Markets and operations

This article reviews developments in sterling financial markets, including the Bank's official operations, between the 2011 Q2 *Quarterly Bulletin* and 26 August 2011.[1] The article also summarises market intelligence on selected topical issues relating to market functioning.

Sterling financial markets

Overview

Financial market sentiment deteriorated markedly over the review period. Volatility increased across a range of markets, as investors tried to reduce their exposure to risky assets and sought refuge in so-called 'safe haven' assets. Contacts noted that the functioning of some markets had, at times, become impaired.

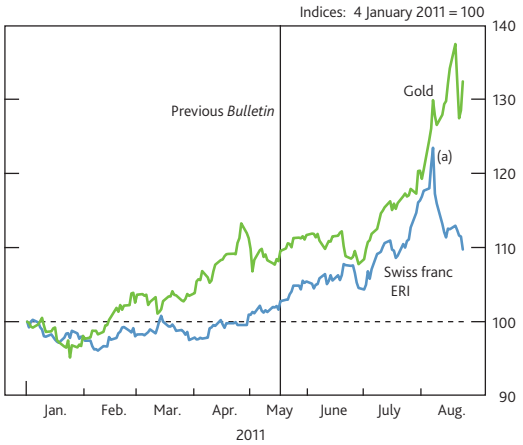
Fiscal developments continued to be a key influence on financial markets. Existing concerns about the sustainability of fiscal positions and the implications for banking sectors spread to some euro-area economies that had previously been less affected. Spreads between the yields of sovereign bonds of several euro-area countries and those of German government bonds remained elevated, and in some cases rose further. The process around raising the federal debt ceiling in the United States and a subsequent downgrade by the ratings agency Standard & Poor's added to uncertainty among investors.

These developments interacted with, and were compounded by, concerns about the sustainability of the global economic recovery that were reflected in downward revisions to growth forecasts in a number of major economies. As these concerns intensified, equity markets in the United Kingdom and abroad fell sharply and the yields on gilts and government bonds in a number of other countries reached historic lows. There was a sharp increase in the price of assets that were perceived to be relatively safe such as gold and the Swiss franc (**Chart 1**).

These factors contributed to market participants pushing out expectations for future monetary policy tightening in major economies, including the United Kingdom. Contacts also started to place greater weight on the possibility of further monetary easing in the United Kingdom and elsewhere.

Primary capital markets experienced low levels of activity over the period. Issuance of debt or equity by UK private non-financial corporations slowed. And term issuance in public markets by UK banks fell sharply.

Chart 1 Gold price and Swiss franc effective exchange rate index (ERI)



Sources: Bloomberg and Bank calculations.

(a) On 10 August 2011, the Swiss National Bank announced additional measures to increase the supply of Swiss franc liquidity.

Monetary policy and short-term interest rates

The Bank of England's Monetary Policy Committee (MPC) maintained Bank Rate at 0.5% and the stock of purchased assets at £200 billion.

UK CPI inflation remained above target throughout the review period. But a slowdown in the pace of economic activity in the United Kingdom and abroad, together with renewed volatility in financial markets, contributed to market participants pushing out their expectations for the timing of an increase in Bank Rate. Contacts also began to place greater weight on the possibility of further monetary easing.

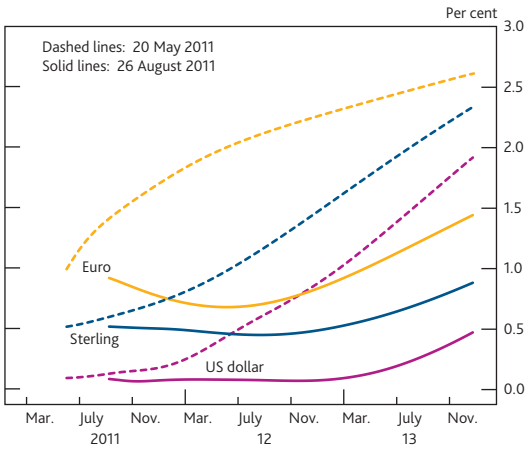
Consistent with this, a Reuters poll released shortly after the end of the review period showed that the majority of economists were not expecting the MPC to begin raising Bank Rate until end-2012. This was one year later than at the time of the previous *Bulletin*. Reuters also surveyed economists about the probability they attached to the MPC conducting further asset purchases at some point. The median respondent attached a 35% probability to this, up from 20% in the 29 June survey, which was the first time since

(1) The data cut-off for the previous *Bulletin* was 20 May 2011.

February 2011 that Reuters had asked about the prospects for further asset purchases.

Against this backdrop, forward sterling overnight index swap (OIS) rates fell at all maturities (**Chart 2**). According to this measure, by the end of the review period market participants had pushed out their expectations of a 25 basis point increase in Bank Rate by the MPC until the second half of 2013, about a year and a half later than at the time of the previous *Bulletin*.

Chart 2 Instantaneous forward interest rates derived from OIS contracts[a]



Sources: Bloomberg and Bank calculations.

(a) Instantaneous forward rates derived from the Bank's overnight index swap (OIS) curves.

Shorter-term forward sterling OIS rates were at times below Bank Rate in August. Some contacts thought this reflected an increased, though still small, probability of a reduction in sterling overnight interest rates as a result of further monetary easing. But the majority of market participants thought these movements were amplified by reduced liquidity in markets over the summer.

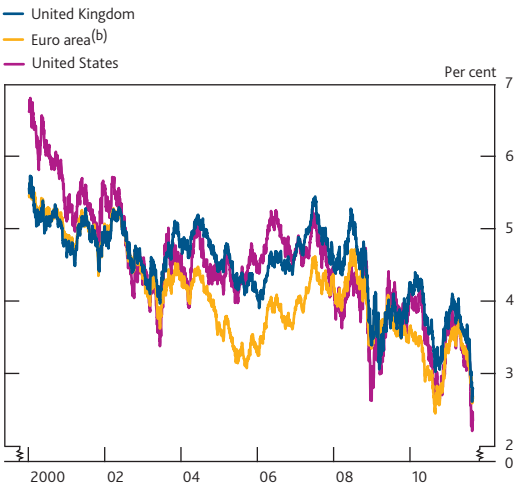
Market participants also pushed out their expectations of monetary policy tightening elsewhere. The European Central Bank (ECB) raised its main policy rate by 25 basis points to 1.5% in July. Forward euro OIS rates ended the period lower, however. This might partly reflect market participants revising their expectations about further policy tightening by the ECB following the intensification of concerns about the global economic outlook and sustainability of fiscal positions in several euro-area countries. Forward euro OIS rates may also have been affected by changes in the ECB's liquidity provision. The ECB conducted a supplementary long-term repo operation with a maturity of approximately six months in August — the first since May 2010. Contacts thought that the provision of additional liquidity in excess of that necessary for banks to meet their reserves targets might keep overnight money market rates below the ECB's main policy rate.

In the United States, the Federal Open Market Committee (FOMC) completed its planned $600 billion asset purchase programme. At its August meeting, the FOMC stated that it anticipated that economic conditions were likely to warrant exceptionally low levels for the federal funds rate at least through mid-2013. It also said that it discussed the range of policy tools available to promote a stronger economic recovery in a context of price stability. Forward US dollar OIS rates fell at all maturities (**Chart 2**) and contacts began to attach a greater probability to the FOMC conducting further asset purchases in the future.

Long-term interest rates

A reappraisal of global growth prospects led to a fall in long-term government bond yields in the major developed economies. Ten-year nominal gilt yields fell by around 80 basis points over the review period (**Chart 3**) to historically low levels.

Chart 3 International ten-year nominal government bond yields[a]



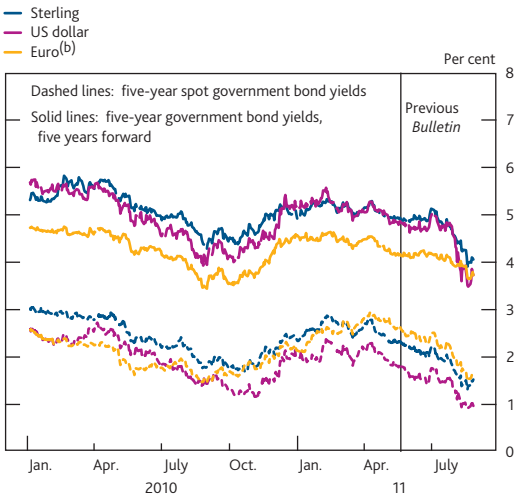
Source: Bank calculations.

(a) Spot interest rates derived from the Bank's government liability curves.
(b) Derived from government bonds issued by France and Germany.

Part of this fall in longer-term gilt yields reflected lower policy rate expectations in the near term, which has lowered shorter-term interest rates (**Chart 4**). But nominal interest rates also fell at longer horizons, which should be less affected by current cyclical developments (**Chart 4**). The fall in one such measure — five-year nominal interest rates, five years forward — was largely accounted for by a fall in forward real interest rates (**Chart 5**). This might suggest that market participants revised down their views on the longer-term growth potential of major developed economies.

