TOWARDS A HOUSEHOLD INFLATION INDEX

Compiling a consumer price index with public credibility

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FOREWORD

This paper[1] has been written at the request of the Royal Statistical Society (RSS) to take forward the current discussion on the question of the establishment of a new household-based inflation index, which is now being referred to as the Household Inflation Index (HII). It takes account of, and builds upon, the Johnson report (commissioned by the UK Statistics Authority) and the official reaction of the RSS to that report (see Johnson, 2015 and RSS, 2015), as well as acknowledging the RPI-CPI User Group 2014 statement on what was then called an Uprating or Household Budget Index (attached as an appendix). It is intended as an input to the consultation on UK consumer price indices set to take place during the summer of 2015.

The proposed HII is intended as a measure of "inflation as perceived and experienced by households in their role as consumers" - a phrase taken from the Preface to the international Manual on Consumer Prices (ILO, 2004). This places it in a different context from indices such as the Consumer Prices Index (CPI), which, as the EU's Harmonised Index of Consumer Prices (HICP), was designed in the 1990s for macroeconomic purposes, and which currently acts as the principal inflation indicator for the Bank of England in its interest-rate setting role.

Because the proposed index is designed as set out above, both it and the sub-indices associated with it would be a natural choice of index or indices to deflate earnings and

[1] We wish to thank the many people who have helped us by discussing ideas or by commenting on drafts in particular Andrew Baldwin, Bert Balk, Arthur Barnett, Michael Baxter, Tony Cox, Mark Courtney, Douglas Dean, Jonathan Gardner, Richard Gibson, Ian Heath, Mike Hughes, Don Sellwood and Philip Turnbull. We would like to thank ONS staff for helping with queries and we have benefited from their substantial research. Any errors, of course, remain our responsibility.

income data to provide measures of real incomes for the population as a whole or specific groups within it. Because of this, it would be seen as a natural choice for uprating purposes, or as a benchmark against which proposed uprating measures would be judged, where the aim of uprating is to enable real incomes to be maintained. Equally it would be suitable for uprating where the aim of uprating is to relate to the evolution of household costs (e.g. as in tax thresholds or regulated prices).

We find ourselves at a key moment in the development of UK consumer price indices. An unprecedented amount of work on consumer price index theory and practice has been done internationally and in the UK in the last twenty years. Much of it was stimulated by the growing need for internationally comparable inflation data, resulting, in Europe, in the Harmonised Index of Consumer Prices, known in the UK as the Consumer Prices Index (CPI). More recently, the Office for National Statistics (ONS) decided that the Retail Prices Index (RPI) was flawed in a major aspect of one of the formulas used to compile average price changes. As a result, it lost its status as a National Statistic.

In parallel with these developments, a number of other changes took place in respect of UK consumer price indices. An "improved" version of the RPI, known as RPIJ, was created, together with a new variant of the CPI, known as CPIH, which includes a measure of owner-occupied housing costs. The HICP is at the same time being developed so as to include owner-occupied housing costs, though using a very different approach to that used in CPIH.

All of this activity has resulted in a situation where there exists a wide array of consumer price indices in the UK reflecting different original purposes that have become blurred over time. Few would dispute the need for producing different price indices for different purposes – it is unlikely that any single index would be suitable for all purposes. However, the current array (totalling twelve different measures) has grown up in a haphazard way, each responding to different needs at different times. The original aim of the RPI – and indeed its predecessors stretching back over a century – has become largely neglected.

The consultation offers a unique prospect of making a fundamental re-assessment of UK consumer price index needs and their appropriate solutions. It opens up the opportunity of creating an index relevant to the needs of citizens and organisations, currently bewildered by the different – and often conflicting – choice of official inflation rates on offer. The proposed Household Inflation Index (HII) returns, to some extent, to the original purpose of inflation indices. Its ancestry can be traced back to the RPI, which in turn owes its origin to the first UK consumer price index, the Cost of Living Index, set up in 1914. This index was established as a means of measuring the increase in the costs of basic subsistence items of workers, and it developed over the years into a wider measure of changes in prices facing households. The HII can thus be seen as a return to the general principles underlying the RPI and its predecessor indices – namely, to provide a measure of the price changes "perceived and experienced" by the majority of households, but it also, we feel, responds to the needs of the general public in the 21st century. We believe that it would incorporate the best of the "old" inflation measures – while taking full account of changes in spending and financing habits of households, as well as the more recent market changes (such as internet shopping and barcode scanner data) that should affect all consumer price indices.

Why would the proposed HII be superior to the CPI or CPIH as a general measure of inflation as perceived by households? What are the main differences and why are they important?

We would answer these questions in the following way. Why should the typical household accept an inflation index that: -

- fails to take account of, or does not track directly, one of their main expenditure items: mortgage payments and other costs of house purchase and renovation
- gives more weight to the expenditure patterns of wealthier households than of other households
- fails to take account of interest on loans for a wide variety of purposes, ranging from student loans to loans for car purchase
- includes the expenditure of foreign tourists in the UK but not their own expenditure outside the UK
- fails to include Council Tax
- includes only a small part of premiums paid for the insurance of cars, travel, health etc.

All of the above inadequacies reflect the designs of the CPI and CPIH as macroeconomic indices, for which they are well suited. Using them, or continuing to use them, for uprating purposes, and indeed as a general measure of inflation as it affects households, seems certain to give rise to a lack of public credibility and acceptability.

SUMMARY

After a detailed **introduction (Chapter 1)**, which sets out some general principles, the paper begins **(Chapter 2)** with the proposed HII treatment of an important but often overlooked aspect of consumer price index construction, namely the overall method of weighting the detailed indices into the total figure. There are two basic ways of doing this, which have been referred to as the "**democratic"** and **"plutocratic**" methods. We do not think these names are at all appropriate, and instead refer to them in a more objective and technical way as "household-weighted" and "expenditure-weighted" indices respectively. The former method gives equal weighting of expenditures to all households, regardless of their income. The latter method effectively weights each household according to its total expenditure, thereby giving a higher weight to the higher-spending households. We do not believe this is correct for a household-based index, which should aim to measure inflation as it affects typical households.

Chapter 3 discusses the treatment of **interest payments**. In particular it describes the recommended treatment of mortgage interest, which is included in the RPI but not the CPI. As this is one of the most important items of expenditure facing owner-occupiers, we believe that if a household inflation index is to have any credibility with the general public, mortgage interest must be covered. The paper goes on to say that if mortgage interest is covered, there is no logical reason to exclude interest payments on other types of loan, including loans for the purchase of cars and other household durables. The final section is concerned with the special difficulties associated with the price index treatment of **student loans**. We strongly believe that student loans – an increasing burden on graduate households – should be covered in the HII - both in respect of the "capital" element of repayment as well as the interest element. Together these can form a significant part of the total expenditure of the affected households.

The wider issue of how to cover the costs of **owner-occupied housing** – a perennial problem in price statistics – is covered in **Chapter 4.** Some fundamental new thinking has gone into this chapter, and two rather different methods are suggested. In both cases, elements of the acquisition prices of dwellings are included, though in different ways from the method used in the CPIH, which uses the method of rental equivalence – a method we believe is arguably suitable for a macroeconomic type of index but would not carry any credibility or understanding for a household index, as it fails to take account of actual expenditures. For a similar reason, the HII would not include any element of property depreciation as is done in the RPI. We are also concerned that the CPI – the EU HICP – will in all likelihood begin to include owner-occupied housing costs on the basis of net acquisition costs (i.e. including only those dwellings new to the household sector), another method which, while suitable for a macroeconomic index, we believe would be difficult to attract public support for in an HII.

Finally, the paper deals in **Chapter 5** with the complex subject of **insurance**, such as motor vehicle insurance. The CPI treats this on what has become known as the "gross/net" basis:

the cost of gross premiums is taken as the price indicator, while the weights are based on the net premiums, i.e. excluding the value of claims. While, again, this treatment is appropriate for a macroeconomic index such as the CPI, it fails to reflect the true costs facing households who have to budget for the payments of the gross premiums every month or year. The HII would therefore cover insurance on the "gross/gross" basis – which also has the advantage of matching the prices to the weights.

Appendix 1 provides an "at a glance" comparison of the characteristics of our proposed HII with the four other key indices (CPI, CPIH, RPI and RPIJ) and also with the Household Index outlined in Chapter 5 of the Johnson Report.

Appendix 2 gives a very preliminary and tentative look at how an HII inflation rate might compare with that of the main existing indices. There is inevitably some speculation in this but it is possible to give some assessment of how and when differences might occur. Doing this is also a reality check. There would be little point in constructing a new index that largely shadowed an existing one. On the other hand an index that consistently showed a substantial difference in one direction with existing indices might have credibility problems.

