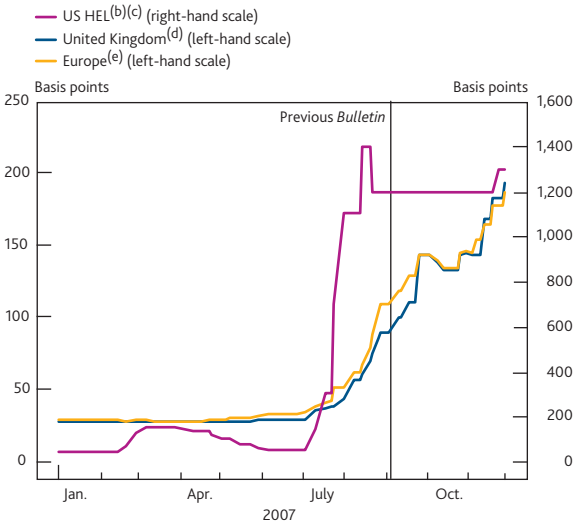
Chart 22 Global issuance of asset-backed securities (ABS)[a]



Source: JPMorgan Chase & Co.

(a) Refers to funded or so-called cash asset-backed securities (ABS) and excludes synthetic ABS.
(b) Includes securities linked to equipment, student loans, commercial mortgage-backed securities, sovereign and agency debt, and other receivables.

Chart 23 Spreads on residential mortgage-backed securities[a]



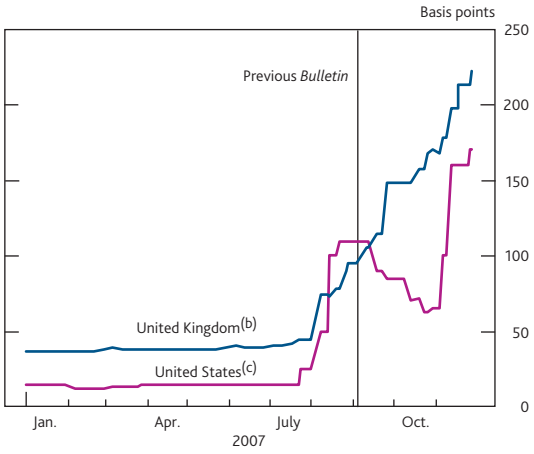
Source: Lehman Brothers.

(a) A-rated.
(b) Home equity loans.
(c) Five-year dollar floating rates over Libor.
(d) Five-year sterling floating rates over Libor.
(e) Five-year euro floating rates over Libor. Spreads on Dutch, Italian, Portuguese and Spanish (ten-year) securities weighted by total issuance as of 23 November.

Similarly, spreads on securities backed by US and UK credit card receivables widened further (**Chart 24**). In the United States, this has been accompanied by wider spreads on auto loan ABS, in part reflecting worries that a weaker outlook for the US economy could lead to more widespread borrower distress.

One source of pressure on ABS spreads was the prospect of forced selling from structured investment vehicles (SIVs).[1] Around half of their assets (around $400 billion at the end of August 2007) were held in ABS. As market prices of their assets fell, the mark-to-market net asset value of SIVs declined.

Chart 24 Spreads on credit card-backed securities[a]

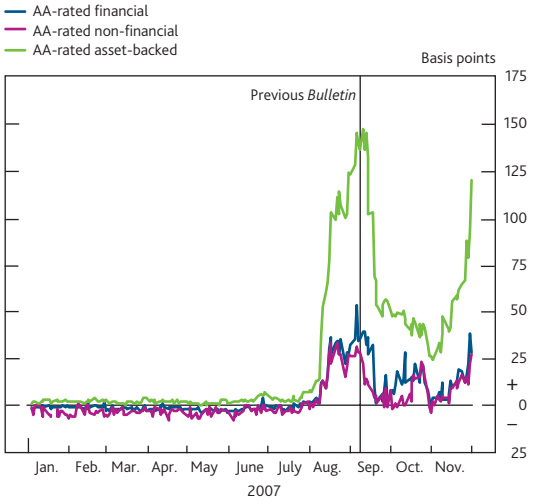


Source: Lehman Brothers.

(a) A-rated.
(b) Five-year sterling floating rates over Libor.
(c) Five-year dollar floating rates over Libor.

Most SIVs continued to find it difficult to obtain funding by issuing asset-backed commercial paper (ABCP). And the spreads on ABCP issued by ABCP-funded vehicles widened sharply in November (**Chart 25**), reversing the narrowing in October. This added further pressure for banks that sponsor ABCP-funded vehicles to take assets back onto their balance sheets.

Chart 25 Spreads on US commercial paper[a]



Sources: Bloomberg and Board of Governors of the Federal Reserve System.

(a) Yields on 30-day US commercial paper less rates inferred from overnight index swaps.

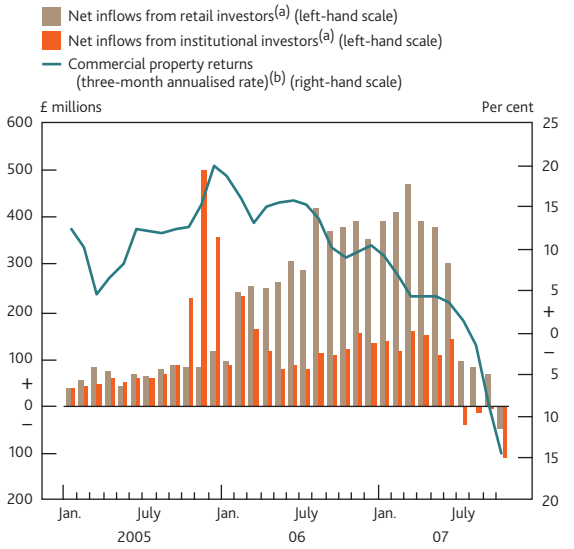
A large proportion of the investor base for ABCP comprises money market funds. According to contacts, some of these funds reduced the quantity and term of their ABCP investments, focusing their portfolios on very low risk and highly liquid assets in case they faced significant redemptions. Some funds that invested in ABCP have encountered

(1) For more details of SIVs and ABCP conduits see the box 'ABCP-funded vehicles' on page 348 of the 2007 Q3 *Quarterly Bulletin* and also the box 'Types of ABCP programmes' in 'Risk transfer between banks, insurance companies and capital markets', by David Rule published in the *Financial Stability Review*, December 2001, pages 137–59.

difficulties over the past few months, but the traditional, low-risk money market funds continued to receive inflows suggesting confidence in this industry generally remained robust.

However, a particular concern among contacts related to the position of funds which invested exclusively in commercial property. UK property funds recorded net redemptions in October from both retail and institutional investors (**Chart 26**). In the same month, commercial property prices fell sharply in the United Kingdom and returns on commercial property slowed significantly. Furthermore, implied rates from commercial property derivatives markets suggested further falls.(1) To the extent that commercial property funds became forced sellers of their assets, this could potentially further undermine returns.

Chart 26 UK commercial property returns and inflows into UK property funds



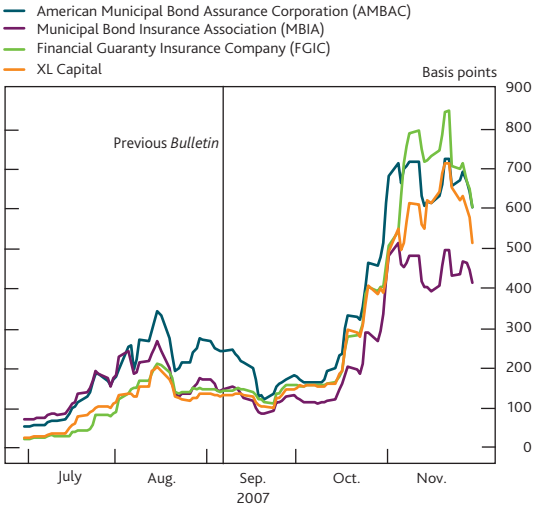
Sources: Investment Management Association and Thomson Datastream.

(a) Based on data compiled by the Investment Management Association (IMA) on 32 UK on-shore property funds with total funds under management of around £15 billion at the end of October 2007.
(b) Uses the Investment Property Databank (IPD) UK All property monthly index, which measures monthly returns to direct commercial property investments in a total of 75 portfolios, covering 4,247 properties worth £56 billion.