Contacts said a 'flight to liquidity' also contributed towards the decline in gilt yields. This might suggest that investors were more willing to forego returns in order to hold gilts and other highly rated government bonds rather than less liquid bonds at a time when concerns about debt sustainability in some euro-area countries had intensified. This intensification occurred despite the announcement by the heads of state or

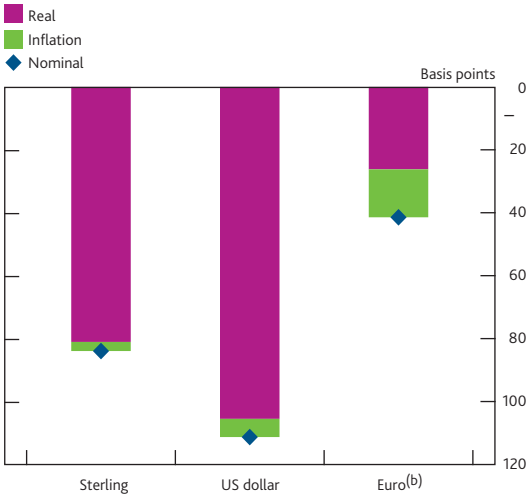
Chart 4 International five-year nominal government bond yields[a]



Source: Bank calculations.

(a) Spot and forward interest rates derived from the Bank's government liability curves.
(b) Derived from government bonds issued by France and Germany.

Chart 5 Changes in international five-year interest rates, five years forward, from 20 May to 26 August 2011[a]



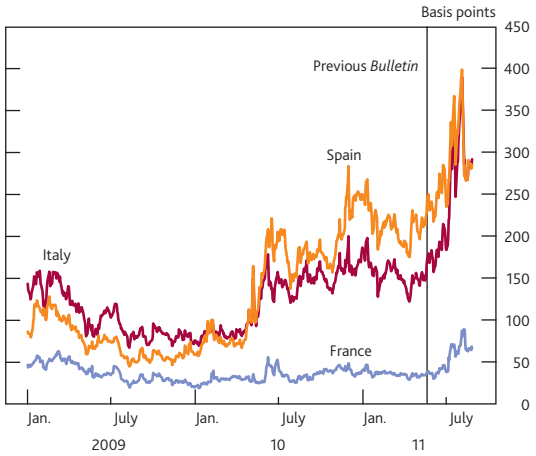
Source: Bank calculations.

(a) Forward interest rates derived from the Bank's government liability and inflation swap curves.
(b) Derived from government bonds issued by France and Germany.

government of the euro area and EU institutions on 21 July of an additional support package for Greece, and measures to enhance the European Financial Stability Facility and the European Stability Mechanism.

Existing concerns about the sustainability of fiscal positions and the implications of these for banking sectors spread to some euro-area economies that had previously been less affected. Yields of Italian and Spanish ten-year government bonds rose to over 6%, and their spreads to German government bonds of similar maturity rose sharply (**Chart 6**). The spread between French and German government bond yields also widened over the period. These moves were mirrored in sovereign credit default swap (CDS) premia, which in some cases exceeded the increase in government bond spreads. Towards the end of the period, the ECB expanded its purchases of government bonds under its Securities Markets Programme with contacts reporting purchases of Italian and Spanish government bonds. Subsequently, Spanish and Italian government bond yields fell, and spreads to German government bond yields narrowed.

Chart 6 Selected European ten-year government bond spreads[a]



Sources: Bloomberg and Bank calculations.

(a) Spreads over ten-year German government bond yields.

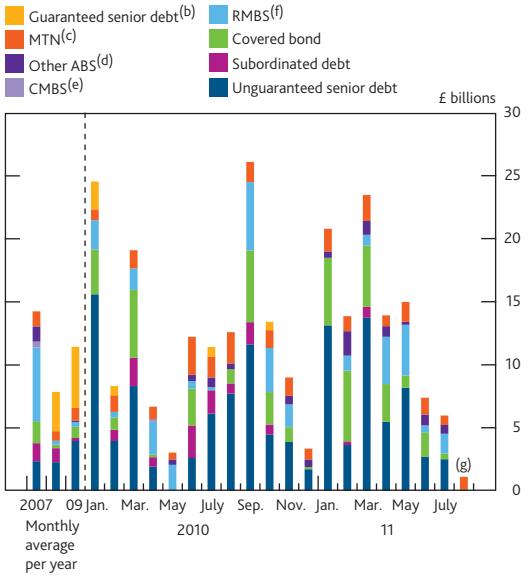
The process around raising the federal debt ceiling in the United States and a subsequent downgrade by the ratings agency Standard & Poor's to AA+ added to uncertainty among investors.

Bank funding markets

Debt issuance by major UK lenders in public term funding markets fell sharply over the review period (**Chart 7**). Contacts mainly attributed this change in primary market conditions to the increasing concern about the implications for banks of sovereign default risks in the euro area. UK banks have modest direct exposures to the sovereign debt of the most vulnerable countries in the euro area, but have larger exposures to real-economy lending in those countries and indirect exposures through their links with other major banking systems. Contacts thought that these concerns overshadowed the bank stress-test results published in July by the European Banking Authority.

While public term funding markets had largely closed over the review period, private issuance in June and July had increased above its monthly average earlier in the year according to contacts. Moreover, UK banks have reportedly remained active in private markets in August. Contacts thought this reflected the bespoke nature of the private market, where terms of the deals are tailored to match the preferences of investors. Also, investors in the private market tended to be hold-to-maturity investors and less affected by market volatility.

Chart 7 Term issuance by the major UK lenders in public markets[a]



Sources: Bank of England, Dealogic and Bank calculations.

(a) Includes debt issued by Banco Santander, Bank of Ireland, Barclays, Co-operative Financial Services, HSBC, Lloyds Banking Group, National Australia Bank, Nationwide, Northern Rock and RBS. Term issuance refers here to securities with an original contractual maturity or earliest call date of at least 18 months. It includes subordinated lower Tier 2 and Tier 3 capital instruments with debt features.
(b) Senior debt issued under HM Treasury's Credit Guarantee Scheme.
(c) Medium-term notes.
(d) Asset-backed securities.
(e) Commercial mortgage-backed securities.
(f) Residential mortgage-backed securities.
(g) Data are up to 26 August 2011.

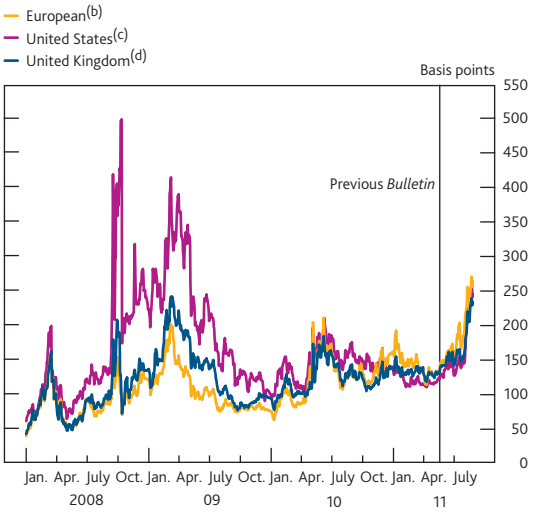
Banks continued to reduce their use of the Bank's Special Liquidity Scheme (SLS) and the results from the Bank's indexed long-term repo (ILTR) operations suggested little change in banks' demand for sterling liquidity from the Bank (see box on pages 188–90).

Contacts were, however, increasingly concerned that the persistence or intensification of worries surrounding the fiscal positions of some euro-area member countries could threaten the reopening of public term funding markets in September, traditionally a month of strong issuance. A prolonged closure of the market could make it harder for banks to improve the resilience of their balance sheets without reducing lending further to the real economy. After the end of the review period there has been some public issuance of covered bonds by UK banks.

Major UK banks' CDS premia, one indicator of longer-term wholesale funding costs, rose markedly over the review period. On average they reached levels last seen in Spring 2009. CDS premia of continental European banks, on average, reached their highest level on record (**Chart 8**).

Alongside the increase in long-term wholesale funding costs for UK banks, the spread of short-term interbank borrowing rates relative to OIS rates rose slightly for sterling (**Chart 9**). The spread rose more sharply for euro, largely reflecting the fall in OIS rates. Contacts thought that the increase in the

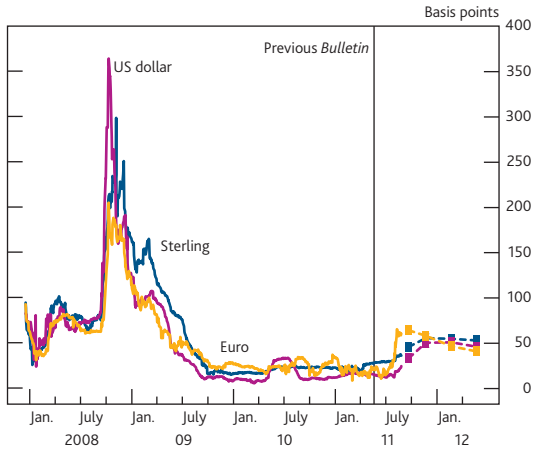
Chart 8 Selected international banks' CDS premia[a]



Source: Markit Group Limited.

