Markets and operations

- The first increase in the US federal funds rate since the start of the financial crisis proceeded smoothly, with the move having been well communicated in advance by the Federal Reserve and widely anticipated by investors.
- There was a material deterioration in sentiment across asset markets at the start of the year, prompted by a combination of factors, including concerns about global growth.
- Developed-country interest rates across short and long tenors fell as a result, and there was a sharp decline in the prices of a range of risky assets. Much of the decline in interest rates persisted, despite a stabilisation in sentiment.
- The sterling ERI fell by 7.5% over the review period. In part the depreciation reflected changes in relative interest rates. Contacts also attributed a portion of it to uncertainty ahead of the referendum on UK membership of the European Union.

Overview

Around the start of the review period, on 16 December, the Federal Open Market Committee tightened US monetary policy by raising the target range for the federal funds rate by 25 basis points (to a 0.25%–0.50% range). This had been well communicated in advance and was widely anticipated by the market. There was a fairly limited reaction across a broad range of asset prices. Meanwhile, the European Central Bank (ECB) loosened policy in December, lowering the interest rate on its deposit facility and extending the horizon for its asset purchase scheme. Shortly after the data cut-off, the ECB announced further measures to loosen policy.

Following the turn of the year, Chinese equities fell sharply, and there was a depreciation of the renminbi. There was also a further fall in the price of oil, and various other commodity prices. This confluence of factors led to a broad-based deterioration in confidence about the outlook for the global economy and a generalised increase in risk aversion. Against that backdrop, the Bank of Japan unexpectedly announced the introduction of negative interest rates on some reserves balances. And there was a material loosening in the expected path of central bank policy in the United Kingdom and United States, with declines in interest rates at both short and long tenors.

The prices of many risky assets declined markedly during the period of heightened volatility from the start of the year. In part, this was due to increased risk aversion, and concerns about global growth. There were also some specific issues associated with the banking sector, including worries about earnings growth and the impact of exposures to the energy sector, with the equity and debt of financial institutions hit particularly hard.

Towards the end of the review period, however, there was a stabilisation of financial markets, helped in part by a modest rise in the price of oil. This fostered a recovery in the prices of many risky assets, although expectations for international monetary policy remained considerably looser than at the beginning of the review period.

The sterling exchange rate index declined by 7.5% over the course of the review period. Much of the depreciation reflected changes in relative interest rates against trading partners of the United Kingdom. And the generalised rise in risk aversion might have contributed as well. Contacts also pointed to a role for heightened uncertainty associated with the coming vote on UK membership of the European Union. Contacts reported that uncertainty was evident in foreign exchange options, with option prices indicating that market participants anticipated a rise in volatility around the time of the referendum, as well as some downside risk to the value of sterling.

In discharging its responsibilities to ensure monetary and financial stability, the Bank gathers market intelligence 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 own market operations. The first section of this article reviews developments in financial markets between the 2015 Q4 *Quarterly Bulletin* and 3 March 2016. The second section goes on to describe the Bank's own operations within the Sterling Monetary Framework.

Monetary policy and interest rates

At the start of the review period on 3 December, the European Central Bank (ECB) cut the deposit rate by 0.1 percentage points to -0.3% and extended the time horizon of asset purchases under its Public Sector Purchase Programme by six months. Although significant action was expected by contacts, there had been no clear consensus regarding specific measures. In the event, both short and longer-term European interest rates rose significantly after the decision, implying markets had been expecting more significant easing.

