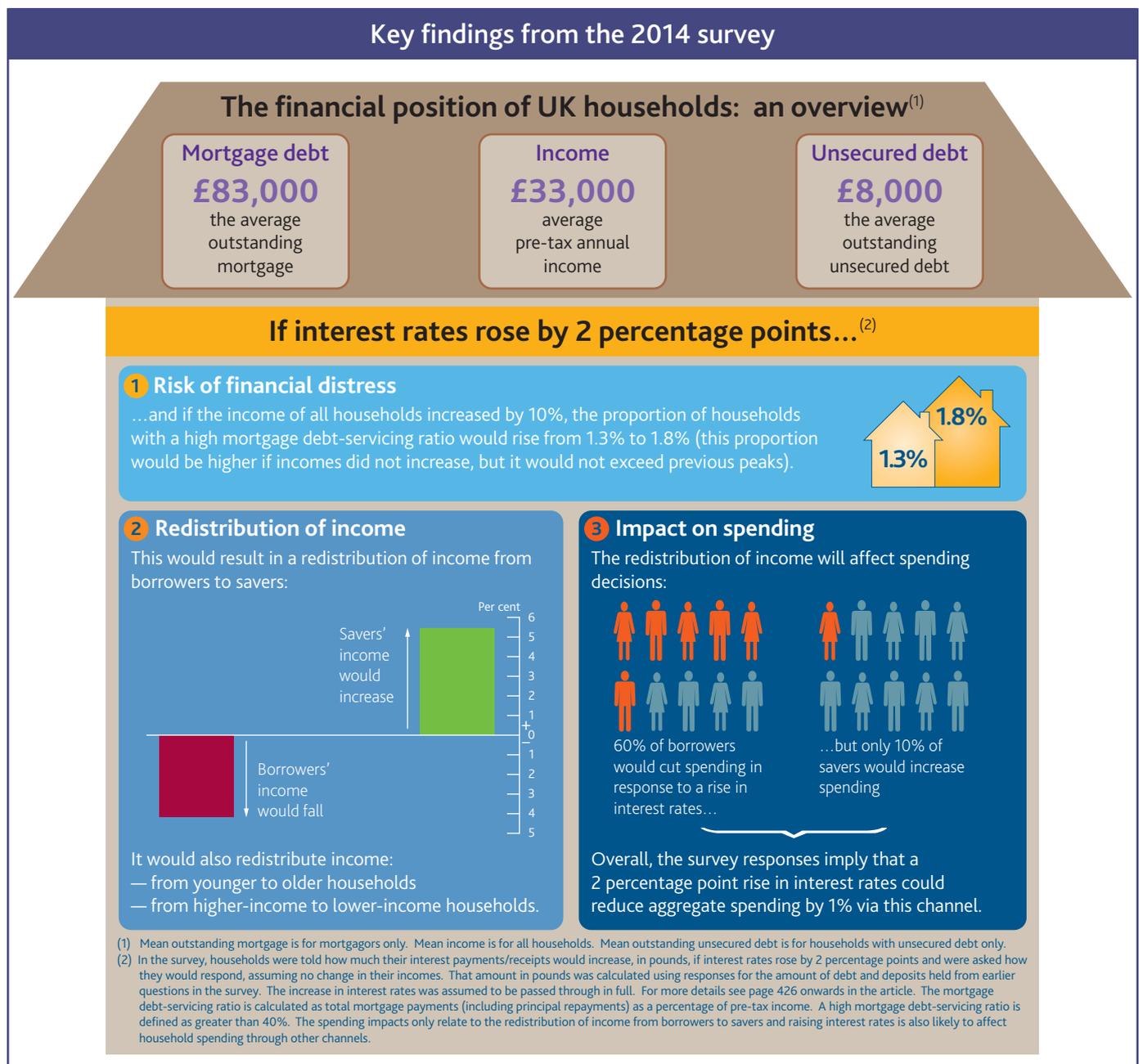


# The potential impact of higher interest rates on the household sector: evidence from the 2014 NMG Consulting survey

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- This annual article on the latest survey of households carried out by NMG Consulting on behalf of the Bank focuses on the potential impact of higher interest rates.



## Introduction

At the time of the August 2014 *Inflation Report*, financial market prices suggested that Bank Rate was expected to start increasing from 2015 Q1. Ahead of any change in interest rates, it is important to understand how the economy will be affected by such a change. The latest household survey carried out for the Bank by NMG Consulting during September therefore focused on assessing the potential impact of higher interest rates on the household sector.

Since August, the growth outlook has weakened a little, and at the time of the November 2014 *Inflation Report*, financial markets were suggesting that Bank Rate was not expected to start increasing until late 2015. As the economy normalises, Bank Rate will eventually need to start to rise in order to achieve the inflation target. But, as noted in the November *Inflation Report*, when Bank Rate does begin to rise, the pace of rate increases is likely to be gradual, with Bank Rate probably remaining below its historical average level for some time. The Monetary Policy Committee (MPC) has no pre-set course for the level of Bank Rate, and the timing of such increases will be determined by the data.

Assessing the current state of households' finances and the possible impact of rising interest rates is important for both monetary and financial stability. From a monetary policy perspective, it is important to understand how aggregate spending in the economy will be affected by higher interest rates. Raising interest rates typically leads to lower household spending, although the extent to which it falls is more uncertain and may change over time. From a financial stability viewpoint, if increases in interest rates were to result in a widespread increase in financial distress on mortgage lending or other debts, that could adversely affect banks' capital positions. And large falls in aggregate spending can also have knock-on effects for the rest of the economy that pose a serious risk to financial stability. The box on pages 422–23 contains a more detailed discussion of the channels through which higher household interest rates might affect both monetary and financial stability and the overlaps between the two.

Aggregate data can provide only a limited assessment of the implications of higher interest rates. It is important to use data at the household level — often referred to as microdata — to assess how many households are particularly vulnerable to rises in interest rates and, more generally, to assess how responses might vary between households in different financial positions.

Between 3 and 24 September 2014, NMG Consulting carried out an online survey of around 6,000 UK households on behalf of the Bank. The Bank has commissioned NMG Consulting to conduct a household survey during September every year

since 2004. This year, for the first time, an additional survey of 6,000 households was carried out during April, although the main focus of this article is on the most recent survey.<sup>(1)</sup>

As in previous years, the latest NMG survey asked households a range of questions about their incomes, balance sheets and the influences on their spending decisions. But in addition, there were a number of new questions asking households how they would respond to higher interest rates.<sup>(2)</sup> The box on pages 424–25 provides more details on the survey methodology.

This article is structured as follows. It starts by summarising the latest data on the distribution of household debt and debt-servicing costs. Next, it investigates the impact of a rise in interest rates on households, both in terms of assessing the number of households who would have high levels of debt-servicing costs and be at greatest risk of falling into arrears, and in terms of the impact on overall household spending. Finally, it looks at the distributional impacts of raising interest rates.

## Recent developments in households' balance sheets

The impact of raising interest rates will depend on households' holdings of debt and savings. National Accounts data show that the aggregate household debt to income ratio has fallen back from its peak in 2009 Q1, although it remains at a relatively high level (see **Chart A** in the box on pages 422–23). That fall reflects increases in nominal income, with the stock of debt having increased very modestly. But as is discussed in more detail in the box on pages 422–23, debt is not unusually high relative to deposits as the aggregate deposit to income ratio is also at a historically high level.

Aggregate data show that the stock of mortgage debt increased only slightly in the year to 2014 Q2. The latest NMG survey suggests that the size of the average outstanding mortgage was broadly unchanged over the year to September and stands at around £83,000.<sup>(3)</sup> For those with unsecured debt, the average amount of debt outstanding was reported to have increased a little over the past year, to around £8,000. Households also reported modest increases in income relative to the 2013 survey: in the latest survey average annual income before tax was around £33,000, although it was somewhat higher for mortgagors at around £43,000.

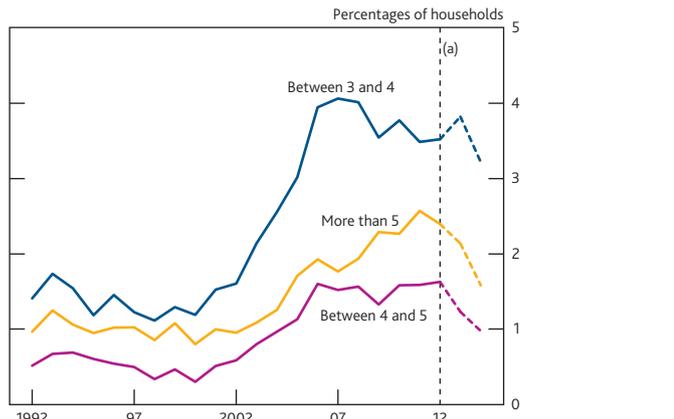
(1) Pages 25–27 of the June 2014 *Financial Stability Report* contains some discussion of the results from the April 2014 NMG survey.

