Understanding the price of new lending to households

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During the recent financial crisis Bank Rate was reduced sharply, but in general the interest rates charged on new lending to households did not fall by as much and indeed some interest rates rose. This article assesses the factors that have influenced new lending rates using a simple decomposition of new lending rates into lenders' funding costs, credit risk charges and a residual (which includes both operating costs and the mark-up). Applying the decomposition to two indicative lending products suggests that funding costs have been an important driver of new lending rates and the residual has also risen. The residual needs to be interpreted with caution — by definition it reflects all the remaining unmodelled factors. But among other things, a larger residual is consistent with lenders increasing mark-ups over marginal costs for new lending, which may reflect a need to build higher capital levels within the banking sector.

Introduction

Banks and building societies provide important services to households and businesses, intermediating saving and borrowing, providing payment services and distributing risk. The interest rates at which lenders extend credit are important for both monetary policy and financial stability. They will affect spending and investment decisions and so influence nominal demand in the economy. And they will affect the profitability of lenders and so — if profits are retained — influence the flow of new capital available to the banking sector.

In the United Kingdom, the Monetary Policy Committee (MPC) is able to influence new lending rates through changes to Bank Rate.[2] But while Bank Rate was reduced significantly during the recent financial crisis, new lending rates to households fell by a much smaller amount — and in some cases rose (**Chart 1**).

This article explores the factors that may have influenced the path of *new* lending rates to households. The analysis in this article cannot be repeated for lending to businesses as a similar set of new lending rates is not available.

A simple framework is adopted to decompose new lending rates into lenders' funding costs, credit risk charges and a residual, which includes both operating costs and the mark-up. This analytical framework is consistent with the pricing approach taken by the major UK lenders.[3] In practice,

Chart 1 New lending rates[a] and Bank Rate
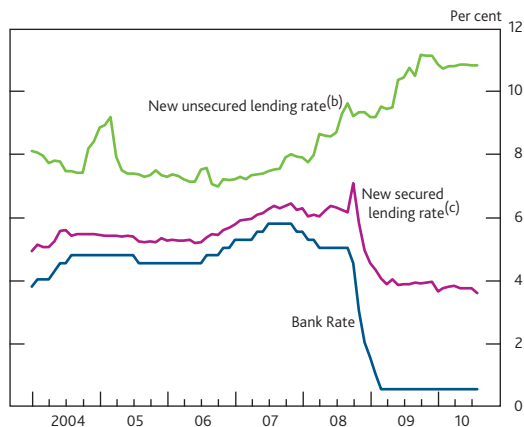
(a) Sterling-only end-month average quoted rates. The Bank's quoted interest rate series comprise data from up to 24 UK monetary financial institutions.
(b) £10,000 personal loan average quoted rate.
(c) 75% loan to value (LTV) tracker mortgage average quoted rate.

however, there will be some variation between pricing models, reflecting lenders' distinct strategies and balance sheets. So this article can only provide an indication of the factors that may have influenced the price of new lending.[4]

The article is structured in five sections. The first section introduces the framework that is used to decompose the price of new lending. The second section applies this framework to the average price of new lending charged by the banking sector for both new secured and unsecured lending to households. The third section then examines how the results differ using individual lenders' new lending rates. The fourth section considers the relationship between the residual item from the decomposition of average new lending rates and lenders' net interest margins. The final section sets out the implications from the results for both monetary policy and financial stability.

Framework

A simple framework can be used to decompose new lending rates offered by the major UK lenders[1] into three underlying factors. First, there is the funding cost faced by lenders. Second, there are credit risk charges, for both the cost associated with the expected loss on the loan and the capital charge (to account for the cost of holding capital against unexpected losses). Third, there is a residual item which captures a variety of other factors, principally the operating cost and mark-up. The remainder of this section reviews each of these components in turn.
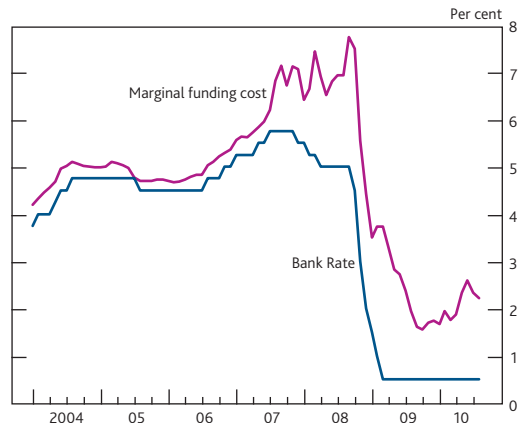
Funding cost
Lenders need to raise funds to extend loans to households. These funds can come from a variety of sources and at a range of interest rates. The sources can be categorised broadly into customer deposits (from households and businesses) and wholesale funding (from other lenders and institutional investors).[2]

In setting the price for new lending, lenders must factor in the cost of raising an additional unit of funding — the marginal funding cost. Lenders report that the marginal funding source is typically long-term wholesale debt since this is the market in which it is possible to raise a large amount of funding over a short period.[3] Lenders would be less able to raise a specified amount of retail deposits over a short period as households do not typically respond quickly to changes in interest rates. Furthermore, long-term wholesale funding will more closely match the expected number of years that a loan will be extended, which is typically around five years on average (although this will differ by product).[4] Going forward, new liquidity regulation for the banking sector will place importance on long-term funding for all forms of lending.[5]

In this article the marginal funding cost — the cost of long-term variable-rate wholesale funding — is estimated as the sum of three-month Libor plus the average of the five-year credit default swap (CDS) premia of the major UK lenders weighted by their shares in new lending. The marginal funding cost is explored in more detail in the box on pages 174–75.

Before the financial crisis, lenders were able to raise new long-term wholesale funding at rates quite close to Bank Rate (**Chart 2**). Risk premia were small. Implicitly, market participants considered there to be a relatively low risk that lenders might fail.

Chart 2 Marginal funding cost[(a)] and Bank Rate

Sources: Bank of England, Bloomberg, British Bankers' Association, Markit Group Limited and Bank calculations.

(a) This is the estimated marginal funding cost for extending variable-rate sterling-denominated loans. It is the sum of three-month Libor plus an average of the five-year CDS premia of the major UK lenders (Banco Santander, Barclays, HSBC, Lloyds Banking Group, Nationwide, Northern Rock and Royal Bank of Scotland). For further information on the marginal funding cost, see the box on pages 174–75.

