# Markets and operations

- Short-term interest rates fell across advanced economies. A large number of central banks eased policy in the review period, reflecting concerns about domestic growth and the risk of disinflation, especially in light of falls in the price of oil.
- The European Central Bank (ECB) announced that it would extend its asset purchase programme to include sovereign bonds. The Governing Council plans to purchase €60 billion of private and public assets per month until it sees 'a sustained adjustment in the path of inflation'.
- Market-implied measures of inflation expectations fell materially. The fall may partly have been due to concerns about the outlook for global growth. But there were additional idiosyncratic factors at play in the United Kingdom and the United States.
- Sterling appreciated materially towards the end of the review period, mostly due to a rise against the euro following ECB loosening. Options markets had started to price in currency volatility around the time of the UK general election.
- Risky asset prices rose following the announcement of ECB sovereign bond-based quantitative easing.

## Overview

A large number of central banks loosened policy during the review period, reflecting both concerns about domestic growth and the risk of disinflation — especially in light of precipitous falls in the price of oil. As a result, there were broad-based declines in international market interest rates, including in the United Kingdom.

Contacts noted that in the February 2015 *Inflation Report* the Monetary Policy Committee (MPC) stated that it could expand the Asset Purchase Facility or cut Bank Rate further towards zero were downside risks to materialise. But contacts thought that the next move in policy would be a tightening. Contacts pointed to the fact that the MPC anticipated that inflation would be above target at the end of the forecast horizon under the assumption that Bank Rate progressed according to what was implied by the market curve.

Medium-term market-implied inflation expectations declined in the United Kingdom, the United States and the euro area. In part, that was thought to reflect a deterioration in the outlook for global growth. And in the case of the euro area, there were some concerns about the ability of the European Central Bank (ECB) to bring inflation back up to its target. Idiosyncratic factors related to market structure were also likely to have been important in the United Kingdom and United States.

The sterling exchange rate index rose significantly during the review period. That was primarily the result of an appreciation against the euro, which had experienced considerable downward pressure since the announcement of a sovereign bond purchase programme by the ECB. Market participants anticipated that uncertainty surrounding the outcome of the upcoming UK general election could cause some volatility in the price of sterling, and this was evident in forward-looking measures of currency volatility.

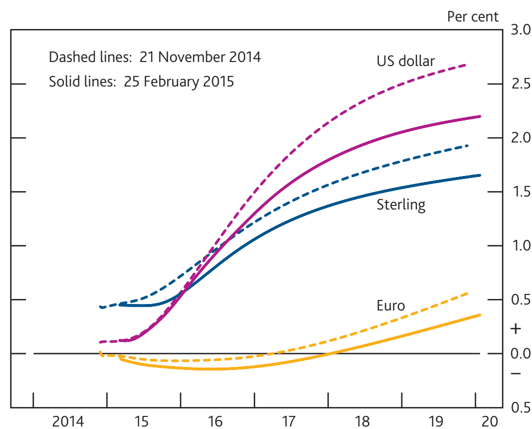
Equity price indices touched record highs and euro-area markets performed particularly strongly following the announcement of further loosening by the ECB. In the corporate bond market, meanwhile, there was an increase in spreads around the start of the period, in part due to the impact of lower oil prices on corporates with exposure to the energy sector. That rise subsequently reversed, due to both a modest uptick in oil prices and the anticipated effects of ECB quantitative easing.

In discharging its responsibilities to ensure monetary and financial stability, the Bank gathers information from contacts across a range of financial markets. Regular dialogue with market contacts provides valuable insights into how markets function, and provides context for the formulation of policy, including the design and evaluation of the Bank's market operations. The first section of this article reviews developments in financial markets between the 2014 Q4 *Quarterly Bulletin* and 25 February 2015. The second section goes on to describe the Bank's own operations within the Sterling Monetary Framework and other market operations.

## Monetary policy and interest rates

Short-term market interest rates fell across advanced economies during the review period (**Chart 1**). A large number of central banks eased monetary policy, reflecting concerns about domestic growth, the risk of disinflation and, in some cases, to maintain foreign exchange pegs. Some central banks viewed lower oil prices as supportive of growth, but others were concerned about the impact of the fall in the oil price on inflation, given wider disinflationary trends.

**Chart 1** Instantaneous forward interest rates derived from overnight index swap (OIS) contracts(a)




Sources: Bloomberg and Bank calculations.