(a) Unweighted averages of five-year, senior CDS prices.
(b) Average of BBVA, BNP Paribas, Crédit Agricole, Credit Suisse, Deutsche Bank, Santander, Société Générale, UBS and UniCredit.
(c) Average of Bank of America, Citi, Goldman Sachs, JPMorgan Chase & Co. and Morgan Stanley.
(d) Average of Barclays, HSBC, Lloyds Banking Group, RBS and Standard Chartered.

Chart 9 International three-month spot and forward Libor-OIS spreads[a][b]



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

(a) Three-month Libor-OIS spreads derived from Libor fixings and OIS rates.
(b) Forward spreads derived using data as at 26 August. The squares are implied forward spreads using forward Libors derived from forward rate agreements, and forward OIS rates derived from spot OIS contracts.

Libor-OIS spread reflected broader funding stresses felt by some euro-area banks.

Forward spreads implied by derivatives settling on Libor were consistent with market participants anticipating that short-term bank funding costs might remain elevated in the months ahead (**Chart 9**). Spot and forward Libor-OIS spreads remained, however, well below the levels reached in late 2008.

Contacts noted that the increase in short-term bank funding costs was accompanied by a further shortening of the maturities at which money market funds (MMFs) were

Operations within the sterling monetary framework and other market operations

Over the review period, the level of reserves held by commercial banks at the Bank continued to be determined by (i) the stock of reserves injected via asset purchases, (ii) the level of reserves supplied by long-term repo open market operations (OMOs), and (iii) the net impact of other sterling ('autonomous factor') flows across the Bank's balance sheet. The box on pages 192–93 provides more detail on the Asset Purchase Facility (APF). This box describes the Bank's operations within the sterling monetary framework over the review period, and other market operations.

Operational Standing Facilities

Average daily use of the Operational Standing Lending Facility was £3 million in the June maintenance period and £13 million in the July maintenance period. The facility had not previously been used since the March 2009 maintenance period. Usage in June and July was consistent with the facility's purpose of keeping market rates in line with Bank Rate by providing a means for banks to manage unexpected frictional payment shocks which might arise.(1)

Since 5 March 2009, the rate paid on the Operational Standing Deposit Facility has been zero, while all reserves account balances have been remunerated at Bank Rate. Reflecting this, average use of the deposit facility was £0 million in each of the maintenance periods under review.

Indexed long-term repo OMOs

As part of its provision of liquidity insurance to the banking system, the Bank conducts indexed long-term repo (ILTR) operations. The Bank offers reserves via ILTRs once each calendar month; typically, the Bank will conduct two operations with a three-month maturity and one operation with a six-month maturity in each calendar quarter. Participants are able to borrow against two different sets of collateral. One set corresponds with securities eligible in the Bank's short-term repo operations ('narrow collateral'), and the other set contains a broader class of high-quality debt securities that, in the Bank's judgement, trade in liquid markets ('wider collateral').

The Bank offered £5 billion via three-month ILTR operations on both 14 June and 12 July, and £2.5 billion via a six-month operation on 16 August (**Table 1**).

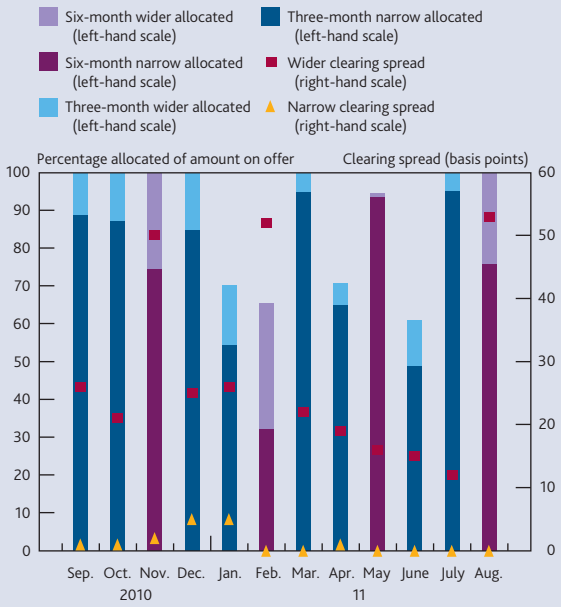
The stop-out spread — the difference between clearing spreads for wider and narrow collateral — is an indicator of potential stresses in the market. In the June and July three-month operations, this spread reached successive lows of 15 and 12 basis points, continuing a trend since March (**Chart A**). The June operation also had a lower participation than any operation to date, with a cover ratio of 0.62, while the proportion of three-month funds allocated to wider collateral reached a new low in July of 4.9%, slightly lower than in the previous quarter, possibly suggesting that demand for funding, especially against wider collateral, had not increased.

Table 1 Indexed long-term repo operations

	Total	Collateral set summary	
		Narrow	Wider
14 June 2011 (three-month maturity)			
On offer (£ millions)	5,000		
Total bids received (£ millions)(a)	3,100	2,450	650
Amount allocated (£ millions)	3,050	2,450	600
Cover	0.62	0.49	0.13
Clearing spread above Bank Rate (basis points)		0	15
Stop-out spread (basis points)(b)	15		
12 July 2011 (three-month maturity)			
On offer (£ millions)	5,000		
Total bids received (£ millions)(a)	5,610	5,365	245
Amount allocated (£ millions)	5,000	4,755	245
Cover	1.12	1.07	0.05
Clearing spread above Bank Rate (basis points)		0	12
Stop-out spread (basis points)(b)	12		
16 August 2011 (six-month maturity)			
On offer (£ millions)	2,500		
Total bids received (£ millions)(a)	4,081	2,445	1,636
Amount allocated (£ millions)	2,500	1,894	606
Cover	1.63	0.98	0.65
Clearing spread above Bank Rate (basis points)		0	53
Stop-out spread (basis points)(b)	53		

(a) Due to the treatment of paired bids, the sum of bids received by collateral set may not equal total bids received.
(b) Difference between clearing spreads for wider and narrow collateral.

Chart A ILTR allocation and clearing spreads



In contrast, the six-month operation in August recorded both the highest cover since November 2010, and the highest stop-out spread to date, at 53 basis points. Contacts did not attribute this to market stress at the time of the operation.

Reserves provided via ILTRs in June, July and August more than offset the maturity of the previous ILTR operations. Consequently, the stock of liquidity provided through longer-term operations increased a little.

The Bank has recently moved to allocating on — or close to — its relative supply schedule, instead of at the lowest accepted bid spread.(2)

Discount Window Facility

The Discount Window Facility (DWF) provides liquidity insurance to the banking system by allowing eligible banks to borrow gilts against a wide range of collateral. On 5 July 2011, the Bank announced that the average daily amount outstanding in the 30-day DWF between 1 January and 31 March 2011 was £0 million. The Bank also announced that the average daily amount outstanding in the 364-day DWF between 1 January and 31 March 2010 was £0 million.

Eligible collateral in the Bank's operations

On 1 July 2011, the Bank introduced two changes to the eligibility criteria for collateral accepted in its operations. First, the Bank introduced changes to eligibility criteria for sovereign, central bank and supranational debt taken as narrow and wider collateral in its operations on 1 July 2011. This had initially been announced on 11 February 2011.

Second, an amendment requiring transaction documentation to be made available online for asset-backed securities and covered bonds accepted as collateral under the DWF and ILTR came into force on 1 July 2011. This had been initially announced on 30 November 2010.(3)

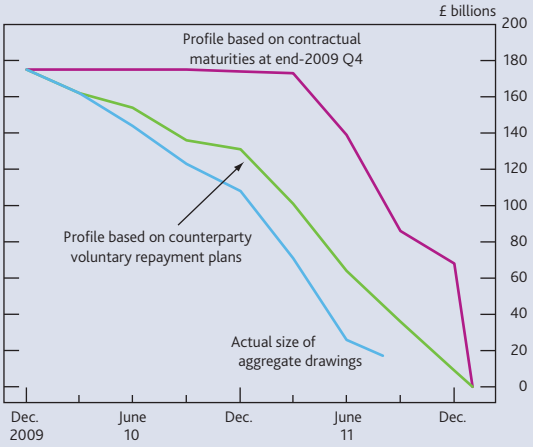
Other operations

Special Liquidity Scheme

The Special Liquidity Scheme (SLS) was introduced in April 2008 to improve the liquidity position of the banking system by allowing banks and building societies, for a limited period, to swap their high-quality mortgage-backed and other securities for UK Treasury bills for up to three years. The Scheme was designed to finance part of the overhang of illiquid assets on banks' balance sheets by exchanging them temporarily for more easily tradable assets.

