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Article

The measurement of real income in the UK: options for a coherent approach

Exploring the conceptual challenges regarding the measurement of real household income with a view to gaining user feedback.

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1 . Background

To obtain valid comparisons of household income over time, nominal income data need to be adjusted for changes in the price of items within a basket of goods and services, which may be inclusive of the cost of other financial transactions (such as interest payments, which have no explicit “price”). By adjusting for these changes, income data become comparable in “real” terms. If adjustments are not made, the validity of comparing income distribution results over time may be undermined.

The choice of index used to adjust income for changes in these prices and costs is of particular importance as, if their measurement is incoherent with the measurement of income, the validity of real household income estimates comes into question. Adjusting for changes in prices and costs using statistically coherent [1] measures ensures that changes in real household income can be more accurately understood. In turn, this ensures that households can be more appropriately ranked by the living standards that their incomes allow. This has important implications for policy-makers, particularly those who wish to understand and improve the living standards of different demographic groups.

Historical analyses of household income have often presented trends in nominal household incomes in substantial detail for different household groups. However, when calculating real household incomes, contributions to the field often make the assumption that all households face the same rate of inflation [2]. Previous work (for example, variations in the inflation experience of UK households) has suggested that this assumption often does not hold: prices grow at different rates for different household groups (for example, retired and non-retired households, households with and without children). It is therefore apparent that the production of real income growth estimates for different population groups requires the estimation of sub-group specific income measures and the estimation of coherent sub-group measures reflecting changes in prices and costs.

In UK Consumer Price Statistics: a review, Johnson (2015) set out a range of proposals on the content and presentation of consumer price statistics. Among his recommendations, he suggested that we produce an annual article in which sub-group measures of income and price growth are presented. In February 2015, the UK Statistics Authority reported on the coherence and accessibility of official statistics on income and earnings. Among their findings, the authors suggested that Johnson’s recommendation could be facilitated through an annual analytical publication that includes comparable income and earnings data.

Together, these recommendations suggest a route producing real income estimates for population sub-groups of households, alongside estimates in changes to household outgoings, or costs. While the precise form and content of this work is specified in neither review, it is clear that it should involve indices that show changes to household costs for sub-groups of the population, and income measures for these same groups, and that the income and price measures should be coherent, allowing the calculation of real income for different household sub-groups.

Notes for: Background

1. Statistical coherence is discussed here with regards to the Guidelines for measuring output quality (Office for National Statistics, 2013), and is defined as the degree to which the statistical processes, by which two or more outputs are generated, use the same concepts and harmonised methods.

2. There are notable exceptions: for example, the Institute for Fiscal Studies (2015) use group-specific income and price data to produce real income estimates for sub-groups.

2 . Aim

The aim of this article is to explore the conceptual challenges regarding the measurement of real household income with a view to gaining user feedback. It examines what it means for price and cost indices to be coherent with income measures, and presents how a family of measures could be produced to provide a better understanding of the real value of household income in the UK. While this article discusses the measurement of real income conceptually, it is hoped that the discussion will help guide decisions regarding the future development of statistics that measure income growth, and statistics that measure changes in prices and costs.

3 . Structure

Section 4 of this article discusses the current approaches to measuring changes in prices and costs, and approaches to measuring household income in the UK. Section 5 begins to conceptually explore how measures should be matched to ensure coherence and accuracy. Section 6 discusses the implications of this discussion on the future development of income statistics, and statistics measuring changes in prices and costs. Section 7 presents a conclusion.

4 . Approaches to measuring changes to household income, and prices and costs

Measurement of household income

The Canberra Group Handbook on Household Income Statistics (UNECE, 2011) describes two main traditions in household income measurement:

The first tradition follows a macro approach, which has its roots in the accounting based standards as laid out in the System of National Accounts (SNA 2008). The macro approach demonstrates how the household sector relates to the corporate and government sectors, and the rest of the world. An example of a macroeconomic approach to income measurement is seen in ONS-produced national accounts estimates of gross disposable household income (GDHI). GDHI is produced in line with international standards set out in the European System of Accounts (ESA 2010) and the SNA 2008. As GDHI is compliant with national accounts concepts, it includes items such as “owner-occupied imputed rental” that represents the value added to the economy by people living in their own homes, instead of renting accommodation.