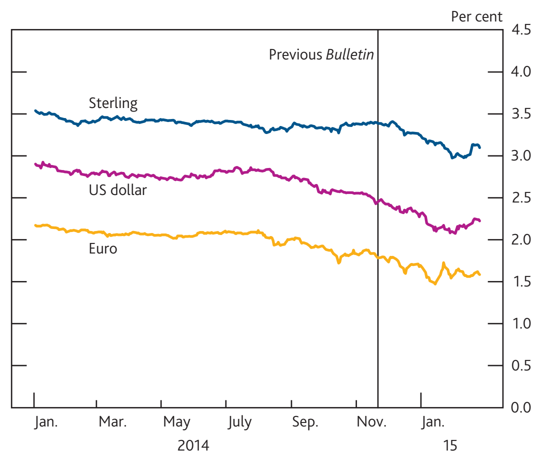
(a) Instantaneous forward rates derived from the Bank's OIS curves.

Perhaps most notably, the European Central Bank (ECB) announced a programme of large-scale sovereign bond purchases. At its January meeting, the ECB Governing Council announced that it would extend its asset purchase programme, buying €60 billion of private and public sector assets per month. Asset purchases are expected to continue until the end of September 2016, or until 'a sustained adjustment' is seen in the path of inflation, consistent with the ECB's aim of inflation below, but close to, 2% over the medium term. The size and potential open-endedness of the programme exceeded market expectations and contributed to a reduction in euro-area government bond yields. Sentiment was also supported by the conclusion of an interim agreement, reached in February, on Greece's Economic Adjustment Programme (originally agreed in 2010 with the European Union, ECB and International Monetary Fund), following Syriza's victory in the parliamentary election.

Contacts typically attributed declines in UK rates to international developments, particularly in the euro area. The February 2015 *Inflation Report* was thought to be broadly in line with market expectations. In the *Report* the Monetary Policy Committee noted that the scope for further cuts in Bank Rate had increased because the United Kingdom's banking sector is operating with substantially more capital now than it did in the immediate aftermath of the crisis. Contacts noted that the possibility of a further reduction in Bank Rate had been a more frequent topic of investor discussion following the *Report*, but they continued to expect the next change in Bank Rate to be an increase.

Despite policy easing by many central banks, market-implied measures of medium-term inflation expectations fell over the review period (**Chart 2**). The fall was thought to have been, in part, due to concerns about the outlook for world economic growth. But other factors were also at play.

**Chart 2** Selected five-year inflation swap rates, five years forward(a)




Sources: Bloomberg and Bank calculations.

(a) Forward swap rates derived from the Bank's inflation swap curves.

Particularly in the United States, implied long-term inflation rates have been correlated with those at shorter horizons, which in turn are sensitive to changes in oil prices (see the box on page 78 for a brief discussion of recent moves in the price of oil). And analysis by the Federal Reserve suggests that some of the fall in implied inflation rates may have resulted from falls in inflation risk premia — the compensation demanded by investors for bearing inflation risk.(1)

In the United Kingdom, contacts suggested that the apparent resilience of implied inflation rates during the latter part of 2014 was at least in part due to stronger demand for inflation

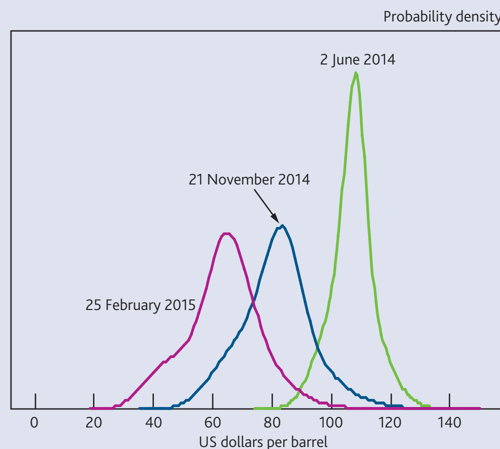
(1) *Federal Reserve Board Monetary Policy Report*, 24 February 2015.

## Recent moves in the price of oil

Over the review period there was a 23% fall in the price of oil, with the Brent front-month oil contract reaching an intraday low of around US$45 in mid-January. The bulk of the decline followed the decision of members of the Organization of Petroleum Exporting Countries (OPEC) not to reduce supply at their November meeting. Contacts had expected OPEC to cut supply in response to sharp price falls during the second half of 2014, and so push the price of oil back up. But in the event, OPEC signalled that it would no longer adjust supply to keep prices stable, instead choosing to maintain market share and allow market prices to fluctuate according to fundamental factors.

The change in OPEC's reaction function has created uncertainty about the future price of oil. Evidence from options markets suggests that there is now considerably more risk priced into the future level of the price of oil than prior to the shift in strategy by OPEC (**Chart A**).