When the drawdown period for the SLS closed at the end of January 2009, £185 billion of UK Treasury bills had been lent under the SLS. In order to prevent a refinancing 'cliff', the Bank held bilateral discussions with all users of the Scheme to ensure that there were funding plans in place to reduce their use of the Scheme in a smooth fashion. The impact of these expected repayment plans are shown in aggregate in **Chart B**, along with the repayment profile based on counterparties' contractual repayment obligations, and the profile of actual repayments to date. Despite difficult market conditions, participants continued to make repayments over the quarter: by end-August 2011, £168 billion had been repaid, compared with £148 billion at end-May 2011.

Chart B Aggregate SLS repayment profiles



US dollar repo operations

From 11 May 2010 the Bank reintroduced weekly fixed-rate tenders with a seven-day maturity to offer US dollar liquidity, in co-ordination with other central banks, in response to renewed strains in the short-term funding market for US dollars at the time. This was subsequently extended to 1 August 2011. On 29 June 2011, the Bank announced a further extension of its temporary swap line with the Federal Reserve to 1 August 2012. As of 26 August 2011, there had been no use of the Bank's facility.

Euro swap agreement

On 25 August 2011, the ECB and the Bank announced an extension of their sterling-euro liquidity swap arrangement to 28 September 2012. This facility was initially established on 17 December 2010. Under the agreement, if requested, the Bank of England will provide the ECB with sterling in exchange for euro up to a limit of £10 billion.

Bank of England balance sheet: capital portfolio

The Bank holds an investment portfolio that is approximately the same size as its capital and reserves (net of equity holdings, for example in the Bank for International Settlements, and the Bank's physical assets) and aggregate cash ratio deposits. The portfolio consists 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.

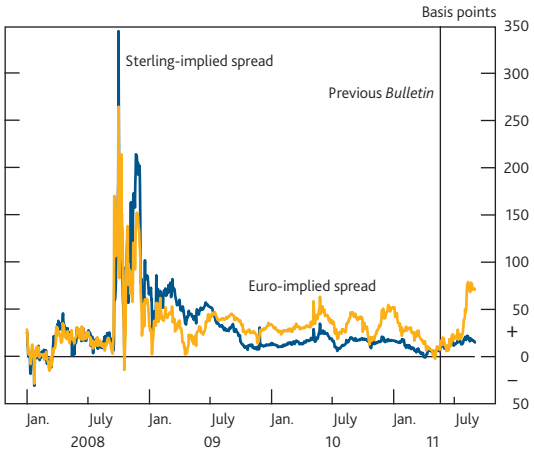
The portfolio currently includes around £3.3 billion of gilts and £0.5 billion of other debt securities. Over the period from 21 May 2011 to 26 August 2011, gilt purchases were made in accordance with the quarterly announcements on 1 April 2011 and 1 July 2011.

(1) For more information on the facility, see Part 2 of the Bank's *Red Book* at www.bankofengland.co.uk/markets/money/index.htm.
(2) For further discussion of this issue, see the speech by Paul Fisher, 'Recent developments in the sterling monetary framework', 30 March 2011, available at www.bankofengland.co.uk/publications/speeches/2011/speech487.pdf.
(3) Further details are available at www.bankofengland.co.uk/markets/money/notices.htm.

prepared to lend to banks. In addition, the largest US prime MMFs reduced their exposures to euro-area banks during the review period; these moves reflected both an overall fall in their assets under management and in the relative weight of European banks in their portfolios.

Signs of stress were also observed in the cross-currency funding markets. The difference between the cost of raising US dollar funding by borrowing in euro and swapping via the foreign exchange market and the cost of direct US dollar borrowing rose markedly (**Chart 10**). The spread remained well below levels in late 2008, which contacts thought might reflect both a reduced need for dollar funding by euro-area banks as some of their dollar assets have matured or been sold, and the existence of central bank dollar swap facilities. Contacts noted the recent usage of the US dollar repo operations offered by the Swiss National Bank (SNB) and the ECB, albeit that usage was small compared to 2008. The cost of US dollar funding via sterling was little changed.

Chart 10 Spread of foreign exchange implied cost of three-month US dollar funding over US dollar Libor(a)



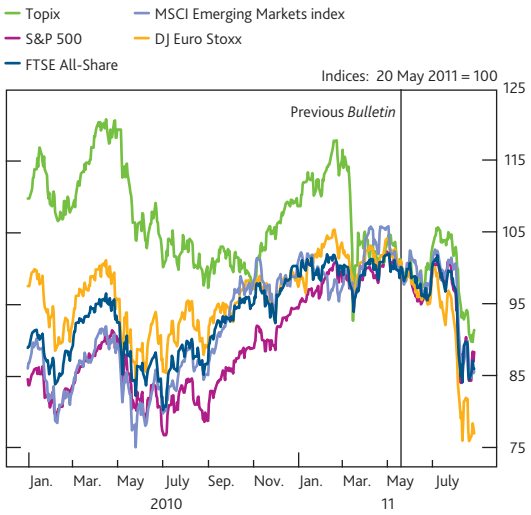
Sources: British Bankers' Association, Reuters and Bank calculations.

(a) Spread of three-month US dollar Libor implied from foreign exchange forwards over actual three-month US dollar Libor. For more details on the construction of these measures see *Bank of England Quarterly Bulletin*, Vol. 48, No. 2, page 134, Chart 26 and *BIS Quarterly Review*, March 2008, pages 73–86.

Corporate capital markets

Global equity prices fell sharply from mid-July (**Chart 11**). In the United Kingdom, the FTSE All-Share index fell by 10% in the first week of August and ended the review period 14% lower. Equity prices fell across a range of sectors, but the falls in financials were particularly large.

Chart 11 International equity indices(a)(b)



Sources: Bloomberg and Bank calculations.

(a) Indices are quoted in domestic currency terms, except for the MSCI Emerging Markets index, which is quoted in US dollar terms.
(b) The MSCI Emerging Markets index is a capitalisation-weighted index that tracks the performance of stocks in emerging markets.

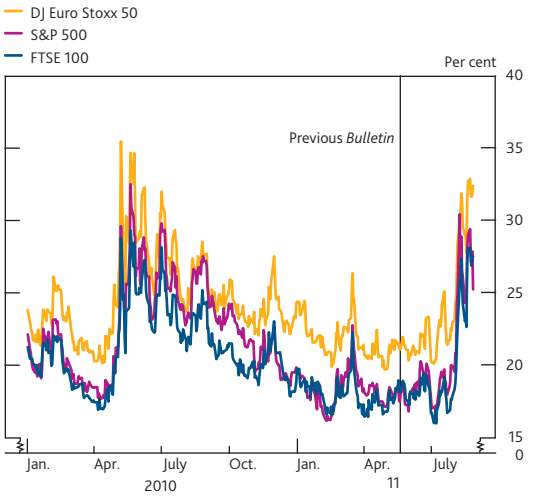
According to contacts, these falls predominantly reflected two factors. First, deteriorating financial market sentiment led investors to reduce their exposure to markets where returns were perceived to be more uncertain — such as equity markets — and invest instead in assets that were seen to generate relatively safe returns.

Second, the perceived deterioration in the strength of the global recovery led investors to reassess the outlook for corporate earnings. For example, the Bank of America/Merrill Lynch Fund Manager survey for August reported that the net balance of respondents expecting the global profit outlook to improve over the next twelve months had fallen to -30%, from +9% in May.

The declines in equity prices were accompanied by a marked rise in option-implied volatility, a forward-looking measure of uncertainty (**Chart 12**). Contacts attributed this in part to the relatively illiquid conditions that prevailed in equity derivatives markets as widening bid-offer spreads discouraged participation.

Perhaps consistent with a re-evaluation of corporate earnings prospects, the spread of corporate bond yields over government bonds rose sharply over the review period. This

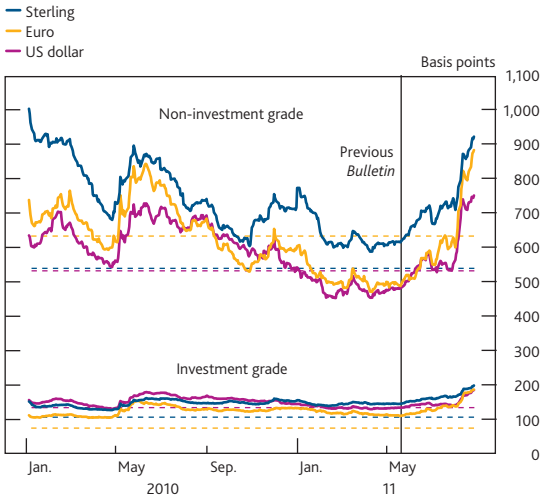
Chart 12 Six-month option-implied volatility for international equity indices



Sources: Bloomberg, Chicago Mercantile Exchange, NYSE Liffe and Bank calculations.

was particularly noticeable for non-investment grade bonds, which contacts attributed to an investor preference for assets considered safest (**Chart 13**). The increase in corporate bond spreads also coincided with increased activity in purchase auctions of the Bank's Corporate Bond Secondary Market Scheme (see box on pages 192–93 for further detail).