Contacts have also expressed concerns about the market impact of any rating downgrades to the major financial guarantors; in particular, specialist insurers known as monolines that provide insurance of interest and principal payments on debt securities. Traditionally monolines largely provided insurance for US municipal bonds. But the main monolines also moved into structured finance and credit markets, typically either through selling insurance policies on ABS or writing credit default swap contracts on collateralised debt obligations (CDOs) of ABS.

Spreads on CDS of the main monolines moved sharply higher over recent months (**Chart 27**). And the major rating agencies announced they would review the capital cushions that they require monolines to hold in order to retain their AAA ratings. These cushions are intended to ensure that the monolines are adequately capitalised to absorb potentially higher-than-expected claims.

Chart 27 Spreads on five-year credit default swaps of financial guarantors



Source: Markit.

A downgrade to a major monoline could potentially cause further disruption in structured credit markets if it led to downgrades to the securities it insured. Contacts have also suggested that if a downgrade to a monoline prompted downgrades of US municipal bonds, this could amplify financial market volatility more generally. Many investors in municipal bonds, such as certain money market funds, have strict investment mandates that stipulate they invest solely in highly rated securities. As such, if a major monoline lost its triple-A rating and that led to a rating downgrade of the bonds they insured, this might potentially trigger widespread sales of municipal bonds.

These concerns about financial guarantors are symptomatic of the general uncertainty about the scale of potential losses on structured credit assets. Based on published information, there was considerable variation in the valuations across structured products and for different financial institutions. Moreover, the valuations were typically stated net of hedging strategies. To the extent that such hedges may not be perfect, this is a further source of uncertainty about institutions' potential exposures to structured credit vehicles.

These variations in valuations could simply have reflected the different characteristics of individual firms' asset portfolios and hedging strategies. But they were also related to different internal methods to value these complex securities; either a model-based process ('mark-to-model' which requires certain assumptions to be made about the factors that affect

(1) For a further discussion of recent trends in commercial property prices, see pages 27–28 of the October 2007 *Financial Stability Report*.

An indicative decomposition of Libor spreads

Libor is the most widely used benchmark for short-term interbank interest rates in major currencies worldwide.(1) From late July, international Libor rates rose relative to other measures of expected policy rates. These spreads remained wide across currencies, reflecting a reduced appetite for unsecured lending to banks and uncertainty about the location of losses associated with the US sub-prime market.

This box outlines an indicative decomposition of the spread between twelve-month Libor rates and equivalent maturity overnight interest rate swap rates. It suggests that, during August and September, credit factors appeared to account for only a small proportion of the spread. More recently, bank credit concerns appear to account for a more significant portion of the spread, although that could partly reflect the effects of liquidity rationing.

Calculating credit and non-credit premia

In principle, Libor rates reflect current and expected future overnight interest rates (ie the expected path of monetary policy) and premia associated with liquidity and credit risk. The latter arises because Libor rates relate to unsecured interbank lending and are therefore subject to the risk of the borrower defaulting.

The analysis in this box uses prices of credit default swaps (CDS) for banks in the Libor panel to form a rough estimate of the credit premia implicit in Libor rates. It then assumes that any difference between observed Libor rates and the sum of the estimated credit premia and a measure of the risk-free interest rate reflects factors not related to credit or policy expectations, such as frictions in the interbank market or liquidity premia. There are, however, a number of assumptions and caveats attached to this methodology, including that credit and liquidity premia are unlikely to be entirely independent; for example, the inability to raise funds — liquidity risk — may be factored into CDS prices.

In principle, CDS prices reflect the default probability of the reference entity, the loss given default and some compensation for uncertainty about these factors. Assuming that investors recover 40% of their deposit in the event of default,(2) and ignoring any liquidity effects in CDS markets, an implied (risk-neutral) probability of default for the underlying security is derived using a simple no-arbitrage relationship.

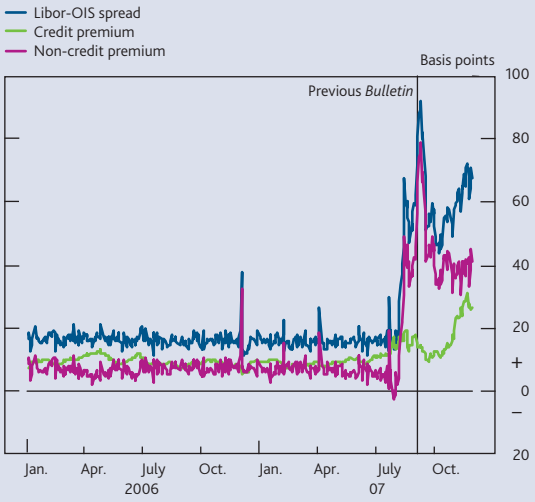
This probability can then be used to infer a credit spread (above the risk-free rate) that must prevail such that a risk-neutral investor is indifferent between investing in a risk-free bond and a risky bank deposit. Overnight index swap (OIS) rates are used to proxy for the risk-free rate.(3)

Put simply, this method maps (under certain assumptions) a standard CDS price into a 'fair' spread for obtaining twelve-month funds in the interbank market. Having derived a spread for each bank in the Libor panel, a simple average provides a crude estimate of the credit premium in Libor. The residual of the Libor-OIS spread net of the credit premium is referred to as the non-credit premium.

Decomposition and international comparisons

The indicative decompositions for sterling, US dollar and euro are shown in **Charts 1–3**. These suggest that (at the onset of the turbulence) credit markets reacted to international financial market developments before the widening of money market spreads. Specifically, credit premia (implied by CDS prices) rose more rapidly than Libor rates in late July and early August. That Libor did not react to the rise in CDS prices in July suggests that credit risk was initially probably not a key determinant of Libor.

Chart A Decomposition of the sterling twelve-month Libor-OIS spread(a)



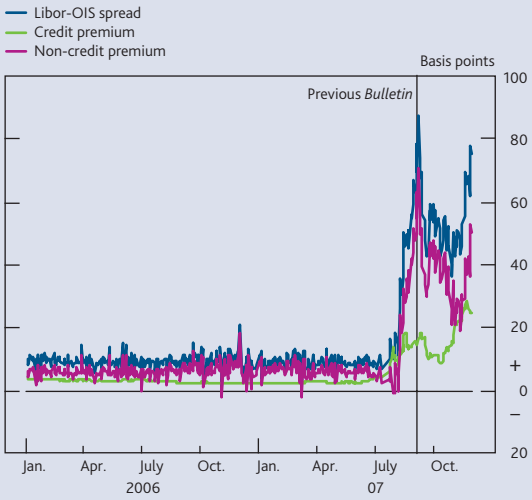
Sources: British Bankers' Association, Markit and Bank calculations.

(a) The decomposition adjusts for the ten-day moving average spread between overnight index swaps and secured rates.

Instead, the substantial increases in Libor and associated widening in Libor-OIS spreads during August and September appears to have been largely associated with non-credit factors across currencies. Market contacts have suggested that this was due to banks hoarding liquidity, as uncertainty about funding commitments to specialist financing vehicles, conduits and corporates increased.(4)

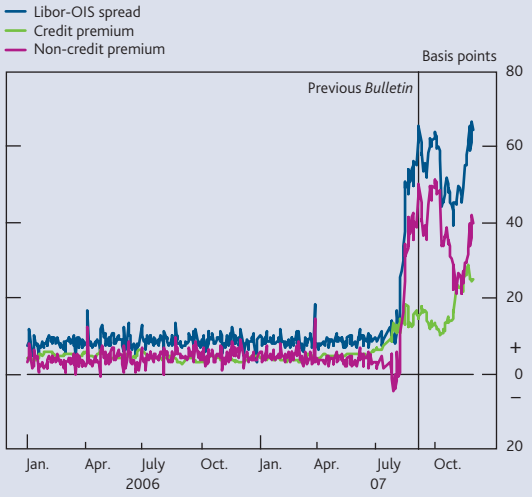
At the beginning of October, Libor spreads narrowed quite sharply before widening again during November. The decomposition suggests that during the latest period of spread widening, a larger part of the move can probably be attributed to an increase in credit premia. This reflected increases in bank CDS prices following the news about significant write-downs

Chart B Decomposition of the dollar twelve-month Libor-OIS spread



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

Chart C Decomposition of the euro twelve-month Libor-OIS spread[a]



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

(a) The decomposition adjusts for the ten-day moving average spread between overnight index swaps and secured rates.

on exposures to mortgage-backed securities and leveraged loan commitments.