The second tradition follows a micro approach, which has a particular focus on the study of living standards and its effect on different socio-economic groups within society. As well as analysing income levels; income, consumption and wealth can also be studied for different population groups and over time. One example of the micro approach to household income measurement is seen in Effects of taxes and benefits on household income (ETB). The data used in the ETB release are primarily from the Living Costs and Food Survey (LCF), a voluntary survey of private households in the UK, covering both income and expenditure.

ETB provides a detailed breakdown of household income and looks at long-term trends in household income for different population groups (for example, income quintiles and deciles of retired and non-retired households). Another example is the Department for Work and Pensions (DWP) Households below average income (HBAI) statistics. These publications provide statistics and commentary on living standards in UK households, as determined by disposable income. They include the number and percentage of people living in low-income households, and changes in income patterns over time.

Measurement of changing prices and costs

Measuring changing prices and costs for consumers and households describes three different approaches that are available or in development, the Consumer Prices Index including owner occupiers' housing costs (CPIH); the Household Costs Indices (HCIs, still in development); and the Retail Prices Index (RPI). These approaches are outlined in this section, along with a fourth approach to measurement, known as the Implied Price Deflator (IPD).

The CPIH is a measure of inflation based on economic principles. It measures the change in the price of a fixed basket of goods and services as consumed by households. The price movements of items within this basket are weighted in proportion to their importance to total household spending on these items, meaning that items on which households spend more money will have greater influence on the rate of change. The CPIH is a comprehensive measure of price change across the economy as a whole and is the lead measure in our publications on consumer price inflation.

Following on from work to calculate inflation rates for different sub-groups of the population, we are developing the methodology for use in producing regular sub-group indices that are consistent with the CPIH. A study is also in progress that looks at the feasibility of producing regional estimates of CPIH.

The HCIs (currently in development) examine how households experience changes in costs [1] by looking at the payments they make for a basket of goods, services and other financial transactions (such as interest payments). The changes in costs of items within this basket are aggregated in a way that gives equal weights to all households (CPI and CPIH implicitly give a higher weight to higher spending households).

Different household groups experience different changes in costs. The HCIs are proposed to be calculated for different household groups, with an all-households index also being produced for reference

The RPI does not use a methodology consistent with international best practice, a flaw which led to it losing National Statistic status in 2013. The National Statistician's statement in 2016 described some of RPIs deficiencies and strongly discouraged its use. It is not discussed further in this article.

Within the System of National Accounts (SNA 2008), and subsequently the European System of Accounts (ESA 2010), another measure is used. This index is referred to as the IPD and is a derived measure of changes in prices and costs. It is derived by dividing current price data by quantity measures and calculates changes in prices and costs from the perspective of the volumes or quantities prevailing within the period of measurement. This is in contrast to the approaches already discussed, which calculate changes in prices and costs from the perspective of quantities prevailing in the base period. While the index is less timely and less frequent than the aforementioned measures, it is coherent with broader measurements within the SNA 2008.

Current measurement of real household income

Even within the selection of measures provided as examples in this article, the current measurement of real household income is varied. Measures of real income growth that follow the macro tradition typically use the IPD to ensure consistency with broader measurement within the SNA 2008. Although nominal disposable household income is produced at a regional level, it is currently not possible to produce real household disposable income estimates at a regional level due to the lack of regional indices measuring changes in prices and costs.

Measures of real income growth, which follow the micro tradition, use a variety of indices to adjust for changes in prices and costs. For example, ETB currently use the CPIH excluding Council Tax to adjust for changes in prices and costs, while HBAI uses bespoke aggregates depending on whether income is being analysed before or after housing costs. The index used to adjust income before housing costs is similar to the CPIH but replaces the housing component with a number of specified payments for housing (mortgage interest payments, ground rent and dwelling insurance). The index used to adjust HBAI after housing costs is CPIH less any costs associated with living in a house (such that the index excludes costs faced for both tenants and owners of dwellings).

While income statistics that are measured under the micro tradition often look at different demographic groups within the population, the income of each group is currently adjusted for changes in prices and costs using the same single aggregate measure. This is partly due to the fact that a regular publication of statistics that measure changes in prices and costs for different groups of households is currently unavailable.

Notes for: Approaches to measuring changes to household income, and prices and costs

1. Where a cost is defined as “an amount that has to be paid or spent to buy or obtain something” (Oxford English Dictionary, 2017), and is synonymous with price except in the case of interest payments where an actual price cannot be observed, only derived.

