

Bank funding costs: what are they, what determines them and why do they matter?

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- A bank needs to finance its activities, and the cost of bank funding affects a wide range of economic variables with important implications for both monetary and financial stability.
- This article sets out what bank funding costs are in simple terms, using an analogy of two buckets on a pair of scales to help explain the dynamic nature of bank funding and bank lending. It also introduces a simple framework for analysing the main drivers of funding costs.

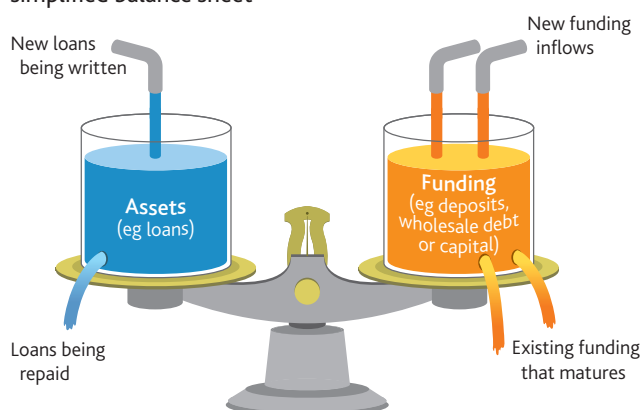
Overview

As with other types of company, a bank needs to finance its business activities — most notably making loans to households and firms — with some source of funding. Banks have a range of possible sources of funding available to them, including savers' retail deposits and investors' wholesale funding, as well as the bank's capital base.

Focusing on the cost of funding, this article explains in simple terms how to think about banks' funding costs and why they are of central importance to both monetary and financial stability. It is aimed at those seeking an introduction to what can often be a complicated issue. Banks' funding costs can affect the outlook for growth and inflation and hence is an important monetary policy consideration. This was clear in the wake of the recent financial crisis, when banks' funding costs rose markedly relative to risk-free interest rates, putting upwards pressure on lending rates.

Funding costs also matter for financial stability. A rise in funding costs reduces a bank's profitability if the bank chooses to absorb the higher costs by leaving its loan rates unchanged. Alternatively, banks may choose to pass on an increase in funding costs to borrowers by raising the rates charged on new lending. But this higher cost of credit could impact negatively on overall economic activity and, with higher costs of servicing debt, the number of borrowers that become unable to repay their loans may rise too. This would increase the credit losses faced by the bank, again weighing down on its profitability. Over time, a reduction in profitability could erode a bank's capital buffer, threatening its solvency and posing risks to financial stability.

Summary figure 'Buckets and scales' depiction of a bank's simplified balance sheet^(a)



(a) For further description see Figure 2 on page 4.

To visualise the dynamic nature of bank funding and bank lending, and how these interact, this article introduces the idea of two buckets filled with water to represent the bank's balance sheet (see **summary figure**). The article explains the analogy in more detail and uses it to work through some of the channels through which a change in banks' funding costs can impact on their profitability and broader macroeconomic and financial conditions.

To understand what drives a bank's cost of funding, the article introduces a simple framework to decompose funding costs into a risk-free rate, a risk premium and other costs.

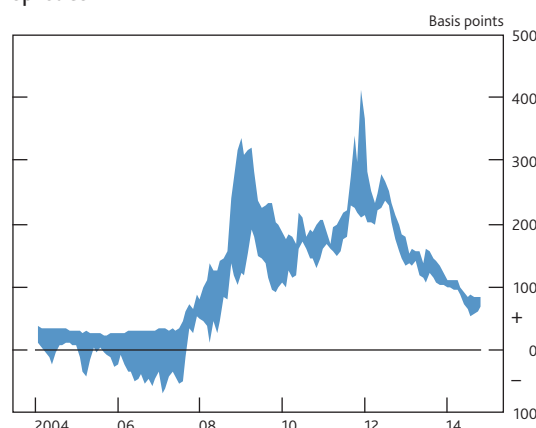
[Click here for a short video that discusses some of the key topics from this article.](#)

(1) The authors would like to thank Steve Perry for his help in producing this article.

Like any other type of company, a bank needs to finance its business activities with funding. However, the cost of funding faced by banks and building societies has particular significance for the rest of the economy because these funding costs are integral to the transmission mechanism of monetary policy and the outlook for growth and inflation. Banks' funding costs also matter for financial stability: they are monitored as part of the microprudential supervision of individual banks and building societies and they feed into an assessment of the risks to the stability of the financial system as a whole — and the implications for macroprudential policy.

Prior to the 2007–08 financial crisis, bank funding costs largely moved in line with 'risk-free' interest rates set by central banks, such as Bank Rate in the United Kingdom — the rate paid on reserves held by commercial banks at the Bank of England. In this environment, movements in risk-free rates provided a reasonably good guide to assessing both the transmission of monetary policy and changes in the profitability of banks. All of this changed with the onset of the financial crisis, however. Some sources of funding evaporated rapidly. And measures of bank funding costs rose sharply relative to risk-free rates. This can be seen in **Chart 1** which shows the sharp increase in a range of funding 'spreads' — the difference between funding costs and the risk-free rate — during the period from 2007 to 2011. This range has since fallen back somewhat but remains higher than in the period prior to the crisis.

Chart 1 Range of indicative measures of bank funding spreads^(a)



Sources: Bank of England, Barclays Live, Markit Group Limited and Bank calculations.

(a) The swathe includes three measures of long-term wholesale funding spreads for UK banks: the average of major UK banks' five-year euro-denominated senior CDS; quoted rates on one-year fixed-rate bonds over one-year swap rates for UK banks; and the Barclays Live 'Pan-Euro Corporate Banking: Senior – Spread' series.

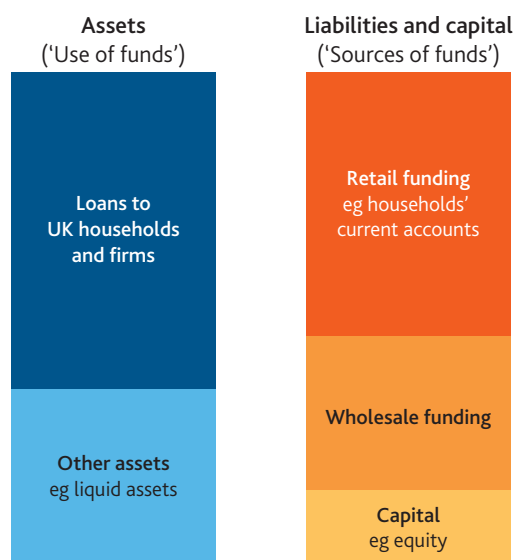
This article explains bank funding costs assuming little prior knowledge of the banking system. It begins by describing the main sources of funding available in the context of banks' business models. It then explains the importance of funding costs for both monetary and financial stability, using the idea of buckets on a pair of scales as an analogy for thinking about the impact of changes in a bank's cost of funds. The third

section sets out a framework for analysing the drivers of funding costs, by decomposing funding costs into risk-free rates and various 'risk premia'. The final section describes the general approach taken to monitoring banks' funding costs at the Bank of England. A short video explains some of the key topics covered in this article.⁽¹⁾

Funding costs in the context of banks' business models

A bank's balance sheet provides a snapshot of its financial position at a given point in time. **Figure 1** illustrates a simplified balance sheet showing a bank's **sources of funds** (liabilities and capital) and its **use of those funds** (assets). As an accounting rule, total liabilities plus capital must equal total assets.

Figure 1 A stylised bank balance sheet^(a)



(a) Derivatives are outside the scope of this article and so are not included in this illustration. However, for some banks, derivatives will form a sizable portion of the balance sheet.

A bank, like any other firm, can issue capital, for example share equity, giving investors a stake in the business. Equity investors will usually receive dividends — a share of the bank's profits — as a reward for investing. As well as ordinary shares in the firm, capital includes a bank's retained earnings and can be thought of as a bank's 'own funds' as it comprises funds that do not have to be repaid. A previous *Bulletin* article, 'Bank capital and liquidity', discusses this in more detail.⁽²⁾

Banks may also raise 'borrowed funds' which, in practice, represent the lion's share of a bank's total source of funds. This article focuses particularly on the cost to a bank associated with these sources of funding.