(2) The latest survey also included a module on buy-to-let investments, which is not covered in this article. These data, along with the other data from the survey are available on the Bank's website at [www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2014/nmgsurvey2014.xls](http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2014/nmgsurvey2014.xls).

(3) The averages in this section are based on financial values reported as point estimates in the 2014 survey. Until 2013, respondents were asked which debt/income band they fell into and averages were calculated using the mid-point of each band. Therefore where changes relative to 2013 are reported, these are calculated using the banded data. See the box on pages 424–25 for further details.

The share of households with a mortgage debt to income ratio above 3 is estimated to have fallen back since 2012 (Chart 1). That proportion appears to be slightly lower than in 2007, at the start of the financial crisis, although the share is still high relative to the 1990s and early 2000s. Part of the decline in the share of households with high mortgage debt to income ratios reflects a fall in the share of households with a mortgage.<sup>(1)(2)</sup>

Chart 1 Distribution of mortgage debt to income ratios



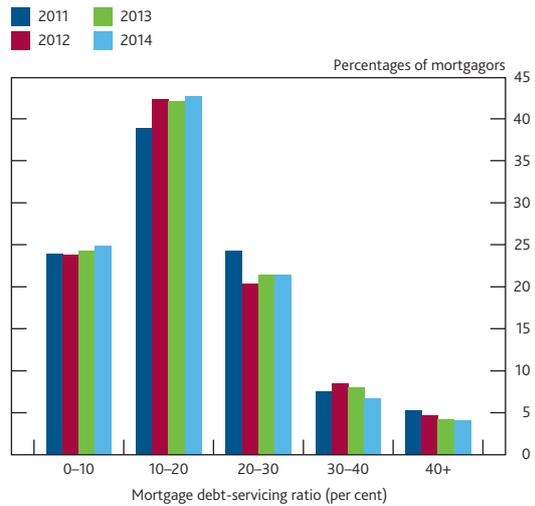
Sources: Living Costs and Food (LCF) Survey, NMG Consulting survey and Bank calculations.

(a) Data up to 2012 are based on responses to the LCF Survey. Data for 2013 and 2014 are based on responses to the NMG survey and have been spliced onto the earlier LCF Survey data series. 2014 NMG data are from the H2 survey only.

In addition to the size of the loan relative to income, when considering the capacity of indebted households to adjust to increases in interest rates it is also important to consider the size of their current loan repayments relative to their income. The sizes of repayments on a loan are determined by the loan size, the maturity of the loan and the interest rate paid on the loan. The debt-servicing ratio (DSR) measures the size of current debt repayments relative to gross income. Households who currently face higher repayments as a share of their gross income — that is, who have a higher DSR — might be considered to be more vulnerable to interest rate increases. While there is no fixed threshold for the DSR at which households become more vulnerable, evidence presented in the box on pages 422–23 suggests that the proportion of mortgagors in arrears increases significantly when mortgage DSRs exceed 40%.

The proportion of mortgagors with high mortgage DSRs was little changed over the past year. Chart 2 shows that around 4% of mortgagors in the latest survey reported a mortgage DSR of at least 40% — which equates to just over 1% of all households. Households with high mortgage DSRs are much more likely than other mortgagors to report that their income has fallen since they took out their mortgage (Chart 3).<sup>(3)</sup> Some vulnerable mortgagors also have a significant amount of unsecured debt, and more broadly there has been a modest increase in the proportion of households for whom unsecured

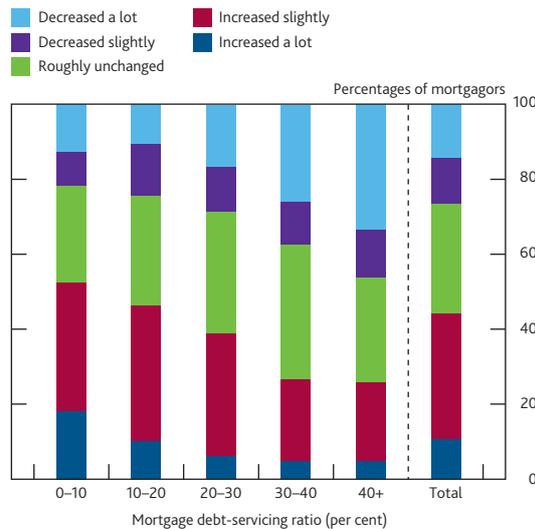
Chart 2 Distribution of mortgage debt-servicing ratios<sup>(a)</sup>



Sources: NMG Consulting survey and Bank calculations.

(a) The mortgage debt-servicing ratio is calculated as total mortgage payments (including principal repayments) as a percentage of pre-tax income. Calculation excludes those whose DSR exceeds 100%. Reported repayments may not account for endowment mortgage premia. 2014 NMG data are from the H2 survey only.

Chart 3 Change in income since taking out mortgage, by debt-servicing ratio<sup>(a)</sup>



Sources: NMG Consulting survey and Bank calculations.

(a) Question: 'How does the current annual income of your total household (before deductions) compare with what it was when you last took out a mortgage or secured loan on your main home or changed the amount borrowed on an existing mortgage or loan secured on this property?'. The mortgage debt-servicing ratio is calculated as total mortgage payments (including principal repayments) as a percentage of pre-tax income. Calculation excludes those whose DSR exceeds 100%. Reported repayments may not account for endowment mortgage premia.

loan repayments take up a significant proportion of their income.

(1) According to the English Housing Survey, which is used to weight the NMG survey, the percentage of households with a mortgage has fallen from 39% in 2007 to 33% in 2012–13.  
 (2) The share of mortgagors with high loan to value (LTV) ratios has also fallen back over the past two years, which in part is likely to reflect increases in house prices over that period. In the latest survey, around 15% of mortgagors had an LTV of 75% or higher.  
 (3) The most common reason cited by these mortgagors for a decline in their income is that somebody in the household has been made redundant.

## Assessing the implications of higher household interest rates for monetary and financial stability

The Bank's Monetary Policy Committee's (MPC's) primary objective is to deliver price stability and meet the 2% CPI inflation target. The Bank's Financial Policy Committee (FPC) is responsible for protecting and enhancing the stability of the UK financial system. Both Committees, however, share a secondary objective to support the Government's objectives for growth. This box describes the main channels through which the impact of higher interest rates on households might have implications for monetary policy and financial stability, and the overlaps between the two.<sup>(1)</sup>

### Implications for monetary policy

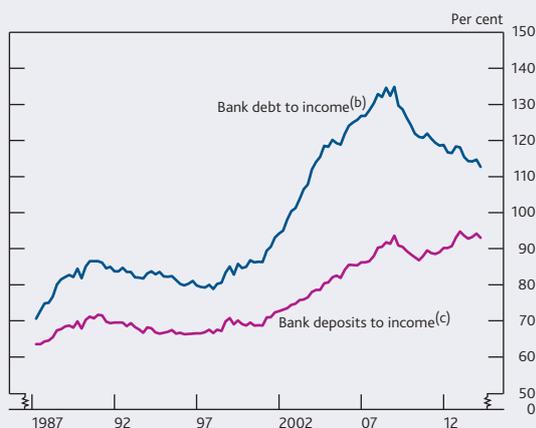
The level of demand relative to supply capacity — in the labour market and elsewhere — is a key influence on domestic inflationary pressure. Understanding the outlook for the level of spending in the economy — around two thirds of which is directly accounted for by households — and how that might be affected by higher interest rates is therefore a key input into monetary policy decisions.

Increases in interest rates should lower household spending: higher rates reduce the disposable income of borrowers by raising interest payments on loans, and boost the income of savers by increasing interest receipts. Borrowers are typically assumed to have higher marginal propensities to consume than savers, implying that borrowers reduce spending by more than savers increase it when interest rates increase, so that aggregate spending falls via these 'cash-flow' effects. But higher rates will also encourage consumption to be postponed because greater returns on saving increase the amount of future consumption that can be achieved by sacrificing a given amount of spending today.

The size of the cash-flow effects on consumption from higher interest rates will depend on the amount of debt held by the household sector relative to its stock of deposits, and on the difference between the marginal propensities to consume of borrowers and savers. Although the household debt to income ratio has risen significantly since the late 1990s (despite the recent fall back), deposits relative to income have also increased, and the ratio of debt to deposits is currently close to its average since 1987 (**Chart A**). The aggregate stock of debt relative to deposits is therefore not likely to be a reason why a given rise in interest rates should have a larger impact on household spending now than in the past. But there is more uncertainty about marginal propensities to consume: estimates from the NMG survey are discussed on page 429.

Increases in financial distress that affect banks' capital positions and which initially pose a risk to financial stability (as

**Chart A** Household debt to income and deposits to income ratios<sup>(a)</sup>



Sources: ONS and Bank calculations.