From the autumn of 2007 onwards, market participants became increasingly concerned about the robustness of the banking sector and demanded higher compensation for the risk that lenders might fail, so credit risk premia increased. Consequently, the cost of issuing new long-term debt rose — both in absolute terms (in the early stages of the financial crisis) and relative to Bank Rate.

More recently, despite improvements in the capital and liquidity positions of lenders, the cost of issuing new long-term debt has remained high relative to Bank Rate. Market participants appear to continue to demand significantly greater compensation than previously for the credit risk associated with long-term exposures to lenders.[6]

Credit risk
Lenders' decisions about whether to extend credit to households and at what price will also depend on their

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(1) For the purposes of this article, the major UK lenders comprise Banco Santander (including Abbey prior to acquisition), Barclays, HSBC, Lloyds Banking Group (including Lloyds TSB and HBOS prior to the merger), Nationwide, Northern Rock and Royal Bank of Scotland.
(2) Short-term wholesale funding comprises interbank deposits, certificates of deposit and commercial paper. Long-term wholesale funding comprises senior unsecured bonds and senior secured bonds, such as residential mortgage-backed securities and covered bonds.
(3) Lenders with a greater proportion of retail deposits may consider the cost of wholesale and retail funding when setting the marginal funding cost.
(4) For example, while mortgages often have a final maturity of around 25 years, in practice borrowers typically repay the loan early. This may be to achieve a lower borrowing rate, to increase the size of the loan or because the borrower is moving home.
(5) For example, see Basel Committee on Banking Supervision (2009).
(6) For a detailed discussion of recent developments in UK banks' funding costs, see the June 2010 *Financial Stability Report*, pages 46–53 (Bank of England (2010a)).

The marginal funding cost: transfer pricing

The decision by lenders to extend loans or raise deposits is made by their individual business units, such as the retail business unit that is responsible for extending credit to and raising deposits from households. In principle, business units could use the deposits that they raise to fund the loans they extend, but the amount of loans typically exceeds the amount of deposits leaving a funding requirement (a customer funding gap) that must be filled with wholesale funding. In practice, each lender's treasury will raise and determine the cost of marginal funding, intermediating both the cost and the demand and supply of funding across business units. The 'transfer price' is set by each lender's treasury. It typically represents both the rate at which funds are provided to business units to make loans and the rate at which the deposits raised by business units are remunerated. This box explores transfer pricing in greater depth.[1]

Taking the transfer price as a starting point, a business unit will then decide the rate at which to extend loans or raise deposits (**Figure A**). Typically, new lending rates are priced at a spread above the transfer price, while new deposit rates are priced at a spread below the transfer price. Consequently, the transfer price does not affect the average profitability of the business unit, ie the interest received on loans minus the interest paid on deposits (X minus Y in **Figure A**). When expressed as a proportion of loans outstanding, this is the net interest margin of a business unit. While the transfer price does not affect the average profitability of the business unit it will affect both new lending and deposit rates.

Each lender's treasury typically sets the transfer price based on long-term wholesale funding costs. This is the market in which a lender can be most confident that it can raise a significant amount of funding at short notice. In contrast, a lender may not be able to raise a large amount of retail deposits at short

notice. For example, a large group of individuals may be slower to decide to increase their deposits than a small group of institutional investors may be to provide a large amount of wholesale funding. It is possible that a lender with a greater proportion of funding from retail deposits may choose to consider the costs of both wholesale and retail funding when setting the transfer price. It is also possible that not all lenders may have explicitly set the marginal cost of funding as the cost of long-term wholesale debt prior to the financial crisis; instead the customer funding gap may have been filled using short-term wholesale funding (eg interbank loans). But this is unlikely to affect the pricing framework as there was little difference between long-term and short-term wholesale funding costs prior to the financial crisis (the cost of both types of funding was close to three-month Libor).

The funding cost typically used by each lender's treasury to set the transfer price is the cost of raising variable-rate long-term wholesale debt. This is the cost of raising fixed-rate senior unsecured bonds and entering into an interest rate swap where the lender receives a series of fixed-rate cash flows and pays a series of floating-rate cash flows. The transfer price has two components. First, there is the stream of variable-rate cash flows paid in the interest rate swap (three-month Libor). And second, there is the spread of the fixed-rate bond yield over the swap rate — this is the asset swap spread (**Figure B**).

Lenders do not issue new long-term debt on a regular basis, so the spread is set by each lender's treasury using a variety of reference points, including the prevailing asset swap spread of lenders' debt trading in secondary markets or lenders' CDS premia. This article uses lenders' five-year CDS premia which provide transparent daily data at constant maturity (ie the maturity of the CDS is always five years). It would be possible to use the prevailing asset swap spread of lenders' debt trading in secondary markets, but this is not available on a consistent basis at a constant maturity (the maturity of bonds falls each

Figure A Transfer pricing within a typical lender[a]
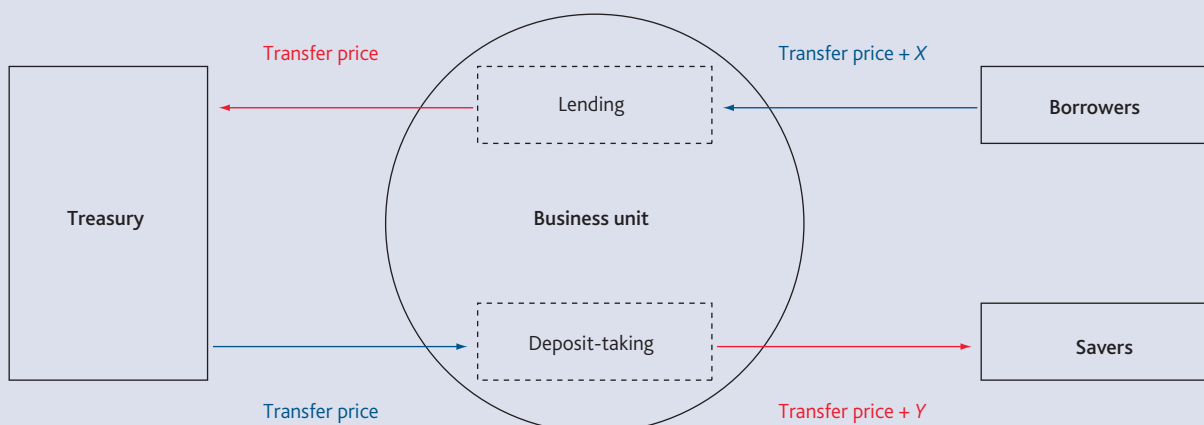
(a) A blue arrow indicates the rate at which the business unit is remunerated for lending funds to the treasury and to borrowers.
     A red arrow indicates the rate at which the business unit pays to borrow funds from the treasury or savers.

day). Even if it were possible to compare five-year CDS premia and five-year asset swap spreads, their levels may still differ due to the liquidity of secondary bond markets, an issue at times during the financial crisis.