The decomposition is consistent with a shift to greater credit concerns over recent months. However, it is subject to some caveats. Specifically, the recovery rate for a Libor deposit in the event of a bank defaulting may be higher than the assumed 40%. Another assumption is that CDS prices efficiently reflect default risk. In practice, CDS prices may also be affected by specific factors in CDS markets. The analysis also assumes investor risk-neutrality. In reality, CDS prices and the credit premia implicit in Libor rates may partly reflect additional compensation for market participants' aversion to risk.

In summary, the indicative decompositions shown in this box appear broadly consistent with market contacts' views about the evolution of observed Libor-OIS spreads. At the beginning of the market turbulence, non-credit premia accounted for the majority of the spread widening, which may have been due to banks hoarding liquidity. More recently, however, credit premia increased. This coincided with markets reportedly becoming more concerned about the capital adequacy of banks and, in particular, whether they would need to replenish common equity following significant write-downs related to structured credit exposures and mark downs to leveraged loan commitments. However, it is important to stress that this crude decomposition is only indicative. It relies on, and is sensitive to, a number of assumptions. And, in practice, credit and non-credit (liquidity) premia are unlikely to be entirely independent.

(1) Libor is an average of indicative funding rates submitted each day by a panel of banks. See box, 'Recent rise in Libor rates', 2007 Q3 *Quarterly Bulletin*, pages 350–51 for a detailed discussion of how Libor is calculated.
(2) As assumed by protection sellers in their CDS price calculations.
(3) See box, 'Interest rate expectations from overnight swap rates', Winter 2005 *Quarterly Bulletin*, pages 410–11 for further details on OIS. Sterling and euro OIS rates are adjusted for a ten-day moving average of observed spreads to secured rates. US dollar OIS rates settle on rates targeted by the Federal Reserve, so are not adjusted.
(4) See October 2007 *Financial Stability Report*, pages 8–9 for a fuller discussion of uncertainties related to balance sheet commitments.

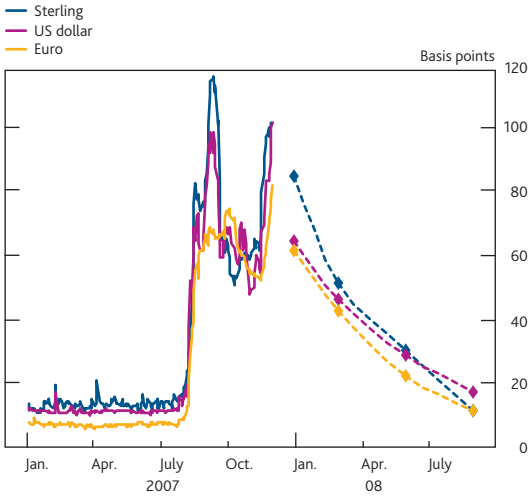
asset valuations), or one based on a quoted market price ('mark-to-market').

However, it should be noted that in most cases the write-downs did not reflect realised losses (ie actual defaults). Consequently, it is possible that banks will make write-backs in future months if conditions in ABS markets were to improve.

Bank funding markets

In the face of losses on structured credit exposures, combined with the prospect of the reintermediation of assets onto banks' balance sheets, bank funding markets remained under pressure. In particular, many money market participants reported difficulties in obtaining funding at maturities longer than one week. Consequently, term Libor spreads remained elevated and forward rates suggested that they would remain so for a while (**Chart 28**).

Chart 28 Three-month Libor rates relative to expected policy rates[a]



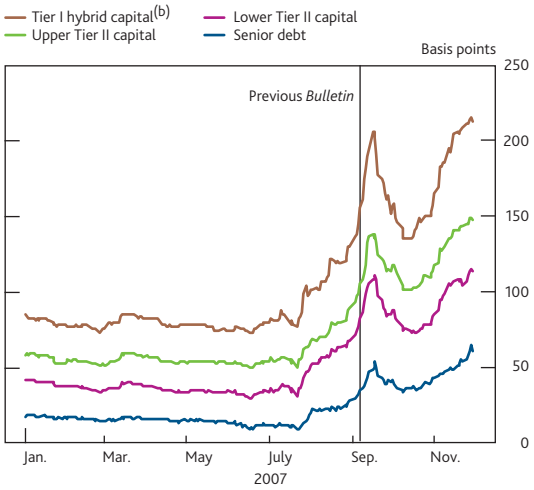
Sources: Bloomberg, British Bankers' Association and Bank calculations.

(a) Three-month spread of Libor to overnight interest swap rates. Dashed lines show implied forward spreads derived from forward rate agreements as at 30 November.

The initial widening in Libor spreads during August had, according to contacts, mainly reflected banks hoarding liquidity. During October and November, further uncertainty about losses on structured credit led to heightened concerns about the potential impact on banks' capital positions. In turn, this may have increased investor perceptions of counterparty risks associated with banks — as evidenced by higher premia on credit default swaps. This is discussed in more detail in the box on pages 498–99.

The cost of longer-term bank funding and capital also increased over the past few months (**Chart 29**). Spreads on covered bonds — securities issued by banks backed by assets on their balance sheets — also widened sharply over the past few months. After some improvement during October, raising capital through the issuance of so-called hybrid Tier 1 securities again became more difficult. However, some banks were able to raise Tier 1 capital through private placements of mandatory convertible securities, essentially a forward sale of common equity.

Chart 29 Spreads on sterling bank debt and capital[a]



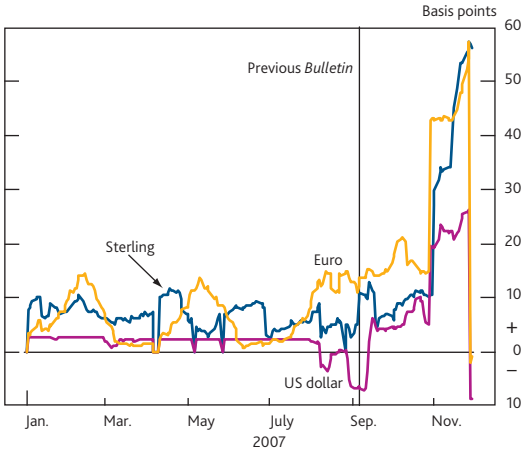
Source: JPMorgan Chase & Co.

(a) Spreads over interest rate swaps.
(b) Fixed-rate debt instruments with equity-like features.

According to market contacts, the continued illiquidity in money markets also related to an increased concern surrounding funding conditions over the year end. As discussed in more detail on page 505, this reflected banks wishing to 'window dress' their balance sheets over the year end. That pushed up further the premium for borrowing for periods spanning 31 December. Reflecting this, the spread of two-month Libor to one-month Libor increased sharply at the start of November when the two-month rates extended beyond the year end (**Chart 30**). This spread narrowed sharply on 30 November for US dollar and euro once the one-month Libor rates also spanned the year end.

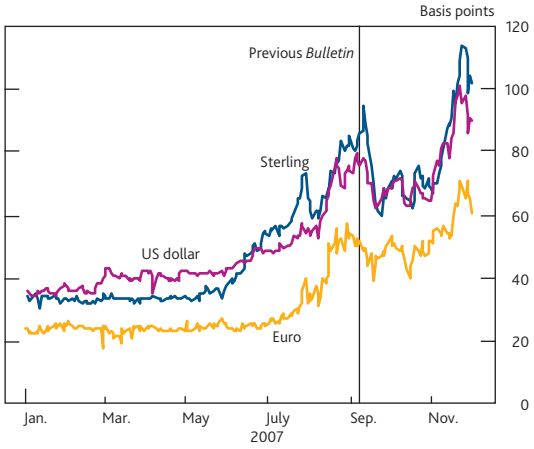
Persistently wider spreads on interbank lending also contributed to a sharp widening in the spreads between

Chart 30 Spread between international one-month and two-month Libor rates



Source: British Bankers' Association.

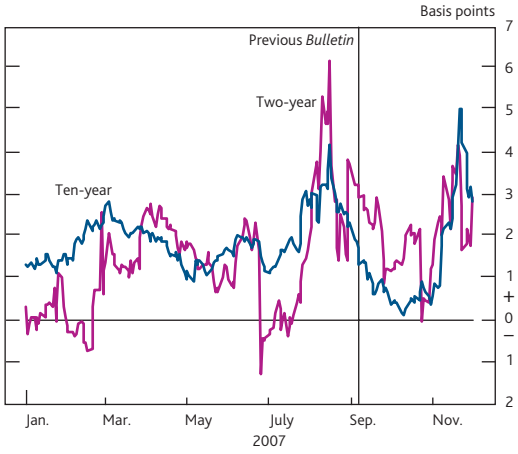
Chart 31 Two-year spreads between interest rate swap rates and government bond yields



Source: Bloomberg.

interest rate swaps and government bond yields (**Chart 31**). According to contacts, part of this widening in spreads also reflected increased demand for government bonds as part of a general 'flight to quality'. Perhaps indicative of that, the spread between yields on the most recently issued, and most liquid, US Treasuries (so-called 'on-the-run' bonds) and those issued earlier (so-called 'off-the-run' bonds) widened sharply in early November before narrowing a little towards the end of the month (**Chart 32**).

