

The profile of cash transfers between the Asset Purchase Facility and Her Majesty's Treasury

By Nick McLaren and Tom Smith of the Bank's Macro Financial Analysis Division.⁽¹⁾

In November 2012, a process for regular cash transfers between the Bank of England's Asset Purchase Facility Fund Limited (APF) and Her Majesty's Treasury (HMT) was established. The size and timing of these transfers depends on a number of uncertain factors, including the future path of Bank Rate, and the price at which the assets held by the APF are ultimately sold. This article uses a spreadsheet-based framework, which has also been made available on the Bank's website, to show how the size and timing of the transfers varies depending on the assumptions made about these uncertain factors. While the initial transfers are from the APF to HMT, it is likely they will be offset by payments in the opposite direction in the future. The ultimate net amount that will be transferred is uncertain, and a wide range of outcomes is possible.

The Bank of England Asset Purchase Facility Fund Limited (APF) is a wholly-owned subsidiary of the Bank of England. It was established in January 2009 to purchase high-quality private sector assets on behalf of the Bank, in order to improve conditions in these markets and so increase the availability of corporate credit. In February 2009, this remit was expanded to allow the Monetary Policy Committee (MPC) to use the APF to make purchases of public and private sector assets for monetary policy purposes. Since then the APF has continued to be used for both these reasons. By acting as a backstop in private markets, the APF has been successful in supporting these markets without the need for large purchases of private sector assets. So the majority of the APF's purchases have been of UK government bonds (gilts) for monetary policy purposes.⁽²⁾

The APF is fully indemnified by Her Majesty's Treasury (HMT): that is, any financial losses as a result of the asset purchases are borne by HMT, and any gains are owed to HMT. Initially, it was envisaged that payments due under the indemnity would be settled when the asset purchase scheme ended. But as the scale and likely duration of the scheme have since increased significantly, on 9 November 2012 it was agreed to alter this arrangement and establish a process for ongoing quarterly transfers between the APF and HMT.⁽³⁾

The size of these quarterly transfers, and the ultimate net amount transferred to or from the APF, is uncertain and depends on a number of factors, including the future path of Bank Rate and the price of the assets when they are sold. This

article explains how the expected size of the transfers varies depending on the assumptions made for these uncertain factors. For instance, other things equal, if Bank Rate rises faster or to a higher level, then the size of the ultimate net transfers from the APF to HMT will be smaller. A spreadsheet has also been made available on the Bank's website, allowing users to examine for themselves how the transfers depend on the assumptions made for these variables.⁽⁴⁾

The net amount transferred to or from HMT by the end of the scheme is the same as the net financial gain or loss of the APF. But while it is useful to understand the possible size and timing of these transfers to and from the APF, this narrow accounting definition of the financial gain or loss is not a measure of the impact of the scheme on the public sector accounts as a whole. That is for two reasons. First, it does not take into account the effect of asset purchases on the value of the

-
- (1) The authors would like to thank Simon Liddell, Paul McArdle, Sarah Prince and Magda Rutkowska for their help in producing this article.
 - (2) The initial purchases of private sector assets were directed towards improving market functioning and were funded by the issuance of Treasury bills and the cash management operations of the Debt Management Office. For more details of the rationale of these purchases and their impact, see Fisher (2010). From March 2009 asset purchases were also used as a tool for monetary policy, financed by the creation of central bank money, a policy commonly known as quantitative easing. To date £375 billion of assets have been purchased for this purpose. More details on the history and design of the APF and the Bank's quantitative easing policy can be found in Joyce, Tong and Woods (2011).
 - (3) The details were set out in an exchange of letters between the Chancellor of the Exchequer and the Governor of the Bank of England. See www.hm-treasury.gov.uk/d/chx_letter_091112.pdf and www.bankofengland.co.uk/monetarypolicy/Documents/pdf/govletter121109.pdf.
 - (4) The spreadsheet is available for download at www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2013/APFcashtransfers.xlsx. Excel 2007 or a compatible program must be installed on your computer to open the file. Instructions for use are included in the spreadsheet.

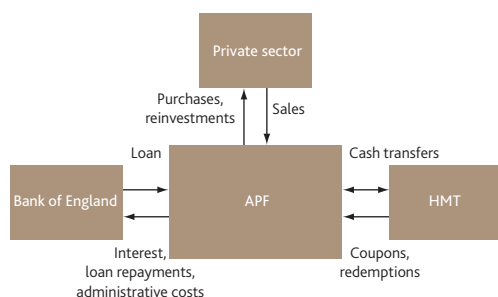
government's liabilities, or their impact on the government's ongoing financing costs. And, second, it does not include the effects on government tax and spending of the fall in yields and boost to economic activity caused by asset purchases.⁽¹⁾ More broadly, the success of the asset purchase scheme should be judged by the degree to which it meets its aims — to improve corporate credit conditions and to boost nominal spending in order to meet the inflation target in the medium term.⁽²⁾

The first section of this article outlines the cash transfer arrangement in more detail, and then explains why the initial transfers to HMT are likely to be offset by payments back in the opposite direction in the future. The second section sets out the factors that will affect the profile of the cash transfers. The third section then considers how the profile of transfers is affected by adjusting each of these uncertain factors. The final section concludes.