- (a) Following methodological changes in the recent *Blue Book*, data used in the calculations are currently only published from 1997. Before 1997, the data are spliced with the previous vintage.  
 (b) Household financial liabilities with UK monetary financial institutions (MFIs) as a percentage of annualised total household resources.  
 (c) Deposits with UK MFIs as a percentage of annualised total household resources.

discussed in more detail below), may also have monetary policy implications. For example, they might affect the amount and cost of new lending that banks are prepared to undertake, which could then feed back into households' spending decisions and aggregate demand in the economy.

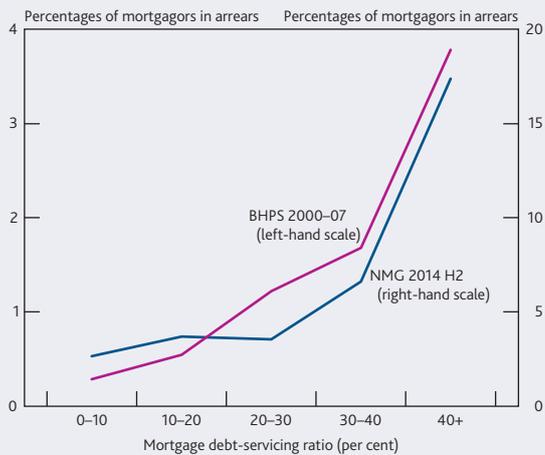
### Implications for financial stability

Increases in interest rates can have implications for financial stability through their impact on households' ability to meet their debt commitments. Higher interest rates would raise repayments on both mortgages and other loans, which may increase the number of households struggling to repay their debts. Widespread increases in financial distress have the potential to lower banks' capital positions and threaten the resilience of the UK banking system.

Mortgage lending is the single largest asset class on UK banks' balance sheets. The extent to which the number of households with high debt-servicing costs increases when interest rates rise will be one determinant of how much financial distress rises. There is evidence from both the British Household Panel Survey (BHPS) before the financial crisis and the latest NMG survey that the proportion of mortgagors in arrears increases significantly when mortgage repayments exceed 40% of gross income (**Chart B**).<sup>(2)</sup> Estimates of how many households fall into this category are discussed on page 427. However, any threshold chosen to proxy a 'vulnerable' household is somewhat arbitrary; developments in income as well as interest rates will affect debt-servicing ratios (DSRs); and DSRs are not the only factor affecting whether households enter arrears.

Large falls in aggregate spending can potentially pose a significant threat to financial stability as well as affecting

**Chart B Mortgage arrears and debt-servicing ratios<sup>(a)</sup>**



Sources: British Household Panel Survey (BHPs), NMG Consulting survey and Bank calculations.

(a) In both surveys households were asked whether they had been in arrears for two months or more over the past year. The mortgage debt-servicing ratio (DSR) is calculated as total mortgage payments (including principal repayments) as a percentage of pre-tax income. Calculation excludes those whose DSR exceeds 100%. Reported repayments may not account for endowment mortgage premia.

monetary policy. At higher levels of indebtedness, households may be more likely to encounter payment difficulties following negative shocks to income or interest rates. Concerns about the risk of financial distress may lead to sharp

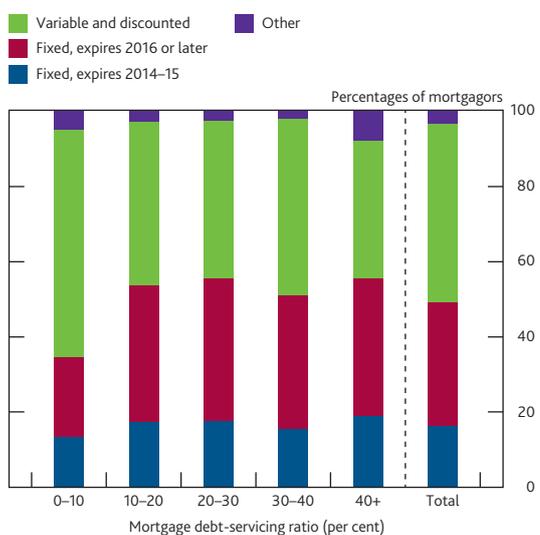
falls in spending, even if that distress does not eventually materialise. That could threaten wider economic stability and pose an indirect threat to the resilience of banks, as well as affecting the outlook for inflation.

The potential for household indebtedness to have a large adverse impact on aggregate demand and on the banking system was a key reason why the FPC took policy actions in June 2014 to insure against the risks from a further significant increase in the number of highly indebted households.<sup>(3)</sup> The importance of this channel will depend on the nature of the shock. A scenario in which interest rates are raised in a gradual and limited way alongside increases in household income is less likely to be one in which indebted households make large cuts in spending that pose a significant risk to financial stability.

- (1) See Shakir and Tong (2014) on pages 396–408 in this *Bulletin* for a more detailed discussion on the interactions between the FPC and MPC.
- (2) The reported level of mortgage arrears in the latest NMG survey is significantly higher than in the BHPs before the crisis. That partly reflects the fact that aggregate arrears have risen. But also, importantly, the latest NMG survey was conducted online rather than face-to-face like the BHPs, and households appear much more likely to report financial difficulties in online surveys (see Bunn *et al* (2012) for more details).
- (3) See the June 2014 *Financial Stability Report* for more detail on these measures; [www.bankofengland.co.uk/publications/Documents/fsr/2014/fsrfull1406.pdf](http://www.bankofengland.co.uk/publications/Documents/fsr/2014/fsrfull1406.pdf).

Households on fixed-rate mortgages are more insulated from the impact of rises in Bank Rate in the short term, since their mortgage repayments would not immediately increase. But the survey suggests that the more vulnerable households with high DSRs are not much more likely than average to be on fixed-rate mortgages (Chart 4).

**Chart 4 Type of mortgage by debt-servicing ratio<sup>(a)</sup>**



Sources: NMG Consulting survey and Bank calculations.

(a) Question: 'What is the type of interest rate being paid on the mortgage or loan?'. The mortgage debt-servicing ratio is calculated as total mortgage payments (including principal repayments) as a percentage of pre-tax income. Calculation excludes those whose DSR exceeds 100%. Reported repayments may not account for endowment mortgage premia.

## Debt burdens and concerns

As well as asking households about the level of debt that they hold and their repayments, the NMG survey asks whether they are finding their debt obligations to be a burden. Encouragingly, the proportion of mortgagors reporting that they are having problems paying for their accommodation has fallen from 19% in September 2013 to 14% in September 2014 (Chart 5). Many households that are not facing immediate financial problems may, nevertheless, be concerned about their debts more broadly. In the latest survey, the proportion of mortgagors who reported that they are concerned about their debt remained substantial at around 44%, although this proportion has fallen back in recent years (Chart 5).

Renters also reported that the burden of debt — in their cases unsecured debts such as personal loans or credit card debts — has fallen over the past year. 15% of all renters reported that they were finding unsecured debt to be a heavy burden, compared with 19% a year ago.

In the latest survey, around a quarter of mortgagors reported that they had cut spending as a result of concerns about their debt (Table A). This proportion has fallen over the past two years. Households with high mortgage DSRs, however, are more likely to have cut spending in response to concerns about debt: around 40% of households who had a mortgage DSR of at least 30% reported that they had cut spending in

## Survey method

### Introduction and methodology

The latest NMG survey was carried out online over the period between 3 and 24 September, covering around 6,000 UK households.<sup>(1)</sup> Between 2004 and 2013, the NMG survey was conducted on an annual basis, however, this year an additional survey was undertaken in April, with some of the results presented in the June 2014 *Financial Stability Report*. That survey also covered around 6,000 households. The focus of this article is on the more recent September survey.

The NMG survey includes a panel element, since respondents from previous surveys are invited to retake the survey. Using the same sample allows changes in households' responses to be tracked without the influence of sampling. In the latest survey, respondents to the April 2014 and September 2013 surveys were reinvited. Around half of the households who undertook the latest survey had completed at least one previous NMG survey. However, this article focuses on the cross-sectional data, given that many of the new questions on the impact of higher interest rates are only available in the latest survey.

The survey is weighted to be representative of the population of Great Britain. It is, however, possible that these survey data do not present a true picture of households' finances. That may be because certain types of individuals are more likely to respond to online surveys, or that answers given are not accurate. Nevertheless, the survey data do have broadly similar trends to the aggregate data and are a good source of information for assessing distributional issues.

### Reporting of financial values

In surveys prior to 2013, financial values, such as household income, were reported in ranges, rather than actual amounts. In 2013, a new approach was trialled in which new respondents were asked to enter actual amounts rather than being given a list of ranges to select from. In the April and September 2014 surveys, all respondents were initially asked to provide actual amounts. Households that were unable or unwilling to provide actual amounts were then provided with a list of ranges to choose from.

