ADVISORY PANEL ON CONSUMER PRICES – TECHNICAL

Current mortgage interest payments methodology: a review

Status: Work in progress
Expected publication: For publication alongside minutes

Purpose

1. As part of the Household Costs Indices development – a new set of measures that aim to reflect changing prices and costs as experienced by different household groups - this paper addresses a review of the method used in the RPI for constructing the index for mortgage interest payments (MIPs).

Action

2. Members of the Panel are invited to:
   a) Comment on the MIPs resulting from alternative proportions of price advanced
   b) Suggest the order of priority with which we test other assumptions mentioned in the paper

Background

3. The Household Cost Indices (HCIs) aim to reflect UK households' experience of changing prices and costs. They are intended to measure how much the nominal disposable income of different household groups would need to change, in response to changes in price and costs, to enable household groups to purchase the same quantities of goods and services at a fixed quality. The broad approach of the HCIs is thus to measure the outgoings of households.

4. Following feedback from the Stakeholder panel, we are reviewing the method for calculating mortgage interest payments for the next publication, due at the end of 2021. A roadmap of our development plans for HCIs is available here. More detail on the background of the HCIs and the mortgage interest payments index is provided in paper *APCP-T(21)07 Lenders formula method for mortgage interest repayments*.

5. In this paper we look at reviewing the current method for calculating a mortgage interest payments index, which is the same as the long-standing method used in the RPI. We have explored an alternative approach for calculating a mortgage interest payments index which is discussed in paper *APCP-T(21)07 Lenders formula method for mortgage interest repayments*.

Current RPI method for calculating mortgage interest payments

6. The RPI aims to treat mortgage interest in a manner consistent with a fixed basket approach. Average payments are calculated in successive months for a fixed stock of mortgages representing those existing in the January base period. This base period stock of mortgages is uprated monthly to reflect changing house prices, and then interest payments are calculated using the prevailing interest rates in the period.

7. The current RPI method for calculating mortgage interest payments starts with a time series of average house prices bought on mortgages over a 23-year period and the average is weighted to reflect the constant mix of house types.

8. For each month, the average house price is multiplied by the proportion of the house price covered by the mortgage. This figure is called the proportion of price advanced and is a constant (0.55). This constant has not been updated for many years. This series is then used to calculate two separate debt series, a series for repayment mortgages and a series for endowment mortgages.

9. For repayment mortgages, the debt is multiplied by the proportion of debt outstanding on a standard 23-year mortgage, worked out using a standard annuity calculation.

10. The debt on endowment mortgages does not decrease over time and therefore it is not altered.

11. The two series are then summed to give the average current debt outstanding on mortgages of different types and vintages.

12. The series is then multiplied by the proportion of index households that have mortgages and this gives the average mortgage debt for index households with a new or existing mortgage. Index households are defined as all private households (not those living in institutions such as prisons, retirement homes or student accommodation, for example) excluding pensioner households, which derive at least three-quarters of their total income from state pensions and benefits, and high-income households, defined as those households whose total household income lies within the top 4% of all households, as measured by the Living Costs and Food Survey (LCF). This new series is then scaled using LCF data to reflect households that have outstanding mortgage debt.

13. The scaled series is then multiplied by the current period mortgage interest rates to derive an average weekly payment per household. An index is then produced using the average weekly payments. The method for deriving the mortgage interest rates varies and is described below. A full description of the method can be found here.

14. There are several areas in the current method that may be worth reviewing. These include the assumption of a 23-year mortgage and whether this reflects the actual lengths of mortgages, the inclusion of all pensioner households and high income households, both of which are excluded from the index households, the mortgage interest rate used and the proportion of price advanced assumption. This paper will focus on reviewing the proportion of price advanced assumption.