Chart 32 Swap spreads between 'on-the-run' and 'off-the-run' US government bonds(a)



Source: JPMorgan Chase & Co.

(a) Difference between the swap spread of the most recently issued and the next most recently issued US government bond at that maturity.

Overall, financial markets remained fragile. In particular, continued uncertainty about the scale and location of possible losses on structured credit investments, coupled with increased concerns about downside risks to the US economy, further suppressed investors' risk appetite. Market contacts thought that it would take time for the full implications of the recent financial market turmoil to be become clear, and while that is the case financial market volatility would be likely to remain elevated.

Bank of England official operations

The Bank's balance sheet is managed in accordance with its policy purposes. These relate to the implementation of monetary policy; management of the Bank's foreign exchange reserves; provision of banking services to other central banks; provision of payment services for the UK financial system and the wider economy; and management of the Bank's free capital and cash ratio deposits from financial institutions.

Sterling monetary framework

This section reviews two full maintenance periods between 6 September and 7 November and summarises key developments in the Bank's official operations during the November–January maintenance periods.

The Bank's operations in the sterling money markets aim to keep secured market overnight interest rates in line with Bank Rate by supplying sufficient reserves for the banking system, in aggregate, to meet chosen targets for average balances held at the Bank of England over a maintenance period running from one MPC decision date until the next.

Each month, ahead of the start of a reserves maintenance period, reserves banks in the United Kingdom have the opportunity to set new reserves targets, and the Bank undertakes to supply the reserves that banks in aggregate need to meet those targets. Thus the monthly resetting of reserves targets provides an opportunity for banks individually, and the banking system as a whole, to obtain extra liquidity from the Bank.

Given the strains in money markets observed since August, reserves banks have in aggregate increased their targets ahead of each of the subsequent maintenance periods. In total, the aggregate target increased by 37% from £16.6 billion in August to £22.7 billion for the maintenance period starting on 6 December.

September–November maintenance periods

As reported in the previous *Bulletin*,(1) ahead of the start of the September–October maintenance period, there was reason to believe that banks' chosen targets did not fully reflect their demand for reserves. Reserves targets should be set on the basis of expected costs and benefits. For an individual bank, the benefit is a buffer against unexpected payment shocks and, in turn, a reduced probability of needing to use the Bank's standing facilities.

But for the September–October maintenance period a co-ordination problem seemed possible. If banks collectively had set higher reserves targets and the Bank supplied the extra liquidity, pressures in the money market might have been

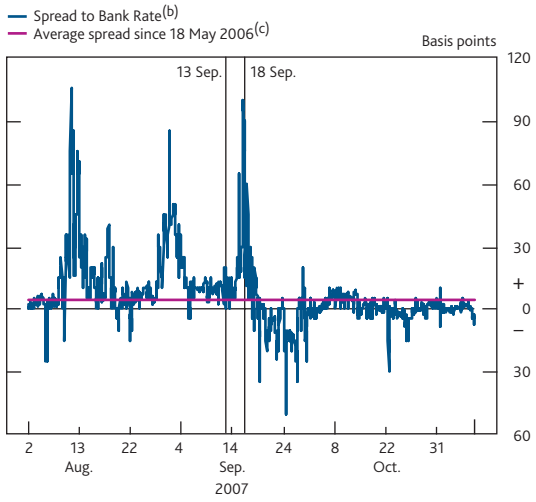
(1) For a fuller description, see pages 358–60 of the previous *Bulletin*.

expected to ease. In turn, market rates, and the cost of holding reserves, might have been expected to fall. But individual banks setting reserves targets did not know what targets other banks would set. And the incentive for any individual bank to set a higher target was diluted to the extent that the benefit of its action would have gone partly to other banks in the form of lower funding costs.

The Bank could not know whether or to what extent such a co-ordination problem had affected targets set for the September–October maintenance period, but it took the possibility seriously. When it announced the new aggregate target on 5 September it stated that in its open market operation (OMO) on the following day it would offer to supply reserves to meet the new target, following standard practice. But if over the subsequent week the secured overnight rate continued to exceed Bank Rate by an unusual amount it would, in the following OMO on 13 September, offer to supply, at Bank Rate, additional reserves of up to 25% of the aggregate reserves target.

In the event, the secured overnight rate did fall back in the subsequent week, but it was still unusually high relative to Bank Rate. The Bank accordingly offered in the OMO of 13 September extra reserves equivalent to 25% of the aggregate target and announced that it would re-offer these extra reserves at each scheduled OMO for the remainder of the maintenance period. The OMO was oversubscribed and the additional reserves were fully allotted. Later that day the secured and unsecured overnight interest rates fell further and traded close to Bank Rate (**Chart 33**).

Chart 33 Spread to Bank Rate of intraday secured sterling overnight interest rate[a]



Sources: BrokerTec and Bank calculations.

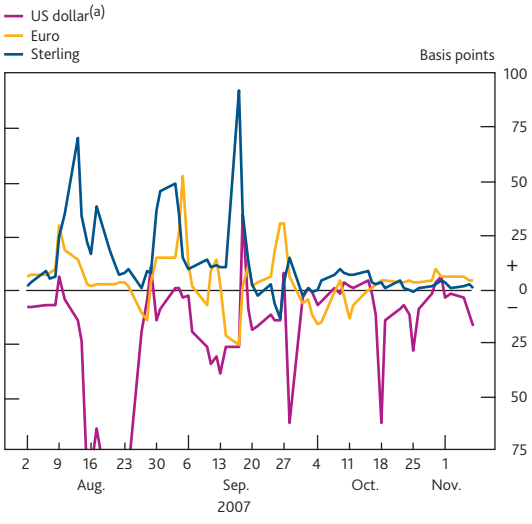
(a) Vertical lines show announcement of additional reserves provision.
(b) Excludes data from 17 August 2007.
(c) Excludes data from 31 July 2006, 28 June to 4 July 2007 and 17 August 2007.

The announcement of a liquidity support facility to Northern Rock on 14 September provided a further disturbance to conditions in sterling money markets, with the effect that sterling overnight interest rates rose sharply. This, together with intelligence from counterparties, suggested that there might have been a further (possibly temporary) rise in the demand for reserves. The Bank therefore offered, on 18 September, additional reserves in an exceptional fine-tuning OMO. More specifically the Bank offered, in a two-day repo, additional reserves equivalent to a further 25% of the aggregate reserves target. The fine-tuning OMO was oversubscribed and the additional reserves offered were all supplied.

The additional reserves supplied in the exceptional fine-tuning OMO and the additional reserves supplied in the scheduled OMO on 13 September were both re-offered in the scheduled OMO on 20 September. This helped to reassure money market participants that the Bank was committed to stabilising the overnight interest rate. The supply of additional central bank money via regular or exceptional OMOs is one of a number of provisions within the Bank's framework for its operations in the sterling money markets that can be used in stressed or otherwise extraordinary conditions.(1)

Following the extraordinary fine-tuning OMO, secured sterling overnight rates fell back and traded close to Bank Rate with limited day-to-day volatility for the remainder of the review period (**Chart 34**).

Chart 34 Spread to policy rates of secured international overnight interest rates



Sources: Bloomberg and Bank calculations.

(a) US dollar series fell to -287.5 on 21 and 22 August 2007.

Reflecting this, the Bank did not re-offer the additional 25% supplied in the extraordinary fine-tune in the final scheduled OMO on 27 September. But it did, as it said it would, re-offer the additional reserves supplied on 13 September. And in view

(1) See box on page 359 of the previous *Bulletin* and *The Framework for the Bank of England's Operations in the Sterling Money Markets* (the 'Red Book'); www.bankofengland.co.uk/markets/money/publications/redbookfeb07.pdf.