The point estimates for financial values reported in this article are the actual amounts reported by households. For households who were unable to give actual amounts and instead reported ranges, it is assumed that the actual amounts for those households were at the mid-point of their reported ranges.

### Advantages of asking households to provide specific values

There are a number of advantages of asking households to provide actual amounts for financial values, rather than asking them to respond in ranges.

#### 1. Monitoring small changes in financial values

One advantage is that it enables small changes in financial values to be identified. This is particularly useful when exploiting the longitudinal element of the survey. For example, a household whose income increased from £30,000 to £39,000 between the 2013 survey and the latest survey would report an income of £30,000–£39,999 in both surveys if asked to respond using ranges and so that increase in income would not be identified.

#### 2. Avoiding the use of range mid-points

When results were reported in ranges, point estimates were calculated by using the mid-points of the relevant ranges. For example, if a household reported that its income was in the range £30,000–£39,999 it would be assumed that this household had an actual income of £35,000.

This assumption might be reasonable if the households who report in this range have actual incomes that are distributed evenly across the range. But using mid-points would provide biased point estimates if households' actual incomes are clustered around specific points in the ranges. For example, if most households who report that their income is in the range £30,000–£39,999 have an actual income of £30,000, then using the mid-point of £35,000 would overstate household income.

Another problem with using mid-points is that it requires an additional assumption about households who select the highest possible range. For example, the highest income range households can choose in the survey is '£100,000 or more'. To assign a mid-point to this range, an arbitrary assumption has to be made about what the average income of households in that group is likely to be.

#### 3. Calculating ratios

The problems with using mid-points of ranges to calculate point estimates can be exacerbated when calculating ratios. Consider a household which has an outstanding mortgage of £165,000 and an income of £30,000. The household's actual mortgage debt to income ratio is given by:

$$£165,000/£30,000 = 5.5$$

If the household was answering in ranges in the NMG survey, it would report mortgage debt in the range £150,000–£169,999 and income in the range £30,000–£39,999. Using the mid-points of these ranges would suggest a mortgage debt to income ratio of:

$$£160,000/£35,000 = 4.6$$

In this example, using mid-points substantially understates the mortgage debt to income ratio, since mortgage debt is understated and income is overstated.

**The treatment of outliers**

Asking households to provide actual values for certain financial variables can result in some households reporting extremely large values, which might be considered to be outliers and potentially can have very significant effects on sample averages. For the analysis undertaken in this article, the influence of outliers is limited by recoding values which exceed the 99th percentile for each variable to that value.

**Comparisons with point estimates from previous surveys**

The change in how financial values are reported in the 2014 surveys means that caution is required when comparing point estimates from previous surveys. Households may respond differently when presented with ranges rather than actual values. Furthermore, as discussed above, mid-points of ranges may be biased estimates of actual values if the actual values are not distributed evenly across the ranges.

To illustrate the difficulties this implies for making year-on-year comparisons of survey averages, **Table 1** considers estimates of the average outstanding mortgage debt

for those with a mortgage using different approaches. In the latest survey, the average mortgage debt using the new methodology, based on point estimates of financial values, was £82,976. That compares to £86,728 in the 2013 survey, which was calculated using mid-points of the band. At face value, this suggests a 4% fall in the average level of outstanding mortgage debt. But if the actual values used to compute the 2014 estimate are converted to the mid-points of the relevant ranges, to be consistent with the old methodology, average outstanding mortgage debt is broadly unchanged since 2013.

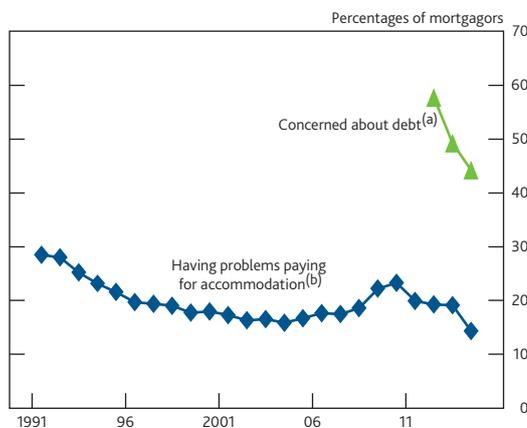
**Table 1** Estimates of outstanding mortgage debt

	Old mid-points methodology	New point estimate methodology
September 2013	£86,728	n.a.
September 2014	£86,407	£82,976

Sources: NMG Consulting survey and Bank calculations.

(1) The main survey has been carried out online since 2012. For a discussion of the advantages of conducting the survey online, see Bunn *et al* (2013).

**Chart 5** Mortgagors having payment problems and reporting concerns about debt



Sources: British Household Panel Survey (BHPS), NMG Consulting survey and Bank calculations.

(a) Question: 'How concerned are you about your current level of debt?'. Data on mortgage payment problems are spliced with results from the face-to-face NMG survey between 2005 and 2010 and BHPS before 2005. 2014 NMG data are from the H2 survey only. Mortgagors concerned about debt includes those who reported they were either very concerned or somewhat concerned.  
 (b) Question: 'In the past twelve months, would you say you have had any problems paying for your accommodation?'.

response to debt concerns. This is consistent with other evidence that suggests that heavily indebted UK households cut their spending by more during the recent recession (Bunn and Rostom (2014)).<sup>(1)</sup>

As well as cutting spending, households facing high debt-servicing costs have responded to concerns about their debt in other ways. In particular, mortgagors who had debt-servicing ratios above 30% were more likely than average to report that they had increased their labour supply in response to debt concerns, both in terms of the number of

**Table A** How households have responded to concerns about debt<sup>(a)(b)</sup>

Per cent	All mortgagors	Mortgage DSR >= 30%	All households with debt
Cutting spending	26	40	30
Avoiding further debt	24	33	28
Making overpayments	10	11	11
Working longer hours/taking a second or better paid job	6	11	7
Getting financial help	2	5	3
Taking up employment myself	2	3	3
Someone else taking up employment	1	4	2
Other	2	5	2
No action	3	3	3

Sources: NMG Consulting survey and Bank calculations.

(a) All households were asked 'How concerned are you about your current level of debt?'. Those households who reported that they were either very concerned or somewhat concerned were then asked 'What actions, if any, are you taking to deal with your concerns about your current level of debt?'. Respondents were allowed to select up to three options.  
 (b) The percentages reported in the table refer to percentages of all households within each group, regardless of whether they were concerned about debt.

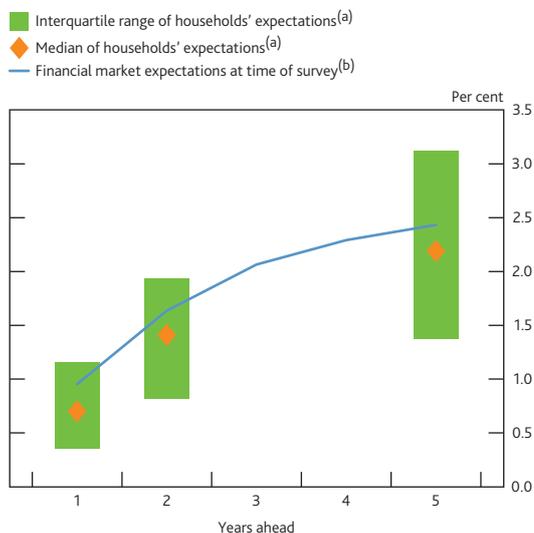
people in the household who work and the number of hours worked (**Table A**).

The NMG survey also asked households why they were concerned about debt. The most frequently cited reason for such concerns was the possibility of being unable to meet repayments if interest rates rose, with 36% of households reporting this as being a concern, compared with 33% in the 2013 survey. At the time the 2014 survey was taken, households were expecting modest rises in Bank Rate, and

(1) This result is also evident in other countries such as the United States (Mian, Rao and Sufi (2013) and Dynan (2012)) and Denmark (Andersen, Duus and Jensen (2014)).

their expectations were broadly in line with those of financial markets (**Chart 6**).

**Chart 6** Expectations for Bank Rate



Sources: Bank of England, Bloomberg, NMG Consulting survey and Bank calculations.

- (a) Question: 'The level of interest rates set by the Bank of England (Bank Rate) is currently 0.5%. At what level do you expect that interest rate to be in each of the following time periods? One year from now/two years from now/five years from now?'
- (b) Forward curve estimated using overnight index swap rates over the period from 3 September to 24 September 2014. This is the period over which the survey was conducted. Forward curves constructed in this way are likely to reflect a measure close to the mean expectation of financial market participants.

## The impact of higher interest rates

This section investigates the impact of a potential rise in interest rates on households. The first part examines this from a financial stability angle, by estimating the proportion of households that are likely to have high debt-servicing ratios when rates rise, since these households are likely to be the most at risk of entering arrears. The second part uses the survey responses to estimate the extent to which a rise in interest rates is likely to result in a fall in overall household spending.