(1) <http://youtu.be/kFtpWnpqqFA>.

(2) See Farag, Harland and Nixon (2013).

Sources of bank funding: retail versus wholesale

Banks have a range of sources of borrowed funds available to them, which can be broadly categorised into retail and wholesale funding.⁽¹⁾

Retail funding refers to the various types of deposits that households and small companies keep with a bank. This type of funding is 'unsecured', since depositors do not ask the bank to give them collateral as a guarantee for keeping hold of their money. It is also a form of funding that is specific to banking — and integral to what banks do, channelling savers' deposits to households and companies that wish to borrow. A bank's retail funding typically consists of a large number of individuals' savings, each of whom have relatively small sums of money available to deposit. Many depositors want to retain the ability to access some or all of their savings quickly — withdrawing cash from a branch or ATM, say, or making payments to other people electronically.

Banks can turn to **wholesale funding** markets when they wish (or need) to borrow funds in excess of their retail deposits or when they need to raise large amounts of funding quickly. Wholesale investors are typically more focused on obtaining a return from their investment in the bank — just as they would if they had invested in any other type of business — than desiring payment or safe-keeping services.

Wholesale funding for banks comes in many forms and there is a wide range of types of investors that provide it. A bank may receive unsecured deposits from other banks, large corporates, pension funds, insurance companies and other financial market participants. Alternatively, unsecured funds may be sourced from financial markets: in this case, rather than the financial investor depositing money with a bank, the bank issues a bond or other type of debt instrument that the investor buys. Examples include the issuance of short-term commercial paper and certificates of deposit or, for a longer time horizon, medium-term notes and bonds.

Banks can also access secured wholesale funding. This is funding that is backed by collateral: in the event that the bank gets into difficulties such that it is unable to repay the funds, the investor providing funds to the bank has recourse to certain (pre-agreed) assets held by the bank. A mortgage is a simple example of a secured loan, although in this case, the bank is the lender, and the borrower is a household. If a borrower cannot meet the repayments on the mortgage, the bank has recourse to the house. In a similar way to a household using a house as collateral to borrow funds from a bank, a bank can use its assets as collateral to borrow funds from investors.

Banks can raise secured funds in a number of ways. One common approach is via sale and repurchase or 'repo' transactions. In a repo transaction, a bank sells an asset, for

example a government bond, and agrees to buy it back on a specified date at a higher price. Economically, this is essentially a secured loan: the counterparty has recourse to some collateral (the bond it has purchased) until the repurchase date. And the difference between the sale and repurchase price is the counterparty's compensation for providing funds to the bank — and the cost of funding for the bank.

Many banks also pool together illiquid assets, such as loans, and transform them into tradable securities in order to raise funds — a process known as securitisation. Banks most commonly securitise mortgages, to create mortgage-backed securities (MBS).⁽²⁾ MBS are tradable in the secondary mortgage market — which is very large and liquid — allowing banks to raise funds secured against their (otherwise illiquid) mortgage assets.⁽³⁾

Different types of banks rely on different types of funding

Banks operate a range of business models, which lead them to have very different asset and liability structures. The value of a bank's assets will reflect all the financial assets that it currently holds (such as banknotes) as well as all of the inflows it is due to be paid in the future, such as loan repayments.⁽⁴⁾ Assets are shown on the left-hand column of **Figure 1**. In a traditional, retail-focused bank, assets mainly comprise lending to households and firms, in the form of mortgages, personal loans, business loans and so on. Larger banks operating this business model usually rely on a mix of retail deposits and wholesale funding. For smaller banks and building societies, the range of funding options is typically more limited and in some cases their options are restricted by law. Building societies, for example, are required to be at least 50% funded by household deposits.

At the other end of the spectrum, an investment bank will not typically accept retail deposits and its balance sheet can be quite complex. It is more likely to raise funds from wholesale funding markets, including secured funding. Some of these funds will be used to provide credit to other financial institutions such as retail banks and hedge funds, typically through secured lending markets. An investment bank will also use the funds to finance transactions in equity and debt

(1) This article does not cover the cost of funding derivatives positions. Derivative contracts entered into by a bank do not immediately appear on its balance sheet as typically they start with zero net value. However, as the market value of the underlying entity changes over time, the contract may result in an asset (a debt owed to the bank by the counterparty as a result of the bank's gain on the contract) or a liability (a debt owed to the counterparty by the bank as a result of the bank's loss on the contract). For more information, see Hull (2008).

(2) MBS are collateralised by the underlying mortgage pool, which can be divided into a number of 'tranches'. These can be structured to suit different investors' risk appetites. For further explanation of how asset-backed securities (ABS) are structured, see Hull (2008), pages 536–40.

(3) The 'secondary market' refers to a market where investors purchase existing securities or assets from other investors. A 'primary market' is one where investors purchase new assets from the issuing companies themselves.

(4) In addition, a bank may hold physical assets (such as the buildings it operates from) and 'intangible' assets, which include things like the brand value of the firm.

securities with other financial market participants, often acting as an intermediary in the markets for those securities.

Why do bank funding costs matter for monetary and financial stability?

While a balance sheet shows a bank's source of funds and use of funds at a given moment, in reality, both sides of a bank's balance sheet will be evolving over time. In order to understand why bank funding, and changes in the cost of bank funding, are so important, it is necessary to grasp the dynamic nature of a bank's assets and liabilities — and the interaction between them.

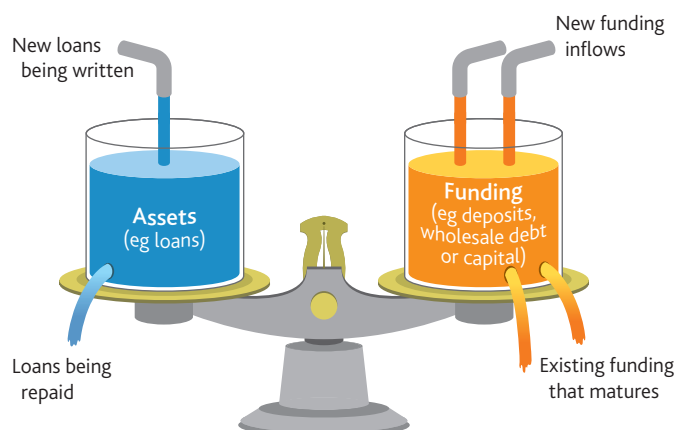
For instance, an inherent part of the traditional banking business model is the fact that a bank's assets typically have much longer maturities than its liabilities: customers are due to repay their bank loans (the bank's assets) over a long period of time, whereas depositors and investors in a bank may — in many cases — withdraw their money (the bank's funding) at much shorter notice — or even 'on demand'. Given this 'maturity mismatch' between assets and liabilities, then, a continuing challenge for banks is to ensure that new funding replaces maturing funding in similar amounts, and in a timely manner, in order to continue to support a relatively stable pool of assets.⁽¹⁾

An analogy: buckets and scales

To visualise the dynamic nature of bank funding and bank lending — and how these interact — it can help to think of each side of a bank's balance sheet as a bucket filled with water, as shown in **Figure 2**. To capture the dynamics, each bucket has a tap (or taps) at the top and a hole (or holes) in the bottom to represent the inflow and outflow of assets and funding each time period. So the taps above the orange bucket represent the flow of new funding that people are placing with the bank, and the outflow from the bottom shows funding leaving the bank — when depositors withdraw their funds or contracts with wholesale investors mature. Since the bank's capital is a source of funding, it too features in the orange bucket (although, as noted above, in contrast to 'debt funding', capital does not need to be repaid). For the asset bucket, the tap represents the flow of new assets, such as new loans being written. The hole in the bottom represents the outflow of assets from the bank's balance sheet, which happens as a loan is repaid.