Figure B sets out the cost of variable-rate funding for variable rate loans. But business units may extend credit on a fixed-rate basis. In addition to centrally managing the funding flows and setting the transfer price, the treasury also centrally manages interest rate risk. This ensures the loans extended by the business unit are all priced on a floating-rate basis. In

practice, the treasury will swap the fixed-rate cash flows received from the borrower into floating-rate cash flows (analogous to the swap used to transform fixed-rate debt into floating-rate debt). The cost of this swap is reflected in the transfer price for fixed-rate lending — so the marginal funding cost for new fixed-rate lending is typically higher than the marginal cost for new floating-rate lending.

(1) For information on transfer pricing in a pan-European context, see Section 6 and Annexes 2 and 3 of European Central Bank (2009).

Figure B Determining the transfer price: variable-rate wholesale funding(a)
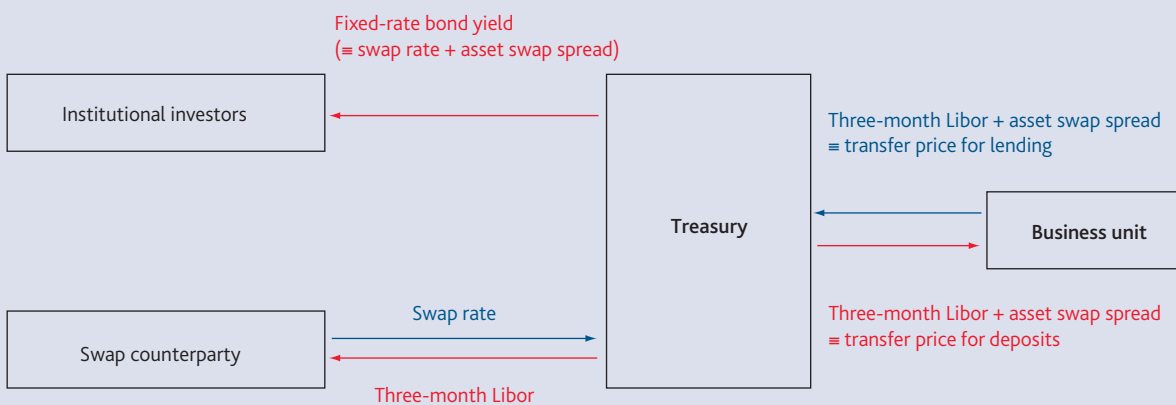
(a) A blue (red) arrow indicates the cash flows received (paid) by the treasury.

assessment of the risk that the borrower may not repay the loan in full.

This credit risk comprises two components. First, lenders must account for the cost of the expected loss associated with the loan. Second, lenders must account for the cost of holding capital to meet the possibility that losses might exceed this central estimate — this is the unexpected loss associated with the loan. This capital charge can be calculated on both a regulatory capital basis (as set out by the Financial Services Authority (FSA) in line with Basel guidelines) or on an economic capital basis (as set by the lenders themselves).

The two components of credit risk are calculated by each lender using proprietary data. These data are confidential so this article constructs estimates based on the method set out in the box on pages 176–77 and on the assumption that lenders price new loans on the basis of the regulatory capital charge.

Loans will attract different credit risk charges depending on the perceived risk. For secured lending the loan is backed by collateral, for example mortgages are secured on residential property: the value of this collateral reduces the loss faced by the lender if the borrower defaults. In contrast, for unsecured lending (for example personal loans) the loan is not backed by

collateral and so the lender expects to suffer a more significant loss if the borrower defaults. It follows that the expected loss and capital charge for secured lending are both lower than those for unsecured lending.

The expected loss component is estimated to have increased over the past two years (**Chart 3**). This reflects an increase in the number of borrowers missing interest payments for more

Chart 3 Expected loss component of credit risk(a)
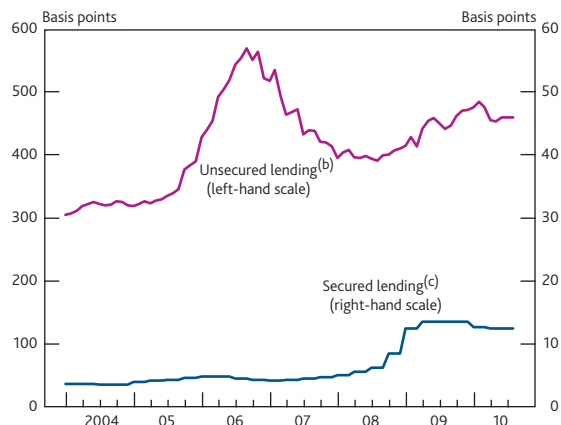
Sources: Bank of England, Council of Mortgage Lenders, UK Cards Association and Bank calculations.

(a) For detail on the methodology used to estimate the expected loss see the box on pages 176–77.
(b) Expected loss for personal loans (all products).
(c) Expected loss for 75% LTV mortgages (all products).

Credit risk

Lenders must account for the most likely loss associated with the loan — this is the expected loss. And lenders must account for the cost of the capital they hold to meet the possibility that losses might exceed this central estimate — this is the capital charge. Lenders do not release data on the two components of credit risk. For the purposes of this article estimates for these components are constructed based on the method set out in this box.

