Inflation and the minimum income standard - past and future measures

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1   Introduction

The Minimum Income Standard is based on budgets recalculated in full every four years for each household type, using the actual prices of the goods and services covered. In between these 'rebases', the standard is updated mainly to reflect changing prices. While a two-yearly review allows for some items to be added and subtracted, the great majority of items are unchanged in between the rebase years.

MIS therefore needs a basis for estimating what the baskets will cost as prices change. When MIS was first updated in 2009, two alternative methods of doing so were compared (Hirsch et al., 2009). One was to reprice all items, and the other was to use the Retail Prices Index (RPI) to uprate broad categories of item. This experiment concluded that the two methods did not produce results which were systematically different enough to warrant the much larger task of annual repricing rather than index-uprating. Overall, repricing produced a slightly higher result than indexation, but differences did not seem to follow a systematic pattern. Importantly, repricing a 'fixed' set of items produces its own imperfections, most particularly that what is on the market changes from one year to the next, and finding closest substitutes is an arbitrary process.

As a consequence, MIS has stuck with a simple index-based inflation uprating system. Specifically, the cost of each broad category of a MIS budget, such as food, clothing and household goods, is considered to have risen each year by the same rate as that category in RPI – the index on whose categorisation MIS budgets are organised and reported. The experience of comparing repricing with indexation, however, has underlined the fact that inflation-based upratings are only estimates of the actual current cost of a basket. The content and weighting of an index is based on overall household consumption patterns. It may have more or fewer items that are going up rapidly in price than a 'minimum' basket. This would be true however finely-grained

items in the index are classified, since within any one item type, the index averages many different prices at different stores, and this can reflect items of different quality that do not all increase in price at the same rate.

This system has fulfilled its function of providing annual estimates of MIS. The re-calculation of budgets in rebase years does not so far appear to have produced the significant discontinuities that one would expect to result from a large inflation correction concentrated in a single year. That is to say, substantial overall changes in budgets at the time of the rebase can generally be explained by a change in the content of a budget from one rebase to the next (notably the addition of cars to budgets for families with children in 2012), rather than by inaccurate recording of inflation in the annual updates. This does not mean that the index-based inflation rate used has been accurate for each category, but as an interim estimate for the overall budget it is serving its purpose.

However, two issues make it worth reviewing whether the present method remains the best one. The first is that in the period after the first MIS results in 2008, there was a rapid increase in the price of food, energy and some other basics. In this context, MIS became a useful tool to track the extent to which inflation is higher for a minimum than for an average household basket, and hence the degree to which official indices are under-estimating inflation for people on low incomes. The validity of assumptions about inflation indices becomes more important in calculations used to comment directly on how inflation is affecting the minimum cost of living than if they were only used to provide interim estimates of MIS levels. A second issue is that, since MIS was launched in 2008, the status of the Retail Prices Index, used for MIS inflation upratings, has changed considerably. In 2010 it was announced that all public uprating of benefits and pensions would be based on the government's preferred Consumer Prices Index, and in 2013 RPI lost its designation as a National Statistic due to the judgement by the National Statistician that one of the formulae it

uses to average prices does not meet international standards. These two issues in combination make a review of the validity of the current MIS uprating method desirable: to continue drawing conclusions about the inflation rate affecting the cost of essentials, we need to consider whether it is valid to use an index whose reliability has been drawn into question.

2   Considerations affecting which index to use

It has been widely observed that the Retail Prices Index routinely shows higher inflation rates than the Consumer Prices Index. This has been partly a product of differences in the indices' composition, but more systematically the result of the different ways in which they average multiple item prices.

The exclusion of some costs such as mortgage interest from CPI has contributed to its reporting lower inflation rates over the long term as the price of housing has a trend increase at a considerably greater rate than average prices. Such compositional effects on the whole index are not relevant for MIS, insofar as we uprate each component separately, and make our main overall calculation net of housing and childcare costs.