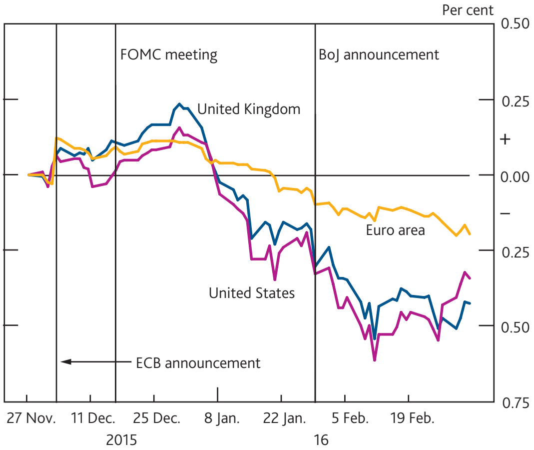
In contrast, the Federal Open Market Committee (FOMC) tightened US monetary policy by raising the target range for the federal funds rate by 25 basis points (to a 0.25%–0.50% range) on 16 December. The move was clearly communicated by the Federal Reserve in advance, and as a result was widely anticipated by the market. As might be expected, the immediate financial market reaction — across a broad range of asset prices — was fairly muted. Contacts noted that the accompanying communication regarding the likely future path of rates was also in line with expectations.

While the first increase in the federal funds rate since the start of the financial crisis progressed smoothly, much of 2016 has been dominated by sporadic bouts of risk aversion, reflecting a combination of growing worries about the prospects for global growth and inflation, along with a generalised rise in uncertainty, fuelled in part by specific concerns related to the energy sector and financial institutions. The touchpaper for the deterioration in sentiment appeared to be a combination of renewed declines in the price of oil — which dropped to thirteen-year lows in January — along with a depreciation of the Chinese renminbi, which renewed concerns about both a potential slowing in growth and the possibility of a change in exchange rate policy there.

Against this backdrop of heightened risk aversion and concerns around the prospects for global growth, the Bank of Japan (BoJ) introduced a negative interest rate of -0.1% on some reserves balances. Contacts reported that the adoption of negative interest rate policy came as a surprise to many investors. There were large declines in developed-country interest rates in the days following the announcement, which some contacts suggested reflected a change in perceptions about how likely it was that such policies would be adopted more widely, as well as a shift in views about the effective lower bound in central bank policy rates.

One-year, one-year forward overnight index swap (OIS) rates in the United Kingdom fell by 42 basis points between 27 November and 3 March (**Chart 1**), in line with moves in the United States. And the market-implied expectation for the timing of the first increase in Bank Rate shifted from 2017 Q1 to 2020 Q1. There was also a substantial slowing in the market-implied pace of tightening, with a marked flattening in the expected path of developed-economy interest rates (**Chart 2**). Shortly after the data cut-off, the ECB announced that the rate on its deposit facility would be lowered further into negative territory, along with several other measures to loosen the stance of monetary policy.

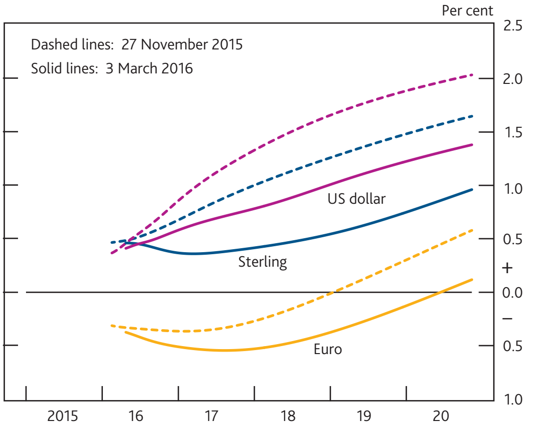
Chart 1 Cumulative change in one-year OIS rates, one year forward since 27 November 2015(a)



Sources: Bloomberg and Bank calculations.

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

Chart 2 Instantaneous forward interest rates derived from OIS contracts(a)

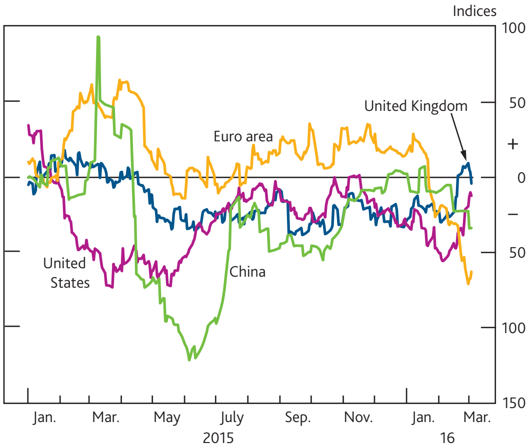


Sources: Bloomberg and Bank calculations.