5 . Producing coherent measures of household income and measures of changing prices and costs

There are many methodological aspects that can be considered when trying to determine the appropriateness of an index when used to adjust household income for changes in prices and costs. Four aspects are explored in this article:

a) the method of weighting

b) population coverage and geographic coverage

c) treatment of items that affect both household costs and household income

d) owner-occupier housing costs

Method of weighting

Two different approaches to producing the weights for a price index are considered in this article: plutocratic (economy-wide expenditure) weighting, or democratic (household expenditure) weighting.

Plutocratic weights are calculated from estimates of expenditure shares of the aggregate household sector. They are calculated relative to the total pounds sterling value of all items bought in the economy. In this case, the price movements of all items are weighted in proportion to their importance to total household spending. Due to the nature of this method, high-spending households influence total households’ spending to a greater extent than low-spending households, and consequently are implicitly given a higher weight within the index. However, the value of pounds sterling is maintained, such that a high-spending household will realise the same value of one British pound as a low-spending household; that is, each British pound spent by households will be treated equally when calculating the aggregate expenditure shares.

Democratic weights aim to measure the expenditure of an average household. They are calculated as the average proportion of each households spending accounted for by that item. In principle, the expenditure of each household receives equal weight. This changes the value of a British pound to households with different levels of expenditure, such that one British pound will have more value to a low-spending household than it will to a higher-spending household; that is, instead of each British pound being treated equally, each household is treated equally and therefore British pounds spent by low-spending households will have a higher weight in the index.

These methods reflect different concepts and fundamentally answer different questions. While plutocratically weighted indices measure the average change in price across all goods and services purchased by households, democratically weighted indices reflect the price experience of each household equally. In populations with perfectly homogeneous expenditure, where all households purchase goods in equal proportions, these weighting methods would result in identical indices. However, in populations displaying greater variation in expenditure baskets across households (for example, because expenditure shares depend on incomes as well as prices), the difference in the resulting indices may become more apparent.

The Canberra Group Handbook on Household Income Statistics notes that while plutocratic weighting may be appropriate for measuring overall changes in prices and costs, it may not be suitable for income studies that wish to attribute equal weights to all households. Therefore, when measuring real household income under the macro approach, plutocratic weighting will be most appropriate for the index that measures changes in prices and costs, as it maintains the value of total pounds sterling within the economy.

However, when looking at the median income of households it may be more appropriate to use democratic weighting method for the index that measures changing prices and costs. It may also be a valid approach to use the inflation rate of the middle income quintile, or middle two income deciles, to provide some approximation of the median household's experience of changing prices and costs.

Population coverage and geographic coverage

Naturally, the most appropriate measure to adjust household income for changes in prices and costs will refer to the same population of households as the income measure itself. Covering different populations may lead to discrepancies in results when measuring real income growth.

Suppose, for example, that data for all UK households (including those living in institutional housing) are used in the construction of an index measuring changes in prices and costs, but only private UK households are included in a matched income measure. If changes in costs for people living in institutional households (such as nursing homes) are vastly different from the changes in costs experienced by private UK households, the results could be biased to suggest lesser or greater increase in real income than is actually the case for private UK households. As such, coherent measures of changes in income and changes in prices and costs should use the same underlying population wherever possible. In practice, however, this difference could be assumed to be minimal, as only a small proportion of the population live in institutions.

Household expenditure can be measured using either the “domestic” or the “national” concept. The domestic concept includes all expenditure within the economic territory (in this case, the UK), whether it is made by residents or by foreign visitors, and excludes any expenditure made by residents abroad. As household income statistics refer to resident households, it seems sensible that wherever possible, the index chosen to adjust for changes in prices and costs should capture expenditure using the national concept, which means that all resident household expenditure is included, whether it arises domestically or abroad.

In countries with a high level of tourism or large cross-border shopping, using domestic inflation measures to deflate household income may be problematic. However, as Johnson (2015) highlighted in UK Consumer Price Statistics: A Review, the difference between domestic and national expenditure in the UK is relatively insignificant, as expenditure of UK residents abroad accounted for just 3% of total expenditure in 2014. Expenditure patterns of foreign visitors to the UK may be similar to those of UK residents when visiting foreign countries and could be concentrated within the same classes. However, further research would be required to investigate this assumption fully, before any conclusions can be made.

Treatment of items that affect both household costs and household income

Both Johnson (2015) and Weale (2014) assert that when inferences are being drawn about real household incomes, the indices should be consistent in their treatment of items that affect both household income and household costs. Weale argues that there may be a case for a “family of indices”, relating to different definitions of income, where each measure of income has a price index associated with it.