The more important issue here is the technical one that has caused RPI's status to be downgraded – the way in which multiple prices observed for a single item type (e.g. the price of apples), across multiple retailers, are averaged (see ONS, 2011). To simplify RPI uses an arithmetic mean (the sum of the prices of N items divided by N) in most cases to arrive at an item cost from multiple prices. In most cases the CPI uses a geometric mean (the Nth root of the product of N items). If all items rise in price by an equal amount, both indices increase by that amount. However, the impact of variations in price increases tend to create bigger overall increases when using an arithmetic mean, because of differences in the relative importance it gives

to changes in items at different price levels. It has been argued that the geometric method is a better way of expressing general changes in price levels, particularly for the purposes of making international comparison, valuing national accounts and making general statements about changes in living standards. The Office for National Statistics (2013) therefore introduced RPIJ, an alternative to RPI with similar composition but a geometric averaging method, while continuing to publish RPI despite its downgraded status. Moreover, when it asked Paul Johnson, Director of the Institute for Fiscal Studies, to review these measures, he concluded not just that RPI is flawed because its formula properties, but also that RPIJ has flaws and should be discontinued, with the main indicator in future being CPIH – a variant of CPI with wider coverage (Johnson, 2015).

While the geometric weighting used in CPI and CPIH is undoubtedly suitable for some of the purposes for which an inflation index is intended, it has been debated whether it is the best approach for all purposes. For example Ros Altman, an independent pensions expert before being appointed Pensions Minister in 2015, questioned (in her former role) whether using CPI rather than RPI to uprate pensions is fair. In doing so, she pointed out two important aspects of which method is used (Altman, 2012). First, the geometric method does not fully capture a situation where lower priced items are tending to rise faster than average. Second, its validity as a measure is greater to the extent that consumers engage in 'substitution': responding to relative price changes by switching to goods that have become relatively cheaper. Both of these issues are relevant to MIS. As a minimum standard, it focuses more on items that are towards the cheaper end, whose price rises may not be fully captured by CPI. Conversely, the use of an arithmetic mean that gives greater weight than a geometric mean to items with below-average cost[1] is less problematic when considering a MIS basket than an average basket. Moreover, there may also be limits to the scope for

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[1]   This is true of one of the two arithmetic means used to compare prices over time in RPI – the Dutot average.

substitution. For example, MIS food items are priced in a single supermarket, rather than drawing the best value items from a range of stores, assuming that people do not have the time to visit several outlets and compare prices in each weekly shop. This means that insofar as some items become relatively cheaper in a single store, a degree of substitution is feasible, but that it will be less extensive than an economist might assume when looking at prices across the market. And even in the context of multiple items within a single supermarket, substitution is more limited if one's starting point is an inexpensive item, since there may be no cheaper substitute of acceptable quality if it rises in price.

These considerations of which averaging formula should be used have had particular relevance in measuring change in the price of clothing. In 2010, the way in which RPI measured clothing prices was changed. This involved pricing a larger number of items, including those where small changes in the exact product description was not taken to be a change in the quality of the item, and hence the products were taken to be equivalent. (Previously, fewer items were included, and where exact comparisons were not possible, missing values were guessed at based on other evidence, reducing the scope for variations). The consequence of this change was to increase the clothing price inflation rate greatly in RPI, and this has accounted for half of the 'formula effect' difference between RPI and CPI at that time. This has helped influence ONS to drop RPI as a national statistic, but it is not clear that CPI accurately represents clothing inflation either (Altman 2012). The experience of the MIS research (see below) is that an accurate measure of changes in clothing costs over time is particularly elusive. This is because the suppliers, price structures, product quality and durability of clothing can all be changing simultaneously in quite significant ways, so the judgement of the cost of an equivalent wardrobe from one period is far from straightforward.

3   Results using different indices, and how they compare to evidence from direct pricing

The MIS analysis currently estimates the inflation rate of a common minimum basket by indexing each of its components to the relevant part of the Retail Prices Index. Such a calculation is based on the composition of a basket as calculated in a particular base year. Thus, for example, to estimate how much the cost of a single person's budget of the composition researched in 2014 would have increased over the past six years, each element such as food and clothing was deflated to 2008 prices using the relevant part of RPI, to calculate the cost of the basket in 2008 terms. This showed that MIS inflation at 28 per cent over six years, in contrast to official CPI inflation of 19 per cent. Such results suggest that people on low incomes face higher inflation rates than the government's preferred official inflation rate indicates.