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

Despite a modest improvement in sentiment toward the end of the review period, expectations for policy remained considerably looser than prior to the period of most pronounced volatility. Broadly speaking, contacts have struggled to reconcile the extent of the downward moves in interest rates with the actual news flow over the period, with few material downside surprises in the economic data to point to that might have shifted expectations (**Chart 3**).

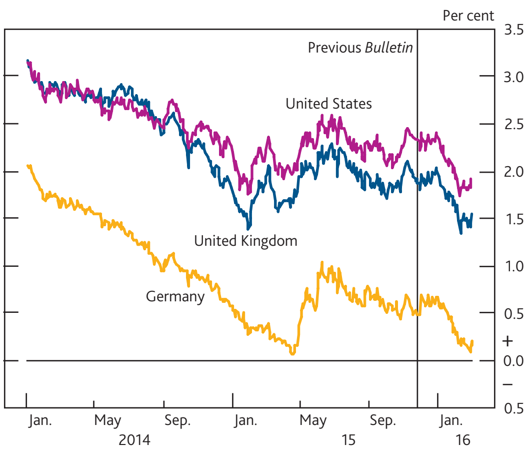
Chart 3 Citi Economic Surprise indices for the United Kingdom, United States, euro area and China



Source: Citigroup.

Further along the yield curve, UK, US and euro-area ten-year government bond yields fell by around 30–40 basis points over the review period (**Chart 4**). The decline can be attributed to falls in both expected real rates and inflation compensation. Contacts suggested that this was broadly consistent with heightened concerns about both global growth and, perhaps, about potential limits to the ability of monetary policy makers to counter global disinflationary pressures.

Chart 4 Selected ten-year government bond yields(a)

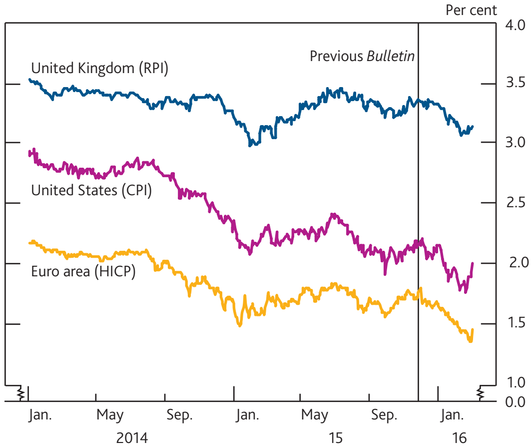


Sources: Bloomberg and Bank calculations.

(a) Yields to maturity derived from the Bank's government liability curves.

Five-year, five-year forward measures of inflation compensation have declined further since the start of 2016 in the United Kingdom, United States and euro area (**Chart 5**). In fact, the level of five-year, five-year forward inflation expectations fell to all-time lows in both the United States and euro area. Towards the end of the review period, market-implied inflation expectations stabilised somewhat, and recovered part of the earlier falls.

Chart 5 Selected five-year inflation swap rates, five years forward(a)



Sources: Bloomberg and Bank calculations.

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

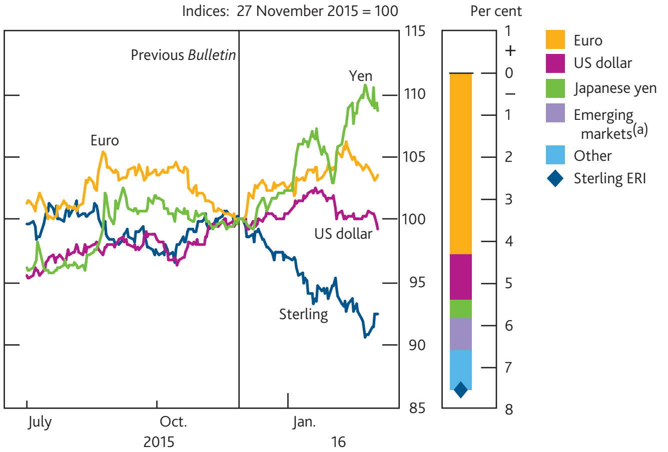
Contacts attribute much of the decline in US market-implied measures of inflation expectations to lower compensation for inflation risk. But contacts thought that expected inflation might also have decreased. UK inflation compensation fell by less than in the United States, with contacts continuing to attribute the relative resilience of UK long-term inflation expectations to the hedging activities of liability-driven investors such as insurers and pension funds.