**Chart A** Option-implied distributions for the price of oil three months ahead(a)



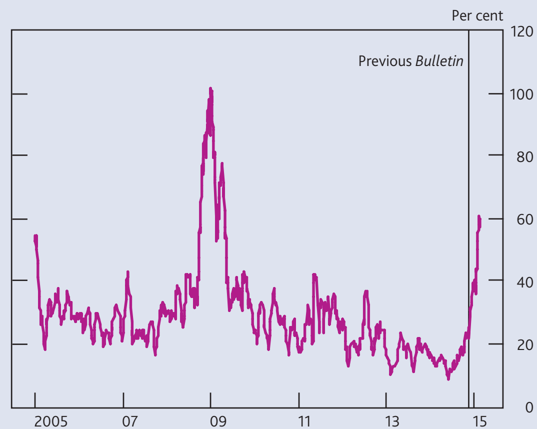

Sources: Bloomberg and Bank calculations.

(a) Calculated from options on Brent crude oil.

In addition, contacts report that the apparent change in OPEC's reaction function has caused market participants to pay more attention than in the past to oil market data as a leading indicator of changes in price. And there is tentative evidence to suggest that oil prices have recently become a little more sensitive to surprises in US crude oil inventories data than over the past couple of years.

Moreover, contacts report that the price of oil has been moving sharply even on days when there may have been very little fundamental news. And oil price volatility has picked up considerably (**Chart B**). Contacts cite a number of potential factors which may have contributed to heightened volatility.

**Chart B** Realised volatility of Brent oil price(a)(b)




Source: Bloomberg.

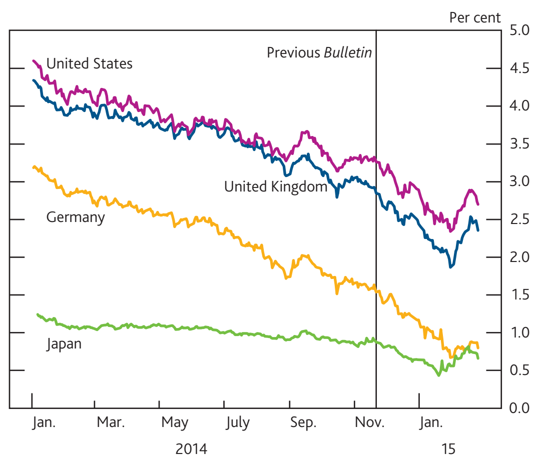
(a) Annualised rolling standard deviation of log returns estimated over the 30 most recent trading days' closing price.
(b) Brent oil refers to the ICE Brent crude oil front-month futures contract.

Most importantly there continues to be uncertainty around the future supply of oil, not just associated with the reaction function of OPEC, but also that of other oil producers, most notably of US shale oil. In addition, a reduction in the capacity of investment banks to intermediate between buyers and sellers was thought to be exacerbating price moves. Contacts also suggested that demand from institutional investors, such as pension funds, which, in the past, would have tended to increase when prices had fallen to attractive levels, had become less of a stabilising influence. Such 'real money' investors have become less prevalent participants in the market in recent years, due, in part, to an increase in the correlation of the asset class with other types of financial asset.

protection from investors seeking to hedge long-term liabilities (such as defined benefit pension funds). They also noted that there had been relatively low issuance of inflation-linked bonds by the Debt Management Office during much of the period. These factors had both ceased to exert as much upward pressure on implied inflation rates from around the beginning of the year.

Contacts had been surprised by the size of recent declines in UK long-term interest rates, with yields on long-dated gilts briefly falling to historic lows (**Chart 3**). Contacts suggested that the subsequent reversal of some of that decline reflected a recognition by investors that the earlier falls had gone further than was justified by macroeconomic news, along with some upwards surprises in data.

**Chart 3** Selected five-year government bond yields, five years forward(a)




Sources: Bloomberg and Bank calculations.

(a) Forward yields derived from the Bank's government liability curves.

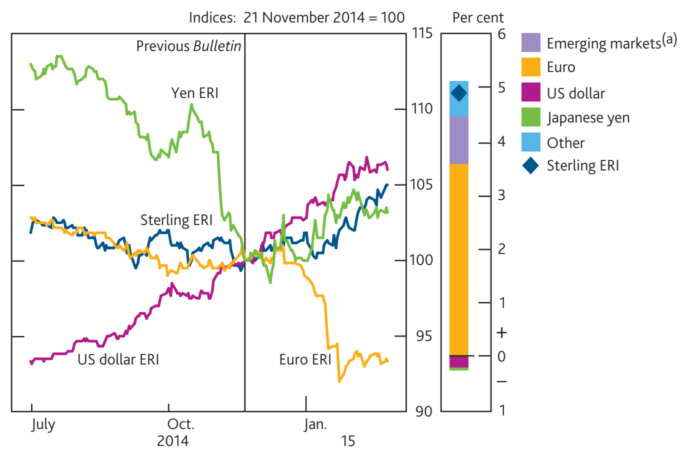
As had occurred over year-end in 2013, there was a marked decline in sterling overnight rates on the last trading day of 2014. But the falls were smaller than in the previous year, which contacts suggested reflected improvements in planning for year-end. Activity in euro and US dollar markets was also orderly relative to the previous year-end.