The analysis in this section is based on a scenario in which Bank Rate rises immediately by 2 percentage points. This increase in rates is assumed to be passed through to households in full, and unless otherwise stated, household income is assumed to remain unchanged. This scenario is therefore likely to be very different to the circumstances in which Bank Rate will actually rise, where increases are likely to be more gradual and accompanied by growth in incomes. Although the aim of this work is to assess the implications of a rise in interest rates that could take place over an extended period, for practical reasons, households were asked how they would respond if the increase in rates took place straightaway. This was in order to avoid them having to make assumptions about how other aspects of their financial situations might change over time.

If Bank Rate were to rise by 2 percentage points, the assumption of full pass-through of higher rates to households is likely to be an overestimate. For example, many households hold mortgages and saving products whose interest rates are fixed for a period, and so they would not be immediately affected by a rate rise (although they would be affected over a longer time period, after those contracts come up for renewal).<sup>(1)</sup> In addition, for simplicity it is assumed that the overall stock of debt remains unchanged; that there is no change in mortgage capital repayments; and that there is no transition between renter and mortgage status.

### Impact of a rise in rates on the proportion of households with high mortgage debt-servicing ratios

Higher interest rates are likely to increase the number of households with high debt-servicing ratios, which in turn might lead to a rise in arrears. Any definition of what constitutes a household that is particularly vulnerable to distress is somewhat arbitrary. As discussed in the box on pages 422–23, however, there is evidence that the proportion of mortgagors in arrears increases sharply when mortgage repayments exceed 40% of gross income. This section therefore assesses the number of households who might fall into this vulnerable category when interest rates rise.

Bank Rate is likely to rise in a gradual and limited way, alongside increases in household income. Assuming a 10% increase in income for all households, a 2 percentage point rise in mortgage interest rates would be likely to raise the proportion of mortgagors with a DSR of at least 40% from its current level of 4% to around 6% (illustrated by the green bars in **Chart 7**).<sup>(2)(3)</sup> The number of UK households in this vulnerable category would increase from around 360,000 to 480,000.<sup>(4)</sup> But the impact would be more severe in a second, less likely, scenario where there was assumed to be no increase in incomes (the red bars in **Chart 7**).

**Looking at households as a whole, and taking account of the falling share of households with a mortgage, the proportion of all households with high mortgage debt-servicing ratios is currently low relative to its average since 1991 (Chart 8), and neither of the scenarios described above would result in that share exceeding previous peaks.** Under Scenario 1, where income increases by 10% for all households, the share of households with a mortgage DSR above 40% would be likely to remain below its average since the early 1990s,

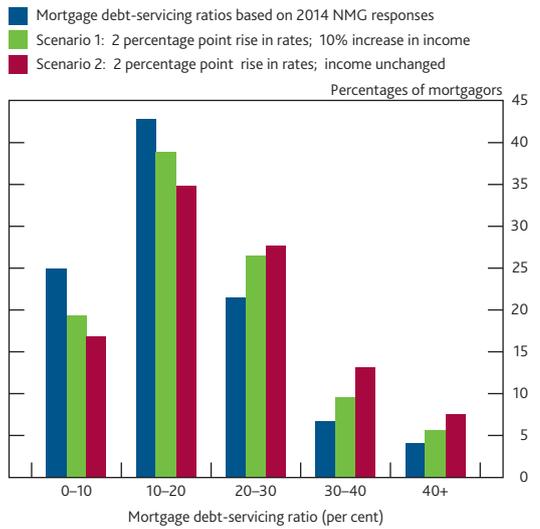
(1) In addition, changes in Bank Rate are usually passed through to variable-rate products with a lag. See Butt and Pugh (2014).

(2) As mentioned earlier, these estimates may overstate the true impact since they assume immediate pass-through of rates to both fixed and variable-rate mortgages.

(3) Based on the November 2014 *Inflation Report* projections, average nominal post-tax disposable income per household is expected to increase by around 10% by the end of 2017.

(4) The estimate of the number of households in the United Kingdom comes from the ONS 'Families and Households' 2013 publication. This figure was multiplied by the proportion of vulnerable households from the NMG survey to estimate the number of vulnerable households.

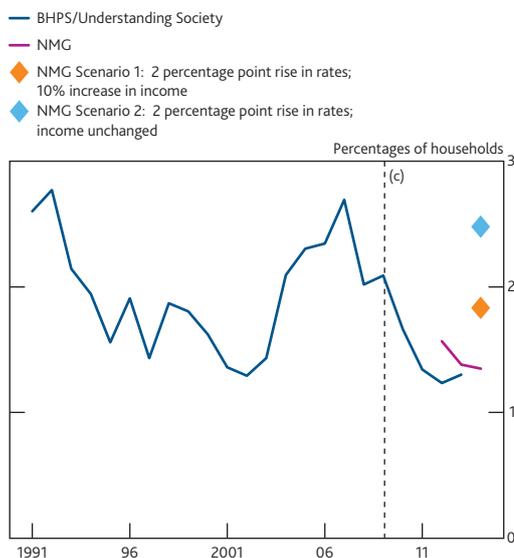
**Chart 7 Sensitivity of the distribution of mortgage debt-servicing ratios to higher interest rates<sup>(a)</sup>**



Sources: NMG Consulting survey and Bank calculations.

(a) The mortgage debt-servicing ratio distribution based on the 2014 H2 NMG survey replicates the one in Chart 2. 'Scenario 1' denotes the distribution under both a 2 percentage point interest rate increase and a 10% income rise. 'Scenario 2' denotes the distribution under a 2 percentage point increase in interest rates with no change in income. The simulations of the two scenarios assume full pass-through of higher interest rates to all mortgagors. The assumptions listed on page 426 also apply.

**Chart 8 Percentage of households with mortgage debt-servicing ratios above 40%<sup>(a)(b)</sup>**



Sources: BHPS, NMG Consulting survey, Understanding Society Survey and Bank calculations.

(a) The mortgage debt-servicing ratio is calculated as total mortgage payments (including principal repayments) as a percentage of pre-tax income. Calculation excludes those whose DSR exceeds 100%. Reported repayments may not account for endowment mortgage premia. BHPS/Understanding Society estimates exclude households for whom more than 1% of income is imputed. 2014 NMG data are from the H2 survey only.  
 (b) Scenarios 1 and 2 are as described in footnote (a) of Chart 7.  
 (c) BHPS/Understanding Society data to the left of the dashed line are from the BHPS (1991–2008). Data to the right are from Understanding Society (2009–13).

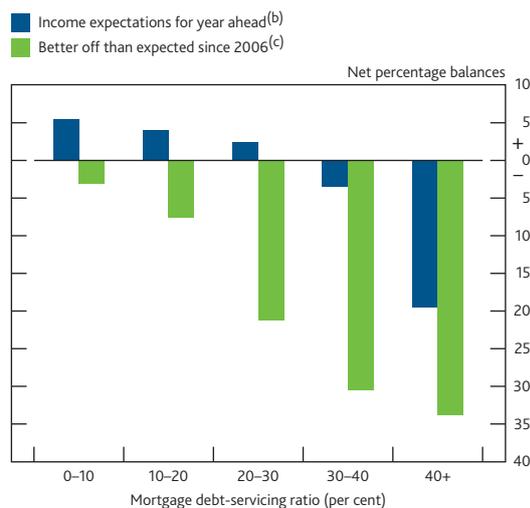
although it is estimated it would approach its previous peaks if there were no increase in household income (Scenario 2).

**These experiments illustrate that, unsurprisingly, the outlook for household income is a key factor that will determine the vulnerability of households to a rise in**

**interest rates.** There is a risk that the most vulnerable households will experience lower-than-average income growth as rates rise.

Indeed, data from the survey imply that more vulnerable households have more pessimistic income expectations for the next twelve months. The blue bars in Chart 9, for instance, show that a net percentage balance of 20% of households with a debt-servicing ratio of at least 40% expect their income to fall over the next year (although the chart does not show by *how much* these households expect income to fall). The time horizon for these income expectations is shorter than the period over which Bank Rate is likely to rise by 2 percentage points. But if these households' expectations are correct then the proportion of households at high DSRs may be similar to, or even higher than, the proportion under the thought experiments where the income of vulnerable households remains unchanged.

**Chart 9 Mortgagors' income expectations and change in financial position since 2006<sup>(a)</sup>**



Sources: NMG Consulting survey and Bank calculations.