Foreign exchange

There were large movements in a number of major foreign exchange rate pairs during the review period, including in sterling. Between 27 November and 3 March the sterling exchange rate index fell by 7.5% (**Chart 6**). That was driven largely by depreciation against the euro and dollar, given the large trade weights of those currencies. In part, the decline in the ERI was a reflection of changes in relative interest rate differentials, with UK interest rates falling by relatively more than those in the euro area in particular. But the move was broad-based, with sterling falling against a number of currencies.

Some of the recent weakness of sterling was perhaps related to a generalised deterioration in sentiment during the period. In the past, the sterling ERI has tended to fall during periods of extreme volatility in financial markets (although, the particular nature of the risk is important, with sterling having appreciated during the euro-area sovereign crisis, for

Chart 6 Selected exchange rate indices (ERIs) and contributions to change in the sterling ERI since the start of the review period



Sources: Bloomberg, ECB, 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.

example). The often-observed tendency of sterling to depreciate during periods of risk aversion may be because sterling assets have sometimes been a destination for carry trades, which tend to be unwound when volatility rises. So, while sterling-denominated assets themselves may be considered 'safe', during periods of extreme volatility the currency may behave less like a 'safe haven' than do some others, such as the yen, which strengthened during the recent turbulence (**Chart 6**).

In addition, contacts attributed at least a portion of the depreciation to a rise in the risk premium in sterling exchange rate pairs, due to uncertainty associated with the forthcoming referendum on UK membership of the European Union (EU). It was suggested that the most straightforward way of expressing views on the risks surrounding the vote was via the exchange rate.

Contacts also reported that uncertainty was evident in foreign exchange option prices, with an increase in the implied volatility of some sterling pairs at maturities spanning the date of the referendum (**Chart 7**). And there had been an increase in the relative cost of hedging against a depreciation of sterling (given by the implied volatility from a put option) compared with the cost of hedging against an appreciation (given by the implied volatility from a call option) (**Chart 8**).

Towards the end of the review period, there was a modest appreciation of sterling, and a fall in both implied volatilities and the relative cost of protection against a depreciation versus an appreciation. Contacts reported that some short-term investors had reduced the size of their short sterling positions. And UK corporates had also been observed entering the market, with a view to hedging future

Chart 7 Term structure of option-implied volatility of selected exchange rates as of 3 March 2016

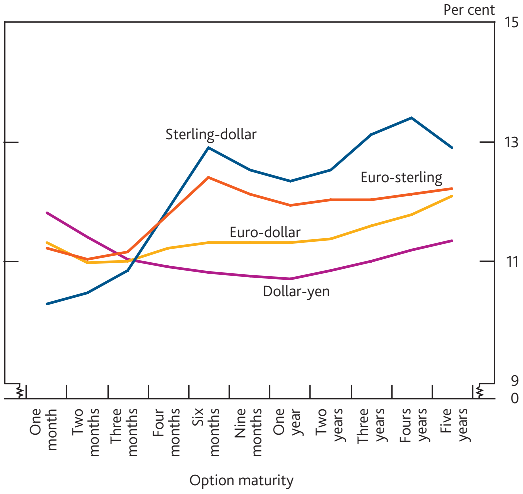
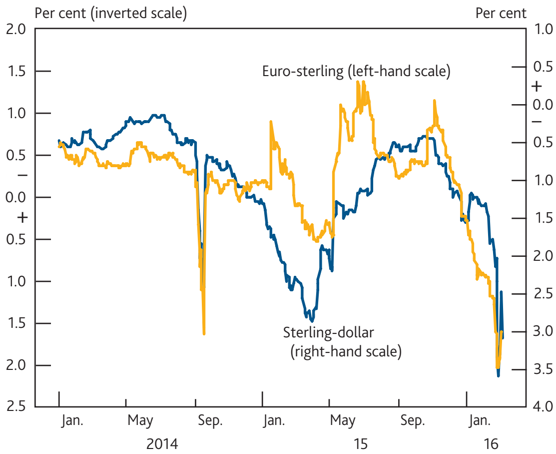


Chart 8 Implied volatility of a four-month call option minus the implied volatility of an equivalent put option(a)



(a) Inverted scale for euro-sterling as sterling is the price currency.