We conclude that in each case there would be times, occasionally prolonged, when HII inflation would be higher or lower than other indices. Over the long term we would expect it to show a somewhat higher inflation rate than CPI and CPIH; the difference with CPI would be reduced but not eliminated once CPI includes Owner Occupied Housing (OOH) on a Net Acquisitions Basis (assuming this occurs). HII inflation would be generally lower than RPI inflation due to the formula effect. It would be closest to RPIJ inflation, possibly slightly higher on average over the long term due to the proposed treatment of OOH.

Appendix 3 is the 2014 RPI/CPI User Group Statement on a Household or Uprating index.

It is to be hoped that the more detailed and considered views expressed in this paper (which are the personal views of the authors) will be built upon further by the RSS, the User Group, and other interested bodies when the public consultation on consumer price indices is launched shortly.

CHAPTER 1 INTRODUCTION

A Aim

Consumer price indices are not only among the most important economic statistics. They have a unique, or almost unique, status in that when used to uprate incomes, prices, benefits or tax thresholds, they directly affect incomes and/or expenditures for practically all households. It follows that public confidence in them is crucial. It is not easy to achieve since everyone has their own perception of inflation. A serious effort is therefore needed if an index used for uprating purposes is to command sufficient public support.

Our core view is that a consumer price index that is used for uprating purposes, or to measure real incomes, must, in addition to being statistically defensible, be recognisable and understandable by the man or woman in the street. It must therefore be seen to reflect, as far as possible, the actual experience of households and the pressures on their budgets. In the past this was the aim of consumer price indices; the Retail Prices Index (RPI) was originally conceived in this light. However, the needs of macroeconomic purposes and hence economic theory have come to dominate debate over how indices should be constructed. And, sadly, semantics - for example the various meanings of the words consumer and consumption – have further confused matters. The box on the next page gives some amplification of this.

We are therefore proposing a Household Inflation Index (HII) that would, in our view, meet the above needs as much as is practically possible. Much of its coverage would be identical or very similar to both the RPI and the UK's Consumer Price Index (CPI). That in many ways we are going back to the original aims of consumer price indices does not mean that we are attempting to revive what they were. Life has moved on considerably since the RPI was launched in the late 40s/early 50s. Our very limited innovations are there to reflect that fact. We are aiming to propose an index which is appropriate to the second half of the second decade of the 21st century and which can evolve to suit future decades.

The intention behind the index we are proposing – the HII – is to create an index (almost certain to be associated with sub-indices for different population groups) which would become the normal index used for uprating purposes and for assessing real incomes in the UK. It would be a headline index, enjoying equal publicity with the CPI or whichever index is used for interest rate setting by the Bank of England.

NOTE ON TERMINOLOGY

The choice of our proposed name of "Household Inflation Index" avoids two words which have led to endless argument among statisticians over the years. In economics the word "consumer" has very specific meanings; it serves as a means of differentiation between current and capital expenditure, referring either to the types of product ("consumer goods") or the type of purchaser ("consumer"). This distinction is crucial for the national accounts, but not for price statistics. A house is treated as a capital good in the national accounts, but it clearly serves as an item of current expenditure to the typical householder, as well as (hopefully) being a store of value. So we have replaced "consumer" with "household" in our title.

We have also replaced "price" with "inflation" – even if this means having negative inflation on occasion. There is at least one important reason for this. We are proposing to include mortgage interest payments in the HII (just as in the RPI). Many would argue, quite reasonably, that there is no "price" associated with mortgage interest. But we believe that householders regard mortgage interest as an important outgoing, and an increase in the interest rate is simply a "price" increase.

Another word which creates problems is often used in consumer price index terminology: "acquisition". In the UK CPI this refers, in the case of goods, to the moment when the purchaser incurs a liability to the seller. In the case of services, it refers to the time when the event occurs, not when the ticket is purchased. "Acquisition" is not a word in very common use. We tend to say "buy" or just "get". And in any case, it cannot apply to the purchase of services: a service is ephemeral: one takes a ride in a bus, but there is no "acquisition" involved. Similarly with a haircut or a football match attendance. We have no solution to this, but we use alternatives wherever possible**.**

In practice, the HII would normally use the date of acquisition for entry into the index. But where timing is such that there is a substantial difference between the dates of "acquisition" and actual payment, such as owner-occupier housing costs where a monthly mortgage payment is involved (see Chapter 4), it is the payment dates which would be relevant for the HII.

The terms "cost of living" and "cost of living index" are frequently used instead of "inflation" or "price index". In fact these expressions go back many years when the early price indices measured the change in price of subsistence products, i.e. basic items of food, shelter etc. In recent times, the same term has been used by statisticians and economists to refer to a particular type of price index, often abbreviated to "COLI". This usage has nothing to do with basic subsistence; it refers to the formulation of a price index which aims to measure the change in outgoings which a household would have to make in order to hold constant some specified standard of utility or well-being. None of the official UK price indices uses the COLI approach, and nor would the HII.

B Background

In recent years there has been growing concern among UK users that the UK Consumer Price Index or CPI (which is also the EU's Harmonised Index of Consumer Prices or HICP) and any derivatives do not and cannot meet adequately the original and still crucial purpose of consumer price indices. This is to provide a measure of the change in the cost of household expenditure which can legitimately be used as the basis of, or an influence on, uprating pensions, wages, tax thresholds, benefits, regulated prices and business contracts where a link to household costs is appropriate or desired.

The HICP was designed for a specific macroeconomic purpose. This was to provide a common method of measuring inflation in EU countries that could be used in particular to judge if a country met the inflation criterion set out in the Maastricht Treaty which countries have to meet in order to qualify for entry into the euro area. Subsequently it is also used by the European Central Bank as the target indicator for setting interest rates. Apart from the known and accepted disadvantage that it does not include any measure of owner-occupied housing costs – a disadvantage that is being addressed – it is generally agreed that it is suitable for this purpose.

However, even within the Euro area most countries retain their own national consumer prices index as their main inflation indicator, generally using that for uprating purposes.

Until 2010 this was the case in the UK. Since 2003 the CPI had been used for interest rate setting but the long-established RPI was used for uprating and associated matters. This changed in 2010 when the government decided to switch from the RPI to the CPI for uprating public pensions, certain benefits (when not otherwise constrained) and, subsequently, certain other items such as most national insurance thresholds.

Concerns about the UK's inflation indices had existed prior to 2010 but the government's decision turned something that had been largely the concern of a small group of cognoscenti into a much wider issue[2]. The previously little known "formula effect"[3] became a hot topic. As a result there was an upsurge of discussion and debate and much investigation. The RPI/CPI User Group was formed in late 2011. Its forum on the RSS Statistics User Network has sparked very lively debate - it has had more posts than any other User Group on the Network.

The subsequent downgrading and loss of "National Statistic" status of the RPI in 2013, following investigation of the formula effect and the conclusion by ONS that the RPI's use of the "Carli" formula led it to overestimate inflation, increased anxiety among users, many of

[2] The change sparked a legal challenge and an e-petition which exceeded the 100,000 signatures necessary for a House of Commons debate.

[3] The formula effect is the estimated difference between the inflation rates shown by the two indices that is due to the different formulae used at the first stage of aggregation. It is not the only reason for the difference but it is often the largest element and it is consistently in one direction – i.e. it makes RPI inflation higher than CPI inflation.

whom, rightly or wrongly, felt it to be a more realistic index than the CPI. It became clear that with the RPI discredited and unable to be substantially changed (following the outcome of the 2012 consultation on it) another option was needed.

This issue has been engaging both authors of this paper. Originally they were not aware of each other's thoughts and wrote separate papers on it (see Leyland, 2014 and Astin, 2014). They were both surprised and pleased to find that their thoughts were very similar and hence have collaborated on this paper. Meanwhile in 2014 the RPI/CPI User Group formally endorsed the view that an index designed specifically for uprating purposes was needed and prepared a statement on the topic (see Appendix 3). The Johnson review (2015) indicated some support for household indices but very much as secondary indices to be published only occasionally. Further, Johnson's definition of a household index, as well as being different from that which we propose, did not accord fully with the form of index the User Group wanted.

C Outline and structure of this paper

Having outlined the general purpose of and background to our proposed Household Inflation Index (HII), the next chapter sets out its basic principles. As explained in the foreword, subsequent chapters then look at some difficult topics in more depth. There are two topics we are deliberately not covering. One is the formula issue. This is not because it is unimportant but because, first, it is an issue that needs further investigation which will affect all indices and, second, whatever system turns out to be the best choice of elementary aggregate formulae for other indices will probably be the choice for the HII as well. We would simply suggest that if the HII is constructed before the formula issue has progressed, it starts with the formulae used in RPIJ[4] as being the least worst option.