Expected loss

The expected loss can be thought of as the combination of the likelihood that a borrower will default, the loss rate suffered by the lender if default occurs and the balance of the loan at the time of default. As a result it varies over time. Formally, the expected loss (EL) is the product of the probability of default (PD), the loss given default (LGD) and the exposure at default (EAD) expressed as a percentage of the full loan amount:

$$EL_t = PD_t \times LGD_t \times EAD_t \qquad (1)$$

Lenders generate both the probability of default and the loss given default for secured and unsecured lending to households using internal models conditioned on proprietary historical data of default experience. However, it is possible to estimate both the probability of default and the loss given default using a combination of publicly available data and assumptions. The exposure at default is assumed to be the full loan amount as borrowers may default at any point from the start of the loan. For the purpose of this article it is set to 100%.

Estimating the probability of default

The probability of default measures how likely it is that borrowers will default. A leading indicator of default is borrowers falling behind on interest payments on the loan (known as arrears), particularly for those who miss more than six consecutive interest payments. Data on arrears rates (arrears as a proportion of loans) are published for both secured and unsecured lending to households.

For secured lending to households, the Council of Mortgage Lenders publishes arrears rates, including the greater than six months' arrears rate. This can be used to estimate the probability of default on, for example, a 75% loan to value (LTV) mortgage. Historical data on defaults show that the probability of default will vary with the degree of collateralisation of the loan. For example, mortgages with a lower LTV ratio (ie higher collateralisation) generally enter default less frequently and so have a lower probability of default.[1] Data from the Financial Services Authority (FSA) on default rates suggest the probability of default for 75% LTV mortgages can be calibrated as 0.7 multiplied by the aggregate

mortgage six-month arrears rate ($M\text{-}ARREARS_{>6m}$). So the probability of default for secured lending is given by:

$$PD_{secured,t} = 0.7 \times M\text{-}ARREARS_{>6m,t} \qquad (2a)$$

For unsecured lending to households, there is no published arrears rate for personal loans. However, the UK Cards Association publishes arrears rates for credit cards, including the greater than six months arrears rate ($CC\text{-}ARREARS_{>6m}$). Personal loan arrears rates can be estimated from credit card arrears rates using a simple calibration parameter (ε): ε reflects the relationship between the probability of default for credit cards and the probability of default for personal loans. This can be calibrated using a measure of the realised probability of default — the write-off rate (the level of write-offs as a proportion of the stock of lending). ε is the ratio of the personal loan write-off rate to the credit card write-off rate. So the probability of default for unsecured lending is given by:

$$PD_{unsecured,t} = \varepsilon_t \times CC\text{-}ARREARS_{>6m,t} \qquad (2b)$$

Estimating the loss given default

For secured lending, lenders will only realise a loss if the collateral backing the loan is lower than the value of the loan at the time of default. The major UK lenders' Basel II Pillar 3 disclosures on loss given default suggest that realised recovery rates (across all mortgage types and all LTVs) are around 85% (based mainly on UK exposures, but including some non-UK exposures). This article adopts a conservative assumption of a 65% recovery rate for 75% LTV mortgages. This lower recovery rate enables the pricing model to allow for possible falls in house prices in the order of 20% by the time of the default. Recognising that for 75% LTV mortgages the value of the collateral is greater than the loan, the loss given default for mortgages can be calculated using the assumed recovery rate:

$$LGD_{secured,t} = \max \{0 \; ; 1 - (1/LTV_t) \times 0.65\} \qquad (3)$$

For unsecured lending, similar Basel II Pillar 3 disclosures on the loss given default for personal loans (part of 'other retail exposures') suggest that realised recovery rates are around 30%–40% (again including some non-UK exposures). To be conservative, this article assumes the recovery rate on personal loans is just 10%.

Comparing expected losses to realised losses

Over time, lenders experience defaults on their existing loans and write off these bad debts. The write-off rate — the amount of write-offs expressed as a percentage of the loan portfolio — is a measure of realised losses on existing lending. Comparing the estimates of expected losses on new lending used in this article to the realised losses on existing lending provides a test of whether the expected losses were (with

hindsight) large enough. Generally, the estimates used in this article for expected losses for both secured and unsecured lending are larger than the realised losses (write-off rates) experienced by lenders on their secured and unsecured (excluding credit card) loan portfolios (**Charts A** and **B**).

Chart A Secured lending to households: expected loss on new 75% LTV mortgages and realised loss on existing mortgages
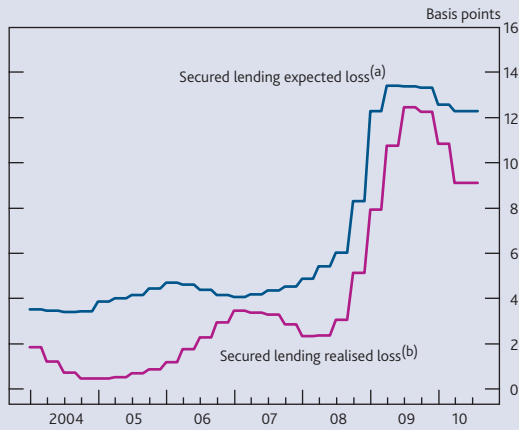
Sources: Bank of England, Council of Mortgage Lenders and Bank calculations.

(a) Expected loss for 75% LTV mortgages (all products).
(b) UK-resident lenders' write-off rate on all sterling secured lending to households (across all LTVs).

Chart B Unsecured lending to households: expected loss on new personal loans and realised loss on existing unsecured lending[a]
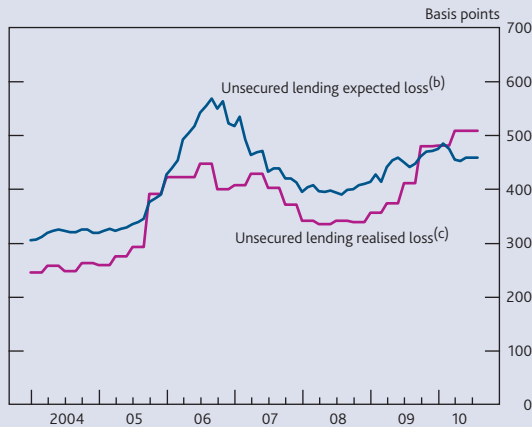
Sources: Bank of England, UK Cards Association and Bank calculations.

(a) Excluding existing credit card loans.
(b) Expected loss for personal loans (all products).
(c) UK-resident lenders' write-off rate on all sterling non credit card unsecured lending to households.