Understanding the cash transfers

Asset purchases involve a series of cash flows between the APF, the Bank of England, HMT and the private sector. To understand how the cash transfers between HMT and the APF fit into this, this section first outlines these interconnections, which are summarised in **Figure 1**. It then goes on to explain why cash accumulates in the APF's account at the Bank of England, in order to show how the transfers are likely to evolve over time.

Figure 1 Cash flows to and from the APF

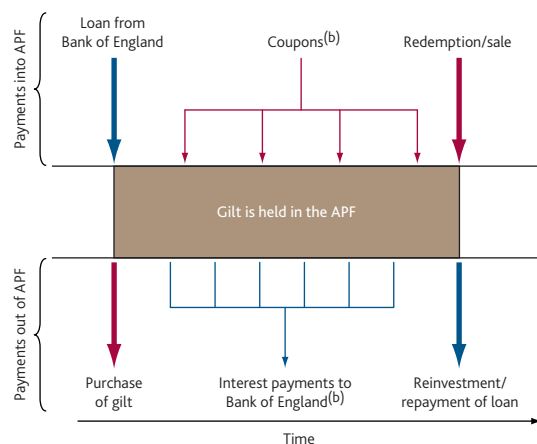


The assets held by the APF are nearly all gilts, which were bought in the secondary market funded by a loan from the Bank of England. The APF also holds some high-quality private sector assets, and remains ready to buy and sell these assets in private markets. But these holdings are small compared to the gilt holdings: they peaked at £3 billion in May 2009 and are now less than £25 million, compared to just under £375 billion of gilts.⁽³⁾ In the interest of simplicity, the rest of this article focuses on the gilt holdings, and does not discuss the private sector assets held by the APF.

The APF receives coupon payments on its gilt holdings, which are paid by HMT. If the gilts are held until they mature, the APF also receives a final redemption payment.

The income earned from coupons is used by the APF to pay the interest on the loan from the Bank of England, at Bank Rate, and the administrative costs to the Bank.⁽⁴⁾ When a gilt in the portfolio matures or is sold, the MPC may decide either to repay the loan or reinvest by buying other gilts in the secondary market. Which action is taken will be decided by the MPC at the time, in light of the prevailing circumstances.⁽⁵⁾ **Figure 2** illustrates each of these payments into and out of the APF for an individual gilt. The red arrows correspond to payments associated with the gilt, and the blue arrows to payments relating to the loan from the Bank used to finance the purchase.

Figure 2 The lifetime of a gilt in the APF^(a)



- (a) Red arrows represent payments for, and from, the gilt. Blue arrows represent payments relating to the loan used to finance the gilt purchase.
 (b) Coupon payments are made every six months, while interest payments are made on a monthly basis.

The cash transfer arrangement

Importantly, the size and timing of the cash payments into and out of the APF is not necessarily the same. For instance, there is no reason why the APF's coupon income should be equal to its interest payments: the coupon rate is set when a bond is first issued, while the level of Bank Rate is set by the MPC based on prevailing economic conditions. Indeed, since the APF first purchased gilts in March 2009, Bank Rate has

- (1) Bank of England estimates suggest the first £200 billion of asset purchases may have had a peak impact on the level of real output of 1.5%–2% (Joyce, Tong and Woods (2011)). Based on the Office for Budget Responsibility estimates for cyclically adjusted net borrowing, all else equal a 1% increase in real output would reduce the public sector net borrowing requirement as a proportion of output by 0.5% in the contemporaneous year, and by 0.2% in the following year: see Helgadottir *et al* (2012). Each of these central estimates is subject to considerable uncertainty.
 (2) For more details see Bean (2009).
 (3) Details of the transactions are published through the Bank's statistical publications, operational announcements, the 'Markets and operations' *Quarterly Bulletin* article and the *APF Quarterly Report*. For more details see www.bankofengland.co.uk/markets/Pages/apf/default.aspx.
 (4) The administrative costs are small relative to the cash flows associated with the gilt holdings, and so are not discussed further in this article.
 (5) For more details, see the minutes of the Monetary Policy Committee meeting, 6 and 7 February 2013, www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2013/mpc1302.pdf.

remained at 0.5%, considerably below the average coupon rate on the gilts that have been purchased. So the interest paid on the loan has on average been much less than the coupon income received. As a result, a large amount of cash has built up in the APF account at the Bank: more than £31 billion by the end of 2012. (As the next subsection will explain, not all of this cash can be thought of as a financial gain for the APF.)