The second is quality adjustment. Unlike the formula effect this could well be a topic which is treated differently in an HII compared with a macroeconomic index. In compiling the latter, quality changes should be stripped out. But there is an argument which says that "forced" quality improvements – i.e. where it is no longer possible to buy an unimproved product – should not be stripped out for an HII as the purchaser is obliged to pay the implied higher price of the improved product (Leyland, 2014). This however is a complex argument which needs further elaboration. Perhaps more importantly the Johnson review raised a number of questions about the current quality adjustment procedures used and the possibility that in some cases there is over-adjustment so that price increases that occur on the introduction of a new model are treated as quality improvements and stripped out, thus resulting in inflation being underestimated. And finally the whole notion of quality is subjective. This then is an issue which needs much further investigation. Pending that, we feel this issue should be left to one side and the debate re-started once more is known.

[4] RPIJ is a variant of RPI using the Jevons formula in place of Carli.

In some cases practicalities will limit the extent to which it is possible to meet the principles we are about to elaborate. But we believe it is important to start with a clear idea of the goal one is aiming for and then see how close one can get to this in practice.

D Principles and general points

General: Although the HII is essentially "a measure of price inflation as experienced and perceived by households in their role as consumers" (ILO, 2004), no consumer price index can be built on the experiences of individual households. Every household has its own pattern of expenditure, and its own "personal" inflation rate. All a consumer price index can do is to measure the average rate of inflation faced by households. This can easily be seen in a simple example. The price of motor cars has a relatively high weight in the CPI. That means that if car prices rise at a higher than average rate, the CPI will rise accordingly. Should a particular non-motoring household complain about this? Not at all; every household should accept that a consumer price index is an average measure, concealing a wide range of individual household inflation rates. (This is, unfortunately, a fact which is not understood by everyone.)

The HII would be constructed according to the following principles:

Basic concepts: Like the CPI and the RPI, the HII would be a "cost of goods" index (COGI) rather than a "cost of living" index. This means that it would reflect changes in the prices of goods and services rather than be an attempt to measure changes in the amount consumers need to spend to maintain a level of constant utility.

Unlike a Cost-of-Living Index (COLI) the HII would not attempt to take account of substitution of products by households, on the grounds that they should not be expected to compensate for the impact of relative price changes by theoretical assumptions concerning changes in their own reactive behaviour.

The HII would be base-period weighted rather than current-period weighted, thereby placing it in the category (like most consumer price indices) of a Laspeyres-type index. Thus the HII would be understood by householders as a measure of the expenditure necessary to buy the same (or almost the same) basket of goods and services that average households chose to buy twelve months earlier. It would be a so-called "fixed basket" index.

Coverage: All items bought by households that they need or want for everyday living would be in scope with the exception of illegal items. Items bought purely as an investment (such as stocks and shares) would not be in scope. However items, such as owner-occupied housing (OOH), which are primarily bought for non-investment purposes but can potentially increase or reduce household wealth, are in scope. Owner-occupied housing is far too important an item in the budget of many households to be ignored. For more details and further discussion see Chapter 4.

Time horizon: When price indices are used for macroeconomic purposes, the main focus is on the rate of change, i.e. the inflation rate, and in particular the inflation rate over the previous twelve months since that is normally the rate used in the UK as the target for interest

rate setting. But any index which is used for uprating purposes has to be capable of showing an acceptable evolution of prices over the long-term. Young workers joining a "career-average" pension scheme will find their pensions affected by the inflation index used up to 50, 60 or even more years ahead depending on how long they ultimately live. Index-linked gilts currently have terms going into the 2060s. This means that short-term biases or erratic movements which even themselves out over the longer term are less important than for macroeconomic indices. In contrast, persistent biases are important since even if small the cumulative effect over the longer term can be substantial. Because of the long time horizon it will be particularly crucial to deal efficiently with changes in expenditure patterns, the introduction of new products and quality change. The UK is well positioned as regards the first two of these, due to its practice of annual re-weighting.

National or domestic expenditure: In theory an HII would be based on national expenditure – that is, it would cover all items bought by UK residents whether at home or abroad and would exclude spending by foreign residents in the UK. In practice this is not likely to be fully achievable but it is unlikely to be of major importance.

Acquisition/payments/use: In theory, the cost of an item to the consumer can be measured at different points in time: when the item is acquired, when it is paid for or when it is used. In practice, none of these measures is achievable. Price collectors have no idea when a good is first used, so in practice the prices are recorded in the month in which they are observed. Nor does it make sense in a general price index to differentiate between payments made in cash or on a credit card. And again, the price collector does not follow individual purchases so has no means of knowing the type of payment. So the usual principle followed is "acquisition", defined as the moment when the purchaser incurs a liability to the seller. This would be the normal practice used in the HII. (Note that "acquisition" cannot be applied to a service, but the principle still applies – see Box on page 7).

It should be noted that acquisition prices are recorded net of any subsequent partial or full reimbursements, such as returnable deposits.

The intention of the HII, however, is to track household budget costs. Thus where timing is such that there is a substantial difference between the dates of "acquisition" and actual payment, such as owner-occupier housing costs where a mortgage is involved (see Chapter 4), it is the payment date which would be relevant for the HII. Another example is university fees. While some students pay these up front, many take a student loan which is (at the time of writing) repayable only after the student is earning above a certain amount. The cost is thus deferred and spread over many years. And in some cases it is never repaid (see section on student loans in Chapter 3).

In both of these cases there is a double "acquisition": a house and a mortgage; a period of education and a student loan.

Classification system: It is important to use an international classification system. We suggest the new EU system, ECOICOP[5]. However in one or two cases it may be necessary to modify

[5] EU version of UN Classification of Individual Consumption according to Purpose, COICOP.

this. The CPI also uses a slightly modified form of ECOICOP, but the RPI uses a national classification which generally does not correspond to the CPI at the sub-index levels.

"Democratic" and "plutocratic" weighting and sub-indices: See Chapter 2 on household-based vs. expenditure-based weights.

Taxation: All taxes related to expenditure which are regular and recurring elements of the household budget, other than direct taxes or quasi-taxes, would be in scope. The index would therefore include council tax and stamp duty land tax but exclude income tax and national insurance contributions.

CHAPTER 2 HOUSEHOLD-WEIGHTED vs. EXPENDITURE-WEIGHTED AGGREGATION

("Democratic/plutocratic" weights)

A Definitions and nomenclature

To construct any type of consumer price index for a population requires some method of aggregation in order to be able to average the effect of price changes on all households in the population. This aggregate index may be computed with weights which reflect either:

(a) average expenditures of all reference households, or

(b) the expenditure of the average household.

Method (a) requires that each household is effectively allocated a weight which is proportional to its expenditure. Seen from the perspective of households, this method implicitly gives more weight to higher spending households (which will also tend to be those with higher incomes). The more a household spends, the larger the share of total spending that household will represent. Thus the inflation experience of higher-spending households makes a larger contribution to the resulting index than that of lower-spending households. Such weighting has therefore been named "plutocratic", because of its connotation with the rich.

Method (b) gives equal importance to all households by averaging consumption value proportions over the whole reference population instead of summing consumption values. In other words, each household has the same weight and makes an equal contribution to the index. This type of weighting has been named "democratic", for obvious reasons. Method (b), unlike method (a), aims to measure the inflation rate experienced by average households.

The two methods are likely to produce different weights and thus different measures of price change.

Although the terms "democratic" and "plutocratic" have been in use for some considerable time in the context of consumer price indices, we feel that, although widely used in the technical literature, they do not meet the scientific aims of neutrality and objectivity. This paper (and, it is to be hoped, future papers on the subject) will therefore refer to them respectively as "household-weighted" and "expenditure-weighted" indices.

B Purposes of household- and expenditure-weighted price indices

The two types of index serve different purposes. Expenditure-weighted aggregation is generally considered more appropriate for consumer price indices which are designed for use as a general macroeconomic indicator. On the other hand, as pointed out in the

international Consumer Price Index Manual (ILO, 2004), household-weighted indices are generally considered more appropriate for consumer price indices which are designed for use in indexation.

The reasons are not difficult to understand. Macroeconomic uses, such as estimating the overall national inflation rate – and making international comparisons of inflation – clearly require data based on total consumption. So also does the use of price indices in deflating current-value estimates in the national accounts. As the international Manual says, the expenditure-based index treats expenditure shares as if they were those of a single aggregate "super-household".