Three noteworthy cases are discussed in this section:

- second-hand cars
- credit
- insurance premia

In each of these cases, a rise in the cost of the product also has a direct impact on the income of some households.

Second-hand cars

Households purchasing second-hand cars are likely to perceive a rise in the price of vehicles as an increase in their costs, and might reasonably expect this to be reflected in aggregate inflation estimates. However, because many second-hand car sales are between households, a cost for one household represents income for another. As a result, the net cost of these transactions to the household sector as a whole is zero: the costs and benefits cancel out. When the price of second-hand cars increases, payments between households get larger, but the net cost to the household sector remains unchanged. While it raises costs for some households, others are provided higher income.

Interest payments

Arguably, households with mortgages and other financial liabilities perceive a rise in the interest rate (the “price” of borrowing) as an increase in their costs. However, as some households are net savers, an increase in the interest rate can increase their incomes, as they will receive a greater amount of interest on their savings. Consequently, any changes to the interest rate can affect both household costs and household income, although the change in income received on savings and interest paid on debt may not be proportional.

Insurance premia

Households are likely to perceive a rise in their insurance premia as a direct rise in their costs each period. However, insurance premia can be divided into two aspects: a charge paid by policy holders to the insurance company for providing the service (net premium), and a payment into a “claims pool”, which is fully disbursed each period (in large part back to the household sector). Following this logic, the latter concept is a transfer between households, which imposes no cost on the sector as a whole. To the extent that this transfer is subsequently spent by the receiving household, its value is captured in estimates of aggregate spending. To count both the original spending (on insurance) and the purchases from claims paid out from the pool would be to double count this spending. As a household pays their insurance premium, but also may claim an insurance payout, insurance has an impact on both household costs and household income.

When considering insurance from the perspective of individual households, rather than the household sector, there is a counter argument to this. A household is not receiving income when they have made an insurance claim; they are simply being compensated for their financial loss. Using the previous example, if households are driving more expensive vehicles, then an accident will be more costly for a household to repair or replace their vehicle. The money claimed will compensate the household for their financial loss, but will not provide them any additional benefit. A rise in income, theoretically, should lead to a rise in the material living standards of households. However, in this case, the material living standards of a household will have decreased following an accident or loss, and the claim restores the household’s material living standards to their pre-accident level. Therefore, it may be inappropriate to think of an insurance payout as income.

If statistics measuring changes in income and statistics measuring changes in prices and costs are not coherent with regards to the treatment of items that affect both household income and household costs, the measure of real income that results will not account for the full effects of these changes on the financial position of households.

To demonstrate this, suppose that a measure of household income that includes net revenue from second-hand car sales is adjusted for changes in prices and costs using an index that includes the gross cost of second-hand car sales. The cost of the second-hand cars will be taken into account twice, once when calculating the net revenue (value of sales less the costs of purchases) from second-hand car sales in the income measure, and again when producing a measure to adjust for changes in prices and costs.

Suppose that while income growth has been subdued, the measure used to adjust income for changing prices and costs shows strong growth as a result of the rising cost of second-hand cars. Adjusting the income measure for changes in these costs overstates the fall in real income because it is including only part of the stronger revenues that some households derive from the higher saleable value of their assets. More precisely, while gross income from second-hand cars is counted once (in the income measure), the gross costs of the cars are counted twice: once in the measure of income, and then again in the measure that is chosen to adjust income for changes in prices and costs.

To ensure that the measures are coherent, one of the following methods should be applied:

- income that includes the gross revenue from sales from second-hand cars should be adjusted for changes in prices and costs using an index that includes a measure of the gross cost of second-hand cars
- income that includes the net revenue from sales of second hand cars should be adjusted for changes in prices and costs using an index that is weighted using the expenditure of net second-hand car costs

This combination of effects is shown in Table 1.