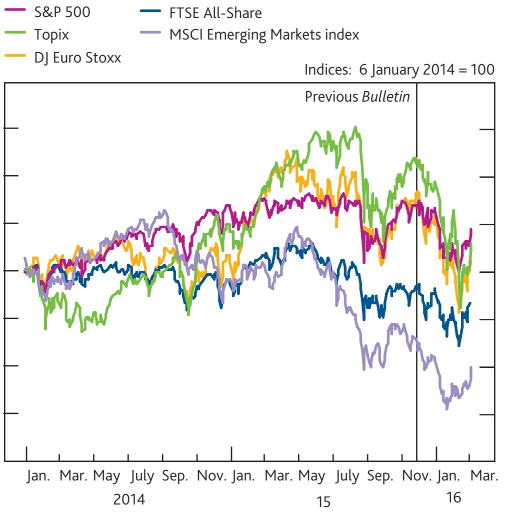
foreign-currency receipts at relatively favourable price levels. These factors had helped to provide some support to the currency.

Elsewhere, both the onshore and offshore renminbi depreciated against the US dollar. Commentators noted that Chinese foreign exchange reserves had fallen to the lowest level since 2012, perhaps indicating ongoing support for the renminbi by the Chinese authorities. People's Bank of China Governor Zhou dismissed concerns about capital outflows and declining foreign exchange reserves, stating that there was no basis for further deprecation of the renminbi.

Corporate capital markets

Changes in equity prices and corporate bond spreads were influenced heavily by wider shifts in risk sentiment over the period. There were material falls in developed-economy equity indices, with particularly pronounced declines in the Topix and Euro Stoxx, which dropped by 14.1% and 12.1%, respectively (**Chart 9**). The Shanghai Composite index also ended the period 16.8% lower. Sentiment improved during the latter part of February, helped by a stabilisation in the price of oil, resulting in a modest boost to equity prices. But indices remained somewhat lower than at the start of the review period.

Chart 9 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.

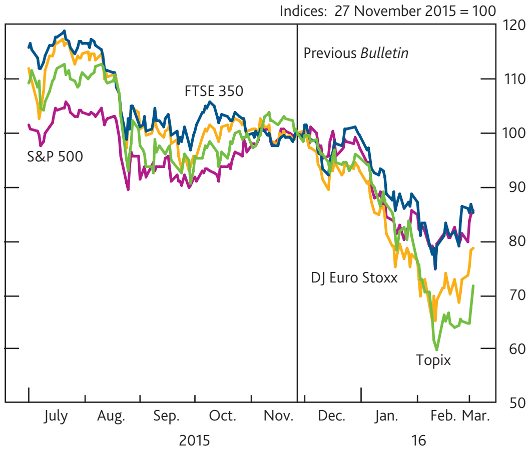
Bank equities in developed markets declined by even more than headline indices over the review period (**Chart 10**). In aggregate, the banking industry group of the S&P 500 and FTSE All-Share declined by around 14.3% and 14.6% (compared with falls of 4.6% and 3.6% in the respective headline indices). Even larger moves were seen in European and Japanese banking stocks. In part, the decrease in the price of banking stocks was simply a function of the fact that financials tend to move by more than the market as a whole. But there were also specific concerns related to the exposures of particular institutions to the energy sector, the impact of negative interest rate policy on earnings and idiosyncratic institutional factors at some euro-area lenders.