However, for a price index designed from the point of view of households' "perception and experience of inflation", the household-weighted type of index is the more appropriate formulation to use.

C Household-weighted index preference for HII

It would appear to be almost axiomatic that a Household Inflation Index should, at least in principle, use the household-based method of weighting. The HII should be based on the inflation experiences and perceptions of typical households – that is, typical with respect to household expenditure. "Typical", in the normal statistical definition, would refer to the modal household, i.e. the most "popular" type of household (in terms of household expenditure) – which would normally be expected to be located somewhere in the middle of the distribution of households by expenditure and hence also by income.

The expenditure-weighted approach is unlikely to reflect the expenditure levels and consumption patterns of the typical household. In fact, a recent pioneering paper by Flower and Wales (2014) concluded that the CPI is broadly representative of the price experience of households around two-thirds of the way up the expenditure distribution.

Astin (2014) argued that the HII – particularly if it is to be a main headline inflation index – should be recognisable and understandable in general terms to the "man in the street". Such an understanding is more likely if the weighting of the HII corresponds more closely to that of the typical "man in the street" than an expenditure-weighted index.

D Current practice

The UK CPI, which is also the EU's HICP (Harmonised Index of Consumer Prices), uses – as indeed it should, bearing in mind its purpose as a macroeconomic index – the expenditure-based method of aggregation. So also does the CPIH, which at present is identical to the CPI except for the treatment of owner-occupied housing costs. The RPI and its related variant RPIJ (see below), are somewhat different. These indices use the expenditure-based method, but also remove from the weighting the expenditure of the extreme ends of the population distribution (a variation of a general method known as "trimming"). To be precise, the expenditures of the highest-income 4% of households and also that of pensioner households

which derive at least three quarters of their total income from state pensions and benefits are excluded from RPI coverage.

The result of these exclusions is an index which could be said to approximate, in a somewhat rough-and-ready way, that of a household-weighted index. This is because trimming removes the influence of such extreme values from the mean value, rendering the latter more representative of the distribution. There is a reason for this practice for the RPI. The RPI was developed in the later 1940s and the 1950s[6] as the successor inflation index to the earlier cost-of-living index, founded in 1914. The latter was designed as a subsistence index, used to compensate for increases in the basic household costs of workers. It was thus logical that it excluded both richer households and those who no longer worked and were dependent on the state.

E Practical application of a household-weighted index

A true household-weighted index involves calculating an inflation rate for a representative sample of households, and then combining them to get an average across all households. Such an index is not possible with current sources of data. It would require information on the expenditure patterns of individual households over a long enough period for these to be considered representative (Johnson, 2015).

But there are other approaches that get close to the household-weighted index concept. One approach is to calculate the average expenditure share on each commodity, across all households. This has been done in the above-mentioned paper by Flower and Wales. It showed that, during the 11-year period of analysis, a household-weighted index grew faster than the expenditure-weighted index by 0.3 percentage points on average per annum. This was because the products purchased more by lower-income households increased in price faster than those purchased more by higher-income households. This analysis did not produce an exact household-weighted index, but it undoubtedly went a long way towards it.

It should be emphasised – as the Flower and Wales paper does - that there is no reason why a household-weighted index should always grow at a faster rate than an expenditure-weighted index; indeed other periods can be found where the reverse occurs.

We believe it may be possible to "industrialise" their methods so as to apply them to the production of a monthly HII. But, failing this technique, another, rather broader-brush, approach may be sufficient (see Astin, 2014). This method would be based on the trimming technique used in the RPI and RPIJ. As mentioned in the previous section, the "tails" of the household expenditure distribution are currently trimmed so as to exclude the top and bottom tails. However, these tails are not equal in size. A better solution for the HII would probably be to trim the distribution tails equally, in terms of household expenditure, so that the remaining central part of the distribution would approximate better to the expenditure

[6] The Interim Index of Retail Prices started in 1947, followed by the Index of Retail Prices in 1956 which then became the Retail Prices Index or RPI.

levels - and consumption patterns - of typical households. This technique should be a relatively simple matter to implement.

F Analytical indices

In its initial response to the Johnson Report, the RSS welcomed the recommendation (No 2) that ONS should develop an annual analytical publication that produces inflation indices as experienced by a range of different household types. However, Recommendation 2 did not suggest which main index such sub-indices should relate to – perhaps the CPIH which the Johnson Report proposes as the main headline index. If an HII is to be produced, preferably monthly, as the RSS suggested in its initial response to the Johnson Report (RSS, 2015), it would be sensible to use it as the basis for a set of analytical indices for different types of household (such as indices for pensioners, poorer households etc.)

CHAPTER 3 TREATMENT OF INTEREST PAYMENTS

A Current status in UK consumer price indices

Mortgage interest payments (MIPs) but no other interest payments have been covered in the RPI since 1975, following a recommendation by the RPI Advisory Committee. MIPs are also included in RPIJ, but not in the CPI.

However, the inclusion of MIPs in the RPI would have introduced an element of unwanted circularity into the process for setting the Bank interest rate: as the Bank rate increases, mortgage interest rates usually follow, raising measured inflation and sparking further increases in the Bank rate, and so on. To prevent this, a new variant of RPI, known as RPIX, was introduced at the same time as MIPs were added to the RPI. This excluded MIPs, and was designed specifically for use by the Bank of England. It was decided by the government in 2003 that the Bank should use the CPI as its main indicator for interest-rate setting. RPIX is still published.

The remainder of this chapter looks at MIPs in detail and then at other interest payments.

B Economic arguments for and against inclusion of MIPs

In national accounts methodology interest payments were traditionally considered as "transfer payments" rather than "expenditure" - something that does not have a counterpart in economic activity but is purely a financial transaction. Further, in recent years this has been modified by including the "service" element (essentially the difference, known as FISIM or "financial intermediation services indirectly measured", between interest charged by a financial institution on loans it makes and interest it pays on deposits) since this is partly how a financial institution makes its money and is therefore an implicit payment for its services.

These are concepts that make sense in the context of national accounting but are not very meaningful from the point of view of households' perception and experience.

It has often been argued that since interest cannot be described as a good or a service, it has no place in a consumer price index. It can, though, be argued that interest paid on a loan should be included as part of consumption since it satisfies the consumer's "needs or wants" (para. 1.3, ILO, 2004) to enjoy a good or service now rather than later.

It is a fact that for owner-occupier households with a mortgage, the payment of the mortgage (both interest and capital) is a major item of household expenditure. Moreover, if the interest rate is variable, the level of expenditure is beyond their control. This places MIPs in a different category of expenditure from most other products, where the impact of price rises (including those caused by tax increases) can be reduced by substituting to other products. Mortgagors are, in contrast, often "trapped" in their repayment levels. It is therefore reasonable from the economic point of view to include MIPs in a household-based consumer price index such as the HII.

The international "Practical Guide to Producing Consumer Price Indices" (United Nations, 2009) has this to say:

"It is sometimes argued that this [payments] option is more consistent with the traditional approach to CPI construction, which is a carry-over from a time when the CPI was mostly used as a compensation tool. It also has much to commend it from the point of view of public acceptability. It measures costs directly, thereby avoiding imputation. In addition, "mortgage interest" is more likely to be understood than "rental equivalence" and, unlike the latter, the index will reflect changes in house prices and interest rates."

C The recommended approach for the HII

The HII is, as already noted, based on the fundamental purpose of a consumer price index, described in the international Manual as "*essentially a measure of price inflation as experienced and perceived by households in their role as consumers"* (ILO, 2004). Using this approach, it would be difficult to argue against the inclusion of MIPs in the HII. Its omission would be seen by consumers as a defect in its construction. Indeed, it has been argued that a major reason the RPI is still widely used in preference to the CPI is that it includes MIPs. It is also worth recalling that the CPI (EU's HICP) was designed as a macroeconomic type of index, and not for use in uprating pensions, wages, tax thresholds etc. We believe (as does the RSS) that public faith would be considerably improved in the official measure of inflation if it were to include MIPs.

D Other types of interest

Mortgage interest may be the largest category of household interest payments, but it is by no means the only one. People incur loans for a wide variety of purposes: the purchase of cars and other household durables such as televisions and washing machines; for the financing of expensive holidays, and – not least – for educational purposes, notably so-called "student loans". More recently a new type of general purpose loan has achieved importance, if not notoriety, namely the so-called "payday loans" – which are often relatively small but carrying high rates of interest.

The question arises: should the interest on non-mortgage loans also be included in the HII? If MIPs are included, it is logical that other types of interest should also be included, particularly those which are clearly linked to the purchase of consumer goods or services.