But how much of this was due to the method of calculation? Figure 1, looking at a single person's budget, shows that there is more than one answer to this question. It shows the result of recalculating MIS inflation using components of CPI rather than components of RPI. On this measure, MIS inflation over the six year period is 22 per cent, not 28 per cent, indicating that two thirds of the nine points additional MIS inflation compared to CPI is linked to using an index with a different formula.

Figure 1   MIS and general inflation, single adult working age, 2008-14
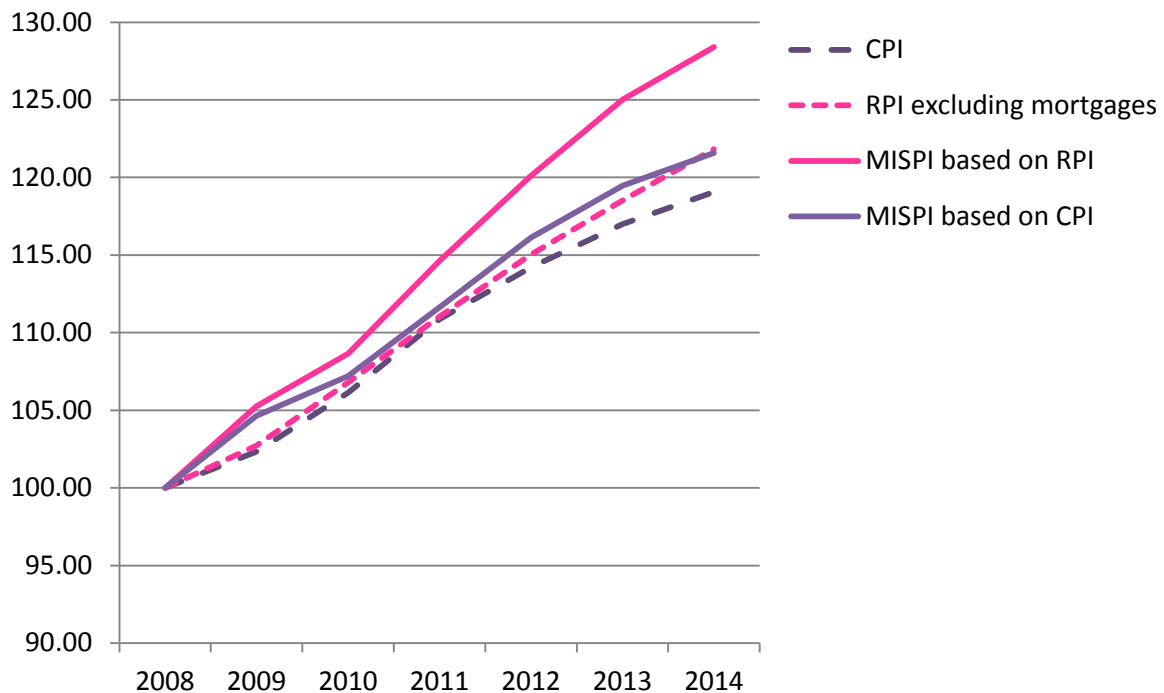
Moreover, the divergence between MIS calculated in this way and the whole CPI (the gap between the solid and dotted purple lines in Figure 1) all opened up in 2009 when food inflation was particularly high. In other words, according to this perspective, the phenomenon of relatively high MIS inflation being caused by higher inflation rates among components with an above-average representation in the budget is attributable to a burst of food inflation in 2008-9 rather than longer-term trends.

However, that is by no means the end of the story. Note also in Figure 1 that the gap between the solid and dotted lines is much greater for RPI, and continued to widen throughout the period. From this perspective, about two thirds of the nine point difference between MISPI and CPI can be attributed to higher than average RPI inflation in areas with a high representation in MIS, rather than on a purely formula effect.