It is possible for the expected loss at a certain point in time to be lower than the realised loss on existing lending if, for example, the outlook for the creditworthiness of borrowers is expected to improve relative to the recent period. This is most likely the case in the most recent data for unsecured lending where the realised loss on existing lending is high (in part due to the effects on households of the recent recession), but the

expected loss on new lending is slightly lower as the outlook for households' financial condition is improving steadily in line with the gradual recovery in the macroeconomy currently under way.

Capital charge

The capital charge can be thought of as the cost of accounting for the unexpected loss associated with extending a new loan. This article assumes the capital charge is set on a regulatory capital (rather than economic capital) basis. This can be calculated using the Basel I/II formula where the capital charge is the product of the 8% minimum capital requirement (MCR), the risk weight (RW) and the cost of capital (R_C, assumed to be 10% for all lenders):[2]

$$CC = MCR \times RW \times R_C \tag{4}$$

The standardised approach in Basel II sets the risk weights for lending at 35% for mortgages with LTV lower than 80% (otherwise 50% for higher LTVs) and at 100% for all types of unsecured loan.[3] Lenders with advanced credit risk modelling techniques may be authorised by the FSA to set risk weights based on their default experience (the internal ratings-based approach). Without these risk weights, this article assumes that lenders use the risk weights set out under the standardised approach (in the case of 75% LTV mortgages, 50% until the end of 2006 and 35% from 2007 onwards) to estimate the capital charge that covers for unexpected losses.[4]

As a result, the estimated capital charges for 75% LTV mortgages are 40 basis points until the end of 2006 and 28 basis points from 2007 onward, and 80 basis points for personal loans. From 2007, lenders using the internal ratings-based approach under Basel II have some flexibility in setting lower risk weights depending on their experience, so these are conservative estimates.

(1) While LTV is not a measure of affordability, a lower LTV at origination means a larger deposit was used upon purchase, alongside the mortgage. This should increase the willingness of a borrower to continue to meet interest payments to avoid losing the deposit and may indicate increased ability of a borrower to meet interest payments (higher deposit may be a sign of higher income). See Table 4.5 on page 40 of Financial Services Authority (2009).
(2) Academic studies place the cost of capital for banks at slightly below 10%. See page 60 of the June 2010 *Financial Stability Report*. Assuming a higher cost of capital would not have a material impact on the residual, for example 15% would only increase the capital charge for 75% LTV mortgages to 60 basis points until the end of 2006 and 42 basis points from 2007 onward. The charge for personal loans would increase to 120 basis points.
(3) See Basel Committee on Banking Supervision (2006). Prior to 2007, under Basel I, risk weights were 50% for all mortgages, 100% for unsecured. Not all major UK lenders may have transitioned to Basel II capital requirements from January 2007.
(4) The experience of the financial crisis may suggest that some Basel II risk weights were not appropriate for the level of risk borne by the lender. This and other issues are currently under debate between central banks and regulators, and the lenders themselves.

than six months, which has been in part influenced by the recession and associated rise in unemployment.

While the expected loss changes over time, the regulatory capital charge is assumed to have been unchanged in recent years, following the introduction of Basel II. For secured loans (75% LTV mortgages) the capital charge is 28 basis points, while for higher risk unsecured lending (personal loans) the capital charge is 80 basis points. Further detail on the calculation of the regulatory capital charge component can be found in the box on pages 176–77.

Other factors

In addition to funding costs and credit risk charges, a variety of other factors will also influence lenders' pricing models. These are captured in the residual in this decomposition.

Two principal factors that will be captured within the residual are the operating costs incurred by a lender through the life of a loan and the mark-up. Taking them in turn, lenders incur operating costs on all the activities that support the origination and servicing of a loan, such as maintaining a branch network and paying staff wages.[1] It is likely that operating costs have been little changed recently, though lenders may have actively sought to reduce operating costs in order to restore profitability following the financial crisis. The other main factor included in the residual is the mark-up that lenders charge over their marginal costs, which ensures that each loan extended generates an expected rate of return.

In addition, new lending rates may also be affected by other factors. For example, fees attached to products (such as application fees) and revenue streams from activities related to lending (such as insurance premiums) would increase the overall return on new lending. This may decrease the price of new lending. A fall in competition within the banking sector would tend to increase the price of new lending, holding other factors constant. Prospective tightening of capital and liquidity regulation may raise expectations of future costs associated with loans currently being extended and so increase the price of new lending.[2]

Decomposing the price of new lending

Having set out the analytical framework, this section outlines the quantitative decomposition of new lending rates for both secured and unsecured lending to households. As discussed earlier, given the variation in pricing models between lenders, there is, inevitably, considerable uncertainty attached to the size of each component. The relative sizes of the components and their trends over time are more informative than the absolute size of any component at any point in time. By construction, the magnitude of the residual is highly sensitive to the assumptions on the costs associated with funding and credit risk and so should be considered an indicative estimate.

The analysis of new lending rates is based on the average quoted new lending rates.[3] In practice, lenders offer a menu of new rates for secured and unsecured lending. The Bank collates these quoted new lending rates by product and publishes average quoted rates.[4] The next subsections will decompose the price of two common loan products.

Secured lending

Lenders offer a range of secured lending products. They include variable-rate mortgages (for example tracker and discounted variable-rate mortgages) and fixed-rate mortgages (products with initial fix periods, for example two-year and five-year, which later revert to the standard variable rate, the SVR). These are offered across a range of LTV ratios.

Decomposing a typical rate for secured lending — such as a 75% LTV tracker mortgage[5] — shows that the two main factors associated with changes in pricing are the funding cost and the residual. The expected loss and capital charge are relatively small in absolute terms, though the proportionate increase in the expected loss component since the financial crisis has been large (**Chart 4**).