In November 2012, it was agreed that the APF would transfer the existing cash balance to HMT over a nine-month period.⁽¹⁾ A process was also created for an ongoing quarterly transfer. The amount transferred to HMT at the end of each quarterly accounting period will be the coupon income earned by the APF during that quarter, minus a buffer of cash for the known expenses of the APF in the next quarter, as well as any additional income or expenses incurred during the current quarter. If the total deductions exceed the coupon income earned during the quarter, then a transfer is made in the opposite direction, from HMT to the APF.⁽²⁾

The expenses which are included in the buffer are the expected interest payments on the loan, the administrative costs, and any extra cash required when gilts mature (that is, any difference between the redemption payment and the amount needed to pay for reinvestment or to repay the loan). Unlike the redemption payments received when gilts mature, the timing of gilt sales and the proceeds received are not known in advance, and therefore neither is the amount of extra cash (if any) required to repay the loan. Likewise, if Bank Rate does not change in line with market expectations during the quarter, the interest payments on the loan will be different from those that were expected at the start of the quarter. Neither of these expenses is specified in the buffer; instead they are deducted from the transfer made at the end of the quarter in which they occur.

How the transfers are likely to evolve over time

To show how the size of these transfers is likely to evolve over time, it is useful to understand why cash has built up in the APF account to date. There are two main reasons for this cash accumulation.

First, Bank Rate has been lower for longer than was priced into markets when most of the gilts were purchased. As a result, the APF's interest payment outflows have been smaller than would have been expected at that point, relative to the coupon payment inflows, providing an *unexpected* boost to the APF's cash balance.

The second reason relates to the fact that almost all of the gilts held by the APF were bought 'above par': that is, for a higher price than their redemption payment. That has an important influence on the broad profile of cash transfers over the life of the APF.

When the price of a gilt is above its redemption payment, that reflects market expectations, at the time of purchase, that the gilt would pay a coupon rate which was high relative to the expected path of Bank Rate. This means that, even at the time of the purchase of the gilt, the APF was *expected* to receive coupon income which was greater than the interest payments on its loan from the Bank. It does not, however, make sense to think of this in isolation as a financial gain for the APF. That is because this part of the income from the coupons is expected to be offset by a shortfall that will materialise when the gilts are sold or reach maturity.

That shortfall is likely to arise because gilt prices tend to approach their redemption payments over time: the APF gilts which were purchased above par will tend to decline in value, even if the yield curve does not rise. As a result, the proceeds from redemption payments or gilt sales are expected to be insufficient to cover the required loan repayments. The expected part of the excess of coupon income over loan interest payments is needed to cover this shortfall. Therefore, when the above-par gilts start to reach maturity or be sold, the need to cover any shortfall will result at first in smaller payments to HMT, and then the likelihood of payments back from HMT to the APF.

The fact that almost all of the gilts were bought above par ensures that all of the profiles examined below feature the same broad pattern of payments: in each case, transfers are initially made from the APF to HMT but then this is offset by payments in the opposite direction in the future.

What determines the size and timing of the transfers to and from HMT?

As discussed above and illustrated in **Figure 1**, the cash transfers between the APF and HMT are just one of a number of cash flows into and out of the APF. In order to make projections for the size and timing of the transfers between the APF and HMT, it is necessary to make projections for all the other flows, as well as for the paths of the relevant external factors, such as gilt prices and the path of Bank Rate. This section sets out a spreadsheet-based framework that can be used to produce these projections.

Some of the factors that affect these cash flows are known in advance. For example, the future coupon and redemption payments from HMT to the APF will depend only on the holdings of gilts in the current APF portfolio — as long as no further gilts are bought or sold.

(1) A schedule was agreed with HMT to pay the accumulated past excess cash (up to 31 March 2013) gradually across the first three quarters of 2013. This was to avoid excessively large flows back to the Debt Management Office. The first regular transfer of newly accumulated excess cash balances will be made in July 2013.
(2) For administrative reasons the transfers will take place shortly after the end of the quarterly accounting period, in the first month of the next quarter.

Other factors, such as the future path of Bank Rate or the MPC's decisions about future asset sales or purchases, are not known in advance. So it is necessary to make assumptions about these factors. To explain the spreadsheet-based framework, this section uses an example based on a set of illustrative assumptions for each of these factors, details of which are set out below.

As the next section will show, the size of the transfers is very sensitive to the underlying assumptions, many of which relate to things which are difficult to predict. The examples and assumptions outlined in this article are therefore *not* intended as forecasts, either of the path of policy or of the future size of transfers between the APF and HMT. The particular illustrative example used in this section is instead intended to demonstrate how the framework variables affect the transfers. It is then used in the next section as a yardstick to measure the effect of changing these assumptions.

Table A summarises the three key variables in the framework, outlining their main effects on the APF balance sheet, and the values that are assumed for each variable in the illustrative example presented below. The effect of varying these assumptions is then considered in the following section.