It is important to bear in mind that many types of transactions involving a commercial bank will bring about changes to *both* sides of its balance sheet simultaneously. For instance, a customer paying in cash to his or her current account would increase both the bank's assets (in this case, the bank's holdings of banknotes) and the bank's stock of outstanding funding (retail deposits): there would be an inflow to both

Figure 2 'Buckets on scales': a simplified illustration of a bank's assets and funds^(a)



(a) This is a simplified analogy designed to illustrate some basic concepts relating to the dynamics of bank funding and lending. It does not show every type of funding or asset that might feature on a bank's balance sheet.

buckets in **Figure 2**. Another example where both buckets fill up simultaneously is when a bank makes an additional loan. On the asset side, this represents the blue bucket filling up. In a sense, this might seem counterintuitive given that a new loan involves funds *leaving* the bank, not entering. But from the perspective of the bank's balance sheet, the loan represents an agreement that the customer will repay a certain amount over the lifetime of the loan, hence features as an inflow into the blue bucket. On the funding side, meanwhile, the orange bucket fills up when a loan is written since the loan creates — at least in the first instance — additional bank deposits of the same amount: a bank authorising a loan to someone for £1 million, say, credits the borrower's bank account with that amount.⁽²⁾ Conversely, when a customer withdraws cash or a loan from a customer's account is repaid, the water level in both buckets would go down. This would also happen when a borrower is unable to repay what he or she owes, forcing the bank to write off the loan. This would reduce the bank's assets and, at the same time, enter as a hit to the bank's capital buffer on the funding side, causing the outflows from both buckets simultaneously.⁽³⁾

More generally, the accounting rule that total assets must equal total liabilities plus capital is illustrated on **Figure 2** by the buckets being balanced on a pair of scales. Over time, the overall size of the bank's balance sheet — the stock of loans outstanding, or the stock of funding, whichever way one looks

(1) Some other important considerations for banks' funding strategies, such as diversification across types of investor or counterparty, are not covered in this article.

(2) Of course, those funds may not remain on that particular bank's balance sheet for long: the borrower might use them to transfer money to someone that uses a different bank, say. For further details on how lending creates deposits, and implications of this for the aggregate banking sector compared to individual lenders, see McLeay, Radia and Thomas (2014).

(3) Capital may be 'topped up', on the other hand, when the bank retains some of the earnings (including the interest that customers pay on loans) that it makes on its assets over a given period, leading — in the first instance, at least — to a rise in cash (on the asset side of the balance sheet) and capital (on the funding side). See Farag, Harland and Nixon (2013).

at it — could increase (the buckets fill up), decrease (the buckets drain) or stay the same. For a bank to maintain its balance sheet at a constant size, it needs to ensure that it tops up its funding (and new loans that are written) at the same rate that existing funding is withdrawn (and existing loans are repaid): in **Figure 2**, the buckets stay at the same level if the inflow from the taps matches the outflow from the buckets' holes.

As mentioned above, an ongoing challenge for a bank is to keep the funding side of its balance sheet 'topped up' given that its funding is typically of a shorter maturity than its lending. **In the context of the buckets analogy, this means that in order to keep both buckets at the same level, the inflows — and outflows — of funding in each period will be greater than the inflows and outflows of assets.** This is sometimes described as the liabilities side of the bank's balance sheet 'turning over' more quickly than the assets side. In **Figure 2**, this is shown by water flowing into the orange bucket from two taps — with two holes from which funding leaks out; the rate of turnover in the blue bucket is slower (one tap, one hole) as new loans are written and existing ones repaid less often.

Introducing funding costs and banks' profitability

A bank's cost of funding is the price it must pay to replace its liabilities. But it is helpful to distinguish between (i) the cost of an additional unit of funding — the **marginal funding cost**; and (ii) the cost of the existing stock of funding (that is, the accumulation of past flows of funding that have yet to mature) — the **average funding cost**.

Like other types of business, banks try to manage their balance sheets so that they maximise their profits — that is, the difference between revenue earned on assets and any associated costs. And the cost of funding is typically the starting point for a bank considering what interest rate to charge on a particular type of loan.⁽¹⁾ For a bank with a traditional business model, then, a useful gauge of profitability is calculated as the difference between the average price of lending and the average cost of funding. This metric is sometimes referred to as the 'net interest margin'. This means that if the price a bank has to pay for new funding rises then, assuming it keeps its lending rates unchanged, its net interest margin — its profitability — will fall. The size of the impact will depend both on how much the marginal cost of funding rises but also on how great the flow of new funding is relative to the stock of existing funding, since this determines how much the marginal cost of funding impacts on the average funding cost.

The buckets analogy can be used to work through the implications of a change in banks' funding costs for their profitability, for financial stability and for monetary stability. **Figure 3** considers a large, systemically important bank that

operates a traditional banking model. **In this stylised example, the size of the bank's balance sheet — the water level of the buckets — will depend, principally, on how much lending the bank can carry out profitably for a given amount (and cost) of funding.** The percentage figures represent the interest rates associated with the inflows and outflows of loans and funds.

The top panel of **Figure 3** describes the situation before the bank is hit by a shock to its funding costs. Inflows equal the outflows each period so that the buckets stay at a constant level. The bank charges a 5% interest rate on its loans and pays out 3% interest on its funding — leaving it a net interest margin of 2 percentage points. It is then assumed that conditions in the bank's wholesale funding markets deteriorate sharply, with investors now only willing to lend the bank funds at a much higher rate of 7%.

Figure 3 considers three possible outcomes to this situation:

- **Scenario 1:** the bank absorbs the higher cost of funding, reducing its profitability.
- **Scenario 2:** the bank passes on the higher funding cost to the price of any new lending, and borrowers are willing to pay higher interest rates on any new loans taken out.
- **Scenario 3:** the bank attempts to pass on the increased costs, but finds no demand for loans at the higher interest rate.