(a) The mortgage debt-servicing ratio is calculated as total mortgage payments (including principal repayments) as a percentage of pre-tax income. Calculation excludes those whose DSR exceeds 100%. Reported repayments may not account for endowment mortgage premia.  
 (b) Question: 'Over the next twelve months, how do you expect your household income (before anything is deducted for tax, National Insurance, pension schemes etc) to change?'. Net percentage balance is the percentage of households expecting their income to increase less the percentage expecting it to fall.  
 (c) Question: 'Would you say you are financially better off or worse off now than you would have expected at the end of 2006, before the start of the financial crisis?'. Net percentage balance is the percentage of households who reportedly are better off now than they had expected in 2006 less the proportion worse off. Those who reported they are better/worse off are given half the weight of those who reported they are much better/worse off.

There is a great deal of uncertainty around the likely distribution of future household income growth, however. Households with the highest DSRs were more likely to report that they were worse off now than they had expected in 2006 (the green bars in Chart 9). If these households have based their income expectations on an extrapolation of their recent experiences, then their expectations may prove to be overly pessimistic.

### Impact of a rise in rates on household spending

An increase in interest rates would raise the interest payments of borrowers, and may lead them to take action such as cutting spending on other items, regardless of whether they are at serious risk of entering arrears. The first part of this subsection examines the proportion of borrowers that would need to take some kind of action in response to higher interest rates. Raising interest rates would also increase the interest receipts of savers. But the consequent increase in spending by savers is likely to be outweighed by the fall in spending by borrowers, so that aggregate household spending would fall. This is examined in more detail in the second part of this subsection.

### Proportion of households that would need to respond to a rise in interest rates

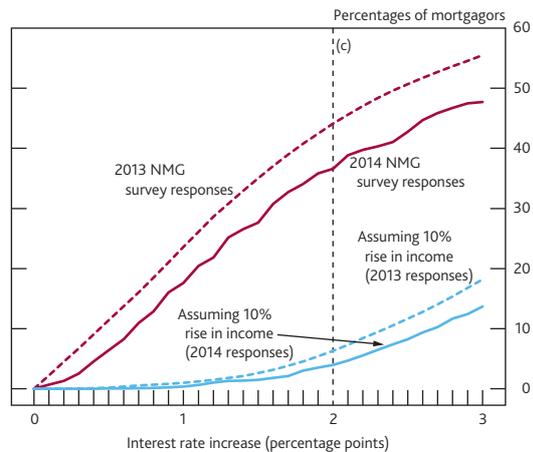
The NMG survey asked households how much their monthly mortgage payments could increase for a sustained period without them having to take some kind of action, such as cutting spending, working longer hours, or requesting a change to their mortgage. And for each household reporting an amount of mortgage debt outstanding, it is possible to calculate the amount by which monthly mortgage payments would increase if interest rates rose by 2 percentage points (or any other amount).<sup>(1)</sup> Taken together, these figures can be used to calculate the number of households who — for a given rise in rates — will have to take some kind of action.

An estimated 37% of mortgagors would need to take some kind of action if interest rates rose by 2 percentage points while income remained unchanged (shown by the solid red line in **Chart 10**), equivalent to 12% of all households. This is somewhat lower than a year ago (shown by the dashed red line). But if the income of all households were to rise by 10%, the proportion of mortgagors that would need to respond falls to only 4% (the solid blue line in **Chart 10**), equivalent to 1.3% of all households. This percentage is also lower than was estimated from the 2013 survey.

### Quantifying the impact of a rise in rates on total household spending

Increases in interest rates should raise the incomes of net savers (households with more savings than debt) and reduce the incomes of net borrowers (households with more debt than savings). The implications of that redistribution of income for aggregate spending will depend on the marginal propensities to consume (MPCs) of borrowers and savers.<sup>(2)</sup> For savers, the MPC captures what proportion of their extra savings income is spent. For borrowers, the MPC is a measure of how much spending would be cut for each extra pound of income that is diverted to higher interest payments. Since the MPC of savers is typically lower than that of borrowers, aggregate spending is likely to fall through this 'cash-flow' channel.

**Chart 10** Proportion of mortgagors that would need to respond to a rise in mortgage rates<sup>(a)(b)</sup>



Sources: NMG Consulting survey and Bank calculations.

- (a) Question asked to mortgagors with discounted, base rate tracker or standard variable-rate mortgages: 'The interest payment on mortgages is often linked to the official interest rate set by the Bank of England. If the rate was to increase, your monthly payments would also increase. About how much do you think your monthly mortgage payments could increase for a sustained period without you having to take some kind of action to find the extra money eg cut spending, work longer hours, or request a change to your mortgage?'. Households on fixed/capped-rate mortgages were asked the following question: 'Although your monthly mortgage payments are currently fixed/capped we would like to understand the impact if your payments were to increase tomorrow. About how much do you think your monthly mortgage payments could increase for a sustained period without you having to take some kind of action to find extra money eg cut spending, work longer hours, or request a change to your mortgage?'. The answers were provided in pounds.
- (b) Households are defined as having to take action if the additional mortgage payments from higher interest rates (calculated using information on the size of the current outstanding mortgage) exceed the income available to meet higher mortgage payments. The income growth scenario line uses the same calculation but assumes that monthly disposable incomes are increased in line with a 10% increase in annual gross income.
- (c) Denotes a 2 percentage point increase in interest rates.

In the survey, households were told how much their interest payments/receipts would increase, in pounds, if interest rates rose by 2 percentage points and were asked how they would respond, assuming no change in their incomes. That increase in interest payments/receipts was calculated using responses for the amount of debt and deposits held from earlier questions in the survey. This should have made it easier for households to respond accurately, by placing the impact of higher rates in the context of their own personal financial situations.

Around 60% of borrowers — both mortgagors and unsecured — reported that they would cut spending in response to a 2 percentage point rise in interest rates (**Table B**). This is higher than the percentage of mortgagors who said that they would need to take action if rates rose by 2 percentage points in **Chart 10**: this may be because **Chart 10** shows the proportion of mortgagors who are estimated to have to take action, whereas **Table B** shows those who would choose to act.

It is useful to compare these results to previous episodes when interest rates were increased. In 2007, the NMG survey asked

- (1) The question specifically refers to mortgage payments and does not take account of any possible holdings of unsecured debt.
- (2) It will also depend on the share of borrowers versus savers in the economy. As it happens, these balance out: in the latest survey, 27% of households were estimated to be net mortgagors, 20% net unsecured only borrowers, 47% net savers and the remainder reported that they had no savings or debt.

**Table B** Borrowers' responses to a hypothetical 2 percentage point rise in interest rates<sup>(a)(b)</sup>

Percentages of households	Mortgagors	Mortgage DSR >= 30%	Unsecured only borrowers
Cut spending	57	49	61
Save less	35	21	25
Work more hours/take a second or better paid job	18	24	23
Take up employment myself	2	5	4
Someone else in household will take up employment	4	6	1
Get financial help	5	11	9
Request change to loan	23	21	15
Move somewhere cheaper	9	10	n.a.
Move and rent	6	12	n.a.
Other	6	5	5

Sources: NMG Consulting survey and Bank calculations.

- (a) Question: 'If your monthly mortgage/unsecured loan payments were to increase for a sustained period by *Ex* [which is calculated automatically from software as the payment increase under a 2 percentage point increase in interest rates], how do you think you would respond? Please assume your income would not be any higher unless you take action to increase it'. Households were allowed to select up to three options.  
 (b) The table only records the responses of households with net debts. Unsecured borrowers were only asked the question if they had more than £4,999 of unsecured debt.

households how they had responded to increases in interest rates over the preceding year, when Bank Rate had risen from 4.75% to 5.75%. Results from the 2007 survey showed that 50% of mortgagors whose repayments had increased reported that they had cut spending in response to increases in their mortgage payments.<sup>(1)</sup> That is similar to the proportion of mortgagors who reported that they would cut spending in response to a 2 percentage point rise in interest rates in the 2014 survey.

**Table C** shows that the proportion of savers who said that they would respond to a rate rise by spending more is considerably smaller than the share of borrowers who would cut spending. Only 10% of savers would spend more, while most would simply allow the extra income to remain in their savings accounts, although it is possible that this extra income could be spent at a later date.

**Table C** Savers' responses to a hypothetical 2 percentage point rise in interest rates<sup>(a)(b)</sup>

Percentages of households	All savers
Increase spending	10
Do nothing (let interest accumulate)	48
Put more money into savings accounts	38
Work fewer hours	2
Other	2

Sources: NMG Consulting survey and Bank calculations.

- (a) Question: 'If the monthly interest you receive on your savings were to increase for a sustained period by *Ex* [which is calculated automatically from software as the payment increase under a 2 percentage point increase in interest rates], how do you think you would respond? Please assume your other sources of income would not change'. Households were allowed to select any of the options.  
 (b) The table only records the responses of households with net savings. Savers were only asked the question if they had more than £4,999 of savings. Households with a mortgage were not asked this question, regardless of their level of savings.