The Japanese government bond market exhibited unusually high volatility over the review period. Yields fell in late 2014 following an increase in the pace of government bond purchases by the Bank of Japan, and reached record lows in January 2015 (**Chart 3**). A large proportion of these moves reversed in the following weeks, with contacts reporting a withdrawal of demand from certain investors, such as insurers and pension funds, which would not buy bonds at yields lower than the cost of their guaranteed liabilities.

## Foreign exchange

Sterling was broadly stable for much of the review period, but appreciated materially from the start of the year (**Chart 4**), reflecting a sizable rise against the euro. Contacts reported that participants in the foreign exchange market remained focused on macroeconomic and policy divergence between major advanced economies. Consistent with that view, the US dollar effective rate index (ERI) increased by 6% over the review period and there was thought to remain a strong consensus around the strength of the currency. Meanwhile, the euro ERI fell by 7%, with part of that move coming after the announcement of quantitative easing (QE) by the ECB.

**Chart 4** Selected exchange rate indices (left-hand side) and contributions to changes in the sterling ERI since 21 November 2014 (right-hand side)




Sources: Bloomberg, European Central Bank, Thomson Reuters Datastream and Bank calculations.

(a) The emerging market currencies in the narrow sterling ERI are: Chinese renminbi, Czech koruna, Indian rupee, Polish zloty, Russian rouble, South African rand and Turkish lira.

A number of other central banks lowered policy interest rates over the review period, in some cases into negative territory. Some foreign exchange strategists suggested that negative interest rates may be having a more powerful impact on exchange rates than was previously thought, as investors were reluctant to hold assets with a negative nominal yield, or move into longer-maturity ones, thereby encouraging cross-border flows. It was suggested that this mechanism might amplify the impact of ECB asset purchases on the currency compared with similar past programmes adopted by other central banks when yields were not as low.

In a surprise decision in mid-January, the Swiss National Bank (SNB) removed the ceiling on the exchange rate between euro and Swiss franc, allowing the domestic currency to appreciate. Contacts thought that the SNB decision was prompted by concerns about the likely scale of foreign currency intervention required to keep the Swiss franc from rising above the ceiling in future, given the widely anticipated monetary policy easing by the ECB. Although the change in SNB policy came as a surprise, contacts were nonetheless shocked by the speed and scale of the exchange rate moves that followed. The Swiss franc appreciated by 14% against the euro on the day of the decision, while the intraday range was several times

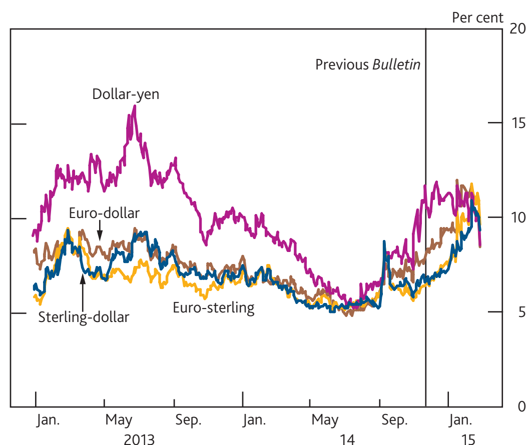
that number — market participants continue to debate over the highest value of the franc traded during the day. In part, the severity of the moves was a reflection of the fact that many market participants had thought that the peg was credible, so some were wrong-footed by the shift in policy. But changes in market structure may also have contributed to the disorderliness.

Electronic platforms have become much more prevalent in the foreign exchange market in recent years, and now account for more than half of all spot currency trades. Following the SNB announcement, banks reportedly switched off electronic trading platforms as quickly as possible — some faster than others — with some dealers temporarily pulling quotes for all currencies. It only required one or two of the large players to switch off their electronic platforms for liquidity to disappear altogether, given the close interlinkages in the foreign exchange market. Once prices returned, algorithmic traders left with open positions placed their offers at the level of the previous bid, 'chasing' the price downwards.

Contacts also suggested that a relative lack of experience among 'voice' traders and reduced appetite to hold risk among traditional intermediaries, had contributed to a reduction in willingness of traders to step in to a falling market, compared with the past. Liquidity in foreign exchange options markets remained impaired following the episode, as participants reassessed the prospects for further shocks to affect trading conditions.