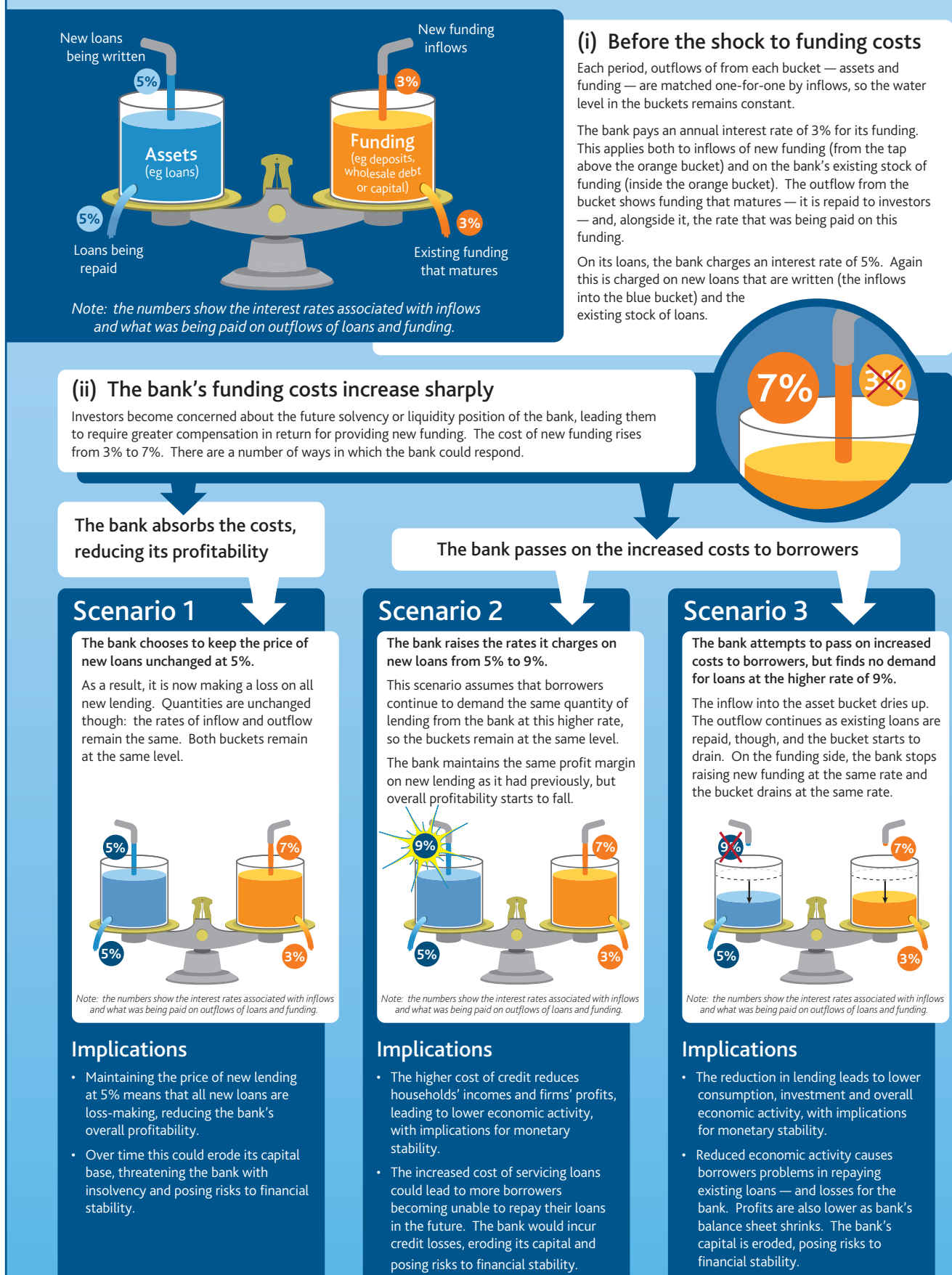
It is important to note that the scenarios shown make a number of simplifying assumptions. There are other possible options for how a bank could respond to this situation beyond those illustrated in **Figure 3**, for instance.⁽²⁾ Moreover, the transmission of higher funding costs is highly stylised: in the case where the bank responds by passing the increased costs on to higher loan rates, Scenarios 2 and 3 illustrate the extreme cases where demand for loans is either completely unaffected by the higher price level, or else demand dries up entirely. In practice, it would likely fall somewhere between the two. More generally, it is important to note that a wide range of other factors (beyond those shown **Figure 3**) will influence the markets for bank funding and bank lending.⁽³⁾ Even so, the examples serve to illustrate some of the main channels through which an unexpected spike in bank funding costs might impact macroeconomic and financial conditions.

(1) To set the interest rate offered to its customers, the bank will then add to its cost of funding any compensation it requires to account for the risk that not all firms or households may repay their loans in full; any operating costs the bank incurs; and any mark-up over and above these costs. See Button, Pezzini and Rossiter (2010).

(2) For example, the bank might be able to find other, less expensive sources of funding to replace the funding that has increased in cost to 7%. Alternatively, the bank might cease to renew funding at the higher rate — reducing the size of its balance sheet — but do so in a way in which it continues to write the same amount of new loans (in other words, running down other, non-loan assets on its balance sheet).

(3) See for example McLeay, Radia and Thomas (2014).

Figure 3 What are the implications of a spike in a bank's funding costs?(a)



(a) The analogy used here makes a number of simplifying assumptions relating to the bank's balance sheet and the transmission of the funding costs shock, discussed on page 5. Moreover, for simplicity, the diagrams shown here do not reflect the fact that turnover on the funding side of the balance sheet is faster than on the assets side. This point would cause a rise in funding costs to push down on the bank's profitability over and above the channels illustrated here (which is discussed on page 7).

Funding costs and financial stability

The Bank has a statutory objective to protect and enhance the stability of the financial system of the United Kingdom. The Bank's financial stability objective includes two angles: first, the Prudential Regulation Authority (PRA) has a general objective to promote the safety and soundness of individual banks and building societies — **microprudential regulation**.⁽¹⁾ And second, the Financial Policy Committee (FPC) is charged with taking action to remove or reduce systemic risks with a view to protecting and enhancing the resilience of the UK financial system as a whole — **macroprudential policy**.⁽²⁾ Funding costs are relevant to both of these aspects of the Bank's financial stability remit.

Typically, a sudden, sharp rise in bank funding costs is likely to have an adverse effect on financial stability. In Scenario 1 of **Figure 3**, the bank chooses to absorb the increase in its funding costs, keeping the interest rate it charges on new loans unchanged. This means that new loans become loss-making: the bank is paying 7% on its funding, but charging only 5% on its loans. This will reduce the bank's overall profitability and, eventually, will start to erode its capital base.⁽³⁾ If this situation continues for long enough, the bank might face solvency difficulties, which could have a destabilising effect on the financial system.

Alternatively, the bank could attempt to pass some of the increase in funding costs to its customers by charging higher rates on any new lending. But even then, it is likely that the bank's overall profitability and capital would be affected, with implications for financial stability. For one thing, the fact that funding turns over more quickly than assets (as illustrated in **Figure 2**) means that in reality, even if the bank passes on the higher *marginal* funding costs to its customers when it makes any new loans, its *average* funding cost will rise faster than its average price of lending — pushing down on the bank's overall profitability. This applies in *all* of the scenarios considered.⁽⁴⁾ In addition to this point:

- In Scenario 2, the bank is able to continue writing the same amount of new loans each period at the new higher rate, preserving the bank's net interest margin. But since the cost of servicing debt for any households and firms taking out a new loan is now higher, it is likely that more borrowers in the future will run into problems repaying their loans — leading the bank to incur higher credit losses.
- In Scenario 3, the bank finds that there is no demand for additional loans at the higher interest rate: the tap above the blue bucket is turned off. As the bank's balance sheet starts to shrink, this in itself will reduce the bank's profits over time. In addition, the credit crunch leads to lower economic activity — including lower incomes for households and lower profits for businesses. This would likely lead to higher credit losses for the bank as existing borrowers struggle to repay their loans.

An increase in credit losses — arising from either of these scenarios — would erode the bank's capital base which, as described above, could pose risks to financial stability. The FPC stands ready to take action to remove or reduce any risks that arise which threaten the stability of the financial system.

To complement these purely illustrative thought experiments, the box on page 8 discusses the empirical link between banks' funding costs and banks' resilience to withstand adverse shocks. The recent financial crisis serves as a useful case study for investigating this relationship because the rise in funding spreads varied markedly across different banks. The box finds evidence that **banks facing higher funding costs tended to be those banks with weaker capital positions**. This finding is consistent with the conclusions from **Figure 3**, although the observed, empirical relationship is likely to reflect causality in the other direction as well: that is, banks with weak capital positions were forced to pay up more for their funding. The next section of this article discusses the determinants of funding costs in more detail.

While lower funding costs in general may be beneficial from a financial stability perspective, regulators must also ensure that banks do not fund their activities in ways that lead to excessive risk-taking. Unsustainably low funding costs might lead banks to offer lending at unsustainably low rates that fuel excessively high levels of credit growth. Some of the cheapest sources of funding, such as short-term wholesale funding, are also the most risky. These funding sources may be short in duration and likely to 'dry up' and become unavailable during times of stress. More generally, levels of funding costs that are unusually low may be a warning sign that risk in the banking sector is being underpriced.

Funding costs and monetary stability

In most inflation-targeting regimes, the central bank aims to achieve monetary stability by setting monetary policy in order to meet an inflation target over the medium term.

(1) The PRA is a subsidiary of the Bank and is responsible for the supervision of banks, building societies and credit unions, insurers and major investment firms. See Bailey, Breeden and Stevens (2012).

(2) See Tucker, Hall and Pattani (2013).