Concerns about slowing global growth and challenges facing the financial sector weighed on expectations for bank earnings, and there was a rise in senior unsecured bank spreads over the review period (**Chart 11**). In addition, the additional Tier 1 (AT1) debt market came under particular scrutiny, with some investors becoming concerned that coupons on these instruments could be cancelled and that banks might choose not to exercise options to redeem callable AT1 debt early, instead deferring repayment of the principal.

Spreads on private non-financial corporate bonds also increased for both high-yield and investment-grade debt (**Chart 12**). Particularly sharp increases in US high-yield bond spreads were partly driven by falls in the price of oil around the start of the year, along with the broader shift in sentiment. But high-yield spreads subsequently fell back somewhat, as both the price of oil and financial market confidence stabilised.

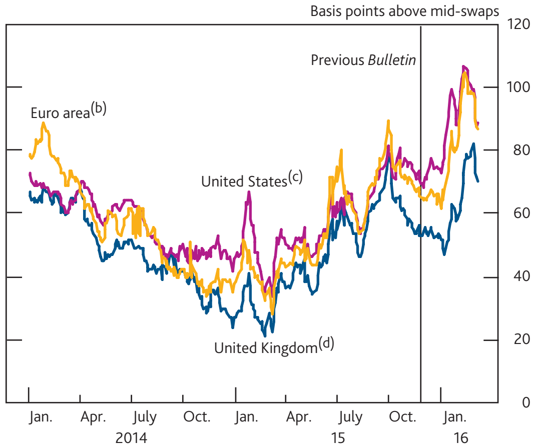
Amid fragile risk sentiment, there was rather less primary market high-yield corporate bond issuance than usual for the time of year. Contacts attributed the fall in issuance to heightened market volatility and impaired liquidity, and the resulting increase in the premium demanded by investors to buy new bonds rather than invest in comparable instruments already available in the secondary market. Nevertheless, US dollar and euro-denominated investment-grade corporate bond issuance remained robust.

Chart 10 Selected bank equity sub-indices



Source: Bloomberg.

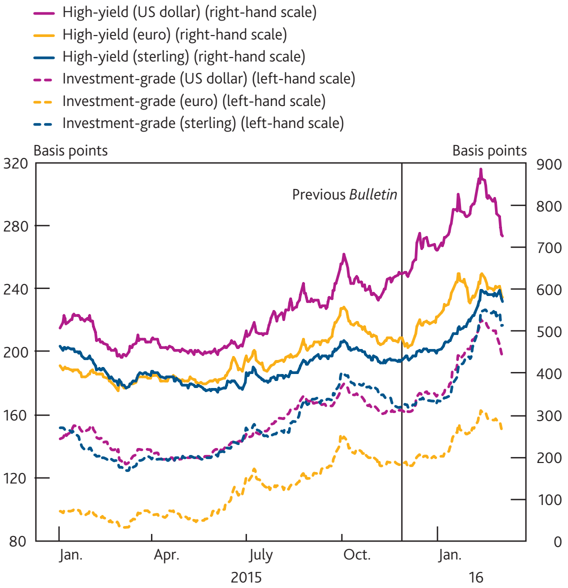
Chart 11 Indicative senior unsecured bank bond spreads(a)



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.
(b) Average of Banco Santander, BBVA, BNP Paribas, Crédit Agricole, Credit Suisse, Deutsche Bank, ING, Intesa, Société Générale, UBS and UniCredit.
(c) Average of Bank of America, Citi, Goldman Sachs, JPMorgan Chase & Co., Morgan Stanley and Wells Fargo.
(d) Average of Barclays, HSBC, Lloyds Banking Group, Nationwide, Royal Bank of Scotland and Santander UK.

Chart 12 International corporate bond option-adjusted spreads



Source: BofA Merrill Lynch Global Research.

Operations

Operations within the Sterling Monetary Framework and other market operations

This section provides an update of the Bank's operations within the Sterling Monetary Framework (SMF) over the review period, as well as its other market operations. Collectively, these operations help implement the Bank's monetary policy stance and provide liquidity insurance to institutions when deemed necessary.

The aggregate level of central bank reserves is closely monitored by the Bank. The level of central bank reserves is affected by (i) the stock of assets purchased 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 flows across the Bank's balance sheet. Over the review period, aggregate reserves remained around £315 billion, but had fluctuated due to the redemption and subsequent reinvestment of gilts held in the APF (discussed below).