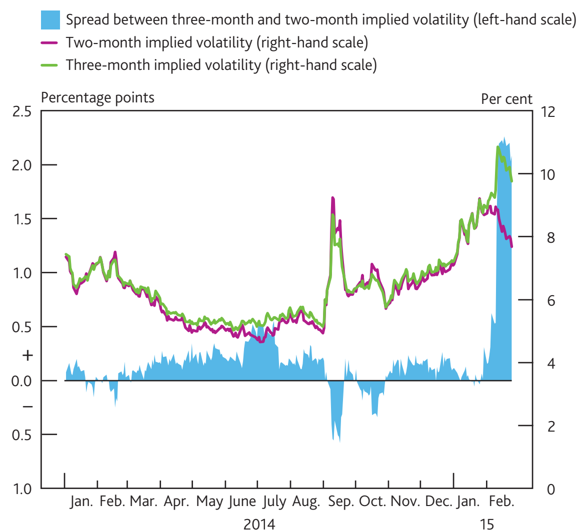
The combined effect of all of these developments in the foreign currency market was to cause a marked increase in foreign currency implied volatility (**Chart 5**). Looking ahead to the UK general election in May, strategists thought that sterling was likely to become more volatile ahead of the vote, in light of uncertainty surrounding the result. That was already being reflected in option prices, with a growing wedge between three-month volatility (options covering the date of the election) and two-month volatility (**Chart 6**). Moreover, uncertainty was being reflected in option prices further ahead of the vote than in the case of the Scotland referendum, and to a greater extent than prior to the 2010 general election.

**Chart 5** Three-month option-implied volatility of foreign exchange rates




Source: Bloomberg.

**Chart 6** Option-implied volatility of sterling-dollar exchange rate

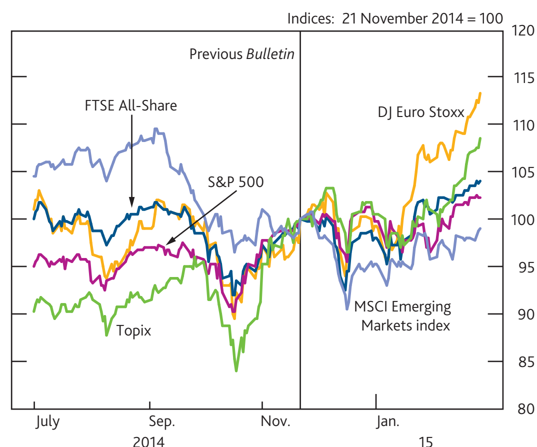



Sources: Bloomberg and Bank calculations.

## Corporate capital markets

Developed-market equity indices increased over the review period as a whole (**Chart 7**). There was a marked outperformance of the Euro Stoxx index, however, which increased by 12%, in large part due to the announcement of expanded QE by the ECB. Contacts reported that US investors in particular had been increasing their exposure to euro-area equities, having previously been relatively 'underweight' on that region in portfolio allocations.

**Chart 7** International equity indices(a)(b)



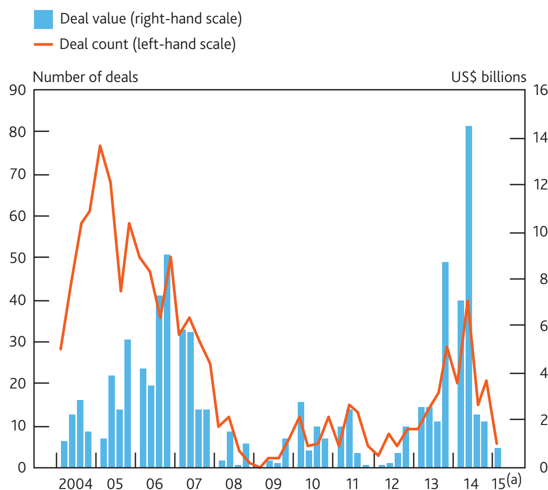

Sources: Bloomberg and Bank calculations.

(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 free-float weighted index that monitors the performance of stocks in global emerging markets.

Equity market implied volatility was elevated towards the end of 2014 and around the start of 2015, reflecting a combination of monetary policy developments, geopolitics — especially negotiations surrounding international financial support for Greece — and the marked fall in the price of oil. But volatility has since fallen back to close to its previous low levels.

Perhaps reflecting heightened volatility around the start of the year, primary issuance in the UK equity market was light during the review period (**Chart 8**). Contacts noted that uncertainty associated with the upcoming general election in May might tend to limit the number of initial public offerings during the first half of the year. In contrast, European equity issuance had been fairly buoyant, despite events in Greece, sentiment having been supported by ECB policy action.