(3) The bucket diagrams do not work through (graphically) the erosion of bank capital, which would start to happen once the bank's overall profitability becomes negative. Once this happens, the cash inflows from the bank's loans would not meet the cash outflows paid out on the bank's funding, leading to a simultaneous reduction in the bank's cash on the assets side (for simplicity, the blue buckets focus on loans, but in practice would reflect the full mix of assets on the bank's balance sheet) and bank capital on the funding side of the balance sheet. For illustrative scenarios that capture more fully the different parts of a bank's balance sheet (in the context of solvency and liquidity problems) see Farag, Harland and Nixon (2013).

(4) To keep it simple, this turnover point is not shown in **Figure 3**, where both buckets have one tap and one hole. But to illustrate this channel through which profitability would be affected, one could draw the orange buckets in **Figure 3** with two taps and two holes (compared to one for the blue buckets), as depicted in **Figure 2**. In Scenario 3, for instance, this would mean that in order for the orange bucket to drain at the same rate as the blue bucket, the bank would need to continue to keep *one* of the taps above the orange bucket turned on (given that it has two holes) — despite no new lending taking place. This would mean raising some new funding at the higher rate of 7%, weighing down on the bank's net interest margin. This mechanism would work in a similar way to reduce the net interest margin in the other scenarios.

Bank resilience and funding costs

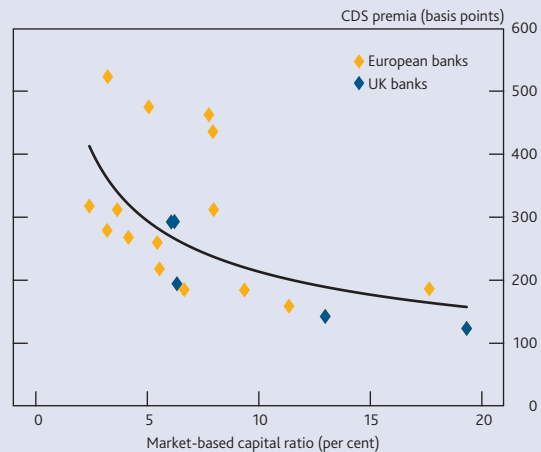
There is an important link between bank resilience and bank funding costs. Drawing on evidence presented in the June 2012 *Financial Stability Report*, this box investigates the link by looking at the relationship between spreads on banks' credit default swaps (CDS), as a proxy for funding costs, and banks' market-based capital ratios, as an indicator of banks' resilience to adverse economic shocks.⁽¹⁾

A CDS is a derivative contract that typically provides insurance against non-payment (that is, default) of a bond.⁽²⁾ The buyer of this protection makes payments (known as paying the CDS 'spread') to the seller. If the reference bond defaults, the buyer of the CDS receives a payout — typically equal to the face value of the bond — and the seller may take ownership of the bond. CDS spreads increase when the reference bonds become more risky and so can be used to gauge investors' perceptions of a bank's credit risk, serving as a proxy for the bank's cost of wholesale funding.⁽³⁾

Bondholders providing funding to banks are more likely to be repaid in full when banks are more resilient to shocks to the value of their assets. More resilient banks should therefore tend to face lower funding costs; and sellers of protection on these bonds will demand lower premia — as they are less likely to have to pay out. This can be seen in **Chart A**: banks with higher market-based capital ratios (a market measure of resilience) tend to have lower CDS premia.⁽⁴⁾

CDS premia are less sensitive to a given shock to the value of a bank's assets when market-based capital ratios are higher, though: this is shown by the line of best fit in **Chart A** flattening off at higher capital ratios. This is likely to reflect the fact that more resilient banks can more easily absorb

Chart A Market-based capital ratios and funding costs^{(a)(b)(c)(d)}

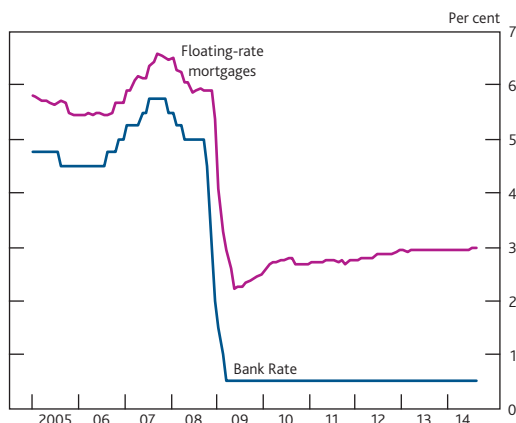


Sources: Capital IQ, Markit Group Limited, published accounts and Bank calculations.

- (a) This chart is taken from the June 2012 *Financial Stability Report (FSR)*.
 (b) The sample shown is the largest 20 European banks by assets (at the time of the June 2012 FSR).
 (c) The sample shown is the largest 20 European banks by assets.
 (d) Funding costs are proxied by five-year senior CDS premia. The 'line of best fit' shown above illustrates their relationship with market-based capital ratios.

shocks to the value of their assets without impairing their ability to repay bondholders in full. In the extreme, the likelihood that bondholders will be repaid in full following a small shock to the value of a bank's assets may be unaffected when banks have very high market-based capital ratios. Better-capitalised banks' funding costs will therefore tend to remain relatively lower and more stable following shocks to the value of their underlying assets.

Chart 2 Bank Rate and a representative mortgage interest rate for UK banks^(a)



- (a) 'Floating-rate mortgages' refers to mortgages in which the interest rate paid varies based on a specified benchmark, for example Bank Rate.

This is typically carried out by setting the central bank's policy interest rate (Bank Rate in the United Kingdom). This policy rate affects short-term market interest rates and, in turn, influences a range of interest rates set by commercial banks, building societies and other institutions — as well as the price of financial assets, such as bonds and shares, and the exchange rate. By affecting consumer and business demand in a variety of ways, all of this feeds into the aggregate level of spending and inflationary pressure in the economy.⁽¹⁾ In the United Kingdom, the Bank of England is responsible for monetary stability — defined by the Government's inflation target of 2% — and the Monetary

- (1) For example, if inflation were projected to be below target two or three years ahead, the central bank might lower the interest rate it controls, leading commercial banks to lower the rates they charge to savers and borrowers. This makes it cheaper for households and businesses to borrow (and less attractive to save), boosting the aggregate amount of economic activity and inflationary pressure in the economy. See www.bankofengland.co.uk/monetarypolicy/Pages/how.aspx.

Policy Committee (MPC) sets the level of Bank Rate each month. As explained below, bank funding costs are integral to the transmission of monetary policy and the outlook for growth and inflation.

As discussed in the introduction, commercial banks' lending rates often move in tandem with Bank Rate. In **Chart 2**, this can be seen over the period leading up to the recent financial crisis: up until October 2008, the average interest rate charged on floating-rate mortgages moved closely in line with changes in Bank Rate. But it is a bank's cost of funding that is the key input into its loan rates — and a bank's cost of funding may change even when Bank Rate remains unchanged. In response to the financial crisis, for instance, Bank Rate was reduced sharply, from 5% in September 2008 to 0.5% in March 2009. While the interest rates charged on new lending to households also fell, they did not fall by nearly as much (**Chart 2**). In large part, this was due to the marked increase in funding costs over this period (shown in **Chart 1**), relative to Bank Rate.

Of the three scenarios considering higher funding costs shown in **Figure 3**, two result in direct consequences for economic activity. In Scenario 2, households and businesses taking out new loans will need to spend more of their disposable income servicing debt, leaving less money to spend on everything else; and in Scenario 3, the rise in the cost of credit may lead to a credit crunch — all new lending from this bank ceases, which would act to reduce consumption and investment. In addition, any scenario that causes banks solvency problems and creates risks to financial stability will also threaten the outlook for monetary stability. Reflecting this point, the recent crisis demonstrated the painful effects on economic conditions that can be brought about by financial instability — in part, but not solely, working via the impact of elevated funding costs on credit conditions.