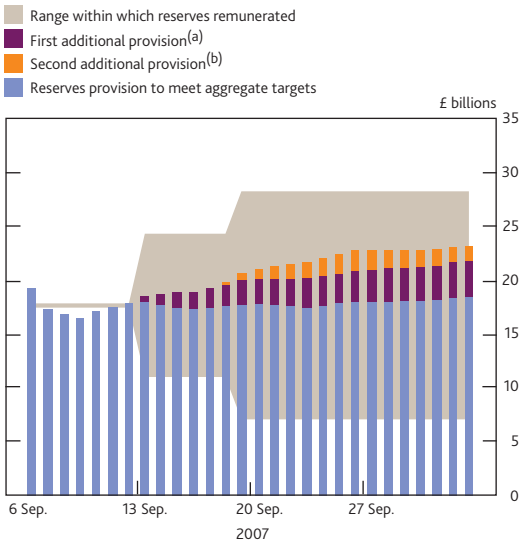
of the provision of extra reserves earlier in the maintenance period, the Bank did not hold a fine-tuning OMO on the final day of the maintenance period.

Because banks' reserves targets had not changed, the range around those targets within which banks are remunerated on their reserves needed to be widened in order to accommodate the increased supply of reserves. The range around each bank's point reserves target is designed to reduce the probability of banks needing to use standing facilities by mitigating the effect of central bank forecast errors. This in turn helps to stabilise market interest rates. Typically, the range has been set at ±1%.

The supply of additional reserves on 13 September, re-offered in subsequent OMOs, was equivalent to 25% of aggregate targets offered for 21 days in a 28-day maintenance period, ie on average over the maintenance period as a whole, 18¾% of target. Reserves ranges were widened to plus or minus twice that amount (±37½%) to allow flexibility in the distribution of the additional reserves between banks. Some banks might have wished to hold reserves up to the top of the new range. Other banks might have wished to hold reserves at their target. A range of ±37½% provided room for banks to make these different choices.

Reserves offered in the exceptional fine-tuning operation on 18 September, re-offered in the subsequent scheduled OMO, were equivalent to a further 25% of aggregate targets offered with 16 days remaining in the maintenance period of 28 days. Reflecting this, reserves ranges were widened further to ±60%. The impact on the cumulative average provision of reserves is shown in **Chart 35**.

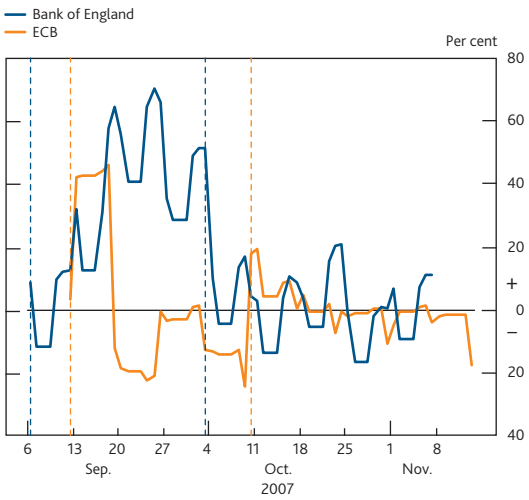
Chart 35 Cumulative average reserves provision in September–October maintenance period



(a) Additional 25% of aggregate reserves targets provided on 13 September and resupplied for the remainder of the maintenance period.
(b) Additional 25% of aggregate reserves targets provided on 18 September for two days and resupplied on 20 September for one week.

The net addition of reserves over the maintenance period differed somewhat from the approach taken by other central banks, reflecting the different frameworks. The ECB, in September, provided additional reserves earlier in their maintenance period, but subsequently drained these reserves later in the maintenance period, meaning that there was no additional supply of reserves (**Chart 36**). The ECB had taken a similar approach during the August maintenance period. In the United States, data are not available on the distribution of reserves provision within each two-week maintenance period. But data are published on the level of reserves provided in excess of requirement. More reserves were provided during the first maintenance period in early August than were required to meet banks' reserves requirements. But the level of excess reserves subsequently returned to more normal levels (**Chart 37**).

Chart 36 Daily aggregate reserves balances relative to target(a)



Sources: Bank of England and European Central Bank.

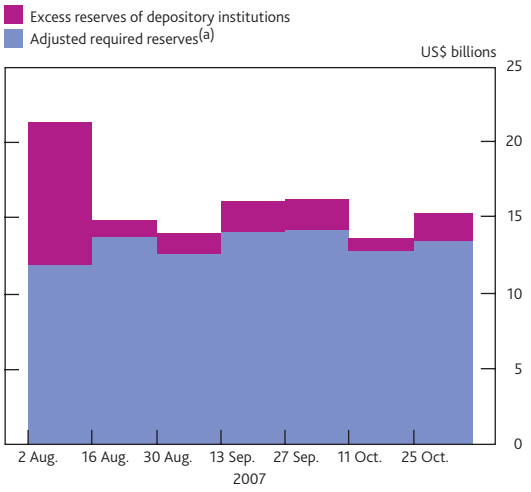
(a) Vertical lines indicate the start of reserves maintenance periods. Bank of England maintenance periods ran from 6 September to 3 October and 4 October to 7 November. European Central Bank maintenance periods ran from 12 September to 9 October and 10 October to 13 November.

In the United Kingdom, reserves banks in aggregate increased their targets again ahead of the October–November maintenance period. The aggregate target rose by 13% from £17,630 million to £19,970 million, reflecting further demand from reserves banks for central bank money (**Chart 38**).

During this maintenance period the Bank provided reserves through regular, scheduled OMOs sufficient to allow reserves banks to meet their targets in aggregate. But in response to feedback from its counterparties, the Bank maintained wider ranges around reserves targets within which it would remunerate reserves balances, at ±30%.

Ranges around point reserves targets provide banks with flexibility on the final day of each maintenance period in managing liquidity and meeting their targets. Before

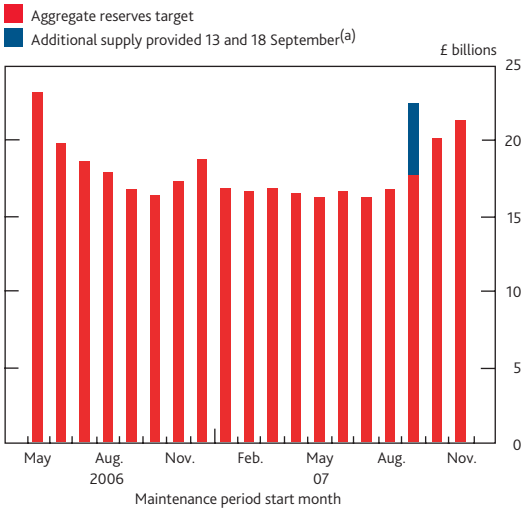
Chart 37 Supply of reserves relative to required reserves in the United States



Source: Board of Governors of the Federal Reserve System.

(a) Required reserves less vault cash used to satisfy reserves plus required clearing balances.

Chart 38 Aggregate reserves targets and additional supply

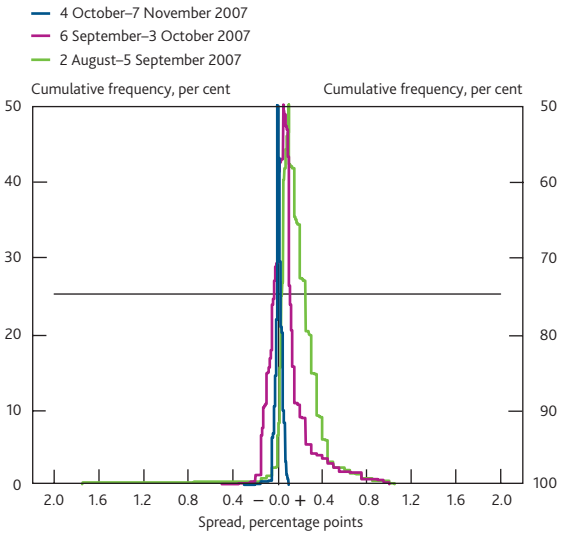


(a) Average additional reserves.

September, the Bank considered a range of ±1% as sufficient to absorb aggregate liquidity shocks. But with greater volatility and uncertainty in money markets, the probability of a bank receiving a late payment shock toward the end of the maintenance period may have been higher and the process of banks redistributing reserves between themselves may have been impeded. Wider ranges were therefore maintained to provide additional flexibility around the distribution of reserves across banks, even though the amount of reserves supplied was sufficient for banks in aggregate to meet targets at the centre of their ranges.