Chart 13 International non-investment grade and investment-grade, non-financial corporate bond spreads[a][b]



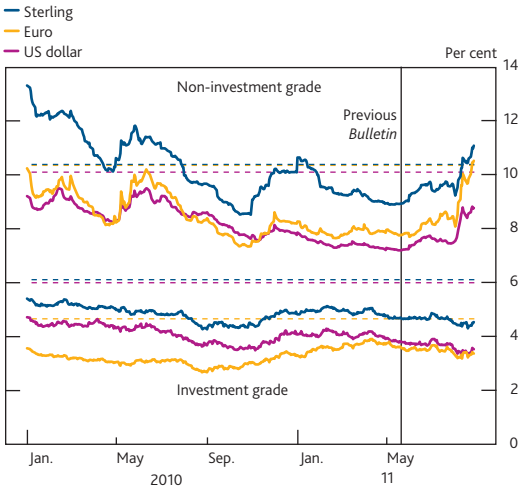
Sources: Bank of America/Merrill Lynch and Bank calculations.

(a) Option-adjusted spreads over government bond yields.
(b) Dashed lines: 1997–2007 averages for investment-grade bonds and 1998–2007 averages for non-investment grade bonds.

Despite the rise in spreads, investment-grade non-financial corporate bond yields ended the review period lower, reflecting the falls in yields on government bonds. In contrast, yields on non-investment grade corporate bonds rose (**Chart 14**).

Turning to primary markets, bond issuance by UK private non-financial corporations (PNFCs) slowed (**Chart 15**).

Chart 14 International non-investment grade and investment-grade, non-financial corporate bond yields[a]

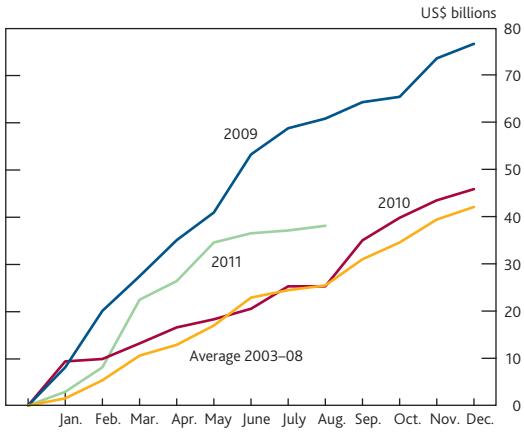


Sources: Bank of America/Merrill Lynch and Bank calculations.

(a) Dashed lines: 1997–2007 averages for investment-grade bonds and 1998–2007 averages for non-investment grade bonds.

Contacts in part attributed this to the challenging conditions in secondary markets, although issuance is typically lower during the summer. Reflecting the strong start to the year, cumulative gross issuance in 2011 to date was still above its average between 2003 and 2008. But more recently, contacts raised concerns that weak issuance might persist until the macroeconomic outlook was clearer.

Chart 15 Cumulative gross bond issuance by UK PNFCs[a][b]



Sources: Dealogic and Bank calculations.

(a) Includes medium-term notes.
(b) Includes data up to 26 August 2011.

The slowdown in corporate bond issuance was accompanied by ongoing negative net equity issuance in June and July as gross equity issuance remained weak and share buyback activity increased (**Chart 16**). There had been few initial public offerings in recent months, which contacts attributed to concerns that investors would be unwilling to partake during volatile secondary market conditions. Contacts also suggested other factors such as some substitution into private equity

Asset purchases[1]

The Bank did not undertake any Asset Purchase Facility (APF) gilt purchases over the review period. As a result, the stock of gilts held by the APF in terms of the amount paid to sellers remained at £198.3 billion.[2]

Purchases of high-quality private sector assets financed by the issuance of Treasury bills and the Debt Management Office's (DMO's) cash management operations continued, in line with the arrangements announced on 29 January 2009.[3]

Table 1 summarises operations under the APF over the review period by type of asset.

Corporate bonds

The Bank continued to offer to purchase and sell corporate bonds via the Corporate Bond Secondary Market Scheme. The Scheme continues to serve a useful role as a backstop, particularly during periods of market uncertainty.

Over the review period, activity in the Bank's auctions continued to be driven by broader market conditions. Sales of corporate bonds continued in June, following the pattern observed in the previous *Bulletin*, while purchases fell. But through July and August the Bank was a small net buyer of bonds. As of 25 August 2011 the Bank's portfolio totalled £1,115 million, compared to £1,153 million at the end of the previous review period. Market contacts suggested that this pattern of usage of the Scheme reflected its role as a backstop, given the deterioration of market sentiment over the review period.

Commercial paper

The Bank continued to offer to purchase sterling-denominated investment-grade commercial paper (CP) issued by companies that make a material contribution to UK economic activity. On 15 November 2010, the Bank provided twelve months' notice of its intention to withdraw this scheme, reflecting a sustained improvement in the sterling commercial paper market.

Average spreads on sterling-denominated CP over the review period were broadly stable and remain well below the levels seen in early 2009. Usage of the APF Commercial Paper Facility remained at £0 million over the period.

Secured commercial paper facility

The Bank continued to offer to purchase secured commercial paper (SCP) backed by underlying assets that are short term and provide credit to companies or consumers that support economic activity in the United Kingdom.[4] The Bank announced on 15 November 2010 that it had made a

Table 1 APF transactions by type (£ millions)

Week ending[a]	Commercial paper	Secured commercial paper	Gilts	Corporate bond		Total[b]
				Purchases	Sales	
19 May 2011[c][d]	0	30	198,275	1,153		199,458
26 May 2011	0	0	0	3	29	-26
2 June 2011	0	0	0	0	4	-4
9 June 2011	0	0	0	0	5	-5
16 June 2011	0	0	0	8	0	8
23 June 2011	0	30	0	0	0	30
30 June 2011	0	0	0	0	0	0
7 July 2011	0	0	0	2	14	-12
14 July 2011	0	0	0	0	0	0
21 July 2011	0	30	0	0	0	30
28 July 2011	0	0	0	0	2	-2
4 August 2011	0	0	0	0	10	-10
11 August 2011	0	0	0	16	0	16
18 August 2011	0	0	0	0	0	0
25 August 2011	0	30	0	8	0	38
Total financed by a deposit from the DMO[d][e]	–	30	–	271		301
Total financed by central bank reserves[d][e]	–	–	198,275	844		199,119
Total asset purchases[d][e]	–	30	198,275	1,115		199,420

(a) Week-ended amounts are for purchases in terms of the proceeds paid to counterparties, and for sales in terms of the value at which the Bank initially purchased the securities. All amounts are 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) Measured as amount outstanding as at 19 May 2011.
(d) In terms of proceeds paid to counterparties less redemptions at initial purchase price on a settled basis.
(e) Data may not sum due to assets maturing over the period.

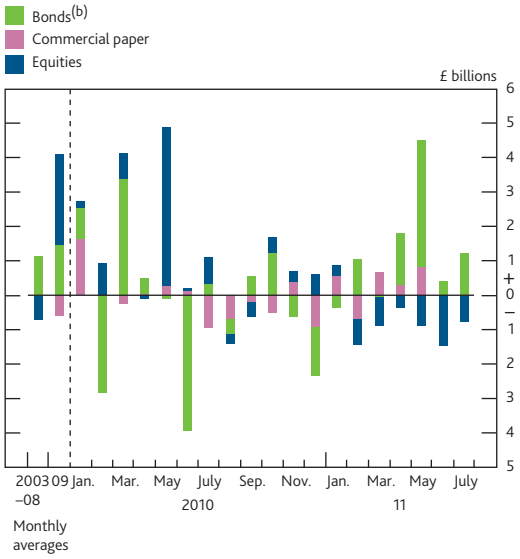
programme eligible for this facility. This programme has subsequently issued SCP to the APF.

Gilt lending facility[5]

The Bank continued to offer to lend some of its gilt holdings via the DMO in return for other UK government collateral. In the three months to 30 June 2011, a daily average of £2,371 million of gilts was lent as part of the gilt lending facility. This was an increase from an average of £1,476 million in the previous quarter. The increase reflected a perceived lack of availability of particular gilts, which led market participants to borrow from the DMO rather than obtain the gilts in the market.