Table A Variables used in the spreadsheet-based framework

Variable	Main effects on APF balance sheet	Assumption in illustrative example
Path of Bank Rate	Determines interest payments from the APF to the Bank. Affects gilt yield curve and the market value of the gilt portfolio.	Follows path implied by market rates as of 28 February 2013: rates begin rising by about 10 basis points/quarter in early 2016, continuing to rise until they reach 4%.
Path of gilt sales	Determines time until the asset purchase scheme ends. Timing of sales affects the price at which gilts are sold.	£25 billion/quarter (at market prices) from September 2016.
Effect of sales announcement on term premia (see below)	Affects gilt yield curve and so the market value of the entire gilt portfolio.	Increases the profile for term premia by 200 basis points.

The framework also contains some simplifying assumptions about the details of future policy decisions and the future path of gilt yields. These are included so that the spreadsheet can be calculated quickly and is easier to understand.

- **The size and composition of the APF portfolio.** The framework assumes that no further assets are purchased, and that any sales and reinvestments take place uniformly across each of the gilts held in the portfolio.
- **Reinvestment of redemption payments.** Following each redemption payment prior to the MPC announcing gilt sales, the amount that was originally used to purchase the maturing gilt is reinvested in additional gilts, as was done

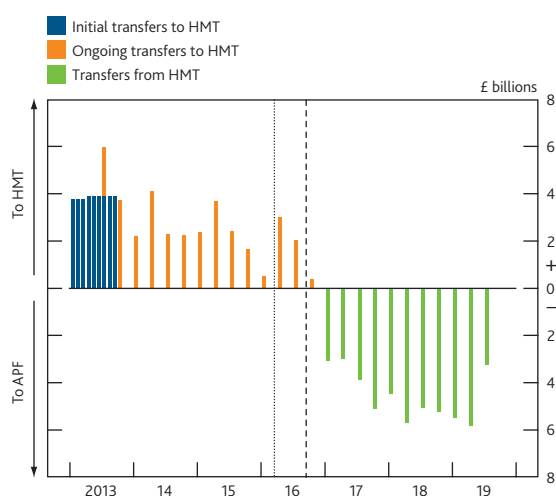
with the March 2013 redemption; once sales have started, following each redemption payment the amount that was originally used to purchase the maturing gilt is used to pay down the loan. As mentioned above, in practice the MPC has said that it will decide on the appropriate size of the asset purchase programme each month, including whether or not to reinvest maturing gilts.

- **The expected path of Bank Rate.** Expectations of the path of Bank Rate are identical to the assumed path for Bank Rate at all times, so there are no surprise movements in Bank Rate.
- **Term premia.** The treatment of the path for term premia — the difference between the expected path of Bank Rate and the gilt yield curve — is extremely simplified. The profile for term premia is set as the difference between the gilt yield curve and the assumed path of Bank Rate as of 28 February 2013. This profile is assumed not to vary at all, except for when sales are announced, at which point there is an immediate shift to its new profile.⁽¹⁾

An illustrative example

Chart 1 shows the transfers between the APF and HMT under the assumptions used in our illustrative example, as set out in the previous subsection, while **Chart 2** shows how the APF's balance sheet evolves over time under those assumptions. (Throughout this article, payments to HMT are represented on charts as positive values, while payments from HMT are represented as negative values.)

Chart 1 Transfers between the APF and HMT in the illustrative example^(a)

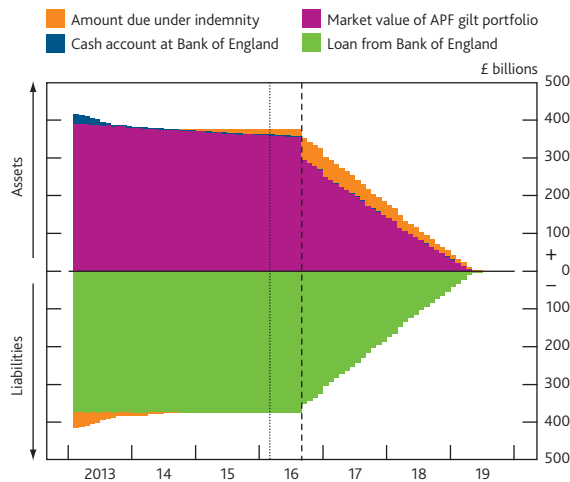


Sources: Bloomberg and Bank calculations.

(a) The dotted line represents when Bank Rate is assumed to start to rise. The dashed line represents when asset sales are assumed to begin.

(1) The shift in the level of term premia is constant for maturities greater than ten years. It is phased in at shorter maturities to avoid unrealistic jumps in short-maturity gilt yields.

Chart 2 The APF’s balance sheet in the illustrative example^(a)



Sources: Bloomberg and Bank calculations.

(a) The dotted line represents when Bank Rate is assumed to start to rise. The dashed line represents when asset sales are assumed to begin.

The sequence of events described by these charts is as follows. First, the £35 billion or so of cash that will have accumulated in the APF by the end of March 2013 is transferred from the APF to HMT. This is done in nine monthly instalments, shown by the blue bars in **Chart 1**. As that cash is transferred, the amount of cash in the APF account, shown by the blue area in **Chart 2**, decreases, and so does the amount due from the APF to HMT (the orange area).