Chart 4 Decomposition of new secured lending rate[a]
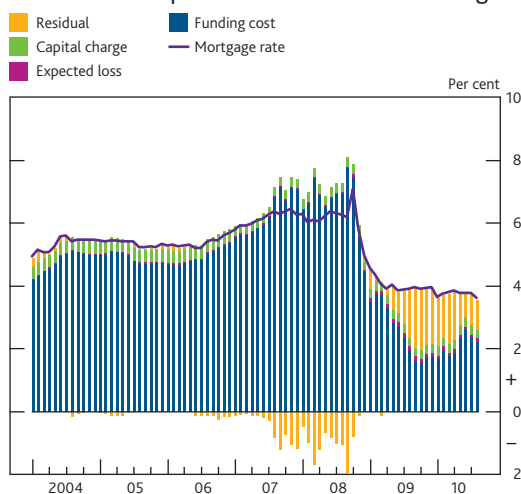
Sources: Bank of England, Bloomberg, British Bankers' Association, Council of Mortgage Lenders, Markit Group Limited and Bank calculations.

(a) 75% LTV tracker mortgage average quoted rate. See **Chart 1**, footnote (a) for information on average quoted rates.

The evolution of new secured lending rates can be divided into three broad periods. Before the onset of the financial crisis, new mortgages were priced broadly in line with estimated

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(1) These costs will vary with lenders' business models. For example, processing loan applications through a branch network is typically more costly than through a call centre or over the internet.
(2) On 12 September 2010, the governing body of the Basel Committee announced higher global minimum capital standards. See Basel Committee on Banking Supervision (2010).
(3) In practice, households may borrow at rates higher or lower than quoted rates, which are only a guide to pricing.
(4) For more information, see 'Explanatory notes — quoted household interest rates' (Bank of England (2010b)).
(5) The rate on a Bank Rate tracker mortgage is set at a fixed spread to Bank Rate for the life of the mortgage (typically 25 years). The rate on the mortgage changes only if Bank Rate is changed by the MPC.

marginal funding costs and the residual was very small. During the financial crisis, funding costs rose sharply and the residual became negative. It is possible lenders were surprised by the persistence of higher funding costs and so may have been slow to update the pricing of new mortgages. Since early 2009 the residual has increased markedly.

The rise in the residual may have reflected an increase in the mark-up charged on new lending. Operating costs are unlikely to have changed significantly during the financial crisis. And the product fees associated with mortgages are unlikely to have changed materially.

Another potential explanation for the rise in the residual could be that lenders incorporated higher credit risk charges into the price of new secured lending than the already conservative estimates included in this article. For the expected loss, lenders may expect a greater deterioration in households' creditworthiness to increase the probability of default. For the most recent period, trebling the expected loss (for example by using an arrears rate at a level similar to the peak observed in the early 1990s recession) would explain a quarter of the current residual. For the capital charge, lenders may have expected a greater cost of capital over the life of the loan following the financial crisis. For the most recent period doubling the capital charge would explain a third of the current residual.

Alternatively, the lenders may update the price of new lending more slowly than the pace at which lenders' funding costs change (for example because of 'menu costs' in updating quoted new lending rates too frequently). If this were true, the price of new lending could be expected to fall significantly in the near term. The implications of the recent increase in the residual will be considered in the final section of this article.

Unsecured lending

Lenders offer a range of unsecured lending products, including personal loans (typically £5,000 or £10,000, available over a range of maturities), credit cards and overdrafts.

Decomposing a typical rate for unsecured lending — such as a £10,000 fixed-rate personal loan — shows that, as with secured lending, changes in both the funding cost and the residual item are important determinants of pricing (**Chart 5**). But, unlike secured lending, the expected loss is large given the lack of collateral. The capital charge is again relatively small, though larger than for secured lending.

The evolution of unsecured lending rates can also be divided into a number of distinct periods. Between 2004 and 2006, unsecured loan rates were on average somewhat below marginal costs. But the sale of single premium payment protection insurance (PPI) alongside personal loans ensured that the overall mark-up on the loan was likely to have been

Chart 5 Decomposition of new unsecured lending rate[a]
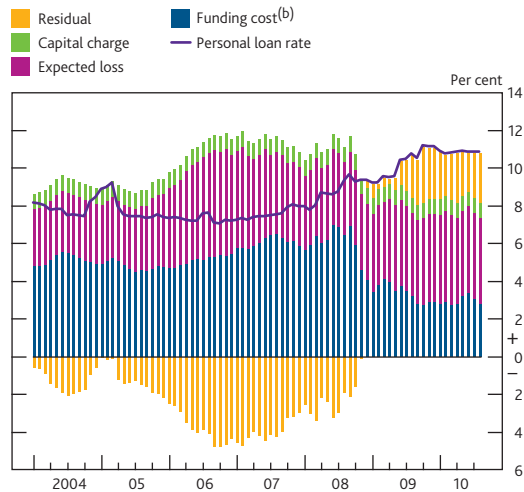
Sources: Bank of England, Bloomberg, British Bankers' Association, Markit Group Limited, UK Cards Association and Bank calculations.

(a) £10,000 personal loan average quoted rate. See **Chart 1**, footnote (a) for information on average quoted rates.
(b) The loan is fixed rate, so the funding cost incorporates the cost of entering into an interest rate swap. For further information on the marginal funding cost, see the box on pages 174–75.

positive at the time.[1] From 2006, the level of personal insolvencies increased, but lenders tightened criteria for new unsecured lending to reduce likely losses on new lending rather than raise the price. From 2008 investigations by the FSA into the pricing and cross-selling of PPI, started in 2005, gathered pace, and lenders were formally prevented from cross-selling PPI with personal loans in early 2009. In light of the loss of income from PPI, lenders started to rebuild the mark-up on unsecured lending.

The funding cost used in the decomposition follows the same pattern as that for secured lending. It currently accounts for a smaller proportion of the overall cost of new unsecured lending than it did before the crisis.

The expected loss component is higher than that for secured lending, principally reflecting the potential for greater losses should the borrower default. This article assumes that the recovery rate on this type of lending is small at 10% of the loan amount.

As with secured lending, it is possible that the residual reflects an increase in the mark-up on new lending (partly in response to the loss of PPI-related income) or could again reflect higher credit risk charges, over and above the conservative estimates included in this article.

(1) PPI is an insurance product offered to households by lenders and other intermediaries. The policy typically aims to meet monthly loan repayments for up to twelve months if the borrower is out of work. Households can choose to pay regular monthly premiums (regular payment PPI) or pay a one-off premium (single payment PPI), which is often added to the balance of the personal loan (and so accrues interest at the same rate as the loan). A report on PPI by the Office of Fair Trading found that the premium for single payment PPI was equivalent to doubling the interest rate on the personal loan and that around half of the premium was retained by lenders (Office of Fair Trading (2006)). This substantially offset the low margins on personal loans.