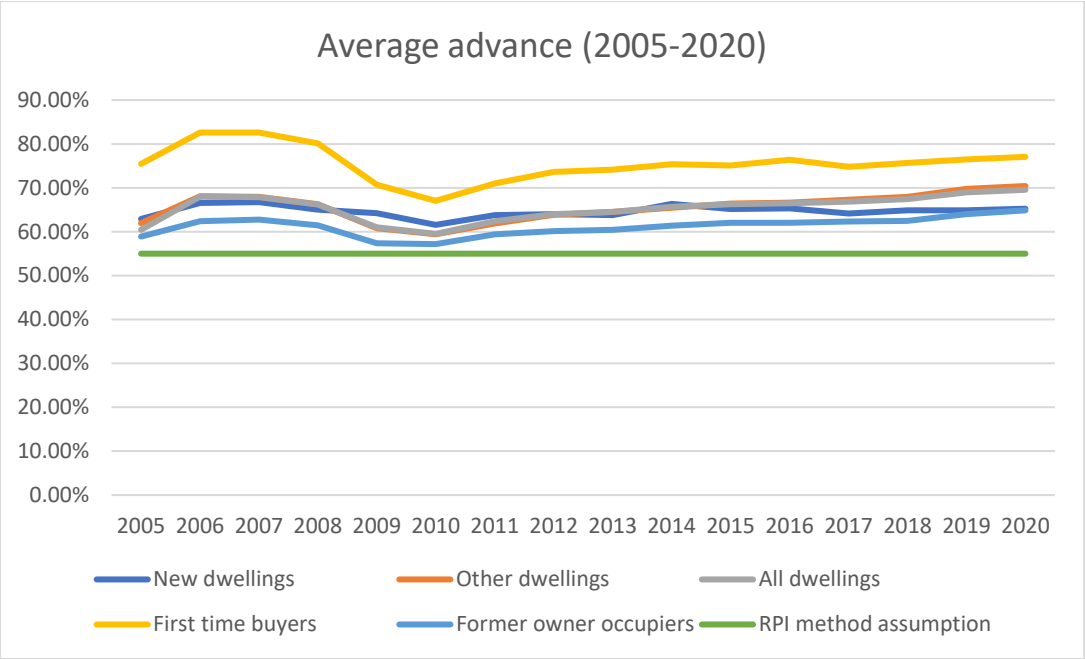
Price advanced in the RPI method

15. The MIPs method used in the RPI assumes that, constantly through the time series, the loan (or price advanced) accounts for 55 per cent of the value of the dwelling purchased. While the figure of 0.55 may have been appropriate when it was set, it can be reasoned that the current 0.55 figure for a price advanced is an underestimate of the true figure based on the following.

16. Data from 2005-2020 (own analysis on ONS HPI publications) shows that the average advance during this period amounted to 0.65 for 'new dwellings', 0.66 for 'other dwellings', 0.65 for 'all dwellings' and 0.76 for 'first time buyers'. The corresponding figure for 'former owner occupiers' is 0.61, which is still considerably greater than the 0.55 assumption. Figure 1 shows the average advance for different types of dwellings and buyers compared to the assumption used in the RPI method. We can see that for all types of dwelling and for all the different types

of buyers, the value of the average advance is consistently greater than the assumption used in the current RPI method. The full table of data can be found in Annex A, table 1A.

Figure 1: Average price advanced as a proportion of average advance out of the average house price. 2005 to 2020