The main argument against inclusion of non-mortgage interest is the potential difficulty of measuring "price" changes. It may take a while for methods to be devised, but there seems little doubt that non-mortgage interest should in principle be included in the HII. It would add to its public acceptability. Some forms of interest may be easier than others to cover; the aim should be to start with those easy to capture and then add others as time and resources permit.

E Student loans

In the case of student loans, the actual fees paid for educational purposes are of course within scope of the HII. While some students cover the cost up front, many do not and take out a "student loan" for this purpose. The aim of a student loan is to allow the fees to be spread over a long period of time, at a relatively low rate of interest. The loan may also extend to cover students' subsistence costs. So the repayment, with interest, of student loans is an expense which many ex-students have to bear for many years. It is part of their regular household expenditure. And, rather like mortgage payments, it is unavoidable once the initial transaction (the agreement to take a course of study, like the decision to buy a house) has taken place. So, in the HII, the cost of the repayment of student loans should be included (both "capital" – the actual cost of the fees - and interest). Thus university fees would be included in the HII only with a weight appropriate to the share of them that were paid up front. For the remainder, there would be separate items in the index corresponding to interest on and repayments of student loans.

CHAPTER 4 OWNER-OCCUPIED HOUSING

A Background

The previous chapter on interest rates set out the arguments for including mortgage interest payments in the HII, just as they are currently included in RPI and RPIJ. This chapter will therefore look at other costs associated with owner-occupied housing (OOH).

OOH has always been one of the most controversial elements of a consumer price index. Indeed the reason it has not yet been included in the HICP is due to the different views about it held by EU countries and also practical difficulties. Various ways have been used in the past by different countries, the most popular ones traditionally being either to exclude it or to use rental equivalence. The latter implicitly assumes that owner-occupiers rent their dwellings to themselves. From the point of view of national accounting and economic theory this is a reasonable approach.

In the real world, however, few would consider this to be a reasonable proxy for owner-occupier costs. Rental and house purchase markets can move in different directions for quite long periods of time. It was because of this that, against the background of the substantial growth in owner-occupation after the Second World War, the Retail Prices Index Advisory Committee (RPIAC) decided in 1975 to switch from rental equivalence to mortgage interest payments, their report[7] stating:

"Owner-occupiers' other costs are at present treated by taking them as the "equivalent rent" which the house would fetch if let in a free market, and assuming, in effect, that these "equivalent rents" move in parallel with the observed rents of local authority houses and privately rented houses. We recommend that, instead of using an "equivalent rent", owner-occupiers' costs (other than repairs and maintenance, etc.) should be represented in the index by the cost of mortgage interest payments."

Later, in 1992-94, the RPIAC decided[8] to include an additional component representing housing depreciation in the RPI. This used an index of house prices as its indicator.

This was a difficult decision on which the Committee was not unanimous. It is clear, though, from reading the Committee's report that the different purposes the RPI was then used for – and in particular its use as both a way of uprating incomes and prices and as a macroeconomic indicator – bedevilled the discussion. The outcome – to use mortgage interest and an estimate of depreciation – was a compromise from which four members dissented.

One of the first jobs of the Consumer Prices Advisory Committee (CPAC), established in 2009 to replace the RPIAC (which had not met since 1994), was to consider adding owner-occupier costs to the CPI, thus forming what became known as CPIH. It rejected the inclusion of mortgage interest payments due to the possible future use of the series in interest rate setting, and narrowed its deliberations to two options: rental equivalence and the net

[7] RPIAC 1975 Cmnd 5905
[8] RPIAC 1994, Cm 2717

acquisitions approach. The latter was being pioneered by Eurostat in conjunction with EU national statistics offices for potential use in the HICP. It is intended to include a capital element of house purchase. However, since the HICP is a macroeconomic indicator, the intention is to look at the net cost to the household sector as a whole (hence "net" acquisitions). Thus the weight given reflects purchases of dwellings new to the household sector, i.e. new builds and those sold by institutions (e.g. local authority or housing association sales to tenants) less dwellings sold by the household sector to other sectors. It was also decided to exclude the value of land associated with house purchase and to cover the cost of the house or apartment only. Rental equivalence was rejected for the HICP due to the imputation involved - an aspect of the HICP which is not permitted.

CPAC decided to recommend the rental equivalence method. This was a controversial decision and the subsequent consultation showed opinion was split between that and net acquisitions. Given that the CPI was a macroeconomic index and that CPAC, by rejecting mortgage interest payments (MIPs), had made it clear that macroeconomic and national accounting needs should have priority, either method would have been broadly theoretically acceptable.

B Our OOH proposals

Unlike the 1994 RPIAC and CPAC, we do not have to struggle with a dual purpose index. We are concerned with an HII which has a practical application and is designed for uprating purposes and not for macroeconomic needs. The needs of ensuring public acceptability and credibility and reflecting the importance of housing expenditure in household budgets are therefore crucial.

Rental equivalence is too far removed from reality to be acceptable. Net acquisitions is a better approach. However, two factors cause us to reject it for an HII. The first is the exclusion of land and the second is that the weight given to house purchase reflects expenditure only on dwellings that are new to the household sector rather than all dwellings.

We therefore propose that all elements of owner-occupier expenditures – deposits and outright payments, mortgage payments (both interest and capital), mortgage protection premiums, spending on renovations and extensions, repairs and maintenance, stamp duty land tax, legal, surveyor and estate agents' fees, insurance of dwellings – should potentially be considered in scope. While one or two of these items (for example minor repairs and maintenance) are normally included in a consumer price index, many of the others are not. The RPI, in addition to MIPs, includes depreciation as a proxy for the more major repairs needed to maintain a dwelling at its current value but does not include capital payments per se.

We say "potentially considered in scope". We accept that including some of these, notably capital payments, including major renovations, may appear to be a radical departure. There may also be practical difficulties in tracking the actual cost to households of the purchase of a second and any subsequent dwellings since this will normally be partly – indeed often largely

– financed by the sum received for the sale of the previous dwelling. We will return to this in a moment.

Dealing with the other elements first, we do not think that any of these should be too controversial. Some are already included in other price indices. Those that are not should be capable of being covered by "normal" methods.

C Capital costs

Let us now look in detail at the case for including capital costs: down payments, mortgage capital repayments, and major renovations. This will be one of the most controversial elements of our proposal so it is right that we spend a little time justifying it. We also accept that there will be challenges in putting some of what we propose into practice but, again, the aim will be to get as close to the ideal as practical. And finally we have two alternative proposals to put.

The main argument for including these items is quite simply that such housing costs are a major item in many households' budgets. We are constructing an index that is defensible to the man or woman in the street, an index that they can see bears a good relationship to their actual outgoings. And shelter, however it is acquired, is an essential. Excluding these items would seriously damage the credibility of the index.

Some of the arguments against including capital costs are easy to dispose of. They are those which are purely due to semantics and to the dominance of national accounting principles in many economists' thinking. The problem as regards semantics is the word "consumer". Does the "consumer" in "consumer price index "refer to "consumers" as people or to "consumer goods"? Along with the international manual on consumer price indices (para. 3.3) (ILO, 2004) we assume that the word refers to consumers as people and that the point of a consumer price index is to follow the costs of things consumers buy.

But suppose the "consumer" in consumer price indices means "consumer goods"? Here again it must logically mean all things that consumers buy when we are talking about a price index compiled for the purposes outlined. But in national accounts terminology consumption by consumers, or consumer expenditure, excludes housing, which is considered to be investment or capital spending. For national accounts purposes this makes sense, since investment adds to the wealth of the nation. But we are not considering national accounts or economic theory here. What we are trying to do is the practical exercise of tracking how much consumers need to spend to "satisfy their own needs and wants" to quote once again the international manual on consumer prices (para. 1.3) (ILO, 2004).

A more serious objection is that there is an investment element to the purchase of a dwelling and that investments should not be in scope of a consumer price index. That there is an investment element is obviously true. (And it may be noted that, as with most other types of investment, prices of dwellings can and do fall as well as rise.) But we are talking about owner-occupiers here, not people buying to rent, or those who aim to purchase a property, improve it and sell on (we accept that a very small number in the latter category may live in the

property while renovating it but even here the dwelling is still providing them with shelter). For many owner-occupiers investment is normally a minor part of the decision to buy which is dominated by factors such as what they can afford, what sort of a dwelling they want, where it has to be and so forth. The "investment" element is usually primarily the wish that the dwelling's value "keeps up" with housing market trends generally. And the investment may only be realised on death or towards the end of life. We do not see this as any reason to avoid including the capital element.