Table 1: Impact of the treatment of second-hand car sales on the measurement of real income

		Measure of income growth includes:	
		Gross sales income	Net sales income
Measure of changing prices and costs includes:	Gross second hand car costs	Coherent – captures both higher costs and higher income from rising prices	Suggests fall in real income: price measure shows higher costs, income measure fails to capture higher income
	Net second hand car costs	Suggests rise in real income: price measure weight reduced by income stream, which is counted gross in income	Coherent – captures both higher costs and higher income from rising prices

While highly stylised, the example shown in Table 1 gives some idea of the importance of coherence between income measures and measures used to adjust income for changes in prices and costs. Provided that both measures treat items that affect both household income and household costs on either a “gross-gross” or “net-net” basis, then the conclusions that we draw from the resulting analyses are fair. If they are incoherent, then diverging trends in the prices of items included (or excluded) from the different measures may result in incorrect conclusions being drawn about the real income of households.

Table 2 generalises the treatment of second-hand car sales to cover the three cases outlined previously. In each instance, the “gross” treatment of an item (that is, calculated using a weight that reflects the full cost of the item, not including any offsetting income effects) in the index chosen to adjust for changes in prices and costs is matched by the gross treatment of income for that item. Conversely, where the index chosen to adjust for changes in prices and costs is calculated on a net basis, including the effect of income on a component, the income measure is also calculated on a net basis. In this way, neither the cost of an item (top right-hand cell in Table 1), nor the income from an item (bottom left-hand cell in Table 1) is counted twice.

Table 2: Coherent treatment of items affecting both household income and household costs

Item	Cost (weight) measure	Income measure
Second Hand Cars	Gross expenditure	Gross income from sales of second hand cars
	Net expenditure or zero, whichever is greater	Net receipts from sales of second hand cars or zero, whichever is greater
Interest Payments	Gross expenditure on interest payments	Gross interest received
	Net expenditure or zero, whichever is greater	Net interest receipts or zero, whichever is greater
Insurance Premia	Gross premia	Gross claims on insurance policies
	Gross premia less claims on policies or zero, whichever is greater	Net claims on insurance policies or zero, whichever is greater

Notes:

1. Note that in most periods for groups of households, net expenditure on second-hand cars, interest payments and insurance will be positive: yielding zero values in the income column. However, this may not hold in all periods and is unlikely to be the case for all sub-groups of the population. Where the net expenditure on one of these items is negative (that is, a group of households derives income from an item), the appropriate income to match to “net expenditure” is “net income”.

A complementary way of thinking about the degree of coherence between these statistics is to examine the composition of the index adjusting for changes in prices and costs relative to the measure of income used to make relevant payments. Suppose, for instance, that we have a measure of household income that includes the gross cost of interest received. This income will be used to buy a range of household goods and services, including credit: that is, the gross costs of credit must be borne from this income, as we have already counted the gross interest received in calculating our income measure.

Owner occupiers’ housing costs

The measurement of owner occupiers’ housing costs (OOH) presents a particular challenge when considering the coherence of statistics measuring changes in income and those adjusting measures of income for changes in prices and costs. There are a number of different approaches to measuring OOH. Different approaches to measuring changes in the cost of OOH are outlined in Understanding the different approaches of measuring owner occupiers’ housing costs. These approaches are referred to as the “rental equivalence” approach, the “net acquisitions” approach, and the “payments” approach.

The rental equivalence approach treats the “rent households would have to pay themselves to rent their own home” as an expenditure item. However, this has implications for both costs and incomes: implicitly, these are costs that households face, but are also an income stream from which households can derive value. For example, if an owner-occupier were to upsize their house from a one-bedroom bungalow to a three-bedroom house, they would receive a greater service from their new property and therefore their imputed income would be greater. Any measure of income that is inclusive of imputed rents should then be adjusted for changes in prices and costs using an index that is inclusive of the cost of imputed rents.

If the treatment of owner occupiers' housing costs within the income measure and the measure used to adjust for changes in prices and costs is not coherent, then the underlying income position of households may be distorted. For example, suppose a measure of household income excludes the income derived from owning ones home, but the measure used to adjust said income for changes in prices and costs includes the cost associated with living in one's home through the inclusion of imputed rentals. In this case, a measure of real income excluding imputed rents may understate the underlying position of households: it will capture the growing cost of owner occupation, but will not consider the growing imputed income stream that households derive from their owner-occupied housing wealth. If our measure of changing prices and costs includes imputed rent, clearly the expenditure to which this measure relates includes imputed rent, in which case our income measure should also include it.

However, as Weale (2014) points out in A family of price indices?, the use of rental equivalence, or imputed rentals, can cause difficulty for survey-based measures of income (which are typical of the micro tradition of income measurement): as imputed rentals are modelled, rather than observed, there is no way of collecting this information through surveys.