Stressed funding conditions: the cost versus the volume of funding

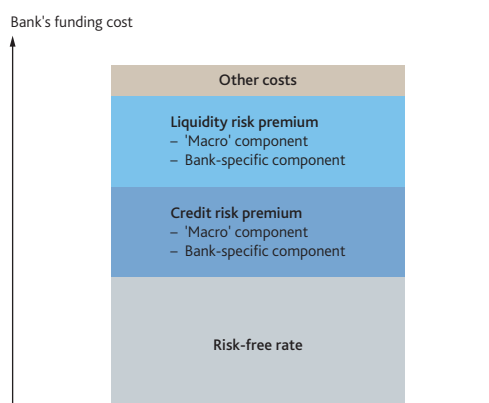
The initial shock to funding conditions worked through in **Figure 3** focuses on the cost of bank funding. In Scenario 3, higher funding costs bring about a reduced inflow of new funding (via a reduction in the demand for new loans at the higher interest rate). But in reality, the nature of the shock to funding markets could manifest itself more directly via funding volumes from the outset. If investors are sufficiently concerned about threats to a bank's solvency or liquidity position, for example, they may withdraw funding, whatever the price: the funding tap would run dry and the bank would be shut out of the funding market entirely. Indeed, supporting this idea, market intelligence suggested that funding markets became more 'binary' in recent times of stress and were often likely to be either 'on' (banks could raise funding) or 'off' (banks were unable to raise funding at any price), rather than banks being rationed by the price of funding.

A conceptual framework for analysing funding costs

Having reviewed some of the ways in which funding costs matter, this section presents a conceptual framework for thinking about the main drivers of funding costs. In general, a bank's cost of funding reflects the compensation that investors and depositors demand in exchange for financing a bank's activities. So in order to understand the determinants of banks' funding costs, it is useful to keep in mind that when a bank issues a bond, say, from the point of view of an investor the bond is an asset and the interest rate is the return on their investment.

The cost of funding can be decomposed into a risk-free component, a combination of credit risk and liquidity risk premia, and other costs (**Figure 4**). The risk premia are influenced by a combination of general, 'macro' factors (such as the broad economic outlook, or an increase in the riskiness of the banking sector) and factors that are idiosyncratic to any given bank, such as a business model focused on a particularly risky type of lending. Taken together, the risk-free rate and the risk premia generally account for the bulk of overall funding costs. They are discussed in turn below, with a focus on wholesale funding costs; many of the same factors drive retail interest rates, but there are also some differences, which are discussed below. Other elements that need to be considered to calculate the total, 'all-in' costs of wholesale funding, such as the costs of hedging interest rate and currency risks, are discussed in the box on page 10.

Figure 4 A breakdown of the components of bank funding costs^(a)



(a) Relative sizes of components are purely illustrative.

There are a number of ways in which central bank policies can affect bank funding costs. Monetary policy determines the risk-free rate and both monetary and macroprudential policy can affect the other components of funding costs. A full discussion of these channels is beyond the scope of this

The 'all-in' costs of wholesale funding

Given the range of options available to banks when raising wholesale funding, it is important to be able to compare these in a way that takes into account all costs. This box focuses on various elements that need to be considered to calculate the 'all-in' costs of wholesale funding.

The **direct cost** of raising funding is the interest the bank must pay for that funding. For bonds, this is the coupon paid by the issuing bank and includes the risk-free rate and risk premia (see the main text of the article). An indicator of the direct cost of raising funding via a particular debt instrument is given by the price at which such bonds are trading in the secondary market. But a bank will usually have paid a slightly higher cost to that implied by secondary market prices to increase the attractiveness of the instrument to investors. This is often called the 'new issue' premium.

These direct costs are reflected in the yield of the bond. But the 'true' or 'all-in' cost of funding includes a number of additional **indirect costs**, which are not reflected in the yield.

For example, a UK bank may issue a bond denominated in US dollars, and which pays a fixed interest rate — both features that might suit demand for the bank's bonds from its investor base. However, if the bank's assets are mostly

denominated in sterling, it will generally prefer to have its funding in sterling, too, to avoid currency 'mismatch'. A bank would typically hedge the currency risk associated with issuing in a non-domestic currency: in the example above, by finding a financial market participant that is willing to swap the dollars the bank receives from its investors for the equivalent amount in sterling.

In addition, banks generally prefer to pay out floating-rate interest payments on their funding instruments in order to reduce interest rate risk. Again, banks usually hedge the risk incurred when issuing a fixed-rate bond — in this case by entering into an interest rate swap to switch the proceeds of the bonds from fixed-rate to floating-rate cash flows.

There are various other indirect costs, including the fees paid to the banks that arrange and underwrite the issuance; fees paid to register the bonds with the listing authority; and fees paid to ratings agencies to rate the debt. There are legal costs associated with structuring a transaction and preparing the legal documentation containing the terms and conditions of the bonds. Finally, there may be costs associated with 'overcollateralisation' of secured funding. This is discussed in more detail in Churm *et al* (2012), which also presents Bank staff estimates of 'all-in' funding costs for different types of funding that underpinned the design of the Funding for Lending Scheme.

article but other publications have explored these themes in more detail.⁽¹⁾ Indeed, some policy initiatives have been designed and implemented directly in order to influence banks' funding costs. For example, in response to the sharp increase in banks' funding costs experienced during the financial crisis, the Bank of England launched the Funding for Lending Scheme in order to incentivise banks and building societies to boost their lending to UK households and firms by providing them with funding for an extended period, at below market rates.⁽²⁾

The components of bank funding costs

Risk-free rates

As discussed in the previous section, inflation-targeting central banks usually seek to implement monetary policy by setting an interest rate (Bank Rate in the United Kingdom) that affects short-term market interest rates. This interest rate can be viewed as the 'risk-free' rate given that the risk of the central bank defaulting is generally considered to be the lowest of any agent in the economy. While Bank Rate is the short-term policy rate set each month by the MPC, risk-free rates also encompass rates at a longer time horizon (such as the risk-free rate over the coming five years, say): in this case, the risk-free rate reflects market participants' expectations of future policy rates.

Because risk-free rates are a common component of funding costs for all types of bank funding, it is common to refer to bank funding 'spreads' — the difference between funding costs and an appropriate risk-free rate. Monitoring developments in funding spreads is particularly useful because they will typically be driven by different factors to those that influence risk-free rates.

Credit risk premium

When buying bank debt, investors demand compensation for bearing the risk that the bank will default on its debt ('credit risk') over and above the risk-free rate of return. This compensation is the credit risk premium. It may rise if investors judge that, relative to the amount of capital a bank has, the bank's use of funds (its assets) has become riskier. This is because the greater the risks a bank takes relative to its buffer of loss-absorbing capital, the greater the risks to the investors themselves in funding the bank.⁽³⁾

(1) For more on how monetary policy determines risk-free rates, see Bank of England (2014) and McLeay, Radia and Thomas (2014). For details on how credit spreads (in turn influenced by funding costs) feed into the MPC's projections for growth and inflation, see Butt and Pugh (2014). For the transmission of macroprudential capital policy to funding costs, see Harimohan and Nelson (2014).

(2) See Churm *et al* (2012).

(3) See Farag, Harland and Nixon (2013) for more details. One subcomponent of the credit risk premium is the term premium: investors typically require greater compensation the longer the term (maturity) of an investment, because there is a higher chance of a counterparty defaulting over a long time horizon than a short one.

An individual bank's credit risk premium will rise relative to its peers when investors consider it to have become relatively more risky.⁽¹⁾ Alternatively, a number of banks' credit risk premia may rise together when investors consider the banking sector as a whole to have become more risky.⁽²⁾ This could be due to changes in the macroeconomic environment — for example, if a country enters into recession, a larger proportion of households and companies will experience difficulties repaying loans compared to a period of economic growth. This would translate into higher credit losses for those banks conducting business in that country.

Whether banks seek funding on a secured or an unsecured basis will also affect the level of credit risk premia that investors demand. As explained in the first section of this article, if an investor lends money to a bank on a secured basis then, in the event that the bank cannot repay the funds, the investor's losses will be mitigated by having recourse to collateral. This significantly reduces credit risk and credit risk premia.