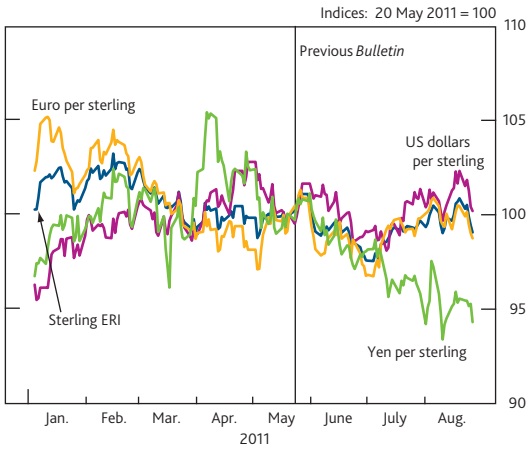
(1) The data cut-off for this box is 25 August 2011, unless otherwise stated. For further discussion on asset purchases see the *Asset Purchase Facility Quarterly Report* available at www.bankofengland.co.uk/publications/other/markets/apf/quarterlyreport.htm.
(2) Further details of individual operations are available at www.bankofengland.co.uk/markets/apf/gilts/results.htm.
(3) The APF was initially authorised to purchase private sector assets financed by Treasury bills and the DMO's cash management operations. Its remit was extended to enable the Facility to be used as a monetary policy tool on 3 March 2009. All purchases of assets between 6 March 2009 and 4 February 2010 were financed by central bank reserves. Since 4 February 2010 all purchases have been financed by the issuance of Treasury bills and the DMO's cash management operations.
(4) The SCP facility is described in more detail in the Market Notice available at www.bankofengland.co.uk/markets/marketnotice090730.pdf.
(5) For more details on the gilt lending facility see the box 'Gilt lending facility' in the *Bank of England Quarterly Bulletin*, Vol. 50, No. 4, page 253.

Chart 16 Net capital market issuance by UK PNFCs[a]



(a) Non seasonally adjusted.
(b) Includes stand alone and programme bonds.

Chart 17 Sterling ERI and bilateral exchange rates



Sources: Bloomberg and Bank calculations.

buyouts and a low number of fast-growing companies seeking equity financing.

Foreign exchange

The sterling exchange rate index (ERI) ended the period broadly unchanged (**Chart 17**). Over the period, sterling appreciated by 1% against the US dollar, but was little changed against the euro. The sterling ERI has remained within a relatively narrow range since the start of 2009.

Although sterling was relatively stable against the United Kingdom's major trading partners, it depreciated significantly against some of the United Kingdom's smaller trading partners. For example, it depreciated by 7% against the Swiss franc, and 5% against the yen, as part of the 'flight to safety' outlined in earlier sections. The broad-based appreciation of these two currencies prompted the SNB and the Bank of Japan to intervene in foreign exchange markets.

Forward-looking measures of exchange rate uncertainty rose over the period, albeit only slightly. Related measures suggested that market participants have placed a greater weight on sterling appreciating over the period (**Chart 18**). According to contacts, that largely reflected investors being willing to pay a higher price to buy protection against an unexpected depreciation of the euro.

The Bank of England's foreign exchange reserves

The Bank of England uses its balance sheet in pursuit of its policy goals. Ordinarily, this involves changes to the size or composition of its sterling assets and liabilities.(1) But the Bank also holds assets and liabilities denominated in foreign currency. This box describes how the Bank finances and invests its foreign exchange reserves.

Institutional arrangements

Both the Bank and the UK Government hold foreign exchange reserves. But they are held for different purposes and in segregated accounts.

The Government's foreign exchange reserves are held in an account called the Exchange Equalisation Account (the EEA). The Bank manages these reserves as agent for the Government, but they do not appear on the Bank's balance sheet. Decisions on the size and composition of the EEA are taken by the Government. The EEA Act of 1979 defines the possible uses for the Government's foreign exchange reserves, including 'checking undue fluctuations in the exchange value of sterling'.(2) The EEA was used to intervene in March 2011 when the G7 nations sold Japanese yen as part of a co-ordinated foreign exchange intervention.

The Bank's foreign exchange reserves appear on its balance sheet. They can be used by the Bank to intervene in the foreign exchange market in pursuit of its monetary policy objectives.(3) The MPC has not decided to intervene in the foreign exchange market since the inception of the 1997 monetary policy framework.(4)

Financing of the reserves

Foreign exchange intervention would involve the sale or purchase of sterling in the foreign exchange market with the intention of influencing the sterling effective exchange rate. To be able to purchase sterling the Bank would need foreign currency to sell. In principle, the Bank could borrow foreign currency directly in the capital markets at the time it wished to purchase sterling. The cost of doing so may however be greatly exaggerated at those times. The Bank therefore chooses to hold foreign exchange reserves on its balance sheet on a precautionary basis.

The Bank's foreign exchange reserves are financed through annual foreign currency bond issuance in the international capital markets.(5) The bond issuance represents a foreign currency liability on the Bank's balance sheet. The currency denomination, maturity and size of each issue reflects the Bank's judgement on where the best value for money may be achieved.

Since bond issuance commenced in 2007, they have been denominated in US dollars, because this has been the most cost-efficient currency of issuance.(6) Each bond issue has been $2 billion in size and three years in maturity. So at any one point in time, these liabilities have financed foreign currency assets of approximately $6 billion. The proceeds from bond issuance are invested in suitable assets of similar maturities.(7)

Reserve assets

Currency composition

The reserve assets held by the Bank are denominated in US dollars, euro and yen, which are the three most-traded currencies in the foreign exchange market and together account for the majority of the sterling effective exchange rate index.(8)

There is a currency mismatch between the dollar proceeds from the bond issue, and the euro and yen assets that the Bank wants to hold. Cross-currency basis swaps are used to convert the dollar proceeds to euro and yen, and hedge the resulting foreign exchange risk.

Asset composition

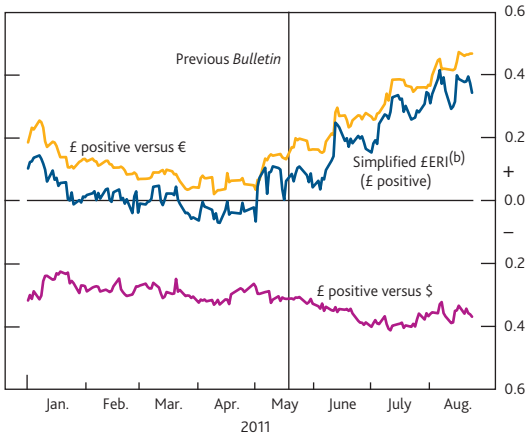
At approximately $6 billion, the Bank's foreign exchange reserves are modest relative to the size of the sterling foreign exchange market, and the holdings of most other major central banks and the UK Government. As a result it is important that those reserves are highly liquid.

The Bank's reserve assets therefore consist only of high-quality sovereign bonds that trade in consistently deep and liquid markets. These sovereign bonds have remained liquid through recent market volatility, and the Bank judges that they would most likely remain liquid in future periods of market stress too. The Bank will publish more details on its foreign exchange reserves in its *Annual Report and Accounts* in the future.

The Bank regularly reviews its reserve assets to ensure they meet their policy purpose. This requires ongoing assessment of the credit quality and liquidity of the Bank's sovereign bond holdings.

(1) See for example, Cross, M, Fisher, P and Weeken, O (2010), 'The Bank's balance sheet during the crisis', *Bank of England Quarterly Bulletin*, Vol. 50, No. 1, pages 34–42.
(2) www.legislation.gov.uk/ukpga/1979/30.
(3) This was set out in the new Monetary Policy Framework introduced by the Government in 1997. See www.hm-treasury.gov.uk/press_40_97letter.htm.
(4) Intervention has been discussed on several occasions and those discussions were reported in the relevant minutes of the MPC meeting. See, for example, paragraph 41 in the minutes of the meeting held on 3–4 May 2000, available at www.bankofengland.co.uk/publications/minutes/mpc/pdf/2000/mpc0005.pdf.
(5) More information on the bonds issued by the Bank can be found on the Bank's website at www.bankofengland.co.uk/markets/reserves/index.htm.
(6) Prior to 2007, the foreign exchange reserves were funded through a Euro Note programme.
(7) Assets are chosen with maturities similar to the liability to minimise interest rate risk. Interest rate swaps are also used to hedge interest rate risk.
(8) The most recent survey by the Bank for International Settlements in April 2010 contains statistics on global foreign exchange turnover: www.bis.org/publ/rpfxf10t.pdf.

Chart 18 Three-month option-implied skewness of foreign exchange returns[a]



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

(a) Returns are defined as the logarithmic difference between current forward rate and the spot rate at the maturity date of the contract.
(b) The simplified sterling ERI places 70% weight on the euro-sterling bilateral exchange rate and 30% weight on US dollar-sterling bilateral exchange rate.