**Chart 8** Total value and number of initial public offerings by UK firms




Source: Dealogic.

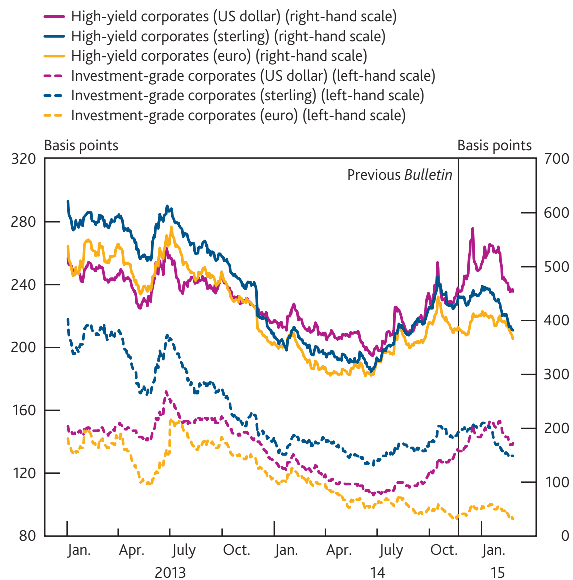
(a) Data up to 25 February 2015.

In the corporate bond market, spreads had been rising in the second half of 2014, but began to decline from around the beginning of this year (**Chart 9**). Broadly similar moves were observed in both the investment-grade and high-yield markets. The rise in corporate bond spreads is likely to have been partly due to the decline in the price of oil, with indices affected according to constituent companies' exposure to lower energy prices. The impact of this was especially evident in the US high-yield index. Recently, high-yield spreads have fallen back, following the stabilisation in the price of oil. Also, contacts reported that corporate bond spreads had declined as a result of anticipated spillovers from the ECB asset purchase programme.

## Bank funding markets

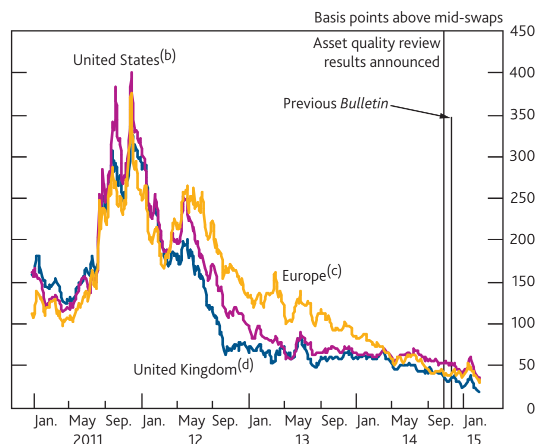
Overall, UK bank funding costs declined a little over the review period (**Chart 10**). Contacts thought that the announcement last year relating to the total loss-absorbing capacity (TLAC) proposal by the Financial Stability Board had contributed to a widening in spreads between debt issued by the holding companies and operating companies of global systemically important banks (G-SIBs). This may reflect reduced expectations of government support and the view that, in cases in which G-SIBs operate with a holding company structure, debt issued by holding companies would in future be written down before that issued by operating companies. Contacts anticipated heavy capital issuance by affected banks this year.

**Chart 9** International corporate bond option-adjusted spreads




Source: BofA Merrill Lynch Global Research.

**Chart 10** Indicative senior unsecured bank bond spreads(a)




Sources: Bloomberg, Markit Group Limited and Bank calculations.

(a) Constant-maturity unweighted average of secondary market spreads to mid-swaps of banks' five-year senior unsecured bonds, where available. Where a five-year bond is unavailable, a proxy has been constructed based on the nearest maturity of bond available for a given institution and the historical relationship of that bond with the corresponding five-year bond.
(b) Average of Bank of America, Citi, Goldman Sachs, JPMorgan Chase & Co., Morgan Stanley and Wells Fargo.
(c) Average of Banco Santander, BBVA, BNP Paribas, Crédit Agricole, Credit Suisse, Deutsche Bank, ING, Intesa, Société Générale, UBS and UniCredit.
(d) Average of Barclays, HSBC, Lloyds Banking Group, Nationwide, Royal Bank of Scotland and Santander UK.

In Europe, bank funding costs declined further. Rating downgrades of the holding companies of a number of European lenders by Standard and Poor's (S&P) had little impact on bank credit spreads. In part, that was because the downgrades had largely been expected. But contacts also noted that the market now relies less heavily on external ratings than it has in the past. That was because many investors have relaxed rules that would previously have caused these downgrades to require automatic sales of affected securities.