Liquidity risk premium

Liquidity, in the context of assets, is the degree to which an asset can be converted to cash quickly, at any time, without affecting its price. **Liquidity risk**, then, is the risk that an asset may only be converted to cash at short notice subject to a substantial reduction in its price. Since debt instruments issued by banks are held as assets by investors, these assets' perceived liquidity influences the price investors are prepared to pay for them.

Investors demand liquidity because they are uncertain about when they might need access to their funds — to invest in a new project, say — and hence how long they wish to hold a given asset for. The more liquid the assets that investors hold, the more investors are effectively insured against this uncertainty.⁽³⁾ Conversely, investors demand compensation in the form of a liquidity risk premium in exchange for investing in illiquid assets. This applies to bonds issued by banks as it does to other financial assets that investors hold.

A key determinant of the liquidity risk premium is the maturity of an asset. All else equal, an investor will typically demand more compensation for holding an asset that matures in one year than for holding an otherwise identical asset that matures in one month: this 'term liquidity risk premium' is demanded in return for the inconvenience of not being able to access these funds for a longer period of time.

As with credit risk premia, liquidity risk premia are affected by both idiosyncratic and macro risk factors. The idiosyncratic component of the term liquidity risk premium depends on factors such as how frequently the bank's debt is traded in secondary markets. Investors are likely to demand a higher liquidity premium when investing in a bond issued by a small

institution that has few other instruments in issue, compared to investing in a bond issued by a large institution. This is because there are fewer investors who are likely to wish to hold this bond — it may be difficult to sell it on at a later date. Meanwhile, liquidity risk premia might rise across the banking sector as a whole when investors become less confident that the bank funding instrument in which they are investing will retain its value. For example, during an economic downturn or a financial or political crisis, investors typically place an extremely high value on liquidity.

Wholesale versus retail funding costs

As a starting point for understanding retail funding costs, the same conceptual framework developed in this section so far can be used. Moreover, one would expect the level of retail funding costs to be broadly similar to the level of wholesale funding costs at a given point in time (for a given maturity and currency of funding). If this were not the case, banks would move away from the more expensive sources of funding and the additional demand for cheaper types of funding would bid up their price.⁽⁴⁾ Some key distinguishing features of retail funding, however, mean that their cost may differ from wholesale funding costs in practice.

In many instances, deposits provide a relatively cheap source of funding for banks because, unlike wholesale investors, households and companies do not just hold deposits at banks to gain a return on these funds. This is particularly true for 'sight' deposits such as current accounts, which provide customers with a safe place to keep their savings and the option to withdraw cash or make electronic payments directly from their account. Depositors demand less compensation (that is, lower interest rates) in exchange for leaving their money in these accounts than the amount banks need to pay out for other sources of funding. Banks will typically need to pay out more in the case of 'time' deposits that have a contractual maturity (such as a three-year fixed-rate retail savings account), since depositors demand a larger term liquidity risk premium — and hence a higher interest rate — in exchange for locking their money away for a given period of time.

Another factor pushing down on retail funding costs relative to wholesale funding costs is deposit guarantees. Eligible deposits carry a very small credit risk premium because,

(1) This, in turn, might be affected by factors such as the amount and quality of information that the bank discloses about its activities and its management of risks. See Sowerbutts and Zimmerman (2013).

(2) See Federal Reserve Bank of San Francisco (2009).

(3) See Diamond and Dybvig (1983).

(4) Alternatively, savers might move their money away from the savings products offering lower rates of interest. For instance, if a bank paid out an annual rate of 5% on a three-year fixed-rate bond in wholesale markets, say, but offered only 2% on three-year time deposits to retail savers, then in a competitive market for savings products there would likely be an investment fund of some sort that would pool together individuals' savings and invest these in the bond (giving a rate of 5%). All else equal, then, the rates paid by the bank for retail and wholesale funding would converge over time.

should a bank fail, a depositor is entitled to receive compensation from the Financial Services Compensation Scheme (FSCS) up to the value of £85,000.⁽¹⁾ In addition, in the event that a bank becomes insolvent, a hierarchy exists to determine how the bank's remaining funds are distributed out to its creditors — with households and small business depositors usually the first to be compensated. Therefore depositors bear much less risk compared to other creditors in the event of a bank defaulting.

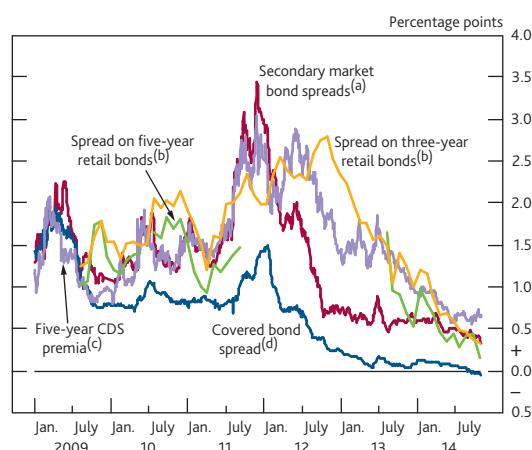
As with wholesale funding, however, there are other, indirect costs that feed in to the overall cost of retail funding. In part, these are the costs associated with providing the safe-keeping and payments services that banks provide to retail customers, such as the fixed cost to a bank of maintaining its branch and ATM network. While it is difficult to measure these additional costs precisely, they are likely to make the overall cost of deposits, particularly longer-term deposits, more comparable to that of other sources of funding.

Monitoring banks' funding costs: the Bank of England's approach

Given the implications that banks' funding conditions can have for monetary and financial stability — and therefore for the policy stances of the MPC and FPC — Bank staff look at a range of measures to estimate the aggregate level of funding costs facing banks operating in the United Kingdom. In addition, bank supervisors in the PRA monitor the funding costs facing individual institutions (alongside a range of other metrics) in order to help promote the safety and soundness of these firms. The measures that Bank staff look at cover a range of wholesale and retail funding sources, at various maturities and across different currencies. Funding costs incurred across all existing liabilities (average funding costs) are monitored in relation to banks' current profit margins. The cost of new funding (marginal funding costs), meanwhile, is monitored to gauge the future profitability of a bank as well as the outlook for credit conditions facing borrowers in the economy.

Economic theory would suggest that different sources of funding (at a given maturity and currency) should cost banks the same amount, all else equal. In practice, however, the differing characteristics of different funding markets and, in some cases, segmentation of certain markets means that sizable gaps can open up between different measures of funding costs. To form a more accurate view of the level of funding costs — and changes in these costs — the Bank therefore closely monitors a wide range of different measures. **Chart 3** shows a range of indicative measures of long-term funding costs typically monitored by the Bank. Each of these are expressed as spreads over the risk-free rate of the appropriate maturity.

Chart 3 Long-term funding spreads for major UK banks



Sources: Bank of England, Bloomberg, Markit Group Limited and Bank calculations.

- (a) Constant-maturity unweighted average of secondary market spreads to mid-swaps for the major UK lenders' five-year euro 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. The gap in the time series between 1 December 2009 and 11 January 2010 is because no suitable bonds were in issuance in that period.
- (b) Spreads for sterling fixed-rate retail bonds over equivalent-maturity swaps. Bond rates are end-month rates and swap rates are monthly averages of daily rates. The bond rates are weighted averages of rates advertised by the banks and building societies in the Bank of England's quoted rates sample, for products meeting the selection criteria (see www.bankofengland.co.uk/statistics/Pages/iadb/notesiadb/household_int.aspx). The series for the five-year bond is not included for May 2010 and August 2011 to April 2013 as fewer than three institutions in the sample offered products in these periods.
- (c) The data show an unweighted average of the five-year senior CDS premia for the major UK lenders, which provides an indicator of the spread on euro-denominated long-term wholesale bonds.
- (d) Constant-maturity unweighted average of secondary market spreads to mid-swaps for the major UK lenders' five-year euro-denominated covered bonds, where available. Where a five-year covered bond is unavailable, a proxy has been constructed based on the nearest maturity of bond available for a given institution.