Starting in July 2013, the ongoing coupon income is transferred in quarterly instalments, net of any interest payments or reinvestments. These are shown by the orange bars in **Chart 1**.⁽¹⁾ Some of the gilts reach maturity, and are reinvested. As discussed in the previous section, because almost all of the gilts were bought ‘above par’, the final redemption payment on these gilts is smaller than the purchase price, and so there is a shortfall relative to the quantity of cash that is reinvested. Where possible, this is made up using the cash available in the APF; if this is not sufficient, then the cash is transferred from HMT. The orange bars in **Chart 1** are smaller in quarters where this occurs — for instance, in January 2016 — because there is less cash available for transfer to HMT following the deductions.⁽²⁾

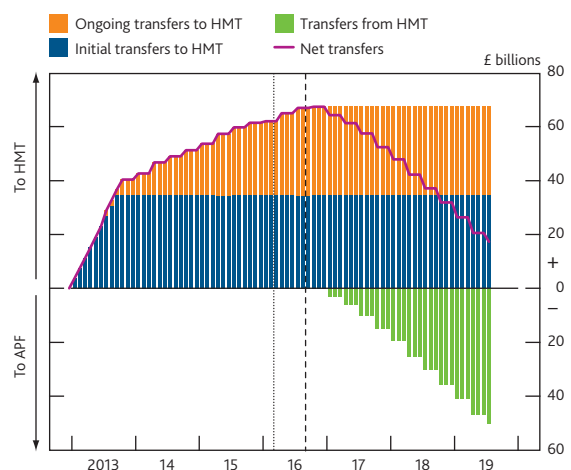
In the illustrative example, policy starts to tighten in 2016. At first, only Bank Rate is raised (the assumed timing of the first Bank Rate rise is denoted by a dotted vertical line in **Charts 1** and **2**).⁽³⁾ That increases the interest payments that must be made by the APF, reducing the amount of cash that is available to transfer to HMT: so the orange bars in **Chart 1** begin to shrink. Then, in September 2016, sales are announced (denoted by the dashed vertical line in **Charts 1** and **2**), and the yield curve is assumed to rise by 200 basis points (the reaction of the yield curve to the announcement of sales is considered in more detail in the next section). That lowers gilt prices,

reducing the market value of the entire portfolio — the height of the magenta area in **Chart 2** falls sharply at this point. This reduction implies that the amount due from HMT under the indemnity — the orange area in **Chart 2** — increases.

Selling the gilts has several effects. Most obviously, the portfolio starts to shrink over time. And because the cash received from sales is used to pay down the loan, that also shrinks over time (shown by the green area in **Chart 2**). Because the price of all the gilts held is assumed to fall when gilt sales are announced, the gilts are sold for a lower price (over and above the extent to which this would occur anyway as a result of the gilts being purchased ‘above par’, as discussed in the previous section). HMT makes transfers to the APF to cover this shortfall, shown by the green bars in **Chart 1**. Again, where possible, cash in the APF is used to make up this shortfall, with the remainder being transferred from HMT. But because the portfolio gets smaller as sales continue, the amount of coupons received also starts to fall, and therefore so does the amount of cash available to make up the shortfall: that is why the size of the transfers from HMT increases over time. This continues until the entire portfolio is sold.

To illustrate the net effect of the transfers, **Chart 3** shows the cumulative transfers over time. Under these assumptions the offsetting transfers back from HMT to the APF are initially small relative to the cumulative transfers to HMT.

Chart 3 Cumulative transfers between the APF and HMT in the illustrative example^(a)



Sources: Bloomberg and Bank calculations.

(a) The dotted line represents when Bank Rate is assumed to start to rise. The dashed line represents when asset sales are assumed to begin.

- (1) The quarterly transfers begin before the initial monthly transfers are complete: that is why there is a particularly large transfer to HMT in July 2013, when the first quarterly transfer coincides with one of the initial monthly transfers.
- (2) In the illustrative example, this shortfall can always be met by deductions from the cash that would have been transferred to HMT that quarter, without the need for supplementary transfers from HMT. In cases where a supplementary transfer was necessary, the orange bar would vanish completely, as there would be no cash remaining for transfer to HMT; the supplementary transfer, meanwhile, would appear as a single green bar.
- (3) The first rate rise is defined, for the market curve, as the date on which Bank Rate first rises above 75 basis points.

But over time these offsetting transfers grow in importance as transfers are required to cover the shortfall on the sale of gilts. By the time the asset purchase scheme ends, that leaves the net cumulative transfer from the APF to HMT at just over £17 billion (shown by the end point of the magenta line in **Chart 3**).

The possible size of the cash transfers

The previous section showed how the spreadsheet-based framework can be used to make projections about the APF's balance sheet and the transfers to and from HMT. But the illustrative example shown in that section is very sensitive to the underlying assumptions, over which there is considerable uncertainty. This section explains how the profile of the transfers changes when each of the key assumptions is varied. This provides an insight into how the size of the transfers will vary depending on the assumptions used. And it also demonstrates the wide range of possible outcomes for the net value of the total transfers, highlighting how much uncertainty there is over the final outcome.