## Operations

### Operations within the Sterling Monetary Framework and other market operations

This section describes the Bank's operations within the Sterling Monetary Framework (SMF) over the review period, and other market operations. The level of central bank reserves is determined by (i) the stock of reserves injected via the Asset Purchase Facility (APF); (ii) the level of reserves supplied by operations under the SMF; and (iii) the net impact of other sterling ('autonomous factor') flows across the Bank's balance sheet.

### Operational Standing Facilities

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. As a consequence, average use of the deposit facility was £0 million in each of the November, December and January maintenance periods. Average use of the lending facility was also £0 million.

### Indexed Long-Term Repo open market operations

The Bank conducts Indexed Long-Term Repo (ILTR) operations as part of its provision of liquidity insurance to banks, building societies and broker-dealers. These typically occur once every calendar month. During the review period, the Bank offered a minimum of £5 billion via six-month ILTR operations on 9 December 2014, 6 January 2015 and 10 February 2015 (**Table A**).

Over the quarter, and in line with recent quarters, the aggregate level of reserves supplied by the Bank through QE remained in excess of the level that would otherwise be demanded by market participants. Usage of the ILTR therefore remained limited (**Chart 11**).

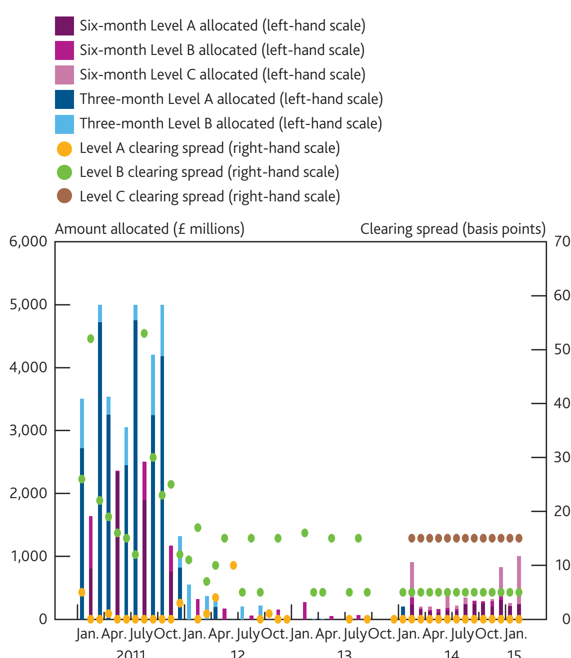
### Contingent Term Repo Facility

The Contingent Term Repo Facility (CTRF) is a contingent liquidity facility, designed to mitigate risks to financial stability arising from a market-wide shortage of short-term sterling liquidity.(1) The Bank judged that, in light of market conditions, CTRF auctions were not required in the review period.

**Table A** Indexed Long-Term Repo operations

| | Total | Collateral set summary | | |
|---|---|---|---|---|
| | | Level A | Level B | Level C |
| **9 December 2014 (six-month maturity)** | | | | |
| Minimum on offer (£ millions) | 5,000 | | | |
| Total bids received (£ millions) | 830 | 310 | 60 | 460 |
| Amount allocated (£ millions) | 830 | 310 | 60 | 460 |
| Clearing spread (basis points) | | 0 | 5 | 15 |
| **6 January 2015 (six-month maturity)** | | | | |
| Minimum on offer (£ millions) | 5,000 | | | |
| Total bids received (£ millions) | 260 | 215 | 0 | 45 |
| Amount allocated (£ millions) | 260 | 215 | 0 | 45 |
| Clearing spread (basis points) | | 0 | n.a. | 15 |
| **10 February 2015 (six-month maturity)** | | | | |
| Minimum on offer (£ millions) | 5,000 | | | |
| Total bids received (£ millions) | 1,000 | 240 | 5 | 755 |
| Amount allocated (£ millions) | 1,000 | 240 | 5 | 755 |
| Clearing spread (basis points) | | 0 | 5 | 15 |

**Chart 11** ILTR reserves allocation and clearing spreads(a)




(a) Where there has not been any allocation to a collateral set, no clearing spread is marked.

### Discount Window Facility

The bilateral on-demand Discount Window Facility (DWF) is aimed at banks experiencing a firm-specific or market-wide shock. It allows participants to borrow highly liquid assets in return for less liquid collateral in potentially large size and for a variable term. The average daily amount outstanding in the DWF in the three months to 30 September 2013, lent with a maturity of more than 30 days, was £0 million.

(1) Further details are available at www.bankofengland.co.uk/markets/Pages/money/ctrf/default.aspx.