If it is desired to use a measure of income that excludes imputed rent, the most appropriate indicator of OOH costs may be current housing-related payments (as in, the payments approach to measuring OOH). This means that mortgage interest payments are treated as a cost, along with items such as running and maintenance costs, which are present in any measure of housing costs. Some households will see their incomes rise when mortgage costs increase, because they are net savers. Therefore, this indicator should be used to adjust a measure of income that includes interest receipts.

Since it is not possible to separate those interest receipts arising from the mortgage market from those arising from other forms of credit, the mortgage payments approach needs to be applied in a context in which all interest receipts are treated as income and all interest payments are treated as a cost. It should also be noted that the capital element of mortgage payments is excluded since this is regarded as a form of debt repayment and therefore of saving, as the house is an asset from which an owner can derive value once the debt has been repaid.

Income measures do not include capital gains on housing or on any other assets. There have been some suggestions that these should be included with income (for example, Nordhaus and Tobin, 1972). An increase in the price of housing can, however, be seen as a transfer from future house-owners to current house-owners rather than an increase in the resources available to society as a whole. Seen from this perspective the case for treating it like income is much weaker and therefore including the capital cost of housing would not be considered when producing a coherent measure to adjust income for changes in prices and costs.

6 . Implications for the future development of statistics measuring changes in income, and prices and costs

It is clear that when attempting to draw conclusions about real household incomes, care is needed regarding the coherence of measures used in its production. In particular, the measures that are used together to draw implications about real household income should be consistent in their treatment of costs that affect both household income and costs, including the prices of second-hand cars, insurance, interest payments and housing costs. Stylised examples of how an income measure and a measure that reflects changes in prices and costs could be produced coherently are provided in Annex A.

Measures of household income calculated following the macro tradition typically treats items net of costs. For example, the System of National Accounts (SNA 2008) estimates of gross disposable household income only include the margin on sales of second-hand goods. It also includes Financial Intermediation Services Indirectly Measured (FISIM – essentially the margins made by financial institutions on household financial transactions) as an approximation of net interest receipts, and imputed rental to estimate the income derived from owner-occupied housing.

It is therefore appropriate to adjust measures of household income, calculated following the macro tradition, using a measure of changing prices and costs that treats the expenditure of items net of any income received. For example, the Consumer Prices Index including owner occupiers' housing costs (CPIH) includes the marginal cost of second-hand car sales (as in, it nets off inter-household transfers), insurance premia net of claims received, and imputed rentals to estimate the costs faced by owner-occupiers' living in their own homes. The CPIH does not include a measure of FISIM (or any other measure of net interest), so the Implied Price Deflator (IPD) may be more appropriate for this purpose as it does include a calculation of FISIM.

However, the IPD is currently only produced quarterly, and as it is produced based on current period expenditure it is somewhat lagged compared with other measures of changing prices and costs. If a more timely measure is needed, then it may be possible to modify the CPIH to include a measure of FISIM. Furthermore, development work is underway to produce regional estimates of CPIH, and to produce CPIH consistent indices for different demographic groups. As such, if producers of income following the macro tradition wish to look at household income by region or by group, the CPIH sub-group indices may produce more accurate results.

Measures of income calculated following the micro tradition typically have a mixed approach regarding the treatment of items that affect both household income and household costs. For example, while the Effects of taxes and benefits on household income (ETB) is inclusive of gross interest receipts, it does not include insurance claims or income received from second-hand goods. The measures are also often survey based and as such do not include a measure of imputed rentals. It would therefore be appropriate to adjust this type of income using a measure of changing prices and costs that includes the gross cost of interest, but that also includes second-hand car expenditure net of any household income received through sales of second-hand cars, and insurance premia net of any claims received. As the income measure excludes imputed rent, the appropriate index used to adjust it would be inclusive of current housing-related payments.

While there are currently no measures available with the desirable features to adjust income measured following the micro tradition for changes in prices and costs, the Household Costs Indices (HCIs) that are currently in development do contain a number of these desirable elements. For example, they are proposed to: be inclusive of the gross cost of interest, weight second-hand cars using expenditure net of any household income received through the sale of cars, and include current housing-related payments.

However, the HCIs are also proposed to include gross insurance premia, which may not be appropriate when adjusting income measures that do not include income received from insurance claims. At this stage of development, it may be worth considering whether the proposals for the HCIs should be modified, to ensure accurate measures of real household income produced under the micro definition can emerge.