The combination of wider ranges and higher reserves targets, plus an apparent absence of large shocks to the demand for reserves meant that overnight market rates were generally close to Bank Rate and stable throughout the October–November maintenance period (**Chart 39**).

Chart 39 Folded cumulative distribution(a) of spread of sterling secured overnight interest rate (trade weighted) to Bank Rate

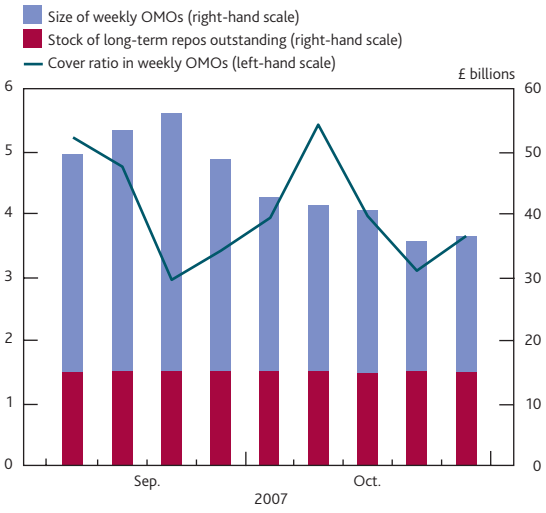


Sources: BrokerTec and Bank calculations.

(a) Distribution of the spread between overnight interest rate at end-of-day and the official interest 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.

Despite reserves banks increasing their aggregate reserves targets by 13% between the October and November maintenance periods, the amounts supplied in the Bank's regular weekly OMOs declined during the review period (**Chart 40**). As explained in the box on page 506, this does not mean that the total amount of liquidity provided to the banking sector fell — this rose in line with the aggregate reserves target. Rather, it reflected reserves being supplied via drawings by Northern Rock on the liquidity facility announced on 14 September.

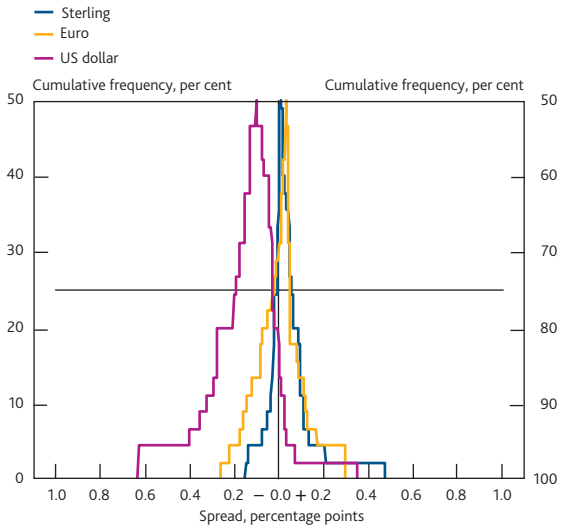
Chart 40 Liquidity provided in OMOs and weekly OMO cover ratio



For the September–November maintenance periods combined, sterling secured and unsecured overnight market interest rates

tended to be at least as close to policy rates as comparable euro and dollar overnight rates (**Chart 41** and **Chart 42**).

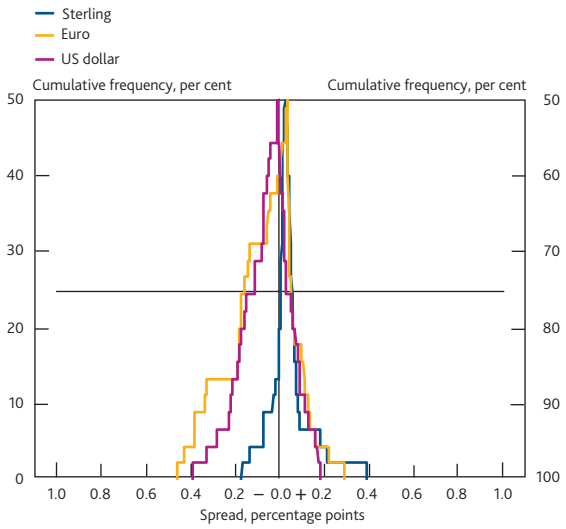
Chart 41 Folded cumulative distribution[a] of spread of international secured overnight interest rates to official interest rates[b]



Sources: ICAP and Bank calculations.

(a) Distribution of the spread between overnight interest rate at end-of-day and the official interest 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.
(b) Chart shows the distribution for period 6 September–7 November 2007. Differences in the median level of the spread of secured rates to official rates are due to differences in the way official operations are conducted.

Chart 42 Folded cumulative distribution[a] of spread of international unsecured overnight interest rates to official interest rates[b]



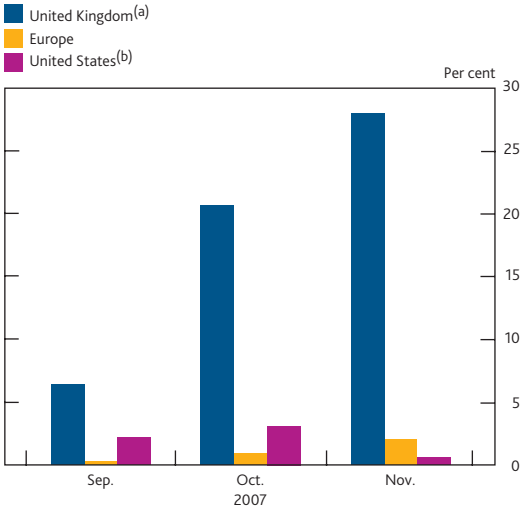
Sources: Wholesale Market Brokers' Association and Bank calculations.

(a) Distribution of the spread between overnight interest rate at end-of-day and the official interest 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.
(b) Chart shows the distribution for period 6 September–7 November 2007.

November–January maintenance periods

Ahead of the November–December maintenance period, members of the Bank's reserves scheme increased their aggregate targets by a further 6%, to £21,200 million, bringing the cumulative increase in aggregate reserves targets since 1 August to 28% (**Chart 43**). The Bank maintained wider ranges (±30%) around reserves targets within which it would remunerate reserves balances. This maintenance period ended on 5 December and will be reviewed in full in the 2008 Q1 *Bulletin*.

Chart 43 Cumulative increase in aggregate reserves targets since August 2007



Sources: Bank of England, Board of Governors of the Federal Reserve System and European Central Bank.

(a) UK aggregate reserves targets for August 2007 announced on 1 August 2007.
(b) Required reserves less vault cash used to satisfy reserves plus required clearing balances.

On 5 December, the Bank announced the size of aggregate reserves targets set by reserves banks for the December–January maintenance period. This showed an increase of £1.5 billion, bringing the cumulative increase in reserves since the August maintenance period to £6.1 billion, or 37%.

A key influence on market interest rates over these maintenance periods was expected to be market participants' behaviour in the run-up to the year end. Since early November, market contacts have expressed concerns about potential illiquidity in money markets in all currencies over this period. This introduced a high premium in unsecured interest rates that spanned the year end. Money market rates often rise over the year end because banks try to 'window dress' their balance sheets over what is an important reporting date.[1] In particular, banks tend to reduce interbank lending and hoard liquidity, which both put upward pressure on money market interest rates. This year, against a backdrop of a protracted period of stressed money market conditions, uncertainty about the year end was unusually high. To alleviate these concerns, the Bank and other central banks took steps to ensure increased availability of term funding over the year end.

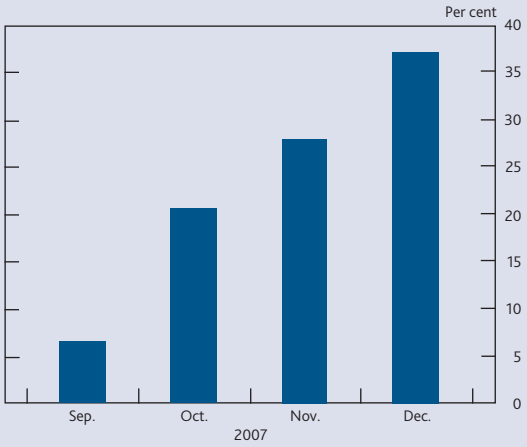
On 29 November, the Bank announced its intention to offer £10 billion, a significant proportion of its scheduled supply of

(1) See page 16 of the 2007 Q1 *Quarterly Bulletin*.