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, there is little incentive for reserves account holders to use the deposit facility. Reflecting this, the average use of the deposit facility was £0 million in the three months to 14 January 2016.[1]

The rate charged on the Operational Standing Lending Facility remained at 25 basis points above Bank Rate. However, given the large aggregate supply of reserves, there was no demand from market participants to use the lending facility. The average use of the lending facility was also £0 million over the quarter to 14 January 2016.

Indexed Long-Term Repo operations

The Bank conducts regular Indexed Long-Term Repo (ILTR) operations as part of its provision of liquidity insurance to banks, building societies and broker-dealers. During the review period, the Bank offered a minimum of £5 billion via six-month repos in each of its ILTR operations on 8 December 2015, 5 January 2016 and 9 February 2016 (**Table A**).

Table A Indexed Long-Term Repo operations[a]

	Total	Collateral set summary		
		Level A	Level B	Level C
8 December 2015 (six-month maturity)				
Minimum on offer (£ millions)	5,000			
Total bids received (£ millions)	3,600	3,550	10	40
Amount allocated (£ millions)	3,600	3,550	10	40
Clearing spread (basis points)		0	5	15
5 January 2016 (six-month maturity)				
Minimum on offer (£ millions)	5,000			
Total bids received (£ millions)	3,121	2,356	0	765
Amount allocated (£ millions)	3,121	2,356	0	765
Clearing spread (basis points)		0	n.a.	15
9 February 2016 (six-month maturity)				
Minimum on offer (£ millions)	5,000			
Total bids received (£ millions)	1,396	1,159	10	227
Amount allocated (£ millions)	1,396	1,159	10	227
Clearing spread (basis points)		0	5	15

(a) The minimum amount on offer is the size of the operation that the Bank is willing to allocate, in aggregate, across all collateral sets at the minimum clearing spreads.

Participation in, and usage of, ILTR operations has continued to remain higher than during the same period last year, with some participants using the facility as a source of term repo liquidity. Nonetheless, the total amount allocated in each operation remained below the minimum £5 billion on offer (**Chart 13**). Over the review period, a total of £6.1 billion of ILTRs matured and £8.1 billion of new ILTRs were allocated, resulting in a net increase in central bank reserves of around £2 billion.

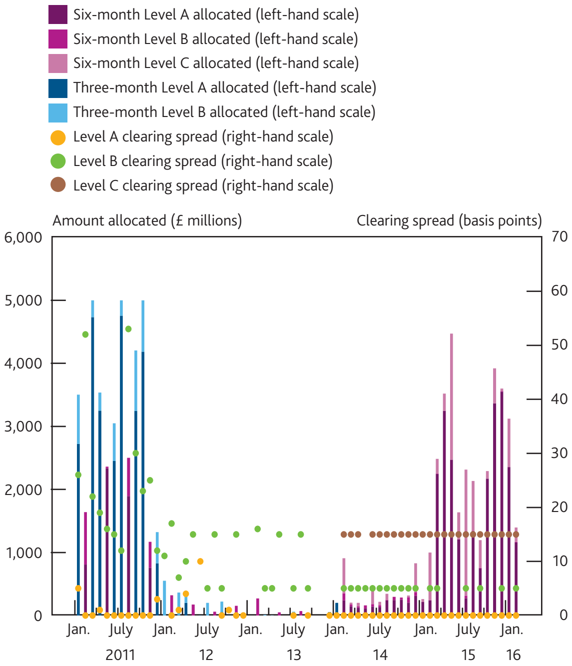
The Bank announced on 7 March that it will offer three additional ILTR operations in the weeks around the EU referendum. These operations are to be held on 14 June, 21 June and 28 June 2016. The Bank will continue to monitor market conditions carefully and stands ready to take additional action if necessary.

Contingent Term Repo Facility

The Contingent Term Repo Facility (CTRF) is a contingent liquidity facility that the Bank can activate in response to

(1) Operational Standing Facility usage data are released with a lag.