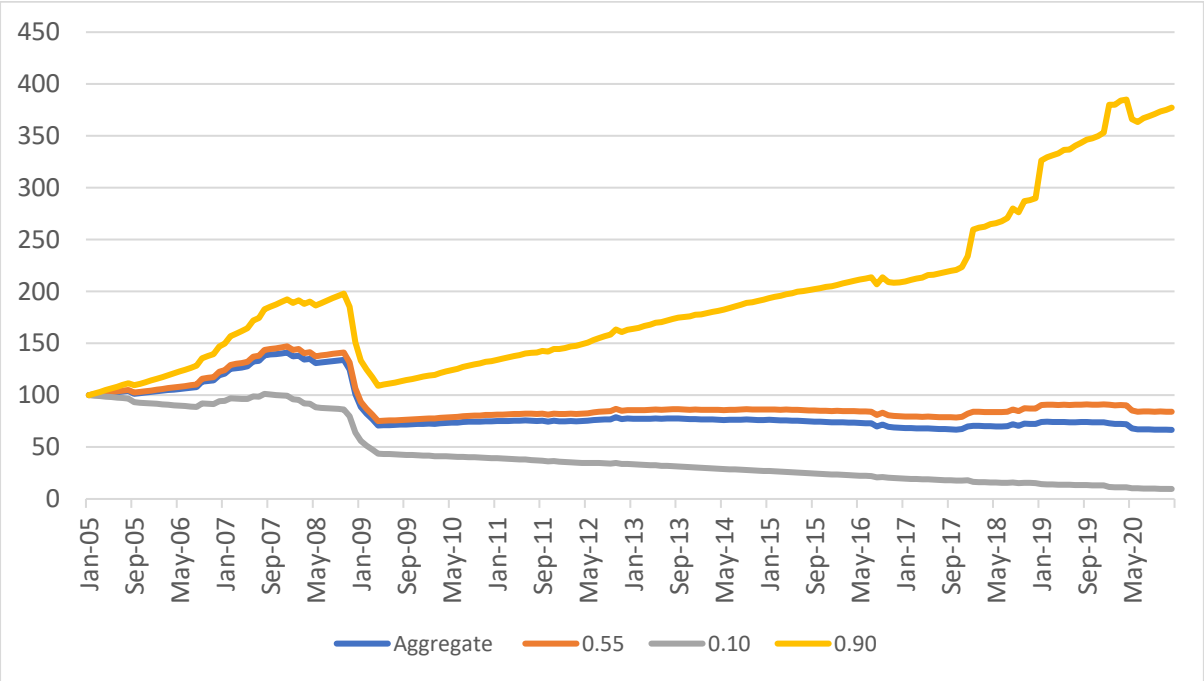
Source: own analysis on ONS HPI publication, Table 15 (formerly published by DCLG)

Analysis on alternative prices advanced

17. We first experimented with changing the proportion of price advanced for the whole cohort providing a MIP index in the current year. For example, the index in 2009 is based on a cohort starting in 1986. We produced indices for the values between 0.55-0.90, going up in increments of 0.05 for the years 2009-2016. This was done so that we could see the effect of having a non-consistent value for the proportion of price advanced on the index and understand the impact that deviations from the current value might have on the index. We found that changing the proportion of price advance for the whole cohort resulted in a proportional change in the mortgage interest payments and therefore the index number remained unchanged.

18. We then experimented with changing the proportion of price advanced on the most recent year of each cohort while keeping the value for the rest of the years at 0.55. We experimented with values between 0.10-0.90, going up in increments of 0.05 for the years 2005-2020. Figure 2 shows the indices for the maximum and minimum proportion of price advanced values we used as well as an aggregate index and the current index using the 0.55 assumption. A full chart which includes indices for all the values we used can be found in annex B, figure 1A.

Figure 2: MIP index (Jan05=100) obtained under alternative proportions (0.10 to 0.90) of price advanced. 2005 to 2020



Source: Own analysis, RPI

19. We found that for values below 0.50, the index would be downward sloping while for values above 0.50, the index would be upward sloping. This is despite the interest rates used in the calculations being the same. A possible explanation for this is that with the house prices in the most recent year being the highest, this meant that the amount of debt taken on these houses would have an increased effect on the index.

20. For example, when assuming the proportion of price advanced for the most recent year as 0.90, this means that we are assuming the debt on the most expensive houses to be 90%, while the cheaper houses only have a debt of 55%. As the house prices increase over time, this causes the index to slope upwards as the debt on these more expensive houses is greater relative to the rest of the cohort. Similarly, when assuming the debt on the more expensive houses to be 0.10, the index slopes downwards as the debt on the more expensive houses is less relative to the rest of the cohort.