One of commercial banks' most important sources of finance is long-term unsecured wholesale funding. The Bank tracks unsecured wholesale funding costs by monitoring secondary market spreads on two main types of instrument: unsecured bonds and credit default swaps (CDS). Whereas CDS spreads are proxies for funding costs, bond spreads are based on the actual costs facing banks — but data on them are more limited. The box on page 13 explains the difference between these measures and reasons why they can sometimes diverge. **Chart 3** also shows covered bond spreads, which represent a measure of the cost of secured wholesale funding;⁽²⁾ as one would expect, these represent a cheaper source of funding than unsecured bond spreads.

The Bank publishes a wide range of data on retail deposit rates that the Bank's statistical area collects directly from banks and building societies.⁽³⁾ These include data on rates relating to sight deposits, and a wide range of term products such as time deposits, cash Individual Savings Accounts (ISAs) and fixed-rate bonds. Data are collected on both 'quoted' and

(1) The Bank recently announced plans to extend protection under FSCS to include large temporary balances (such as following the sale of a property) of up to £1 million. The Bank also outlined rules to ensure depositors are able to move their accounts swiftly in the event that their bank is resolved. More information can be found at www.bankofengland.co.uk/pr/Pages/publications/cp/2014/cp2014.aspx.
 (2) Covered bonds give investors recourse to a pool of assets that secures (or 'covers') the bond in the event that the issuer of the bond defaults.
 (3) See the Bank's Interactive Database; www.bankofengland.co.uk/boeapps/iadb/newintermed.asp.

Measuring unsecured wholesale funding costs

Both CDS spreads and senior unsecured bond spreads can be used as a gauge of a bank's wholesale funding costs. Most of the time, both measures imply a broadly similar level for wholesale funding costs: this can be seen in **Chart 3** over the 2009–11 period, for instance.

On occasion, however, CDS premia diverge from senior unsecured bond spreads — sometimes markedly. For example, spreads on UK banks' senior unsecured debt declined sharply relative to CDS in early 2012. This reflected factors specific to the CDS and unsecured bond markets, which are 'segmented' in the sense that different market participants will determine the prices that prevail. The marked reduction in bond spreads relative to CDS in early 2012 reflected a reduction in new bank bond issuance at a time when investor demand remained strong: this pushed up on bond prices, and bond yields (and hence spreads) declined.⁽¹⁾ The reduction in banks' supply of bonds, in turn, was related to the European Central Bank's longer-term refinancing operation (LTRO) and the Funding for Lending Scheme, both of which provided banks with an alternative source of funds.

Market contacts have indicated that banks use secondary market spreads on existing bonds to calculate the marginal

cost of wholesale funding. This is because they more directly capture what it would cost for a bank to issue a bond in present market conditions, in contrast to CDS spreads which are proxies for actual funding costs (see the box on page 8 for more details). But relying on secondary market bond spreads as an indicator of funding spreads over time presents some challenges: to be consistent, measures of funding costs based on existing bonds should refer to the same currencies and maturities at all points in time — and it is difficult to find data that are consistent over time in this way.⁽²⁾

One ideal solution is to use an average of the spreads on specific benchmark bonds (for example, five-year maturity bonds issued in euros). But banks do not always have a bond outstanding at the exact desired maturity, making time-series comparisons potentially misleading. To address this, analysts in the Bank have constructed an indicator of the cost of wholesale funding based on secondary market senior unsecured bond spreads that, as far as possible, proxies a constant maturity. This is the measure shown by the red line in **Chart 3**.

(1) The price of the bond and the bond's yield are inversely related. See, for example, Mishkin (2004).

(2) Consistent time-series data for CDS spreads, on the other hand, are readily available. The Bank monitors five-year CDS spreads as these are the most liquid CDS contracts.

'effective' rates. Quoted rates are the rates advertised on new savings products. For example, the Bank monitors quoted rates on three and five-year retail bonds alongside measures of wholesale funding costs (**Chart 3**), with the chosen maturities aligned as closely as possible to the average maturities of wholesale funding instruments. Effective rates data reveal the rates that, on average, banks have actually been paying households and companies that have deposited money with them. These are particularly useful for assessing the interest paid on the outstanding stock of retail deposits held by banks.

The Bank's choice of indicators of bank funding costs is regularly reviewed to ensure that it remains focused on the most relevant ones. For example, as banks have increased the proportion of retail funding raised at longer maturities, Bank staff have put more weight on longer-dated retail funding indicators in their overall assessment of funding costs.

Market and supervisory intelligence and the Bank Liabilities Survey

In addition to monitoring these data, the Bank of England uses intelligence from market and supervisory contacts to inform its understanding of developments in banks' liabilities. The Bank also produces the *Bank Liabilities Survey*, which is a quarterly survey of developments in UK banks' and building

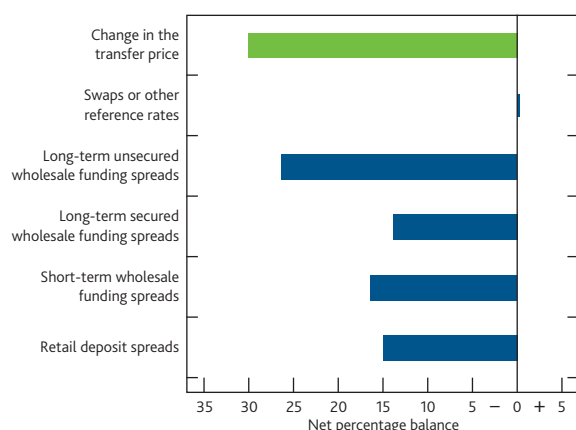
societies' funding positions (including capital). The survey provides information on the factors underlying developments in the price and quantity of funding raised and on non-price terms and conditions.⁽¹⁾ It also sheds light on the pass-through of the cost of funding (raised externally) to the internal cost of funds that banks' treasuries make available to individual business units that are responsible for particular types of lending (such as mortgage lending). This is sometimes referred to as a bank's internal 'transfer price'.

For example, **Chart 4** shows that on average over the past two years, the net balance of lenders reported a fall in the transfer price (shown in green). Beneath that, it shows some of the factors cited as having affected this price. Falling spreads on both wholesale and retail funding are reported as having helped drive down the cost of providing funds to internal business units over the past two years. Among other things, these indicators can help to inform a view about the future availability and cost of loans to households and companies provided by banks.⁽²⁾

(1) For more information, see Bell, Butt and Talbot (2013).

(2) See Butt and Pugh (2014) for more details.

Chart 4 Change in banks' internal 'transfer price' and factors affecting it since the end of 2012^(a)



(a) The chart shows average net percentage balances from the *Bank Liabilities Survey* from 2012 Q4 (when the survey began) up to 2014 Q3. Negative balances indicate that banks, on balance, reported the transfer price (in green) or underlying funding costs (in blue) to have decreased.

Conclusion

This article has introduced bank funding costs in the context of banks' business models and presented a conceptual framework to help understand their main drivers. Funding costs are integral to the transmission mechanism of monetary policy and the outlook for growth and inflation. They are equally important for the Bank's assessment of financial stability. Funding costs are therefore central to many aspects of the Bank's work, whatever the economic and financial conjuncture.

Looking ahead, the likely normalisation of monetary policy at some point,⁽¹⁾ the introduction of new liquidity metrics and the phasing in of higher capital requirements ahead of the full implementation of the Basel III capital framework in 2019 all have the potential to affect the outlook for funding costs. In time, some policies put in place during the crisis are also likely to be removed and may affect banks' cost of funds. These examples underline why it is important for Bank staff to continue to monitor closely a wide range of measures of bank funding costs.

(1) See the box on pages 42–43 of the August 2014 *Inflation Report*; www.bankofengland.co.uk/publications/Documents/inflationreport/2014/ir14aug5.pdf.

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