The spreadsheet has also been made available on the Bank's website, allowing the user to input alternative assumptions for each of these uncertain variables.

The impact of announcing asset sales

It is very difficult to judge how the yield curve will react when the MPC announces its intention to reduce the size of the APF portfolio by selling the gilts. The metric used in the example above was based on the reaction of the yield curve to announcements about asset *purchases*. Previous Bank work found that the initial £200 billion of asset purchase announcements depressed gilt yields by around 100 basis points.⁽¹⁾ Applying this result to the current £375 billion gilt portfolio, and assuming an equal and opposite effect from announcing sales, would imply an increase in gilt yields of a little less than 200 basis points.

Alternatively it could be that current gilt prices already fully reflect expectations of future asset sales. In this case, if the announcement of sales and its timing did not contain any unexpected news, there would likely be little or no yield curve reaction.

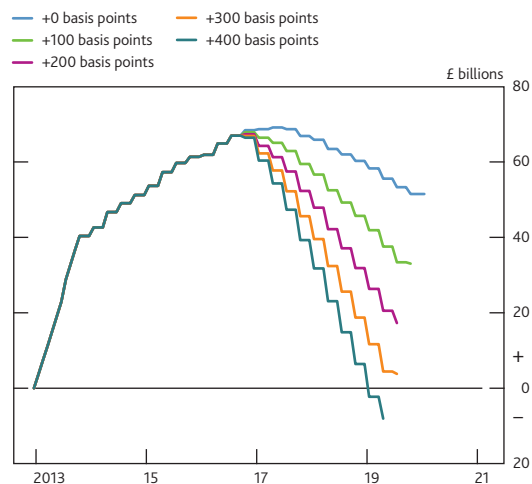
A further possibility is that announcing sales could trigger a larger reaction in gilt markets. As there is little precedent for large sales of government bonds by a central bank, it is difficult to calibrate this risk based on past events. But to give an indication of what the path of cash transfers would look like in this case, a 300 and 400 basis point rise are also considered below.

It could also be that there are other factors, such as stresses in financial markets, which have lowered current gilt yields

through a reduction in term premia. Such influences on the yield curve are not captured directly by this framework; but if those factors unwound before any assets were sold, then this could also reduce the market value of the APF portfolio.

Changing the assumption about how the announcement of asset sales affects the yield curve has a significant impact on the size of the cash transfers. The uncertainty over the size of the transfers can be seen in **Chart 4**, which shows the cumulative net transfers over time under the different assumptions about how the gilt yield curve reacts to the announcement of sales. The other assumptions used are the same as those in the illustrative example shown in the previous section — so the magenta +200 basis points line is the same as the magenta net transfer line in **Chart 3**, which also assumed a 200 basis points rise. In the case where announcing sales is assumed to have no effect on gilt yields, net transfers to HMT peak at around £70 billion in 2017 and end up at around £50 billion in 2020. In the opposite case, where the yield curve rises extremely sharply in response to the sales announcement, net transfers to HMT peak at around £65 billion. But by the time the asset purchase scheme ends, so much cash has flowed back from HMT to the APF that overall there has been a cumulative net transfer of £8 billion from HMT to the APF.

Chart 4 Cumulative net transfers to HMT under different assumptions about the effect of announcing sales^(a)



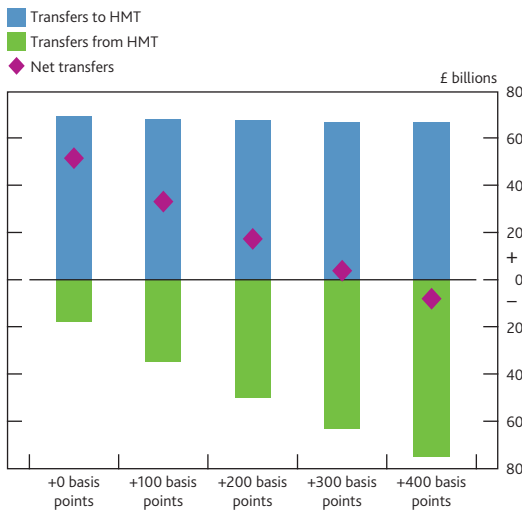
Sources: Bloomberg and Bank calculations.

(a) Assumptions for Bank Rate and the timing of asset sales as in **Table A**.

The reason why the net transfers are so different under these variations can be seen in **Chart 5**, which shows the final cumulative transfers in each direction under each assumption, as well as the cumulative net transfers. In each case the gross transfers from the APF to HMT are between £65 billion and £70 billion. That is because these transfers are largely determined by the composition of the portfolio, the path of

(1) See Joyce *et al* (2011).

Chart 5 Cumulative transfers under different assumptions about the effect of announcing sales^(a)



Sources: Bloomberg and Bank calculations.

(a) Assumptions for Bank Rate and the timing of asset sales as in Table A.

