

## Box E: Projecting the Impact of Peak Interest Rates on Variable Rate Mortgages

By Max Mosley

In deciding at what level interest rates are set, monetary policymakers assess their decisions in terms of maintaining price stability. Concerns about the distributional consequences are not within the remit of monetary policy authorities, and nor should they be. That is the task for political decision-makers. In the current context where the monetary response comes after successive shocks to household finances, the distributional impact of interest rate changes must be understood in order to allow fiscal policymakers to design the appropriate response aimed at alleviating adverse effects.

The need to undertake such research for the UK has grown following the recent ‘mini-budget’ on 23 September, when markets lost confidence in the country’s debt sustainability and economic prospects following the proposed injection of a sizable stimulus in an already highly inflationary economy. Markets and forecasts from independent researchers such as NIESR expected a monetary response to peak at around 5 to 6 per cent within a short period of time. This expected response was up from expectations of a 3 per cent peak, which highlights the scale of the impact of certain fiscal policy decisions on monetary policy with substantial consequences at the aggregate level and at the household level too.

Specifically, mortgage holders on variable rates face significantly higher monthly mortgage repayments as a result of this response. We have therefore applied recent research methods developed for analysing household savings (Mosley, 2022) to project the impact of peak interest rates on households with variable rate mortgages.

To do so, we use the representative sample of UK households (excluding Northern Ireland<sup>1</sup>) and their financial profile based on the latest round of the Wealth and Assets Survey (2022). As the latest data only goes up to 2019, we project forward using a combination of NIESR’s economic models. The National Institute Global Econometric Model (NIGEM) is used to project forward income growth, and our dynamic microsimulation Lifetime Income Distributional Analysis (LINDA) model is used to attribute spending profiles to each household in order to enable each household to add, or draw on, financial reserves given economic conditions (NIESR, 2016 and 2018). Lastly, households move across the income distribution to account for social mobility in both directions and to account for the fact households are often on Universal Credit for a limited period of time.

To change components of each household mortgage, we convert stated monthly mortgage repayments into a computed version to make the figure endogenous to a given bank rate. To do this, we use the standard Robert Kohn equation in determining monthly mortgage costs, which lies behind most standard mortgage calculators (Kohn, 1990).

$$\hat{M} = V \left[ \frac{i(1+i)^N}{(1+i)^N - 1} \right]$$

Here, the monthly mortgage repayment  $\hat{M}$  is dependent on the value of the mortgage ( $V$ ), its given interest rate  $i$  and the duration of the mortgage  $N$ . The Wealth and Assets Survey holds most of these variables, including the size of the monthly repayments. However, we would like to create a predicted version of  $\hat{M}$  that is endogenous to  $i$ . The WAS does not hold a variable on the total value of the mortgage, only the value of the remaining mortgage.<sup>2</sup> To work around this problem, we use the known figure of  $\hat{M}$  (denoted  $M$ ) which we will use to estimate the imputed size of the mortgage. To do so we simply rearrange the first formula to solve for  $V$  by using the known monthly repayment  $M$ .

1 We will create a pseudo sample for Northern Ireland at a later stage.

2 It is important to note that we are trying to estimate typical monthly repayments, which do not reduce over time as the mortgage is paid off. That scenario mostly happens when the mortgage holder refinances, which is not modelled here. Therefore, we need the total value of the mortgage as this yields a more plausible prediction of what that household is likely to face in terms of monthly repayments in the short run.