This brings us to the final objection. This is linked to the purpose of the index as an uprating tool. The issue raised is that if house prices rise then, if the owner-occupier has an income linked to or influenced by the HII, he or she is being rewarded for something that is also making him or her better off through increasing his or her wealth. Of course if the owner-occupier has expenditure linked to the index then this will increase too. But more importantly the link is very tenuous; housing is not a liquid asset so the increase in wealth is not always easily realisable and house prices can go down as well as up.

The last two objections are not without some merit. But against that we see the imperative of constructing an index which people will see as properly representing typical expenditure.

In the following paragraphs we present two alternative proposals.

D First-time buyers

There is a case for considering first-time buyers separately from those who are already owner-occupiers. First-time buyers are faced with the full inflationary costs of house purchase as house prices rise. Second-time and subsequent buyers are only faced with the inflationary consequences of any difference in cost between their existing house and the one they want to purchase (e.g. if it is larger or in a more expensive neighbourhood). And they are already, in a sense, benefiting from an increase in wealth as house prices rise.

The first proposal therefore is to include down payments and mortgage capital payments for first-time buyers only. ONS publishes a House Price Index (HPI) for first-time buyers so there is no practical reason why they could not be considered separately. We assume that a way can be found to model mortgage capital repayments in a similar way to mortgage interest payments and that enough information is available, given the wealth of information on the housing market, to establish appropriate weights both for this and for down payments.

Special arrangements may be necessary in the case of interest-only mortgages, where a significant part of the mortgage may be due at the end of the period.

An index covering only first-time buyers would be complementary to the macroeconomic approach planned for the HICP. The latter covers housing new to the household sector. This proposal covers households new to the housing market.

E Covering the full market

The second approach would be to cover the full housing market. Under this approach we would still separate out first time buyers from those buying for the second or subsequent time. First time buyers would be treated as above.

The existing ONS index for former owner occupiers would be used for those buying for a second or subsequent time. Clearly a house buyer with an existing property does not have to fund the full cost of a new purchase in the way that a first-time buyer does so the weight allocated to down payments and mortgage repayments in this case would be net of the price received for the existing house. This is analogous to the treatment of car purchase in the RPI (and presumably in the CPI) where the weight allocated is derived from Living Cost and Food Survey data showing the cash price paid for cars less amounts received for part exchange or trade-in. It would be more complex since the financing of housing via mortgages is long term and existing buyers more often than not have to port their mortgage or re-finance but the principle is the same. Consideration would, though, have to be given to the treatment of people "downsizing".

These are complex issues to consider. We accept therefore that there will be a number of challenges in compiling this particular part of the index, both philosophically and in practice. Challenging problems are, however, not unknown to statisticians compiling consumer price indices. As regards practicalities, there is a large and growing amount of information about the housing market in the UK so it does not seem unreasonable to expect that it would be possible to have a fair attempt at building whatever statistical series are ultimately considered desirable.

CHAPTER 5 INSURANCE

A Purpose of insurance

The purpose of insurance is to protect a household against relatively rare events which, if they occur, may be very costly. In any given year, the proportion of households making, say, a claim on their domestic policy is rather small. Putting this the other way around, most households with a domestic insurance policy may pay premiums for many years without making a claim. They may feel that the premiums they pay are a significant item of household expenditure, and should be taken into account in an inflation index.

A distinction has to be made between "insurance" and "assurance". In the case of insurance, claims are only paid if the event insured against occurs. Life **Assurance**, however, is a form of saving for an event which is relatively probable or even certain – e.g. reaching a certain age or death upon which the policy pays out. As a form of saving this is a financial transaction and thus not included in consumer prices indices; neither do we propose including it in the HII. However there is a case for including Life **Insurance**. These are policies which pay out in the event of death or injury during a specified period only. For example parents might take out a life insurance policy to benefit their children should they die before their children reach adulthood. If death does not occur during the specified period nothing is payable.

The greater part of the premiums paid by households is recycled to those households making claims. The net effect of these outgoings and receipts to a large extent cancel out within the household sector. Only that part which is retained by the insurance companies represents a net outflow from the household sector. This is the economic cost of insurance to policyholders.

Current premium income from policyholders is not the sole source of insurance companies' income. A secondary source is known as "premium supplements". This comprises income received from investments made by insurance companies which act partly as a cushion against future exceptional claims. An adjustment also has to be made for changes in "actuarial provisions". These are the allocations by the insurance company to technical provisions against outstanding risks.

The "service charge" which can be reasonably accepted as the value of the services supplied by insurance companies to policyholders is thus taken as the gross premium income plus premium supplements, minus the value of claims and any changes in actuarial provisions. This is an approach frequently used in consumer price indices, including the UK CPI, and is probably the most appropriate approach for an index designed for macroeconomic purposes.

B Treatment of insurance in HII

Turning next to the treatment of insurance in the proposed HII – we begin with the purpose of paying for insurance, taking motor insurance as an example. The aim is to give

householders the opportunity to smooth out over the years the often high costs of repairing or replacing cars after losses resulting from accidents or losses. Without insurance, motorists would in most years benefit financially because of not having to pay premiums, but when an accident happens they may have to spend very large sums in repairs or replacements – sums which they may not have at their disposal. The pooling process offered by insurance companies thus provides – at a price – the guarantee that a policyholder will be able to pay for the potentially high costs after an accident without disturbing their normal pattern of expenditure. The price is, in principle, the cost of the service provided by the insurance company.

Nevertheless, the HII is designed to be an index which measures inflation as "experienced and perceived by households". Expenditure on insurance premiums is seen as an often significant part of the household budget, and it is unlikely that the typical householder will take the long-term view and assume that one day in the future he or she will need to make a claim which will relieve them of the need to pay a possibly large sum in repairs. Indeed, when claims are paid out, the householder does not directly benefit; the claim merely relieves the policyholder from all or part of the burden of paying for repairs etc. He or she must continue to pay the premiums even when a claim is paid – and indeed the premiums may rise as a result of making the claim.

This "household-based" view leads inevitably to the conclusion that the HII should include the full cost of insurance premiums, without making a deduction for the possibility of future claims. This approach accords with the perception of householders, as required by a household-based inflation index.

This approach of course contrasts markedly with that of a macroeconomic index such as CPI or CPIH. It has an effect also on the classification of insurance premiums. Continuing with the motor insurance example, an insurance company will typically pay for all or part of the cost of the repair or replacement of a damaged vehicle, with possible other additional costs such as the cost of towing to a garage and transport home for the passengers. In past years, the claim proceeds were often paid to the claimant, who would then disburse them to the repairers etc. Nowadays it is often the case that the insurance company settles the debts direct with the repairers etc. In such cases, the payments from the insurance company are treated as if they were paid on behalf of the claimant, and are recorded in the relevant heading in the household budget survey (LCF) e.g. payments to a repair garage or to a new car dealer. These payments are classified to the appropriate heading in the ECOICOP classification, such as "maintenance and repairs of motor vehicles". The "service charge" part of the premiums is classified to the insurance sector.

The proposed treatment of insurance premiums in the HII would impact on this method of classification. The most straightforward solution would be to allocate the whole of insurance premiums to the ECOICOP insurance category, although this would overweight the insurance category and underweight the repair and maintenance category. Given that the greater part of insurance premiums is re-directed to the settlement of claims (e.g. payments to repairers), it would perhaps be more realistic to allocate the value of gross premiums to the relevant ECOICOP categories such as repairs and maintenance, new vehicles etc. The appropriate

aggregate data will almost certainly be available from insurance companies, and are likely to be more reliable than household expenditure data from the Living Costs and Food Survey (LCF). It may be noted that ECOICOP does not prescribe any particular method of allocation: the insurance category merely says “Insurance”.

C Weights and prices

So far this discussion has concerned only the weights for insurance. In the case of those price indices such as the CPI which in principle need to measure the prices of service charges, it is in practice virtually impossible in the monthly time frame of a consumer price index to do so. As a proxy, therefore, the trends in gross (i.e. total) premiums are used instead of the trends in service costs in the CPI. It is unsatisfactory, but it is widely accepted as a second-best measure. For the HII, however, the situation can be simpler and more correct, since the price of gross insurance premiums is exactly what is required in order to match the relevant weights. We may call this the “gross/gross” approach, as compared with the “gross/net” approach of the CPI.

D Other points

The claims pattern of insurance companies can be erratic, and it can happen that in a particular year, claims can exceed income. The result, for a macroeconomic index such as the CPI, would be a negative weight for insurance services. This is clearly unsatisfactory; the CPI addresses this problem, following international guidelines, by calculating the weights on a three-year moving average. This would be unnecessary for the HII weights, since gross premiums are always a large positive.