Supply of reserves and the liquidity support facility to Northern Rock

A unique feature of the Bank's operational framework is the freedom reserves scheme banks have to choose their own reserves target balances and to adjust those targets from one maintenance period to the next. In early August they chose targets which in aggregate amounted to £16.6 billion. By the start of the December–January maintenance period the aggregate target had risen to £22.7 billion. That means that over this period the amount of reserves to be injected into the system by the Bank had risen by 37% (**Chart A**).

Chart A Cumulative increase in aggregate reserves targets since August 2007

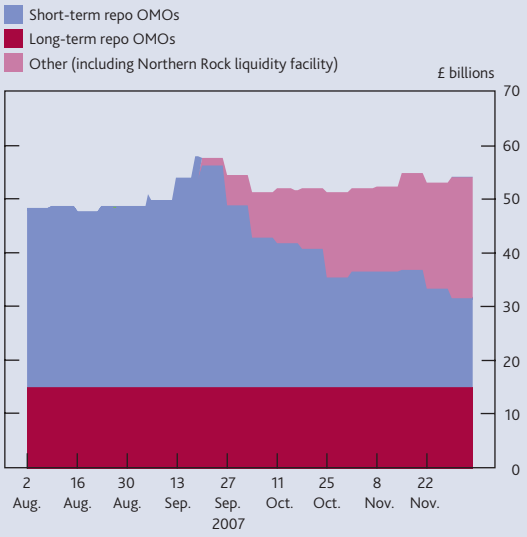


The Bank undertakes to supply reserves banks, in aggregate, with the reserves they need to meet their targets. If reserves targets rise, the Bank needs to supply more reserves and normally does so by lending more via one-week repos in its open market operations (OMOs).

However, it is important to note that OMOs also provide, in part, funds that banks use to purchase banknotes. So the size of OMOs will depend, among other things, on the demand for banknotes, which is, for example, higher in the period ahead of Christmas. Changes in banks' reserves targets will therefore not necessarily be reflected one-for-one in changes to the size of the Bank's OMOs.

It is also important to note that OMOs are not the only route through which money passes from the Bank to the banking system. Since late September, lending to Northern Rock under the liquidity support facility has been another important channel. As Northern Rock pays away the money to meet liabilities to other creditors, it simply adds to the reserves of other banks. Had the size of the Bank's OMOs remained unchanged, the total amount of funds provided to the banking system would have exceeded the amount needed for banks, in aggregate, to meet their reserves targets. To avoid this, the size of the Bank's OMOs fell, contrary to the usual seasonal pattern, by about £14 billion from £48 billion on 2 August to £34 billion on 6 December. But consistent with the increase in banks' reserve targets over that period, the total amount of funds provided to the banking system through OMOs and other transactions including the Northern Rock facility had risen by some £6 billion (**Chart B**).

Chart B Breakdown of sterling market transactions



reserves during the maintenance period beginning on 6 December, in the form of a five-week repo open market operation (OMO). This was done in order to help to alleviate concerns that money market conditions would be particularly tight over the year end, and to provide greater assurance to banks in managing their liquidity positions over that period. The decision to conduct a five-week repo OMO followed discussions with reserves scheme banks and at the Money Market Liaison Group (the work of the Money Market Liaison Group during 2007 is described in the box on pages 508–09). In the event, the operation was oversubscribed, with a cover ratio of 6.2.

Along with other central banks, the Bank announced on 12 December further measures designed to address pressures in short-term funding markets, which had increased in the weeks before the announcement.(1) Specifically, the Bank announced changes to its scheduled long-term repo OMOs on 18 December and 15 January.(2) In those operations, it announced that reserves would, as usual, be offered at three, six, nine and twelve-month maturities against the Bank's published list of eligible collateral. But the total amount of reserves offered at the three-month maturity would be expanded and the range of high-quality collateral accepted for funds advanced at this maturity would be widened.

The total size of reserves offered in the operations would be raised from £2.85 billion to £11.35 billion, of which £10 billion would be offered at the three-month maturity. The range of securities eligible as collateral in the three-month operations would be wider than in the Bank's normal OMOs, but narrower than those eligible for the recent term auctions described on pages 509–10. The Bank also announced that, consistent with its objective of keeping overnight market interest rates in line with Bank Rate, that it would offset in its other market operations additional reserves taken up in the long-term repo operations.

Longer-term repo OMOs

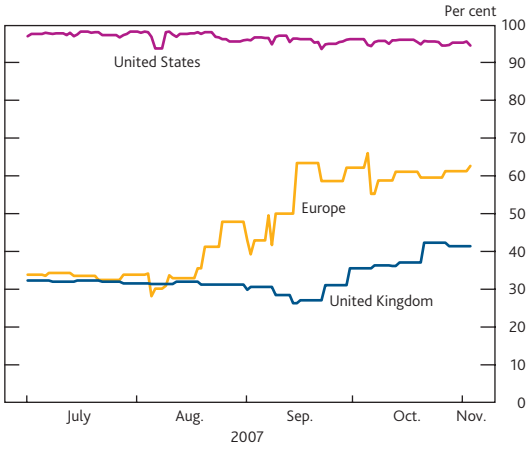
During the September–November maintenance periods, longer-term repos accounted for an average of 34% of liquidity supplied through OMOs (**Chart 44**). Each of the operations were fully covered (**Table A**). Cover in the three-month maturity repo offered in September was a little higher than in previous months, though reverted to more normal levels in October. The twelve-month maturity also achieved slightly higher cover in this review period than in the previous two months. Yield tails were low in most of these operations.

Electronic tendering system for OMOs

The Bank has introduced a new electronic tendering system, Btender, through which it will conduct its regular short-term and long-term repo OMOs. On 22 November, it conducted the first weekly OMO using this system. The Bank intends that, subject to market conditions and continuing liaison with counterparties, it will conduct the first long-term repo OMO using Btender on 18 December.

In addition to short and long-term repo operations, the Bank intends to provide longer-term financing to the banking system through purchases, on an outright basis, of gilts and foreign currency bonds, swapped into sterling. During the review period the Bank announced plans to hold the first gilt-purchase OMO early in the new year; the date to be announced before the end of this year.

Chart 44 Proportion of total stock of open market operations provided by longer-term financing(a)(b)



Sources: Bank of England, Bloomberg, European Central Bank and Federal Reserve Bank of New York.

(a) Defined as instruments longer than two weeks to maturity at inception.
(b) This chart differs from the printed version which, owing to a technical error, showed the United States line at the wrong level.

Table A Long-term repo operations

	Three-month	Six-month	Nine-month	Twelve-month
18 September 2007				
On offer (£ millions)	1,500	750	400	200
Cover	3.53	1.82	2.00	3.00
Weighted average rate(a)	5.819	5.736	5.680	5.700
Highest accepted rate(a)	5.900	5.750	5.700	5.700
Lowest accepted rate(a)	5.805	5.685	5.660	5.700
Tail(b)	1.40	5.10	2.00	0.00
16 October 2007				
On offer (£ millions)	1,500	750	400	200
Cover	2.25	1.40	2.25	3.00
Weighted average rate(a)	5.757	5.739	5.730	5.740
Highest accepted rate(a)	5.761	5.750	5.730	5.740
Lowest accepted rate(a)	5.740	5.730	5.730	5.740
Tail(b)	1.70	0.90	0.00	0.00

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

(1) www.bankofengland.co.uk/publications/news/2007/158.htm.
(2) The Bank has supplied liquidity via monthly longer-term repo operations at four different maturities since January 2006.

The work of the Money Market Liaison Group in 2007

The Money Market Liaison Group (MMLG), chaired by the Bank of England, was established in March 1999. It provides a high-level forum for discussion of market or structural developments affecting sterling money markets and related infrastructure and, where appropriate, responds to them. Typically, it meets quarterly and comprises representatives from institutions involved in the Bank's sterling monetary framework, trade associations and the authorities.

Discussions of developments in the Bank of England's official operations

Sterling monetary framework contingency measures

The MMLG has been a high-level discussion forum for issues arising from the period of money market stress that began in the summer. In particular, the Bank sought feedback from the group on contingency measures taken within its framework for operations in the sterling money markets (the 'Red Book'). The Bank also sought the MMLG's views on expected money market pressures over the year end.

OMOs for outright bond purchases and electronic bidding

Throughout the year, the MMLG has been consulted on the Bank's proposals to provide long-term funding to the banking system through outright bond purchases. MMLG members were invited to comment on revisions to the Bank's operational procedures covering electronic bidding and outright purchases.