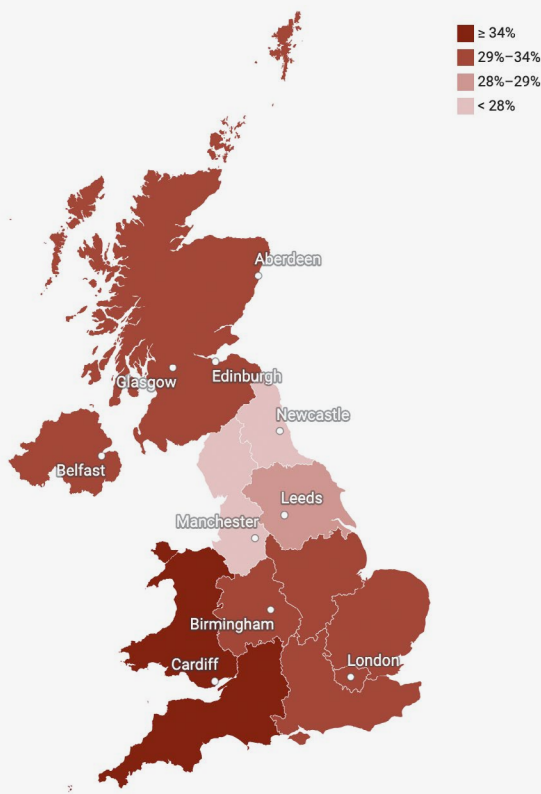
$$\widehat{V} = M \left[ \frac{(1+i)^N - 1}{i(1+i)^N} \right]$$

This gives us a value of the mortgage, which we can then put back into the first formula to complete it. From here, we can now increase  $i$  in line with what the bank rate is assumed to rise to and see what effect it has on our estimated  $M$ .

This can only be attributed to those on a variable rate mortgage. In this exercise those on a fixed rate are considered immune to this change. In reality it is not quite this simple as households with a fixed rate will at some point either switch to a variable rate mortgage or renegotiate a new fixed rate. Due to a lack of variables on the length of the fixed element of a mortgage, it has not been possible to predict the effect nor the effect of refinancing a mortgage.

We are, however, able to present the geographic distribution of the proportion of mortgage holders on a variable rate, which is shown in Figure E1. This shows a higher concentration in Wales and parts of the south of England.

**Figure E1** Proportion of mortgage holders with a variable rate mortgage, by region



Source: NIESR Analysis of the ONS Wealth and Assets Survey (2022), NiGEM, LINDA.

As we have allowed household incomes (both earnings and benefits) to vary over time, we are able not just to assess the new average cost of variable rate mortgage repayments but also to compare them to their monthly incomes. We find that about 30,000 households in the UK could see mortgage repayments greater than their monthly incomes. This is likely an underestimation of the problem because we lack a sufficiently large sample size for the section of the population that is affected in this way. But it is still a concerning number of households who will be placed in an unsustainable financial condition.

The pass-through of interest rate rises to households is not exclusive to only those with variable rate mortgages. Firstly, those on fixed rate mortgages only have the interest rate fixed for a limited period of

time, often between two and five years. It has not been possible to estimate at this stage the implications of bank rate rises on those with fixed rates when they fall onto a variable rate mortgage or when they choose to refinance. This will form the basis of further investigation. Given that 5 million households are on fixed rate mortgages (ONS, 2022), we can assume that a considerable number of those households will be similarly affected by higher interest rates between 2024 and 2027.

Even for those without mortgages, private renters for example will also face implications from rate hikes, as own-to-rent landlords pass on the additional costs onto their tenants. There are existing estimates that rents could increase by up to 20 per cent in many places by 2024. While the poorest in society can be somewhat shielded from rent hikes through social housing, the combined effects of higher mortgages and rents will fall disproportionately on lower-income households, with housing costs rising by about 30 per cent for the lowest decile and as much as 50 per cent up to the middle of the income distribution. This would amount to housing costs rising to between 25 per cent to 35 per cent of disposable income for the entire lower half of the distribution.

This will lead compound on existing financial stress the poorest households are already facing. NIESR has already identified that savings are being continuously decimated by rising cost of energy and food bills. The rising cost of borrowing will further raise the cost of living, mostly through inflating the cost of accommodation via either mortgages or rents. It is urgent that the government considers measures to shield households from rising housing and borrowing costs.

## References

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