A similar effect can be seen for other household types. For a pensioner couple, for example, a calculation based on CPI reweighted by MIS shows inflation over six years as two percentage points higher than the general index, while for a couple with two children it is no higher. This last case is influenced by the inclusion of a car in the 2012 budget, and the fact that public transport has had a much higher inflation rate than motoring, as well as by a relatively high share of the budget being attributed to clothing, which as discussed below went up much faster in RPI than in CPI.

All of this raises the hard to answer question of which index more fairly represents the ways in which price increases affect MIS. There is no perfect way of answering this question, but some helpful clues.

The first clue came from the 2009 attempt to reprice a constant set of MIS items referred to above. While this was an imperfect process, it showed that for most categories of the MIS budgets, the cost had gone up slightly faster than suggested by the RPI. This was the opposite of what one might have found if the index produced an unduly high inflation rate.

A second clue can be obtained from looking at changes in the MIS budgets when they were rebased, compared to what the inflation indices show. The rebase involves identifying and pricing a completely new set of items. While there have been some significant changes in the content of the baskets, such as introducing internet for pensioners and cars for families with children, some substantial areas of the budget have essentially the same specifications after being rebased as they had in 2008. For a single working age adult, the most significant content changes come in social participation (including catering), household services (telephone services are affected by internet packages) and taxis. Looking at the budgets excluding these categories, as well as personal care, for which the method of compiling items has changed, gives a rough idea of how much MIS costs have actually risen – especially

for food, clothing and household goods. The actual increase in the cost of a basket with just these items, between 2008 and 2014, was 32 per cent. When using indices to deflate the 2014 budget to 2008, the equivalent differences are 31% for RPI and 25 per cent for CPI, respectively. On this basis, therefore, the higher results given by RPI inflation look more accurate. For other household types too, CPI seems to underestimate the increase in cost of the areas of the MIS budget whose contents have not noticeably changed.

A third clue can be gleaned from looking at budgets excluding clothing from the analysis. The influence of clothing on the differences in the results produced by the indices is large. Between 2008 and 2014, CPI reports clothing as falling in price by five per cent, while RPI reports it as rising by 41 per cent. MIS rebase results for clothing help illustrate how difficult it is to identify a general price change in clothing, given the complex ways in which price changes and product changes interact. For example, when lower-cost clothing through cheap retailers have come onto the market, but could be similar or different from the products they replace in terms of quality and durability, it becomes hard to say whether clothing is actually becoming cheaper. The judgements of MIS groups suggested in some cases that clothing became slightly more expensive in 2012 compared to the original research in 2008, but in 2014 a greater emphasis on lower-cost products brought most clothing costs down substantially. Overlaying such one-off switches in the shopping model used for MIS, it has been argued that underlying pressures such as increases in cotton prices have caused increases in the cost of any one item (Altman, 2012). Excluding this item from an assessment of overall 'MIS inflation' gives an incomplete picture of what is happening to the minimum cost of living, but arguably gives one useful indicator of those costs by excluding an area about which we are so uncertain. This typically increases the six-year inflation total for CPI by up to two percentage points and decreases the RPI measure by up to one percentage point, depending on

household type. This is therefore another small way in which the CPI measure seems to underestimate inflation, while RPI might over-estimate it, but to a smaller degree. While no one of these factors shows can demonstrate on its own that RPI is the best measure of MIS inflation, between them they show why we cannot assume that CPI would be better.

4   The scope for calculating MIS upratings on a different index

MIS was originally built in categories defined according to the Retail Prices Index, which has the advantage of allowing budgets to be compared to actual household spending, as reported in the Living Costs and Food Survey, which uses RPI categories. Since ONS inflation categories are all build on the same definitions of lower-level categories, it is also possible to calculate MIS inflation using CPI, and that is what calculations in this paper are based on. However it takes additional work to do so. More importantly, if that index were adopted, the reporting of categories would have to be changed (at least in identifying drivers of inflation), leading to some alteration in the way in which MIS is presented. This is not in itself a reason for sticking with RPI, but is a reason for not changing without a strong reason to do so.