Chart 13 ILTR reserves allocation and clearing spreads[(a)]



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

actual or prospective market-wide stress of an exceptional nature. The Bank reserves the right to activate the facility as it deems appropriate. In light of market conditions throughout the review period, the Bank judged that CTRF auctions were not required.

Discount Window Facility

The Discount Window Facility (DWF) is a bilateral on-demand facility provided to institutions experiencing a firm-specific or market-wide liquidity 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 Bank publishes quarterly data of DWF usage with a lag. The average daily amount outstanding in the DWF in the three months to 30 September 2014 was £0 million.

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 FLS 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 31 January 2018, following the extension beyond January 2016 announced on 30 November 2015.[(1)]

The quantity current participants can borrow in the FLS is linked to their lending to the UK real economy from 2013 Q2 to 2015 Q4, with the incentives currently skewed towards supporting lending to small and medium-sized businesses. From 1 August 2016, borrowing allowances will reduce by 25%, and by the same amount every six months thereafter, phasing the scheme out gradually by 31 January 2018.

US dollar repo operations

The Bank conducts seven-day US dollar liquidity-providing operations and will continue to do so until further notice. The network of bilateral central bank liquidity swap arrangements provides a framework for the reintroduction of further US liquidity operations if warranted by market conditions. There was no use of the Bank's US dollar facilities throughout 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. 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 £5.6 billion of gilts and £0.1 billion of other debt securities.

Asset purchases

In the publication of the *Inflation Report* on 5 November 2015, the Monetary Policy Committee announced that it expects to maintain the stock of purchased assets at £375 billion, including reinvesting the cash flows associated with all maturing gilts held in the APF, at least until Bank Rate has reached a level from which it can be cut materially.

A total of £14.7 billion of cash flow associated with gilt redemptions was successfully reinvested in gilts across the curve during December 2015 and January 2016. £6.3 billion of which was invested in December 2015 and £8.4 billion in January 2016.

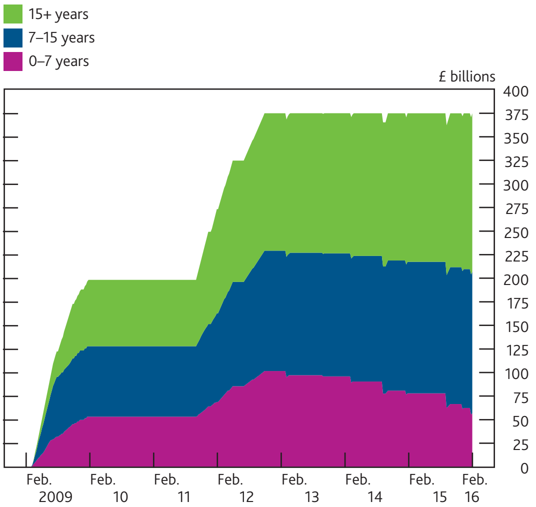
The total stock of gilts outstanding in the APF, measured as proceeds paid to sellers, remains at £375 billion. The stock of gilts comprised of £56.8 billion of purchases in the 3–7 years residual maturity range, £150 billion in the 7–15 years residual maturity range and £168.1 billion with a residual maturity of greater than 15 years (**Chart 14**).

Gilt lending facility

The Bank continued to offer to lend gilts held in the APF via the Debt Management Office (DMO) in return for other UK government collateral. In the three months to 31 December 2015, the daily average value of gilts lent, as part

(1) For more details, see www.bankofengland.co.uk/publications/Pages/news/2015/096.aspx.

Chart 14 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.

of the gilt lending facility, was £316 million. The average daily lending in the previous quarter was lower at £152 million.

Corporate bonds

There were no purchases of corporate bonds during the review period. Future purchase or sale operations through the scheme will be dependent on market demand and conditions, which the Bank will keep under review in consultation with its counterparties. Reflecting the recent lack of activity, the scheme currently holds no bonds.

Secured commercial paper facility

The Bank continued to offer to purchase secured commercial paper backed by underlying assets that are short term and provide credit to companies or consumers that support economic activity in the United Kingdom. No purchases were made during the review period.