The HCIs are also proposed to be calculated for different demographic groups. This will be useful for producers of household income, following the micro tradition, who wish to look at the long-term trends in household income for different demographic groups. However, an aggregate index will also be needed to calculate overall real income estimates.

7 . Conclusion

The aim of adjusting household income for changes in prices and costs is to calculate its real value. It is important when measuring real income that an appropriate index is chosen to adjust for these changes in prices and costs, as if the measures are incoherent in their methodology, or in their treatment of particular items, households may be interpreted as having a greater, or lesser, real income than is actually the case.

Real household income that is measured following the macro tradition is already fairly coherent with the index used to adjust it for changes in prices and costs in its treatment of certain items (because its standards are laid out within the System of National Accounts (SNA 2008)). However, a timelier estimate may be feasible if a modification of the Consumer Prices Index including owner occupiers' housing costs (CPIH) that included Financial Intermediation Services Indirectly Measured (FISIM) was used to adjust for changes in prices and costs. Regional estimates or estimates for demographic groups may also be feasible using measures of CPIH in the future.

Real household income that is measured following the micro tradition is currently varied with regards to the index that is used to adjust for changes in prices and costs. While the real income measures in production currently use different bespoke indices (that are modifications of indices already produced), there may be a case to move towards using the Household Costs Indices (HCIs) in the future, once the indices are fully developed.

Estimates of real household income can offer significant insights into the standard of living of households, and household groups. They are used to help guide policy decisions within government as well as academic research projects that help to provide an understanding of the pressures faced by households. It is therefore important that the measures are produced as accurately as possible, using an appropriate index to adjust household income for changes in prices and costs.

The choice of index should depend on the make-up of the income measure, and producers should expand the discussion and conclusions in this article to the treatment of any items that affect both household income and household costs, to ensure that the real income estimate is capturing changes in costs and income only once.

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9 . Annex A: Stylised examples of how an income measure and a measure that reflects changing prices and costs could be produced coherently

Table 3: Net approach to measurement

Feature	Measure of income growth	Measure of changing prices and costs
Weighting	Looking at the whole economy – wishes to maintain the value of sterling	Plutocratic weighting
Coverage	All households within the economic territory	All households within the economic territory
Second-hand cars	Sales revenue from second-hand cars measured net of payments for second-hand cars (or zero, whichever is greater)	Expenditure on second-hand cars measured net of revenue from the sale of second-hand cars (or zero, whichever is greater)
Interest payments	Interest received from saving measured net of interest paid on debt (or zero, whichever is greater)	Interest paid on debt measured net of interest received from saving (or zero, whichever is greater)
Insurance premia	Income received from insurance claims measured net of payments made (or zero, whichever is greater)	Expenditure on insurance premia measured net of any insurance payouts received (or zero, whichever is greater)
Owner occupiers' housing costs (OOH)	Measured using imputed rentals / rental equivalence	Measured using imputed rentals / rental equivalence
Capital housing	Not included	Not included

Table 4: Gross approach to measurement

Feature	Measure of income growth	Measure of changing prices and costs
Weighting	Median income	Democratic weighting OR middle income quintile
Coverage	All private UK households	All private UK households
Second-hand cars	Gross sales revenue from second-hand cars	Gross expenditure on second-hand cars
Interest payments	Gross interest received from saving	Gross interest paid on debt
Insurance premia	Gross insurance payouts received	Gross expenditure on insurance premia
Owner occupiers' housing costs (OOH)	Does not include imputed rental as income stream	Measured using a payments approach
Capital housing	Not included	Not included

Table 5: Mixed approach to measurement

Feature	Measure of income growth	Measure of changing prices and costs
Weighting	Wishes to attribute equal weight to all households	Democratic weighting
Coverage	Pensioner households	Pensioner households
Second-hand cars	Sales revenue from second-hand cars measured net of payments for second-hand cars (or zero, whichever is greater)	Expenditure on second-hand cars measured net of revenue from the sale of second-hand cars (or zero, whichever is greater)
Interest payments	Gross interest received from saving	Gross interest paid on debt
Insurance premia	Income received from insurance claims measured net of payments made (or zero, whichever is greater)	Expenditure on insurance premia measured net of any insurance payouts received (or zero, whichever is greater)
Owner occupiers' housing costs (OOH)	Does not include imputed rental as income stream	Measured using a payments approach
Capital housing	Sales of housing assets included	Cost of housing assets included