The example of motor insurance used in this paper can be extended to other types of non-life insurance, such as (a) dwellings insurance (structure and/or contents) which may include all-risks cover for items lost, stolen or damaged when outside the dwelling; (b) travel insurance, covering forms of transport not included in standard motor policies; and (c) medical insurance policies. The same principles as those discussed in relation to motor insurance apply mutatis mutandis.

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May 2015

APPENDIX 1 HOW AN HII MIGHT COMPARE WITH OTHER INDICES

This appendix attempts to summarise the similarities and differences between an HII constructed as we propose, the four main current indices and, to the extent possible, the proposals for a household index set out in Chapter 5 of the Johnson report. Please refer to the text for further details in each case.

A General concepts

		Astin-Leyland proposed Household Inflation Index (HII)	RPI/RPIJ	CPI/CPIH	Paul Johnson Household Index
1	**Perspective**	Household perspective	Not explicitly from household perspective, but in practice quite close	Based on HICP, designed as macroeconomic index	Household perspective
2	**Allow imputed items**	No	No	Not allowed in CPI; Imputed rents used for OOH in CPIH	Not mentioned
3	**Current status**	Does not yet exist	RPI still widely used although no longer a "national statistic", RPIJ little used	CPI widely used. CPIH scarcely used; currently temporarily downgraded from "National Statistic"	Does not yet exist
4	**Proposed status**	(Joint?) headline index	RPI to become legacy index. Johnson report recommended RPIJ be discontinued	Johnson report recommended CPIH to be sole headline index	Household index only supported for specific population groups annually
5	**Purpose**	Intended for uprating and calculating real incomes	RPI originally intended for uprating; later used also as macroeconomic indicator	Originally intended for macroeconomic needs, now also used for uprating	Analytical only. CPIH should be main uprating index
6	**Concept**	Not a COLI	Not a COLI	Not a COLI	Further research required
7	**National/Domestic expenditure**	National	National	Domestic	National
8	**Household coverage**	All households covered including institutional, unless trimming needed to approximate "democratic" concept	Top 4% income and pensioners mainly state-pension/benefit -dependent excluded. H'hold institutions excluded.	All households covered, including institutional	Not mentioned
9	**Population sub-indices**	Sub-indices for specific populations - monthly	Pensioners and Rossi indices	No population sub-indices	Main intention would be publication of sub-indices
10	**Acquisition/payments approach**	Payments in principle; acquisition in practice unless payments timing very different	Acquisition except for mortgage interest and depreciation	Acquisition except for rental equivalence used for OOH	Not mentioned
11	**Expenditure weighting**	Democratic or quasi-democratic	Arguably quasi-democratic: excludes top 4% and poorer pensioners	Plutocratic	Democratic or quasi-democratic
12	**Classification**	Mainly ECOICOP; some exceptions	Original RPI classification	ECOICOP	Not mentioned
13	**Elementary aggregate formula where quantities not available**	As RPIJ to start with; would follow emerging best practice	RPI Dutot and Carli ; RPIJ Dutot and Jevons	Mainly Jevons, a few items Dutot	Not mentioned, but presumably as CPIH
14	**Institutional h'holds**	In	Out	In	

B Specific items

		Astin-Leyland proposed Household Inflation Index (HII)	RPI/RPIJ	CPI/CPIH	Paul Johnson Household Index
15	**Insurance weights**	Gross premiums weights	Gross premiums weights	Net weighting	Net weighting
16	**OOH - mortgage interest**	In	In	Out	Out (as interest income for some)
17	**Other loan interest payments**	In	Out	Out	Not recommended
18	**OOH - capital cost**	Included in principle but possibly only for first time buyers	Partially proxied by depreciation	Currently not included in CPI; only by imputation in CPIH	Out of scope
19	**Major renovation and extensions**	Follow same method as OOH capital cost	Partially proxied by depreciation	Currently excluded	Excluded
20	**Other repairs and maintenance**	Included	included	included	included
21	**University fees and student loan interest**	Student loan interest and repayments included. Fees paid up front included	University fees included for UK students	University fees included	Based on actual repayments
22	**Council tax**	In	In	Excluded; Johnson recommends inclusion in CPIH	Presumably included as recommendation to include in CPIH
23	**Insurance - buildings**	In	In	Out	
24	**Estate agent fees**	In	In	Out	
25	**Conveyancing fees**	In	In	Out	
26	**TV licence**	In	In	In	
27	**Vehicle Excise Duty**	In	In	In	
28	**Trade Union subs**	In	In	In	
29	**Univ accomm fees**	In	Out	In	
30	**Univ tuition fees**	In	Out	In	
31	**Stockbroker fees**	In	Out	In	
32	**Loan interest**	In	Out	Out	
33	**Forex commission**	In	Out	In	

APPENDIX 2 HOW WOULD HII INFLATION FIGURES COMPARE?

A Introduction

This appendix assesses, to the extent possible, how the inflation rates generated by an HII might compare with those of the CPI and the RPI (and to a lesser extent with CPIH and RPIJ). We focus primarily on CPI since comparison with the RPI will be dominated by the formula effect.

Clearly much of what can be said will be speculative and incomplete but some comments are possible.

B CPI and the impact of coverage differences

We will look briefly at the impact of each of our proposed differences.

Using a household-weighted ("democratic") rather than an expenditure-weighted ("plutocratic") approach can make a noticeable difference over a period of years. Flower and Wales (2014) suggests that from 2003-2013 a household-weighted CPI index might have averaged 0.3 percentage points higher per year than the actual CPI. This was primarily due to the greater weight given to expenditure on fuels, food and energy by lower-spending households and the faster rise in prices of those commodities during that period compared with other goods and services. However, other studies over a longer period show that such trends reverse themselves and that over the longer term there is very little difference in inflation rates experienced by households with different expenditure levels.

Thus the use of household rather than expenditure weights would result in HII inflation at times being higher and at times lower than CPI inflation. The difference could be persistently in one direction for, possibly, a period of years, but over the long term no significant difference would be expected.

Mortgage interest payments are considered as part of housing (see below), but in general the impact of including interest payments will depend on two main factors: the rate of interest and the size of the loan which in turn depends on the value of the relevant good or service. Rates of interest can vary sharply in the short-term but over the long-term one would expect them to oscillate around a reasonably stable average[9]. The price of the underlying good or service will clearly rise with inflation along with other items; whether interest payments therefore raise or lower measured inflation would be primarily dependent on whether there is any tendency for the goods and services purchased with loans to have a faster or slower rate of inflation than other items. In general we would not expect the inclusion of interest payments to have a significant effect on inflation rates over the long term although they would have short term effects.

The effect of including student loan repayments will depend on their structure and conditions which in turn will depend on government policy.

The different treatment of insurance seems unlikely to have a major effect. Trends in insurance payments would be similar to those in CPI but the greater weight given to insurance by the use of the "gross/gross" rather than the "gross/net" method (see Chapter 5) means that any difference in the inflation rates shown by insurance premiums compared to the rest of the index would have a somewhat greater impact on the