Differences in lenders' rates and costs

The results have so far been couched in terms of aggregate data. While this article assumes that the major UK lenders face the same marginal costs for expected loss and the capital charge, lenders offer distinct new lending rates and face different costs when extending loans, leading to a range of decompositions and associated residuals across the banking sector. Individual institution data are confidential and cannot be published. But this section aims to give a feel for the range of pricing decompositions across the major UK lenders using the price of new secured lending as an example. The distributions discussed in this section do not account for the uncertainty over the absolute size of any component.

The range of lenders' new secured lending rates has widened somewhat following the reduction in Bank Rate (**Chart 6**). This may reflect differences in funding costs faced by lenders. But it may also reflect differences in lenders' pricing models. The median new lending rate in **Chart 6** is not the same as the average new lending rate in **Chart 4** (which is a weighted average of the individual lenders' rates based on the market share of new lending).

Chart 6 Distribution of new secured lending rates[(a)(b)]

- Maximum-minimum range
- Interquartile range
- Median
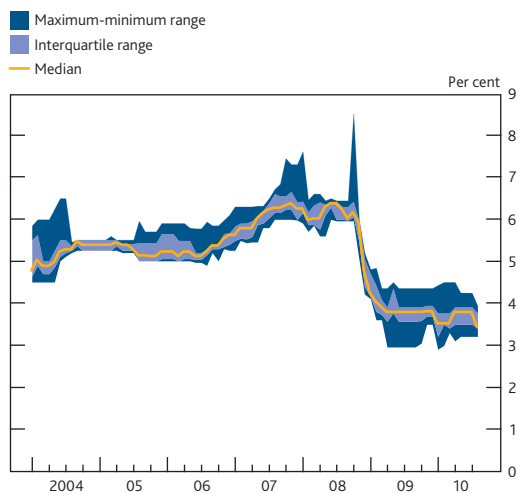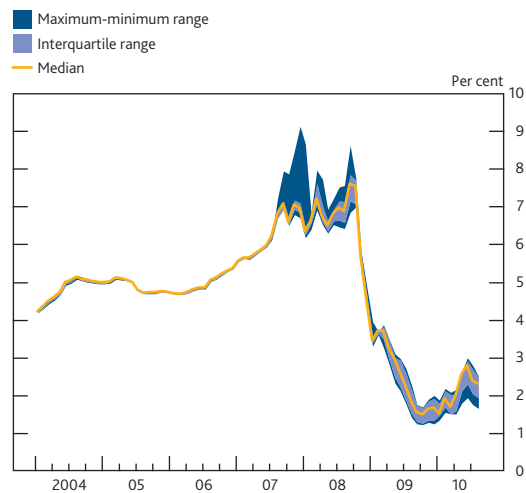
Sources: Bank of England and Bank calculations.

(a) 75% LTV tracker mortgage average quoted rate. See **Chart 1**, footnote (a) for information on average quoted rates.
(b) Not all the major UK lenders quote rates in all periods, so the sample varies over time.

The differences in the long-term wholesale funding cost between lenders became particularly marked during the financial crisis (**Chart 7**). Funding costs were broadly similar across lenders up to mid-2007. During the second half of 2007, funding costs began to diverge sharply as market participants reappraised the credit risk faced by each lender. And the distribution across the banking sector remains wider than before the financial crisis.

Having been negative during the early stages of the financial crisis, the residual component of new lending rates rose in

Chart 7 Distribution of marginal funding costs[(a)(b)]

- Maximum-minimum range
- Interquartile range
- Median

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

(a) Long-term variable-rate wholesale funding cost proxied by three-month Libor plus five-year CDS premia (for each individual lender). See **Chart 2**, footnote (a) for information on the marginal funding cost.
(b) The sample is aligned with **Chart 6**.

2009, as in the analysis using average new lending rates (**Chart 8**). A reasonably wide dispersion remains, reflecting differences in pricing models between lenders and continued differentiation between borrowers in funding markets. This dispersion will also reflect other factors such as the use of product fees and cross-selling by different lenders, the competitive environment and the operational capacity of lenders' back offices to process loan applications. The relative importance of these factors is likely to have varied across institutions and over time.

Chart 8 Distribution of residual component of pricing for new secured lending to households[(a)(b)(c)]
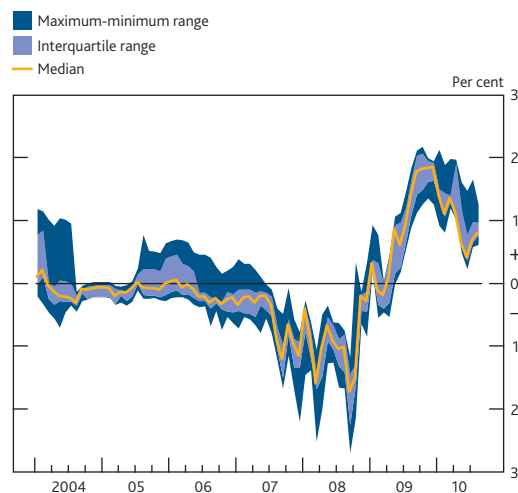
- Maximum-minimum range
- Interquartile range
- Median

Sources: Bank of England, Bloomberg, British Bankers' Association, Council of Mortgage Lenders, Markit Group Limited and Bank calculations.

(a) 75% LTV tracker mortgage average quoted rate. See **Chart 1**, footnote (a) for information on average quoted rates.
(b) The sample is aligned with **Chart 6**.
(c) For details on the decomposition of the average new lending rate see **Chart 4**.

The residual and net interest margin

The residual item appears to have been an important part of the price at which lenders extended some types of credit to households and is substantially higher now than before the financial crisis. The increase in the residual may reflect a rise in the mark-up over marginal costs as operating costs are expected to have been little changed and may even have fallen recently. This section explores the possible reasons for that increase.

The rise in the residual — to the extent it reflects an increase in the mark-up over marginal costs — is consistent with a desire by lenders to improve the net interest margin on the existing loan portfolio. The net interest margin is the difference between the interest that a lender receives on all loans and the interest it pays on all funding instruments as a proportion of loans outstanding. Since the start of the financial crisis, lenders' net interest margins have come under pressure and their response may have been to raise the mark-up on new lending.