A new index, RPIJ, could potentially represent a compromise between CPI and RPI. Its contents and classifications are the same as RPI and it uses an arithmetic averaging formula (Dutot) which gives greater weight to lower-cost items for the same categories as RPI, while on the other hand replacing another arithmetic formula (Carli), to which ONS finds the greatest objections, with the preferred geometric one (Jevons). However, unfortunately, it is not at present possible to use this index since its breakdowns are not published or available, and there are no plans to do so.

5   Conclusions

This paper has shown that inflation indices can be used as approximations of how a basket of goods and services increases in price over time, but any one index is bound to be subject to inaccuracies in this respect. This is partly because the contents of a general index is bound to be different from that of any particular basket. However, it also reflects a more fundamental issue about measuring changes in the cost of living over time. This is that any basket is bound to change continuously in its content. Part of this is that we change the ways in which we live. Comparing the 'real' value of someone's income in 1915 and 2015 cannot capture the fact that most of the products we consume now could not be bought then.

Even in a much shorter timescale, the structure of products available from retailers may change in ways that make like-for-like comparisons problematic. The clothing case discussed above illustrates this. With new, cheaper retailers not only adding to what is available but also changing pricing structures and possibly the quality among existing ones, comparisons of the price of different products require judgements to be made about quality, durability and the consequent cost over time of an 'equivalent' minimum. In this context, MIS research on what members of the public consider to comprise an acceptable minimum does not only measure changes in the 'real' (inflation-adjusted) standard of living, but can also help us to understand inflation itself. In the clothing case, it appears to confirm that at the same time, it will be difficult over the long term to disentangle the purely 'price' related aspect from 'real' changes in baskets, since the more that the contents of baskets change, the less meaningful it is to use indices to compare a 'constant' basket over time.

These are not reasons to stop commenting on price effects on the minimum cost of living. The MIS findings of living costs going up more quickly for those on low incomes than generally have been confirmed by other recent analysis (e.g. Adams

and Levell, 2014). It is important to continue to track this trend. However, in doing so, it will be worth in future distinguishing three different factors that may cause low income households to experience higher inflation rates than assumed by CPI:

- The broad composition of MIS budgets: the extent to which they are weighted towards categories rising faster in price.

- The potential understatement of inflation by using the CPI formula rather than RPI.

- Aspects of changes in MIS budgets, when rebased, that appear not to arise from changes in the specification of baskets or from general price changes as reported by indices, but from the actual change in the cost of a minimum set of items.

Based on the arguments put above, we propose to continue using RPI to uprate MIS budgets, and to consider switching to RPIJ if and when this becomes technically possible (although Johnson's 2015 recommendation that it should be phased out makes this unlikely). However, we also recognise that errors in clothing inflation cause particular issues, and this is becoming increasingly problematic. Between April 2010 and April 2015, clothing was reported as rising 3.5 per cent by the Consumer Prices Index but 49 per cent using the Retail Prices Index. Even over the maximum of three years in which we use inflation estimates to uprate MIS budgets, these differences are creating distortions. We therefore propose to re-examine directly the actual cost of MIS clothing budgets each time that they are reviewed, i.e. every two years. This will be achieved by discussing aspects of the budget such as which retail outlets are acceptable on a more regular and consistent basis, and also to look at how actual prices are changing rather than relying on indices. Indices will still be used every other year to uprate the budget priced in the previous one, but in order to minimise inaccuracy, an average of the clothing inflation rate for CPI and RPI will be used (based on the observation that the cost of the clothing basket seems to have increased by somewhere between these rates when repriced).

In tracking inflation rates, we will also continue to report change in a MIS-based inflation index, but at the same time note the influence of which inflation index is used. We will report any long-term analysis of MIS inflation on a CPI as well as RPI basis, in order to see the extent to which formula effects are influencing the results, and we will exclude clothing from this analysis.

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