Market intelligence on developments in market structure

In discharging its responsibilities to maintain monetary stability and contribute to financial stability, the Bank gathers information from contacts across a wide spectrum of financial markets. This intelligence helps inform the Bank's assessment of monetary conditions and possible sources of financial instability and is routinely synthesised with research and analysis in the *Inflation Report* and the *Financial Stability Report*. More generally, regular dialogue with market contacts provides valuable insights into how markets function, providing context for policy formulation, including the design and evaluation of the Bank's own market operations. And the Bank conducts occasional market surveys to gather additional quantitative information on certain markets.

Based on intelligence of this kind, this section describes recent developments in the structured notes market. It also describes changes to the way gilt repo transactions can be settled.

Recent developments in the structured notes market

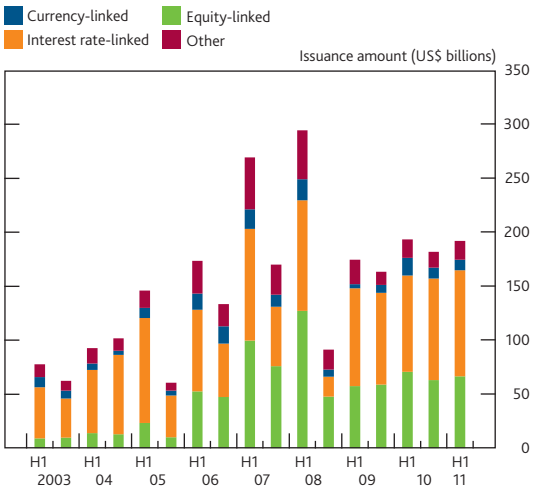
Structured notes are debt instruments which pay coupons, and a final redemption value, linked to asset prices. Understanding developments in the structured notes market is important from a financial stability perspective.(1) This is because they act as a source of funding for banks that lie at the heart of the financial system. This funding may vary with market conditions. Moreover, structured notes can create risks that banks might find difficult to manage, impacting the functioning of certain markets. And they can provide insights into the extent to which investors are prepared to take greater risks in pursuit of higher returns. This section describes recent developments in the structured notes market, drawing on intelligence gathered from discussions with contacts.

Description of structured notes

A structured note is a debt instrument which pays coupons that are linked to the returns of an underlying asset using derivatives (usually options, futures or swaps). They are typically unsecured debt obligations, meaning that investors are exposed to the risk that an issuer will default. Investors are attracted to structured notes because they allow them to tailor returns to more closely match their preferences. While issuers are mainly attracted to structured notes because they allow them to raise funding from an investor base that is perceived to be diversified, and often at cheaper rates than from conventional medium-term notes.

Most structured notes provide returns linked to interest rates or equity markets (**Chart 19**). Together they account for approximately 80% of structured notes. But there are also structured notes that provide returns linked to other markets, including commodity and foreign exchange markets.

Chart 19 Issuance of structured medium-term notes by type of underlying asset



Source: mtn-i.com.

Structured notes come in a variety of forms, with differing degrees of complexity. But there are broadly three types of structured notes: principal-protected notes, yield-enhancing notes and participation notes.

- Principal-protected notes guarantee that an investor's initial investment will be returned upon maturity, while providing positive returns if asset prices evolve in a pre-specified way (eg the FTSE 100 index increases). In their simplest form, these notes essentially replicate the returns from buying a zero-coupon bond of the issuer, and purchasing an option.

(1) For a more detailed review of financial stability implications, see Rule, D, Garratt, A and Rummel, O (2004), 'Structured note markets: products, participants and links to wholesale derivatives markets', Bank of England *Financial Stability Review*, June, pages 98–117, available at www.bankofengland.co.uk/publications/fsr/2004/fsrfull0406.pdf.

- Yield-enhancing notes pay coupons that exceed those offered by conventional notes provided asset prices evolve in a pre-specified way. But investors can lose all or some portion of their initial investment if asset prices do not evolve in this way. For example, a structured note might pay a coupon of 5% and return the initial investment if the FTSE 100 does not fall in value. But if the FTSE falls in value, only some portion of the initial investment will be returned. In their simplest form, these types of notes essentially replicate the returns from buying a zero-coupon bond of the issuer, while selling an option.

- Participation notes tailor the returns from investing in a specific asset, sometimes by limiting the potential gains and losses. These types of notes often replicate the returns from investing in futures contracts, and buying and selling options with various strike prices.

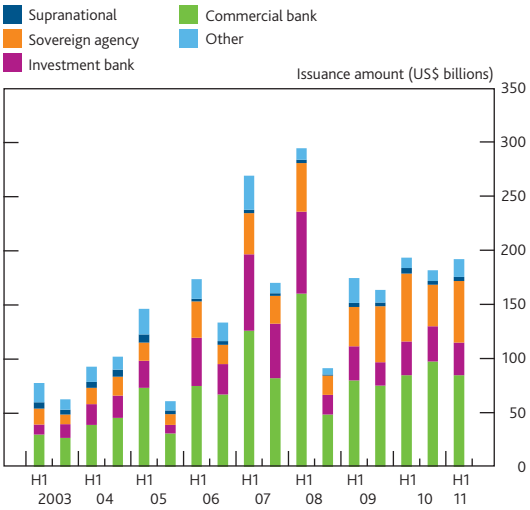
Structured notes can be complex. For example, some of the embedded options have complicated pay-off profiles, which can create risks that are difficult for banks to manage and may increase the risk of mispricing the security. Some provide returns linked to the evolution of more than one asset price. They include a credit risk exposure to the issuer or counterparty to the transaction. And the ultimate maturity of some types of structured notes are dependent on the evolution of asset prices, perhaps because they can be called by issuers, or put back by investors.

Market participants

Investors in structured notes typically fall in three broad groups: high net worth individuals, retail investors and institutional investors. High net worth individuals and retail investors often invest in structured notes to access return profiles that they cannot achieve using other securities available to them, or because alternatives are more expensive. Institutional investors, such as insurance companies, also invest in structured notes for this purpose. But they also invest in structured notes to more closely align the expected returns from their assets with their liabilities. Perhaps for this reason, institutional investors, which tend to have long-term liabilities, tend to invest in structured notes with maturities exceeding ten years. Retail and high net worth investors tend to invest for shorter maturities, typically less than seven years.

Commercial banks are the largest issuers of structured notes (**Chart 20**). European banks, including some UK banks, are particularly large issuers, since they are in a strong position to capitalise on the robust demand from European high net worth and retail investors through their branch networks. For example, contacts suggest that in 2010 around 10%–20% of major UK banks' term funding was via structured notes. US banks were prominent issuers prior to 2008, but some have reportedly scaled back their involvement since. Sovereign and supranational agencies are also large issuers.

Chart 20 Issuance of structured medium-term notes by type of issuer



Source: mtn-i.com.

Benefits and drawbacks to issuance of structured notes

Contacts at banks perceive there to be two main benefits from structured note issuance. First, they provide a diversified source of funding, which tends to be cheaper than conventional medium-term notes. Contacts say that investors are willing to forego some returns in order to access the tailored returns that structured notes provide. Second, they allow banks to hedge some risks that arise from the trading of derivatives, thus complementing this part of their business.

But there are also some drawbacks to structured note issuance. Issuers and investors expect banks to buy and sell their own structured notes, or those of other issuers in the secondary market ('market-making'). This means that a bank might have to repurchase its notes during periods of stress, when their need for funding is highest. And second, managing the embedded derivatives positions from complex structured notes can be difficult. These difficulties can be exacerbated in stressed market conditions, when liquidity dries up, or if issuers have sold similar notes in large size.

Recent trends in issuance

Estimating the size of the global structured notes market is difficult because a large portion of issuance is conducted via private placements. And monitoring whether notes have been repurchased, or called by the issuer, is also difficult.

But publicly available data suggest that structured note issuance fell sharply in the second half of 2008, having grown rapidly prior to the collapse of Lehman Brothers in 2008 (**Chart 20**). Moreover, investors switched from investing in complex yield-enhancing notes towards principal-protected notes, typically issued by those banks deemed the safest.

Issuance recovered during 2009, and was increasingly accounted for by commercial banks, as fears about the credit risk of banks abated somewhat (**Chart 20**). More recently, yield-enhancing notes have once again become the most popular form of structured note.

But contacts noted that structured notes tended to be less complex than was the case prior to 2008. This reduction in complexity is thought to be a result of two factors. First, issuers are pricing complex structured notes less attractively than prior to the crisis. This arose from the difficulties they faced managing the associated risks during late 2008, when liquidity dried up in a number of markets. And second, investors currently demand higher returns to compensate them for taking bank credit risk, negating the need for investors with nominal return targets to engineer higher returns via greater complexity.