Market-wide contingency planning

The MMLG is sponsoring a series of 'live' sterling market tests to test banks' ability to trade and settle from disaster recovery sites (DRSs), with each test getting progressively more challenging. The first test was conducted on 24 May and included large clearing banks and some investment banks who participated in and, in some cases, settled the Bank's weekly OMO from their DRSs. Infrastructure providers and some broking firms also took part in the test.

The exercise was a success in that all trades were executed and settled. Nevertheless, there had been some learning points. In general, the tests had been useful in identifying small issues that had not previously been thought of ahead of an emergency move to a DRS. For example, some counterparties had difficulty locating important information (eg key contact details and passwords). This suggested that key staff at the Bank and its counterparties should have 'grab bags' of key information to take to DRSs.

A second, more challenging, test had been scheduled for 2007 Q4, but this had been rescheduled owing to the stressed conditions in global money markets. The series of 'live' tests is expected to resume in 2008.

A desktop scenario exercise is also scheduled for the new year. The objective is to provide MMLG with a more informed understanding of how a major operational disruption, which could not be tested live, might affect the sterling markets. It will also give participants an opportunity to test their own planning assumptions and may identify practical issues that may not be identified by a live test.

Operational developments

The MMLG and its operations subgroup also provides a forum for the discussion of important structural developments affecting trading, clearing, payments and settlement infrastructure in sterling markets. As well as commenting on the design of live and desk-based tests, this involves identifying potential operational disruption. For example, through 2007 the MMLG discussed the implications of major disruption to CREST late in the trading day, and potential contingency measures to ensure outstanding trades can be unwound in an orderly manner.

Discussions/initiatives relating to the wider sterling money market

Volatility in overnight interest rates

The group discussed volatility in overnight interest rates during the final days of 2006. Group members noted that it was not unusual for rates to rise over the year end, and similar effects were apparent in euro and dollar rates. The Group suggested that shortages of gilt collateral could also cause volatility. In response to these discussions, the Bank had extended the deadline for its counterparties to substitute gilt for euro-denominated collateral in its operations.

Another period of volatility had occurred around the end of June, following an uncovered repo OMO. MMLG members thought that the reaction to the episode may have reflected some money market participants not fully appreciating how the Bank's sterling monetary framework was supposed to work. But it provided a useful case study and a repeat was thought unlikely.

Euroclear proposals for a single platform

During 2007, the MMLG has continued to monitor and offer feedback on Euroclear's migration of its national central depositories to a single platform. The problems experienced during 2006 were resolved but the Group did raise a number of other concerns with Euroclear, which were subsequently addressed.

LCH clearing of DBV repos

The Group has also continued to monitor the progress and contribute views on LCH.Clearnet's initiative to extend its central counterparty clearing service for gilt repo transactions to deliveries of gilts through CREST's delivery-by-value (DBV) service, which launched on 14 March 2007. The launch occurred with no technical or procedural problems and trading volumes had grown steadily.

Foreign currency reserves

There have been no significant developments in the Bank's holdings of foreign exchange reserves over the review period. The assets held in the reserves are currently funded by two liabilities: a euro-denominated note which matures on 28 January 2008 and the new programme of annual bond issuance which commenced in March 2007. Upon maturity of the 2008 Note, the level of reserves will fall from the current level of just over £2 billion to around £1 billion until the subsequent bond issue, due in March 2008, and which is planned to take the level back up to £2 billion. At present, the steady state of the Bank's foreign exchange reserves is planned to be around £3 billion.

Capital portfolio

The Bank holds an investment portfolio that is approximately the same size as the Bank's capital and reserves (net of equity holdings, eg in the BIS and ECB, and the Bank's physical assets) together with aggregate cash ratio deposits. The Bank's 'free' capital and cash ratio deposits 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 billion of gilts and £1 billion of other debt securities. Purchases are generally made each month with purchase details announced in advance on the Bank's wire services pages. Over the current review period, gilt purchases were made in accordance with the announcement on 24 September: £20 million each in September and October.

The remainder of the Bank's capital and reserves are invested in short-term repos, which are conducted as part of the Bank's OMOs.

Customer deposits

Over the review period, the Bank's consolidated balance sheet increased (**Table B**). As well as higher reserves targets, this reflected higher balances held by central bank customers. In common with many central banks, the Bank provides banking services to other central banks.

Special term auctions against wide collateral

On 19 September, the Bank announced plans to conduct a series of special auctions to provide funds at three-month maturity against a much wider range of collateral than is eligible in the Bank's OMOs and standing facilities. A Market Notice[1] issued on 21 September provided detailed operational

Table B Simplified version of Bank of England consolidated balance sheet[a][b]

£ billions

Liabilities	7 Nov.	5 Sep.	Assets	7 Nov.	5 Sep.
Banknote issue	41	41	Short-term sterling reverse repo	21	36
Reserves account balances	22	21	Long-term sterling reverse repo	15	15
Standing facility deposits	0	0	Ways and Means advance	13	13
Other sterling deposits, cash ratio deposits and the Bank of England's capital and reserves	14	10	Standing facility assets	0	0
Foreign currency denominated liabilities	17	12	Other sterling-denominated assets	24	4
			Foreign currency denominated assets	21	16
Total[c]	**94**	**84**	**Total**[c]	**94**	**84**

(a) The Bank Charter Act 1844 requires the Bank of England to separate the note issue function from its other activities. Accordingly, the Bank has two balance sheets: for Issue Department and Banking Department. See 'Components of the Bank of England's balance sheet' (2003), *Bank of England Quarterly Bulletin*, Spring, page 18.
(b) Based on published weekly Bank Returns. The Bank also uses currency, foreign exchange and interest rate swaps to hedge and manage currency and non-sterling interest rate exposures — see the Bank's 2006 *Annual Report*, pages 36–37.
(c) Figures may not sum to totals due to rounding.

(1) www.bankofengland.co.uk/markets/money/documentation/statement070921.pdf.

information on the term auctions. These auctions were offered in order to alleviate the strains in longer-maturity money markets, and wider financial markets.

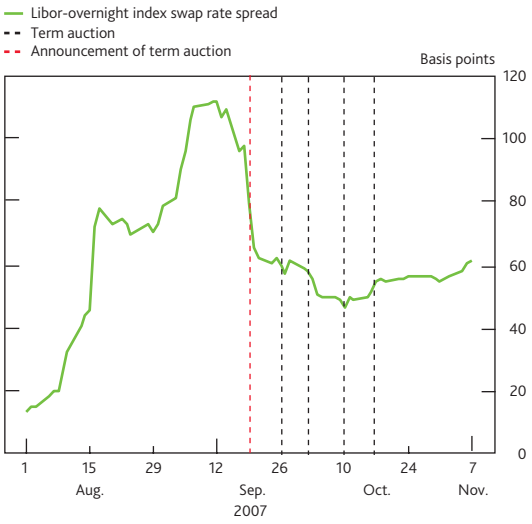
Banks eligible to participate in the auction were reserves account holders and banks and building societies with access to the Bank's standing facilities. Bids in the auctions were to be submitted as a spread to Bank Rate prevailing over the term of the auction, with a minimum spread equal to the spread between the Bank's standing lending facility rate and Bank Rate (100 basis points). The auctions were held at a variable rate on a discriminatory rate basis.

These operations were held against a much wider range of collateral than is eligible in the Bank's open market operations. In addition to the collateral eligible in regular OMOs, the Bank accepted a range of other securities. The Bank also offered to make loans secured against raw mortgages. Details of eligible securities for repo transactions, together with margin ratios, were provided in the Market Notice.

The margin ratios determined the value of collateral delivered to the Bank against lending in the auctions. The value of collateral taken by the Bank would have been higher than the loan amount. This was in order to protect the Bank from changes in market value of the securities in the case that a counterparty defaulted on a transaction and the Bank had to bring the collateral onto its balance sheet.

The Bank offered £10 billion in each of four operations held on 26 September and 2, 10 and 17 October. The term of each borrowing was approximately three months.

Chart 45 Three-month sterling Libor spread to three-month OIS



In the period between the announcement of the term auctions and the date of the first auction, there was a significant narrowing in the spread between three-month market interbank interest rates and measures of the expected path of Bank Rate (**Chart 45**). Partly as a result of this, no bids were received in any of the term auctions because obtaining funds in the auction became expensive relative to prevailing market rates. And without the prospect of large-scale participation, some banks may have been deterred from bidding owing to the reputational risk if their usage of the facility became widely known.

No further term auctions have been held since 17 October. The Bank announced that it would consider re-introducing term auctions at any time if market conditions warranted.