Bank Rate and the time taken for the scheme to end, which follow the same assumptions in each of these cases (the effect of altering these assumptions is explored in more detail below). But the gross transfers back from HMT to the APF range from around £20 billion to around £75 billion. This is because the different assumptions about the yield curve reaction lead to very different sales prices for the gilts in the APF portfolio. As a result, the size of the transfers that HMT must make to the APF to offset the shortfall from sales also varies substantially.⁽¹⁾

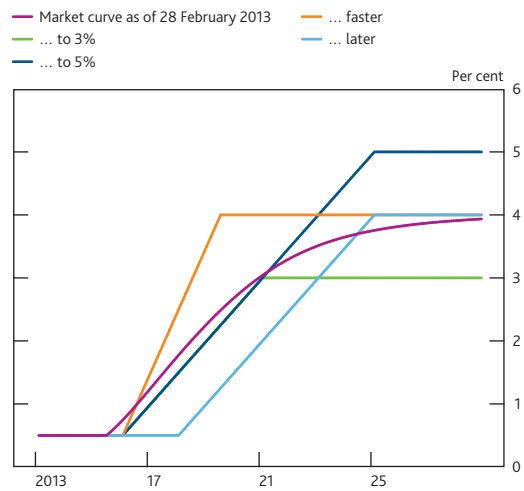
Clearly, just altering the single assumption about the reaction of gilt yields to the announcement of asset sales can cause large changes in the results. But it is very difficult to judge which of these outcomes is most likely.

The impact of different paths for policy

So far, this analysis has taken the path for Bank Rate and asset sales as given, with Bank Rate assumed to follow the path implied by market interest rates and asset sales following an arbitrarily chosen path. Of course the exact path of monetary policy is highly unlikely to follow that particular path in practice: the MPC may judge that a different path for Bank Rate is warranted by the economic conditions which subsequently prevail.⁽²⁾ And similarly the MPC may choose to begin selling gilts at a different time or speed than was assumed in the illustrative example. This subsection considers how the profile of cash transfers varies under different paths for policy.

The path of Bank Rate could take many different shapes, and it is impossible to examine all of them. To give an idea of the range of possible outcomes, four stylised alternative paths for Bank Rate, shown in Chart 6, will be considered. They are: a path where Bank Rate rises broadly in line with the

Chart 6 Alternative paths for Bank Rate^(a)



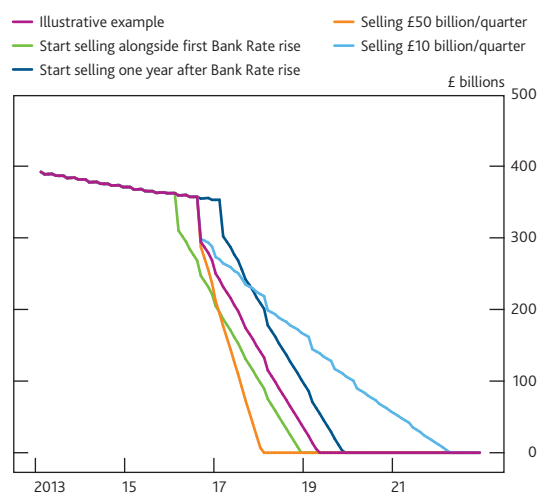
Sources: Bloomberg and Bank calculations.

(a) Assumptions for the impact of sales announcement and the timing of asset sales as in Table A.

market-implied path, but only to 3%; a path where it rises broadly in line with the market-implied path, but continues rising to 5%; a path where policy is tightened from the same point as in the market-implied path and to the same ultimate level, but where the pace of tightening is considerably faster; and a path where Bank Rate remains at 0.5% for much longer before rising in the same way as the market path would imply.

Similarly, Chart 7 shows what happens to the size of the APF portfolio under four stylised alternative paths for asset sales. They are: a path in which sales start as soon as Bank Rate is

Chart 7 Market value of the APF gilt portfolio under alternative paths for sales^(a)



Sources: Bloomberg and Bank calculations.

(a) Assumptions for Bank Rate and the impact of sales announcement as in Table A.

(1) The time taken to sell the gilts is also affected by this assumption. This is because the gilts are always assumed to be sold at a rate of £25 billion per quarter. So in scenarios where the value of the gilts falls further, it takes fewer quarters to sell them all.
 (2) Even as a measure of market expectations of the path of Bank Rate, the market-implied rates are imperfect: they will be affected by risk premia in the prices of the underlying financial contracts. Joyce and Meldrum (2008) discuss the use of market interest rates as a measure of expectations of Bank Rate.