## Other operations

### *Funding for Lending Scheme*

The Funding for Lending Scheme (FLS) was launched by the Bank and HM Treasury on 13 July 2012. The initial drawdown period for the Scheme ran from 1 August 2012 until 31 January 2014. The drawdown period for the FLS extension opened on 3 February 2014 and will run until 29 January 2016. The quantity each participant can borrow in the FLS is linked to their lending to the UK real economy, with the incentives skewed towards supporting small business lending.(1)

The Bank publishes quarterly data showing, for each group participating in the FLS extension, the amount borrowed from the Bank and the net quarterly flows of lending. During the three months ending 31 December 2014, fourteen of the 38 groups participating in the FLS extension made drawdowns totalling £8.5 billion. Participants also repaid £0.4 billion from the first stage of the FLS. This took outstanding aggregate drawings under the Scheme to £55.7 billion.(2)

### *US dollar repo operations*

On 23 April 2014 in co-ordination with other central banks and in view of the improvement in US dollar funding conditions, the Bank ceased the monthly 84-day US dollar liquidity-providing operations. The current timetable for the seven-day operations will continue until further notice. The network of bilateral central bank liquidity swap arrangements provides a framework for the reintroduction of US liquidity operations if warranted by market conditions. There was no use of the Bank's US dollar facilities during the review period.

## 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 (CRDs). The portfolio consists of sterling-denominated securities. Securities purchased by the Bank for this portfolio are normally held to maturity, though sales may be made from time to time, reflecting, for example, risk or liquidity management needs or changes in investment policy. The portfolio currently includes around £5.4 billion of gilts and £0.3 billion of other debt securities.

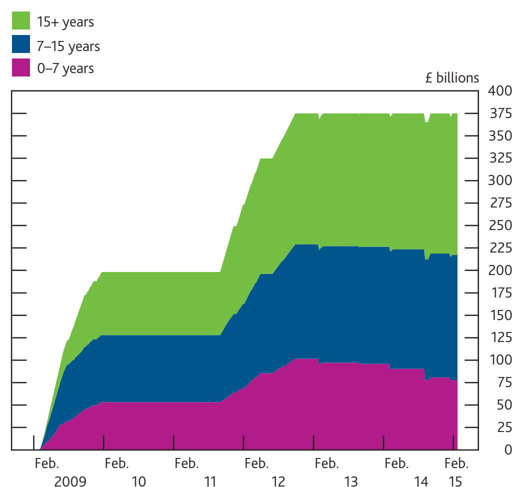
## **Asset purchases**

Alongside the publication of the *Inflation Report* on 12 February 2014, the Monetary Policy Committee announced that it intends to maintain the stock of purchased assets, including reinvesting the cash flows associated with all maturing gilts held in the APF, at least until Bank Rate has been raised from its current level of 0.5%. In line with this, the cash flows associated with the redemption of the January 2015 gilt owned by the APF were reinvested. Reinvestment operations took place in the week beginning 26 January 2015.

### Gilts

The total stock of gilts outstanding, in terms of the amount paid to sellers, was £375 billion, of which £77.9 billion of purchases were made in the 3–7 years residual maturity range, £139.5 billion in the 7–15 years residual maturity range and £157.5 billion with a residual maturity of greater than 15 years (**Chart 12**).

**Chart 12** Cumulative gilt purchases by maturity(a)(b)




(a) Proceeds paid to counterparties on a settled basis.
(b) Residual maturity as at the date of purchase.

### Gilt lending facility(3)

The Bank continued to offer to lend some of its gilt holdings via the Debt Management Office (DMO) in return for other UK government collateral. In the three months to 31 December 2014, the daily average aggregate value of £1,080 million of gilts was lent as part of the gilt lending facility. Average daily lending in the previous quarter was £1,693 million.

### Corporate bonds

There were no purchases of corporate bonds during the review period. Future purchase or sale operations will be dependent on market demand, which the Bank will keep under review in consultation with its counterparties in the Corporate Bond Scheme.(4) The Scheme currently holds no bonds.

### 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.(5) No purchases were made during the review period.

(1) Further details are available at www.bankofengland.co.uk/markets/Pages/FLS/default.aspx.
(2) Further details are available at www.bankofengland.co.uk/markets/Pages/FLS/extensiondata.aspx.
(3) 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; www.bankofengland.co.uk/publications/Documents/quarterlybulletin/mo10nov.pdf.
(4) More information can be found in the Market Notice at www.bankofengland.co.uk/markets/Documents/marketnotice130627.pdf.
(5) The SCP facility is described in more detail in the Market Notice available at www.bankofengland.co.uk/markets/Documents/marketnotice120801.pdf.