Introduction of CREST Term DBV

In the aftermath of the financial crisis, an increased level of regulatory scrutiny has been applied to the settlement and payment arrangements that support repo markets.(1) In these markets, repo transactions can be used for short-term borrowing or lending against collateral. The introduction of 'Term DBV' on 1 July 2011 marks a significant change to the way gilt repo can be settled. Similar risk-mitigating initiatives are being progressed in a number of countries,(2) for example to tri-party repo in the United States.(3) This section describes Term DBV and how it will benefit the UK gilt repo market.

In the United Kingdom, gilts, equities and money market instruments are settled in CREST — a securities settlement system operated by Euroclear UK & Ireland Limited (EUI), the central securities depository.

Use of Delivery by Value

A high proportion of repo is settled by means of the Delivery-by-Value (DBV) settlement mechanism. It is a low-cost, reliable and efficient way of delivering multiple lines of collateral either to cover cash lending or as a collateral delivery mechanism in its own right to cover exposures between CREST members.

Technically, the transacting parties simply agree on the type of securities to be delivered (using pre-defined sets of securities in the CREST system) and the value of the securities to be delivered. Prior to 1 July 2011, the CREST system settled repo transactions only in overnight DBV. This meant the system selected a package of securities to the required value, delivered it in the afternoon DBV settlement window and returned it the following morning when CREST settlement starts.

Participants

DBV is used by the principal participants in the gilt repo market such as major banks, Gilt-edged Market Makers (GEMMs), interdealer brokers, life assurance and pension funds, the UK Debt Management Office, and by the Bank in its open market operations.(4) DBV settled in the CREST system has a value of around £180 billion per day, which typically accounts for around 70% of all sterling settlement in CREST.(5) A large proportion of DBV trades in the gilt repo market are centrally cleared through the LCH.Clearnet Ltd RepoClear service (RepoClear), where two parties submit trades to the clearing house which then nets and settles the trades within CREST. The true size of the DBV market, which would include gross trades prior to netting by RepoClear, is consequently larger than £180 billion. Once netted, DBVs input to CREST by RepoClear account for approximately 40% of daily settled DBV trades.

Disadvantages of overnight DBV

While ideally suited for the settlement of repos with an overnight term, overnight DBV is also used to settle repos with terms of greater than one day. For example, the value-weighted-average term of underlying DBV-based repos submitted to the RepoClear service is around eight calendar days.(6) The RepoClear service settles these term deals in CREST as a series of daily overnight DBVs.

Use of overnight DBV to settle underlying term repos introduces two main risks. First, the settlement of the trade unwinds each morning and so needs to be re-input (rolled) each day until maturity. This introduces operational risk. For example, the money market would be exposed to potentially significant disruption in the event of either an intraday failure of market infrastructure or the inability of one or more major participants to input their DBV trades for that afternoon's settlement.

Second, the use of overnight DBVs increases the value of intraday liquidity that the Bank provides to settlement banks. The daily unwind of overnight DBV routinely creates an intraday funding requirement that is met by intraday liquidity provision by the Bank until it is offset by DBV re-input each afternoon. The Bank is willing to provide intraday liquidity to settlement banks (subject to provision of eligible collateral) in order to support efficient payment and settlement. However, it seeks that the design of settlement processes should be liquidity-efficient and not require undue reliance on the provision of intraday liquidity by the Bank.

(1) Settlement means that the ownership of an asset is transferred from one party to the other, with a simultaneous transfer of cash in the other direction.
(2) For example, see the 2010 BIS Committee on Payments and Settlement Systems (CPSS) recommendations on repo market infrastructure, available at www.bis.org/publ/cpss91.htm.
(3) For more information, see www.newyorkfed.org/tripartyrepo/index.html.
(4) DBV is also much used by the stock lending community to cover borrowing positions with both gilts and equities.
(5) Data from period June to August 2011.
(6) Over the period January to August 2011.

The extension of intraday liquidity also exposes the Bank to collateralised counterparty credit risk. On average, over the quarter to end-August 2011, the Bank's balance sheet expanded by around 50% during the day.(1) While such intraday liquidity is collateralised by high-quality assets with prudent haircuts, there is always a residual risk that market prices will move significantly at times of stress and the Bank may not be able to recover the full value of a loan in the event of a counterparty default.(2) Such risks are judged to be small, but as they are not zero it is prudent for the Bank to keep the amount of intraday liquidity created to the minimum needed to facilitate the flow of liquidity around the system.

Introduction of Term DBV

In order to address these inefficiencies and reduce risk in the repo market, the option to settle term repos using Term DBV was introduced into CREST on 1 July 2011 to complement the existing overnight DBV option. The new mechanism allows trades to be transacted for a period of more than one night without having to be re-input, matched, settled and unwound in the CREST system every day. This is demonstrated in **Figure 1** below.

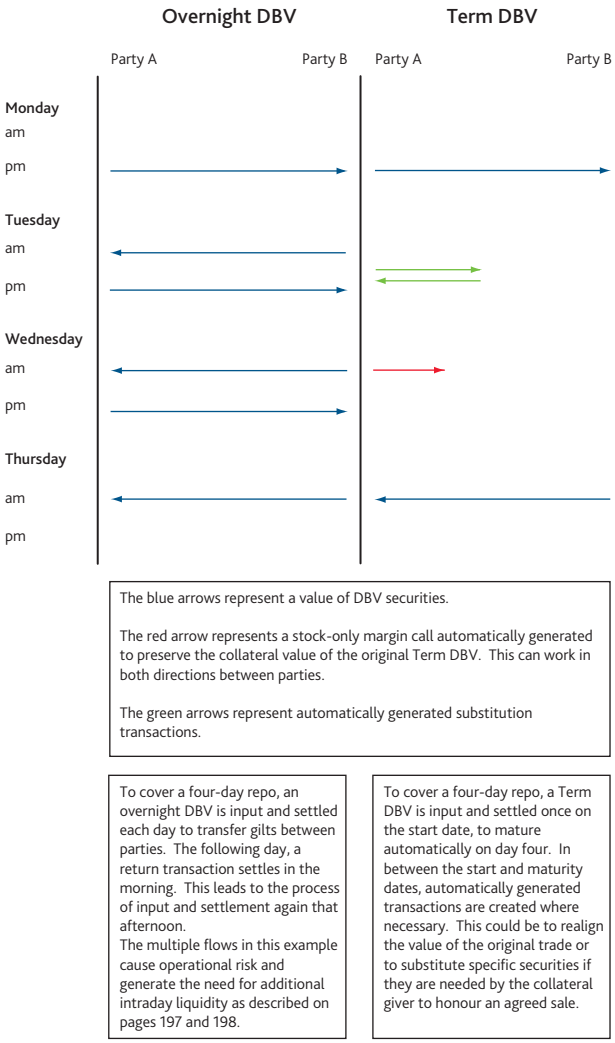
Consequently, use of Term DBV will reduce the operational risk inherent in settlement activity; it will also reduce demand for intraday liquidity from the settlement banks, which in turn reduces the intraday expansion of the Bank's balance sheet.

The introduction of Term DBV required a number of changes to the CREST system. First, automated mark-to-market processing was introduced so that the value of collateral provided in the transaction would be maintained even if the price of the underlying securities changed over the life of the trade. Second, an automated process was initiated to allow for the substitution of securities to meet the collateral-giver's security liquidity needs during the life of the Term DBV.

Since Term DBV was implemented in July 2011, there has been a steady increase in the market's use of this method of settlement: at end-August, around £7 billion of gilt repo was held in Term DBV, accounting for 4% of the DBV market; eight market participants have chosen to settle gilt repo using Term DBV. Since its launch, several contacts have stated their support of the introduction of Term DBV and have acknowledged the risk-reducing benefits that it brings to the gilt repo market.

At present, it is not possible for Term DBV to be centrally cleared. LCH.Clearnet Ltd and EUI are working with their clients in the repo market to determine the viability and design of a centrally cleared Term DBV product. If that proves possible, it is expected that the market's use of Term DBV will rise further.

Figure 1 Introduction of Term DBV to CREST



Given the risk-reduction benefits of using Term DBV, the Bank is supportive of the market's growing adoption of this method of settlement.(3) Since its launch, Term DBV was used in the settlement of the Bank's July and August 2011 indexed long-term repo operations. Of the DBV collateral provided by the Bank's counterparties, over 40% was settled using Term DBV. The Bank is minded to discontinue the use of rolling overnight DBV in its operations at some point in the future.

(1) Over the quarter to end-August 2011, the Bank's balance sheet on average was around £238 billion at close of business, and expanded to around £360 billion during the day in order to provide liquidity for CHAPS and CREST settlement.
(2) The Bank's collateral risk management is described in Breeden, S and Whisker, R (2010), 'Collateral risk management at the Bank of England', *Bank of England Quarterly Bulletin*, Vol. 50, No. 2, pages 94–103.
(3) See page 9 of the speech by Chris Salmon on 5 July 2011, available at www.bankofengland.co.uk/publications/speeches/2011/speech508.pdf.