Table B The effect of varying the underlying assumptions on the transfers to and from HMT

	Final cumulative transfers to HMT (£ billions)	Final cumulative transfers from HMT (£ billions)	Final cumulative net transfers to HMT ^(a) (£ billions)	Final payment date
Illustrative example	67	50	17	July 2019
Impact of sales announcement^(b)				
+0 basis points	69	18	51	January 2020
+100 basis points	68	35	33	October 2019
+300 basis points	67	63	4	July 2019
+400 basis points	67	75	-8	April 2019
Alternative paths for Bank Rate^(c)				
To 3%	69	46	23	July 2019
To 5%	68	53	15	July 2019
Faster	68	57	11	July 2019
Later	69	44	26	July 2019
Alternative paths for sales^(d)				
Faster	67	51	16	April 2018
Slower	68	47	21	July 2022
Earlier	63	48	16	April 2019
Later	71	56	15	January 2020

Sources: Bloomberg and Bank calculations.

(a) Difference of the previous two columns: so a positive number is a net transfer from the APF to HMT, while a negative number is a net transfer from HMT to the APF. Figures may not sum exactly due to rounding.

(b) Assumptions for Bank Rate and the timing of asset sales as in Table A.

(c) Assumptions for the impact of sales announcement and the timing of asset sales as in Table A.

(d) Assumptions for Bank Rate and the impact of sales announcement as in Table A.

raised for the first time; a path in which sales start a year after Bank Rate is raised for the first time; a path in which sales start at the same time as in the illustrative example shown in the previous section, but are carried out at a faster pace; and a path in which sales start at the same time as in the example but are carried out at a slower pace.

The effects on the profile of payments from varying these assumed paths for policy are summarised in Table B, together with the effects of varying the impact of announcing sales on the yield curve shown above.

Altering the path of Bank Rate has two main effects. Both of these effects act in the same direction such that, as shown in Table B, raising Bank Rate more quickly or to a higher level reduces the size of the total net transfers from the APF to HMT. First, by changing the interest payments that the APF must make on its loan, it changes the amount of cash available for transfer to HMT: that changes the gross cash transfers from

the APF to HMT. Second, the expected path of Bank Rate will affect the level of the yield curve: the higher the expected path of Bank Rate, the higher will be the level of the yield curve, all else equal. So the expected path of Bank Rate also affects the price at which the gilts are sold and thus the gross transfers back from HMT to the APF.

Altering the path of sales, meanwhile, affects not only the gross transfers from the APF to HMT, but also the gross transfers flowing in the opposite direction. These two effects, however, tend to offset each other, so that the effect on the net transfer to HMT is small relative to the gross transfers. This can be seen in Table B where the final cumulative net payments to HMT (penultimate column) do not vary by that much across the different assumptions about the path of asset sales.⁽¹⁾

Conclusion

The size of the quarterly transfers from the APF to HMT, and the ultimate net amount transferred, is uncertain and depends on a number of factors, including the future path of Bank Rate, and the price of the assets when they are sold. The framework outlined in this article can be used to examine how the size and timing of the transfers varies depending on each of the assumptions made.

In all of the scenarios considered in this article, the initial transfer of cash to HMT is followed by large offsetting cash transfers back in the future. But it is not possible to say with any precision how large the total gross and net transfers between the APF and HMT are likely to be, as the variables on which these transfers depend are difficult to predict, and a wide range of outcomes is possible depending on the assumptions chosen. Although the net transfers from the APF to HMT are positive in most of the scenarios considered in this article, it is not inconceivable that they could be negative overall, particularly if there is a large shift in the yield curve, for instance when asset sales are announced.

In any case, the eventual size of the net payments to or from HMT should not be used as a measure of the success of asset purchases, or of the impact of the scheme on the public sector accounts as a whole. The scheme should instead be judged by the degree to which it meets its aims — to improve corporate credit conditions and boost nominal spending in order to meet the inflation target in the medium term.

(1) The path of asset sales makes more of a difference if Bank Rate reaches a level high enough such that the outgoing interest payments on the loan exceed the incoming coupon payments. In that case, cash transfers back from HMT will be needed to make up the difference. The later asset sales begin, the longer this will go on for, and the larger the cumulative gross transfers back from HMT will be.

References

Bean, C (2009), 'Quantitative easing: an interim report', available at www.bankofengland.co.uk/publications/Documents/speeches/2009/speech405.pdf.

Fisher, P (2010), 'The corporate sector and the Bank of England's asset purchases', available at www.bankofengland.co.uk/publications/Documents/speeches/2010/speech423.pdf.

Helgadóttir, T, Chamberlin, G, Dhimi, P, Farrington, S and Robins, J (2012), 'Cyclically adjusting the public finances', *Office for Budget Responsibility Working Paper No. 3*.

Joyce, M, Lasasosa, A, Stevens, I and Tong, M (2011), 'The financial market impact of quantitative easing in the United Kingdom', *International Journal of Central Banking*, Vol. 7, No. 3, pages 113–61.

Joyce, M and Meldrum, A (2008), 'Market expectations of future Bank Rate', *Bank of England Quarterly Bulletin*, Vol. 48, No. 3, pages 274–82.

Joyce, M, Tong, M and Woods, R (2011), 'The United Kingdom's quantitative easing policy: design, operation and impact', *Bank of England Quarterly Bulletin*, Vol. 51, No. 3, pages 200–12.