To help estimate the size of MPCs for both borrowers and savers — and thus the amount by which aggregate household spending is likely to change when rates rise — the survey asked households who reported that they would change spending to quantify this change.

The survey responses suggest that, when interest rates rise, the average MPC of borrowers out of higher interest payments is expected to be around 0.5.<sup>(2)</sup> This means that, if the average borrower's monthly interest payments were to increase by £10 when interest rates rise, they would cut spending by £5. The average estimated MPC of savers out of higher interest receipts was much smaller, however, at 0.1, implying that they would spend only £1 more for every £10 of extra savings income.

There is considerable uncertainty in the academic literature over the size of households' marginal propensities to consume. But the estimates from the NMG survey are within the range of literature estimates and are broadly consistent with previous assumptions made by Bank staff (based on that literature).<sup>(3)</sup> **Overall, these results do not imply that increases in interest rates from their current historically low level would have unusually large effects on household spending. Taken together, the estimates based on the NMG survey imply that a 1 percentage point increase in interest rates could reduce aggregate spending by around 0.5% via a redistribution of income from borrowers to savers (the cash-flow effect).**<sup>(4)</sup> And a 2 percentage point rise in interest rates could reduce spending by around 1% through this channel.

On the one hand, as noted above, these estimates are likely to overstate the effect on consumption of Bank Rate increasing, to the extent that the pass-through of interest rates is assumed to be full and instant and incomes are assumed to remain unchanged. On the other hand, however, these estimates only measure the cash-flow effect of changes in interest rates. The total reduction in household spending from a 1 percentage point rise in interest rates, keeping incomes constant, is likely to be larger than 0.5%. For example, as discussed in the box on pages 422–23, changes in interest rates may also affect spending by altering households' marginal decisions about whether to take on additional borrowing or to postpone spending to the future.

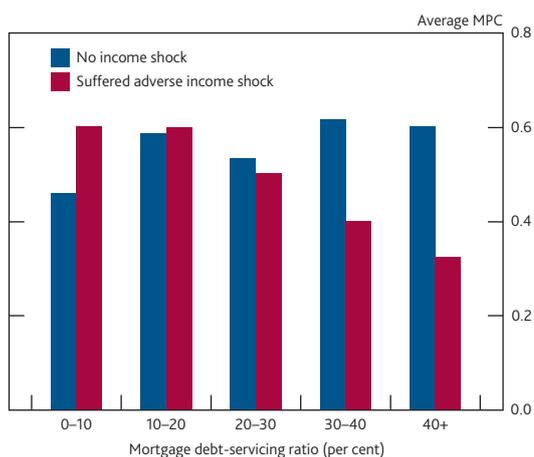
- (1) This question was only asked to variable-rate mortgagors and those whose fixed-rate deals had expired. See Waldron and Young (2007) for more details.  
 (2) These aggregate MPCs are weighted by net debt/deposits to provide an estimate of how the aggregate spending of each group will change.  
 (3) Recent internal work by Bank staff has assumed MPCs of 0.5 for borrowers and 0.2 for savers.  
 (4) This impact on aggregate spending was calculated by summing the reported increase in spending across savers less the total reduction in spending by borrowers. Those estimates were then scaled by estimates of total current consumption from the survey. See the footnote to **Chart 12** for more details.

## Responses of more vulnerable mortgagors

Evidence from the NMG survey and other work suggests that more highly indebted households, on average, cut spending by more following the financial crisis.<sup>(1)</sup> But in the 2014 survey, mortgagors with higher debt-servicing ratios reported that they were not more likely to respond to higher interest rates by cutting spending than other mortgagors (Table B).<sup>(2)</sup>

One reason why households with high debt-servicing ratios might not be more likely to cut spending when rates increase is that those households may still be adjusting to past income shocks, and so will not have scope to cut spending further when rates rise. Chart 11 shows that the estimated MPCs of households out of higher interest payments were a little larger for mortgagors at high DSRs if they had not suffered an income shock in the past (defined as being worse off now than they had expected in 2006 or seeing their income fall since they took out their mortgage). But the opposite was true for households who had suffered a negative income shock: those with higher DSRs reported lower MPCs. That may be because these households have already cut spending significantly (consistent with the evidence in Table A) and so have less scope to adjust in future. Again, this illustrates the importance of developments in income for potentially vulnerable households. If they do not experience any increase in their wages and are not able to increase their income in other ways or cut spending sufficiently, there is a greater risk that they will enter arrears when rates rise.

**Chart 11** Marginal propensity to consume of mortgagors, split by debt-servicing ratio and whether experienced an income shock<sup>(a)</sup>



Sources: NMG Consulting survey and Bank calculations.

(a) Questions: 'If your monthly mortgage loan payments were to increase for a sustained period by Ex [which is calculated automatically from software as the payment increase under a 2 percentage point increase in interest rates], how do you think you would respond? Please assume your income would not be any higher unless you take action to increase it.' Households were allowed to select up to three options. Respondents who reported they would cut spending were then asked 'How much would you reduce your monthly spending by in this situation?'. The marginal propensity to consume is calculated as the reported change in spending as a share of the change in interest payments. Respondents who reported that they would not change spending were given an MPC of zero. Respondents who reported that they would cut spending but did not respond to the question about by how much were assumed to have an MPC of 1 (the median response for those who did say they would change spending). A household is defined as having suffered an adverse income shock if they reported being worse off now than they expected in 2006 or that their income had fallen since they took out their mortgage. The mortgage DSR is calculated as total mortgage payments (including principal repayments) as a percentage of pre-tax income. Calculation excludes those whose DSR exceeds 100%. Reported repayments may not account for endowment mortgage premia.

Instead of responding to higher interest rates by cutting spending, however, households at higher debt-servicing ratios reported that they would be more likely to seek to raise additional income, for example by increasing employment or working more hours (Table B). Indeed, Table A from the previous section suggests that households have already responded to concerns about debt by raising their labour supply in the past.

## Distributional impact of higher interest rates

Alongside assessing the aggregate impact of higher interest rates, the NMG survey can be used to assess the potential distributional impacts. In this section, information on the distribution of debt and deposits from the survey, and on how households reported that they would adjust spending are used to estimate how raising rates might affect the disposable income and consumption of different groups in society. As above, the consumption impacts are based only on the cash-flow effects of redistributing income from borrowers to savers, not the total spending impact.

Changes in monetary policy always affect different parts of the population in different ways. One obvious distributional impact of raising interest rates is that it redistributes income from borrowers to savers. A 1 percentage point rise in interest rates is estimated to raise the interest payments of mortgagors by just under 3% of their post-tax income, whereas higher interest receipts increase the income of savers by a similar amount (blue bars in Chart 12). But borrowers reported that they would cut spending by more than savers would increase it because they have a higher MPC, and hence aggregate spending should be expected to fall (red bars in Chart 12).

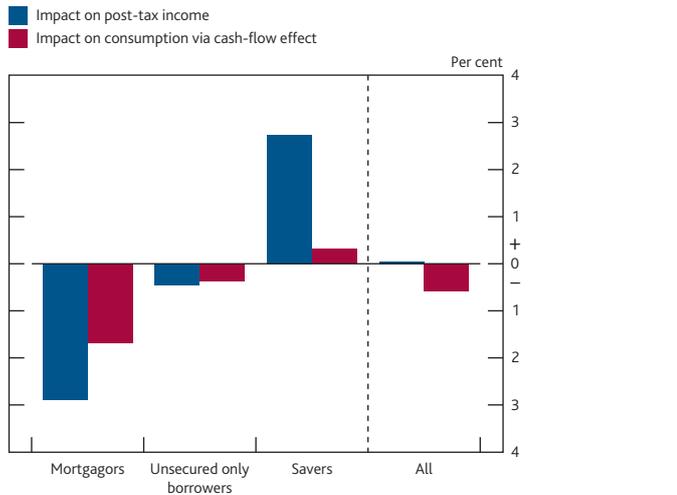
While raising interest rates — all else constant — will make savers better off and borrowers worse off than they are now, the reduction in Bank Rate from 5% to 0.5% between October 2008 and March 2009 will have benefited borrowers at the expense of savers.<sup>(3)</sup> Even when Bank Rate does start to rise, it is likely to remain below its historical average for some time. The returns on savings products are therefore likely to also remain lower than before the financial crisis, but just to a lesser extent than is currently the case. But without the loosening in monetary policy during the financial crisis, economic growth would likely have been lower and unemployment higher. That would have had a significant,

(1) See Bunn and Rostom (2014).

(2) In Table B, a slightly wider definition of vulnerable mortgagors is used (DSR of at least 30%), in order to account for those households who might have a very high ratio (greater than 40% DSR) when rates rise.

(3) The MPC's programme of asset purchases, or 'quantitative easing' (QE) will also have had distributional impacts. QE is likely to have boosted the wealth of households holding financial assets. Incomes of those already drawing a pension before QE began will have been unaffected. The implications of QE for those approaching retirement and for pension providers will have depended on the type of pension scheme and how well it was funded. See Bank of England (2012) for more details.