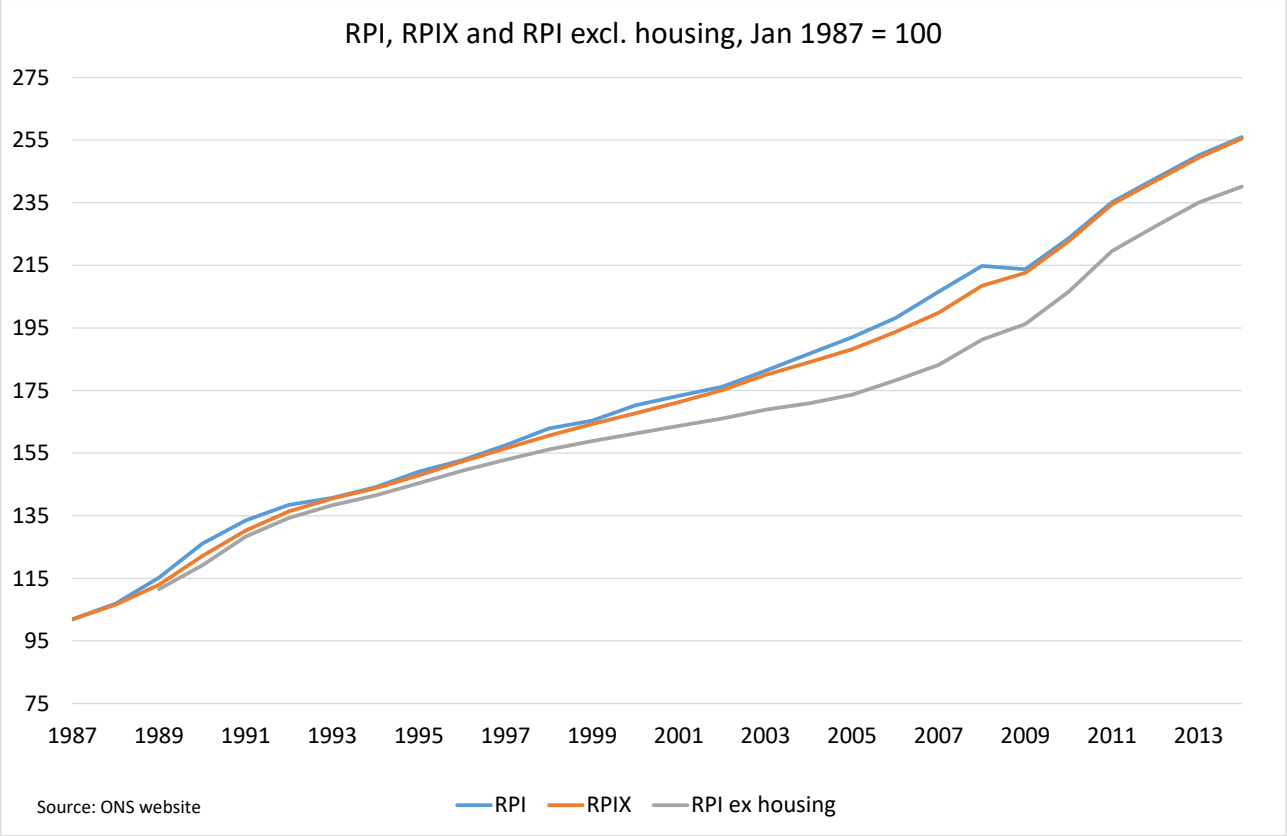
[9] In addition to the "core" rate of interest, actual interest rates reflect three other things: expected inflation; the implicit service charge of the lending institution (financial institutions derive part of their income from the margin between money they borrow and money they lend); and the perceived riskiness of the borrower. Changes in any of these will have an impact on the actual rate but would not be expected to have a major impact on the overall HII.

index as a whole. Data are not available but we are not aware of any work suggesting that the different treatment of insurance in the RPI and the CPI has any marked and persistent effect on their overall inflation rates.

This brings us to Owner Occupied Housing (OOH). There seems no reason to believe that such items as stamp duty land tax, estate agents' and legal fees, repairs, renovations and extensions will have a particularly significant impact on the overall inflation rate. This leaves the impact of mortgage interest payments and of house prices themselves, i.e. of outright and down payments and the capital element of mortgage payments.

We will first consider the impact of including these. While we are primarily concerned by the potential difference between a future HII and the CPI, some indications can be obtained from comparisons of different series within RPI datasets. These include RPIX, which is RPI excluding mortgage interest payments, and RPI excluding all housing. Housing in the RPI includes, among other things, an estimate of depreciation which is based on house prices. Depreciation would not figure in our proposals for the HII but since it reflects house prices we may get some information from comparing RPI less housing, RPIX and RPI.

The following chart shows the three series from 1987 to 2014. Including mortgage interest payments may make noticeable differences in the short term but over the long term there is very little difference between RPI and RPIX. There is more of a difference between these two series and RPI excluding housing. Even here, though, the difference is not enormous. Over the period 1989 to 2014, when data for all three series are available, RPI and RPIX inflation both averaged 3.3% per annum, with RPI excluding housing averaging 3.1%.



We would expect the weight of house prices in HII to be a little greater than the weight effectively given to them in the RPI as a depreciation proxy (currently 5.8%) but we would be surprised if it was very large.

Further, while CPI at the moment does not include Owner Occupier Housing, it is likely to in the future using the Net Acquisitions method (provided the CPI remains the same as the HICP). Currently OOH is represented by rental equivalence in CPIH. We therefore need to consider how what we propose would compare with the treatment of OOH in both CPI and CPIH.

Data for both of these series are only available for the relatively limited period of 2005-2014, a period dominated by the financial crisis. During this time OOH measured by the rental equivalence method rose by 14.6% whereas OOH measured by Net Acquisitions rose by 21.7%. During the same period the all-items CPI rose by 28.0% and CPIH rose by 25.5%. Both Rental Equivalence and Net Acquisitions would thus have reduced measured inflation over this period as a whole – but this can be at least partly if not entirely laid at the door of the financial crisis. Data are not available for CPI including Net Acquisitions but it would clearly not have reduced inflation by as much as the rental equivalence method.

Given trends in house prices, it would be expected that over the long term, and when the impact of the financial crisis is less dominant, both the Net Acquisitions method and our proposed method would raise measured inflation. Our method is likely to produce a greater weight for capital payments so over the long term we would expect it to raise measured inflation on average to a small degree greater than a Net Acquisitions approach would.

It is important to remember, though, that there is no economic law that says house prices always have to rise, or even normally have to do so. In addition to recent experience during the financial crisis, house prices fell for several years in the early 1990s and real house prices declined sharply in the 1970s.

Overall, therefore, there would be times when HII inflation is greater than CPI inflation and times when it is lower. Over the long-term we would expect HII inflation to average somewhat higher. The difference would be reduced but probably not eliminated once CPI includes OOH on the net acquisitions method (assuming this occurs).

C RPI and the impact of coverage differences

Turning to how an HII would compare with RPI, the use of household ("democratic") rather than expenditure ("plutocratic") weights would at times make HII inflation higher than RPI inflation and at times reduce it – just as in the case of the CPI comparison. The difference, however, is likely to be much less since, as discussed in Chapter 2, the "trimming" of RPI has the effect of bringing it nearer to a household-weighted approach. Insurance would be treated the same in both the RPI and the HII. Mortgage interest is already included in the RPI while the inclusion of housing depreciation means that the RPI is already affected in practice by house prices although one might expect the HII to give a greater weight to house prices in practice.

Overall and over the long term, we would expect less difference on average with the RPI due to coverage changes alone than would occur with the CPI. Coverage changes on their own might make HII inflation slightly higher, on average, than RPI inflation due to the increased weight likely for house purchase. But this conclusion changes sharply when formula issues are taken into account.

D The impact of formula changes

The crucial choice of first stage aggregation formulae in the HII would be dictated by on-going research and assessment. Our initial suggestion, however, would be to use similar formulae as in RPIJ – that is a mix of

Dutot (ratio of arithmetic price averages) and Jevons (geometric mean) with the choice dependent on the type of good or service covered. This alone would make HII inflation over the long term lower than RPI inflation – indeed very noticeably so. The extent of this can be demonstrated by comparing RPI and RPIJ; from 2000 to 2014 the former rose by 50.3% while the latter rose by just 41.3%.

Thus HII inflation would almost certainly be noticeably lower on average than RPI inflation over the long term as a result of the formula effect. Any formula differences with CPI (and CPIH) would be much less.

Overall the series that the HII is likely to be closest to is RPIJ, partly due to the formula choice and partly due to the limited differences in coverage. It would not, though, be identical and we would expect HII inflation to average slightly higher over the long term due to the treatment of Owner Occupied Housing.

APPENDIX 3

RPI/CPI User Group Statement (2014) on an Uprating or Household Budget Index

There is a clear need for a price index designed specifically to measure the increase in the costs of a household budget for the UK as a whole. The index would seek to measure, over both the long term and short term, how the cost of the appropriately weighted basket of goods and services, public and private, bought or paid for by the typical household had changed allowing for evolution in the contents of the basket due to product change and shifts in typical purchasing patterns. It would be based primarily on actual household expenditure at the time of payment. All items on which a household normally spends money should be in scope, weighted according to their share of the household budget, unless there are good and clear reasons to exclude them or to reduce their weight.

Among other criteria it should meet the requirement in the Social Security Administration Act 1992 of measuring the "increase in the general level of prices" or any subsequent replacement legislation. While the key need is for an index covering all UK households, the index should be capable of being calculated for different population groups where needs exist and resources permit.

The index would be designed with the following purposes in mind:

- The uprating of pensions, benefits and other items, where there is a legal or contractual requirement aimed at preserving the purchasing power of the individual or household;
- As an indicator in wage and other negotiations where the need to preserve the purchasing power of the employee is typically a factor taken into account;
- As a guide to uprating prices, elements of business contracts or other sums where it is logical, desirable or legally required to link these to household budget costs;
- In calculating the evolution of real incomes for households or individuals.

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