One source of pressure on net interest margins has been the rise in the cost of funding the existing loan portfolio, both from customer deposits and wholesale funds. The cost of different funding instruments has risen relative to Bank Rate following the onset of the financial crisis (**Chart 9**). While variations in the cost of customer deposits do not affect the price of new lending (as the marginal cost is set as the price of long-term wholesale funding), they will affect the net interest margin on lending. For a discussion on the interaction between the price of new lending and the net interest margin, see the box on pages 174–75.

Chart 9 Cost of different funding instruments
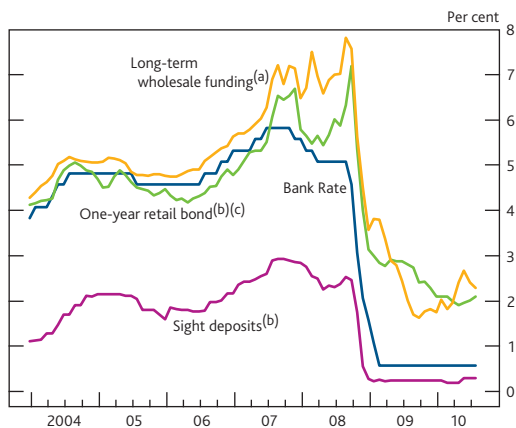
Sources: Bank of England, Bloomberg, British Bankers' Association, Markit Group Limited and Bank calculations.

(a) The long-term wholesale funding cost is proxied by the sum of three-month Libor plus an average of the five-year CDS premia for the major lenders.
(b) The sight deposit and one-year retail bond rates are weighted averages of rates from banks and building societies.
(c) The one-year retail bond rate is the cost of a floating-rate one-year retail deposit, ie the cost of a one-year fixed-rate bond net of a one-year interest rate swap.

Before the financial crisis lenders typically offered rates on new household deposits below Bank Rate. As Bank Rate was reduced sharply during the financial crisis, lenders commensurately reduced deposit rates. But as deposit rates cannot fall below zero, the spread between the deposit rates and Bank Rate also fell sharply. This is known as the 'endowment effect' and has been one source of pressure on lenders' net interest margins. In addition, as lenders seek to reduce their reliance on wholesale funding, competition for long-term retail deposits has increased, putting upward pressure on absolute rates and spreads to Bank Rate.

Net interest margins have also been squeezed by contractual obligations that lenders face on their existing stock of loans. For example, lenders may be obliged to pass on changes in Bank Rate to some variable-rate mortgage products (such as trackers and those linked to lenders' standard variable rate, the SVR). Before the financial crisis, the rate on new lending was lower than the rate on existing loans, reflecting competitive pressures in the market which reduced new lending rates. But during the financial crisis that situation has reversed as the 'back-book effect' has led to a sharp fall in the average interest rate charged on existing secured loans, such that the rate is now lower than that on new lending (**Chart 10**).

Chart 10 Divergence in lending rates to households[a]
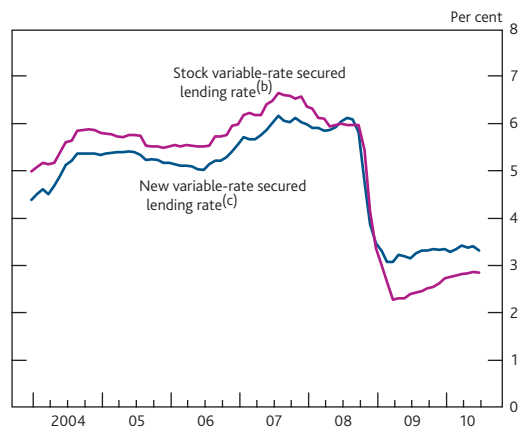
(a) For information on effective rates see Bank of England (2010c).
(b) The actual (effective not quoted) rate on variable-rate secured lending prevailing on all loans on lenders' balance sheets.
(c) The actual (effective not quoted) rate on variable-rate secured lending prevailing on new lending each month.

The combination of the endowment effect (raising the cost of deposits) and the back-book effect (lowering the return on existing assets) has contributed to a sharp fall in net interest margins on the overall stock of loans to households since the onset of the financial crisis. Lenders are seeking to rebuild net interest margins — some have stated long-term targets — in part through a higher mark-up on new lending. This is consistent with lenders rebuilding capital through retained earnings, an important part of the ongoing adjustment process for the UK banking sector and a factor that should ultimately lead to lower funding costs.

Implications for monetary policy and financial stability

The decoupling of new lending rates from Bank Rate since the onset of the financial crisis appears to have been predominantly driven by two factors. First, long-term wholesale funding costs (relative to Bank Rate) increased sharply. And, second, the residual component also picked up.

Higher long-term wholesale funding costs reflect a reappraisal among market participants about the perceived riskiness of lenders. Prior to the financial crisis, risk premia on all types of assets were low — including on lenders' long-term debt. But the events of the financial crisis led investors to require greater compensation for exposure to the credit risk of lenders, and funding costs in wholesale markets increased sharply. That contributed to a rise in new lending rates relative to Bank Rate.

The increase in the residual is likely to reflect a number of factors, including the mark-up on new lending. An increase in the mark-up is consistent with a desire by lenders to improve the net interest margin given the low return on the stock of existing loans (the back-book effect) and the higher cost of retail deposits (the endowment effect). It may also have been influenced by a reduction in the degree of competition within the banking sector following consolidation.

Movements in the residual can have different implications for monetary policy and financial stability. Holding other factors constant, an increase in the residual would push up on the cost to households of new borrowing, acting to dampen demand. But if an increase in the residual reflected higher mark-ups on new lending, it could increase lenders' profitability and — if those profits were retained — enable lenders to increase capital.

Higher levels of capital in the banking sector are desirable to enhance financial stability, so long as the process of building capital levels does not unduly constrain the supply of credit to households and businesses. Building up higher levels of capital in the banking sector reduces the likelihood that lenders will default and reduces the losses to creditors if lenders do default. This should lower market participants' perceived riskiness of the lenders and correspondingly lenders' marginal funding costs, thus enabling them to reduce the price of new lending to households while preserving mark-ups.

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