Further development

21. We aim to expand our review to also include changes in the proportion of price advanced on other years in the cohorts, rather than in the current year only. Our end goal is to use the data we have on the average advance (Table 1A, Annex) directly in the calculation to get an index that better captures consumer behaviour. According to the data, this figure would be greater than the current assumption and this would expect a slight increase to the index.

22. Another assumption of the current method is the length of a mortgage, which is 23 years. We thus aim to run the method under different mortgage lifespans to capture more closely the true figure. We may be constrained by the data available so we will first have to review the data available in order to determine whether it will be possible to review this parameter.

23. We would also like to produce an index that includes all mortgage households, not just index households which excludes pensioner (households that derive at least three quarters of their income from state benefits and pensions) and high income (households whose total household income lies within the top 4% of all households) households.

24. Also, the method used for obtaining the interest rate is not consistent throughout the years. Prior to 2010, the interest rate used to produce the index was a standard variable rate calculated using the formula:

$$Average\ MI\ rate = \frac{M_B I_B + M_{BS} I_{BS}}{M_B + M_{BS}} / 100$$

Where:

M_B is the stock of mortgages issued by banks, I_B is the average interest rate on mortgages issued by banks, M_{BS} is the stock of mortgages issued by building societies and I_{BS} is the average interest rate on mortgages issued by building societies.

25. From 2010 onwards, the interest rate used to produce the index is the annual effective rate (AER) published by the Bank of England as recommended in the 2009 Consultation on the Measurement of Mortgage Interest Payments within the Retail Prices Index. The current MIP index therefore reflects differences in the formulation of the interest rate before and after 2010. As a next development, we will thus compute MIP indices consistently using an effective rate. We will provide updates on this work at the July technical panel meeting.

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List of Annexes

Annex A	Average advance for different types of dwellings and types of buyers
Annex B	Indices for all proportion of price advance values between 0.10 and 0.90 as well as aggregate index

Annex A: Average advance for different types of dwellings and types of buyers

Table 1A: Average advance for different types of dwellings and types of buyers

	New dwellings	Other dwellings	All dwellings	First time buyers	Former owner occupiers	RPI method assumption
2005	62.95%	61.98%	60.41%	75.48%	58.88%	55.00%
2006	66.52%	68.06%	67.99%	82.58%	62.42%	55.00%
2007	66.75%	67.91%	67.85%	82.61%	62.76%	55.00%
2008	65.03%	66.28%	66.20%	80.09%	61.47%	55.00%
2009	64.26%	60.81%	61.00%	70.71%	57.38%	55.00%
2010	61.56%	59.42%	59.51%	67.04%	57.18%	55.00%
2011	63.80%	61.90%	62.40%	71.01%	59.38%	55.00%
2012	64.04%	63.89%	63.98%	73.60%	60.13%	55.00%
2013	63.77%	64.53%	64.51%	74.15%	60.44%	55.00%
2014	66.31%	65.45%	65.65%	75.35%	61.35%	55.00%
2015	65.19%	66.42%	66.26%	75.09%	62.04%	55.00%
2016	65.30%	66.60%	66.48%	76.42%	62.06%	55.00%
2017	64.18%	67.30%	66.87%	74.77%	62.29%	55.00%
2018	64.90%	67.93%	67.46%	75.68%	62.46%	55.00%
2019	64.85%	69.79%	68.96%	76.48%	64.02%	55.00%
2020	65.24%	70.41%	69.56%	77.06%	64.87%	55.00%

Annex B: Indices for all proportion of price advance values between 0.10 and 0.90 as well as aggregate index

Figure 1A: Indices for all proportion of price advance values between 0.10 and 0.90