**Chart 12** Impact of a 1 percentage point rise in interest rates on income and spending of borrowers and savers<sup>(a)</sup>



Sources: NMG Consulting survey and Bank calculations.

(a) Mortgagors are defined as households with a mortgage who have positive net debt, unsecured borrowers are non-mortgagors with positive net debt and savers are households with net savings. Post-tax income is calculated by deducting estimates of National Insurance and income tax from reported total gross household income. Current consumption is estimated as post-tax income less regular saving. For each household, the impact of a 1 percentage point rise in interest rates on annual interest payments/receipts is calculated as 1% of current net debt/deposits. Those estimates are then aggregated and scaled by current annual post-tax income. For each household, the impact on consumption is estimated as the change in interest payments/receipts multiplied by their reported MPC out of higher interest payments/receipts from the survey (see footnote to Chart 11 for more details on how MPCs were calculated). Those estimates are then aggregated and scaled by estimated current consumption. Unsecured borrowers and savers with debt/deposits of less than £5,000 were not asked how they would respond to higher interest rates and are therefore assumed to have an MPC of zero.

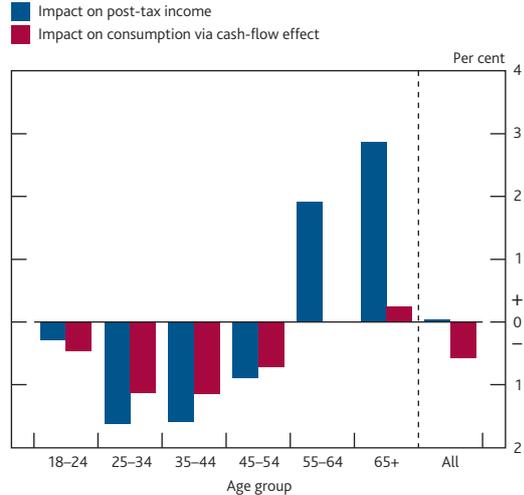
detrimental impact on all groups in society. Any assessment of the distributional implications must be seen in that light.

Borrowers and savers are not evenly distributed across age groups, which implies that higher interest rates will have different impacts on different age groups. On average, the reduction in income and spending is likely to be larger for households aged between 25 and 44, since they are more likely to be borrowers.<sup>(1)</sup> But higher rates would increase the income of older households, on average, since they are more likely to be savers, although these households do not expect to make much change to their spending in response (Chart 13).

By region, higher interest rates are not expected to have substantially different effects (Chart 14). Debt levels are estimated to be higher in the South which implies that a rise in interest rates will have a larger impact on the interest payments of borrowers in that region. But overall, the differences in the estimated impacts on income and spending between regions are small relative to the distributional effects among other dimensions that are discussed in this section.

Higher interest rates are likely to have different effects across the income distribution. Lower income groups are likely to be made better off by higher interest rates (Chart 15). Partly that is because those groups include some pensioners who have relatively low current incomes, but larger stocks of deposits.

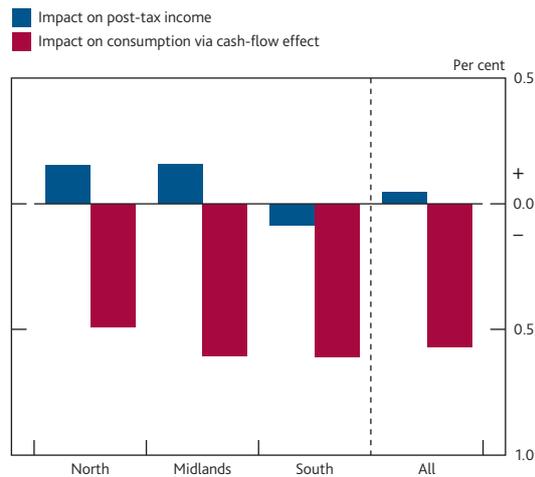
**Chart 13** Impact of a 1 percentage point rise in rates on income and spending by age<sup>(a)</sup>



Sources: NMG Consulting survey and Bank calculations.

(a) Calculated using the methodology explained in the footnote to Chart 12. Results for borrowers and savers within each age group are then aggregated.

**Chart 14** Impact of a 1 percentage point rise in rates on income and spending by region<sup>(a)(b)</sup>



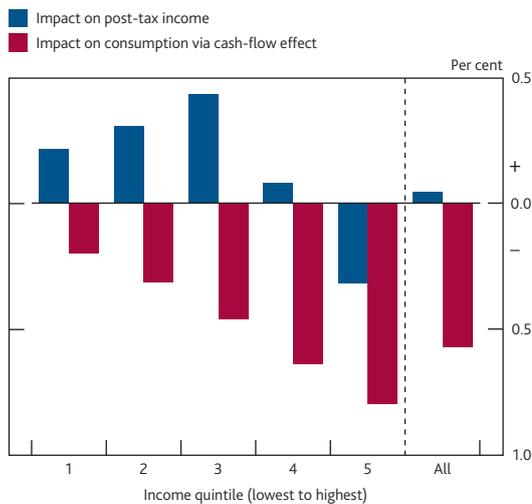
Sources: NMG Consulting survey and Bank calculations.

(a) Calculated using the methodology explained in the footnote to Chart 12. Results for borrowers and savers within each region are then aggregated.  
 (b) North is defined as North, North West, Yorkshire and Humberside, and Scotland. Midlands is defined as East Midlands, West Midlands, East Anglia and Wales. South is defined as London, South East and South West. The results are aggregated into North, Midlands and Southern regions because at Government Office region level, the sample sizes for some regions are small.

When households aged over 65 are excluded, the reductions in income and spending are still expected to be largest for the higher income groups (Chart 16). This is because the higher income groups also tend to have the largest debt to income ratios.

(1) The ratios of the consumption impacts to the income impacts on Charts 13 to 16 cannot be interpreted as the average marginal propensities to consume of households within that group. Each group contains both borrowers and savers and the impacts shown are the net of the positive effect on savers within each group less the negative effect on borrowers. The income effects are also expressed as a percentage of overall income, which is higher than overall consumption, which is used to scale the consumption impacts.

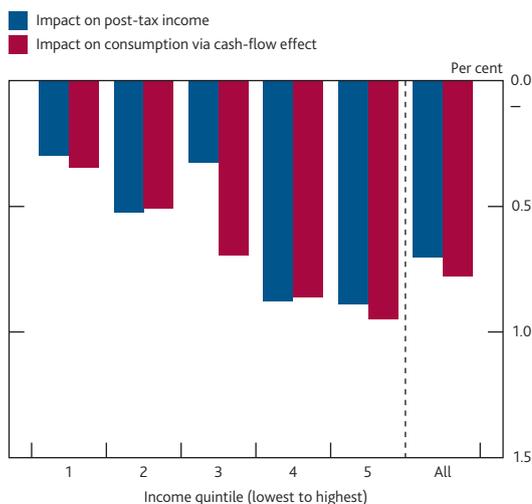
**Chart 15** Impact of a 1 percentage point rise in rates on income and spending by income quintile<sup>(a)</sup>



Sources: NMG Consulting survey and Bank calculations.

(a) Calculated using the methodology explained in the footnote to **Chart 12**. Results for borrowers and savers within each income quintile are then aggregated.

**Chart 16** Impact of a 1 percentage point rise in rates on income and spending by income quintile excluding over 65s<sup>(a)</sup>



Sources: NMG Consulting survey and Bank calculations.

(a) Calculated using the methodology explained in the footnote to **Chart 12**. Results for borrowers and savers within each income quintile are then aggregated.

## Conclusion

Higher interest rates will increase financial pressure on households with high levels of debt. The percentage of households with high debt-servicing ratios, who would be most at risk of financial distress, is not expected to exceed previous peaks given the likely paths of interest rates and income. But developments in incomes for the households who are potentially most vulnerable will be an important determinant of the extent to which financial distress does increase.

Estimates of marginal propensities to consume out of higher interest payments and receipts from the survey are broadly in line with previous estimates, and do not imply that gradual increases in interest rates from their current historically low levels will have unusually large effects on household spending. On average, more vulnerable mortgagors reported that they are not expecting to make larger cuts in spending than other mortgagors when rates increase. That may be because they are still adjusting to past shocks and so do not have scope to make further large cuts in spending when rates rise. However, some do say that they expect to respond in other ways, such as by increasing their labour supply.

As usual, raising interest rates will have significant distributional consequences. It will make borrowers worse off and savers better off, holding other factors constant. On average, younger households, who are more likely to be borrowers, will be worse off, while older households, who are more likely to be savers, will gain. Higher-income households will typically be more adversely affected than low-income households, but differences in the impact between regions are likely to be small.

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