

Compendium

Results

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1 . Section 5. Results

This section sets out the results of our analysis. It first considers differences in expenditure patterns and inflation rates between households in different equivalised disposable income deciles, before turning to deciles of equivalised expenditure¹. It follows this analysis by comparing the rates of inflation experienced by households with and without children and retired and non-retired households.

Throughout this section, the analysis is based on a set of expenditure weights that are consistent with the CPI weights, details of which are available in Section 3. This places some limits on our analysis, which are discussed in Section 8, but allows us to draw direct comparisons between our sub-group inflation rates and the headline Consumer Prices Index (CPI) inflation rate.

Notes for section 5. Results:

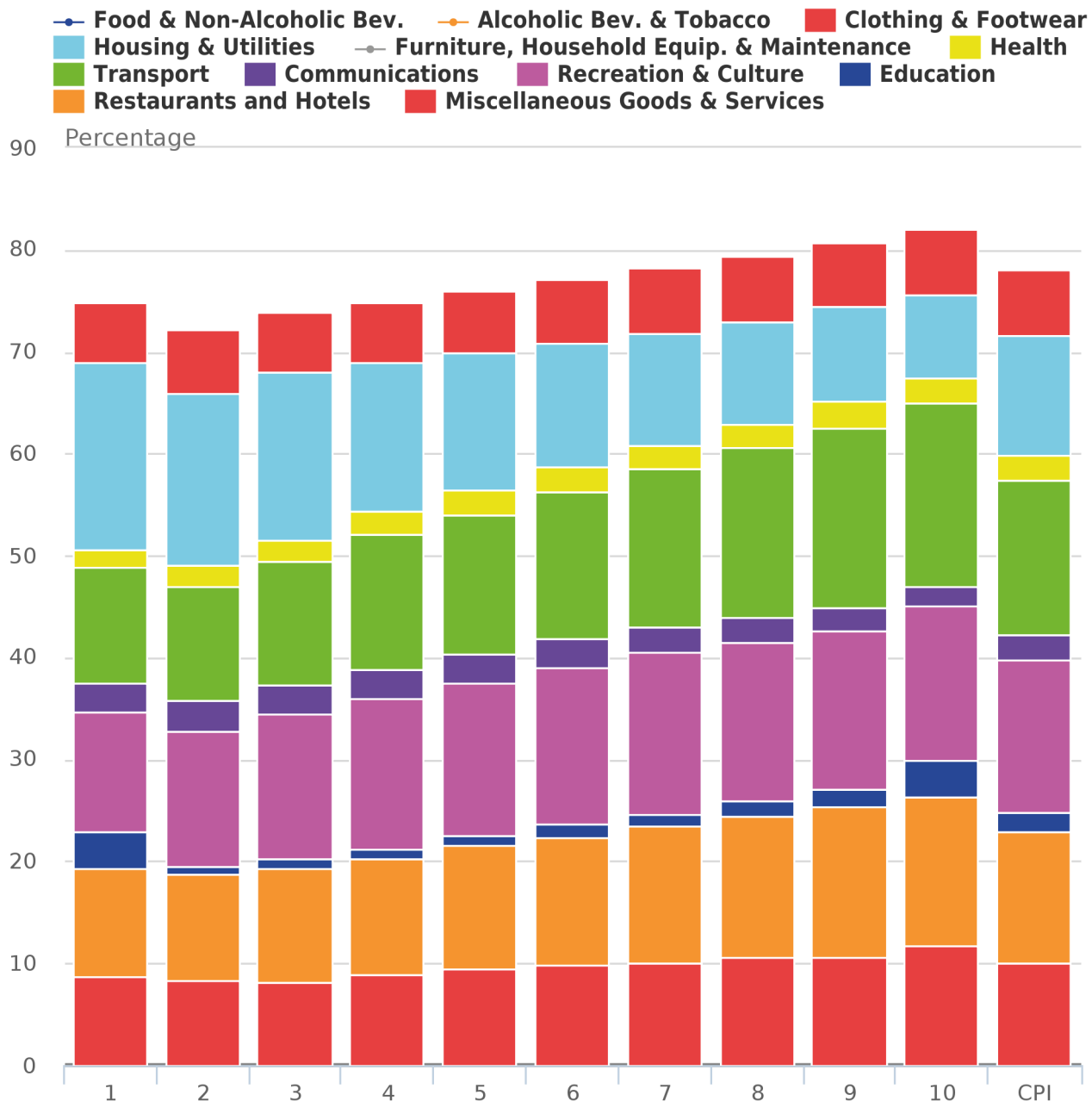
1. The 'equivalisation' process adjusts household specific expenditure and income to take account of household composition and is based on the OECD-modified scale equivalisation factors used in the ONS publication on the Effects of Taxes and Benefits (ONS 2014b). See Section 3 for more details.

2 . 5.1 Income deciles

5.1.1 Expenditure weights

As set out in Section 3, this paper uses sub-group specific expenditure weights from the Living Costs and Food Survey (LCF) alongside population-level price indices from the CPI. As a result, the only driver of differences between sub-groups is the share of expenditure which they attribute to each product, delineated by the class-level categories for the Classification of Individual Consumption According to Purpose (COICOP). As a starting point, Figure 5.1 divides the household population into income deciles¹ – ten equally-sized groups of households ranked by their equivalised disposable income – and illustrates household spending on each COICOP division as a percentage of total spending. It shows that – with the exception of the lowest-income decile – spending shares evolve quite smoothly over the deciles. Spending on 'essentials'² such as food, clothing, housing and utilities declines smoothly as a fraction of total spending between deciles 2 and 10; falling from 44.4% of expenditure in the 2nd income decile to just 24.9% in the highest-income households. By contrast, spending on recreation and culture represents 13.2% of the spending in the 2nd income decile, compared with 15.1% for households in the highest-income decile.

Figure 5.1: Expenditure shares by COICOP division, by equivalised disposable income decile; average %, 2002 – 2013



Source: Living Costs and Food Survey, ONS Calculations

The 'kink' which is apparent in the expenditure weights between deciles 1 and 2 in Figure 5.1 indicates that the composition of the first decile is slightly unusual. The presence of student households (with low current income, but expectations of higher long-term income) is particularly clear, as the weight accorded to spending on education falls from 3.5% to 0.8% between the 1st and 2nd income deciles, before rising smoothly up to the highest-income groups. Pensioner households – many of whom are 'income poor, asset rich', also fall into the first decile. This means that care should be taken when comparing the lowest-income decile to other groups.

5.1.2 Inflation rates

Differences in spending patterns across income deciles cause differences in the inflation experience of these households. Table 5.1 below shows the annual rates of price growth experienced by each equivalised income decile between 2003 and 2013, compared with the CPI annual rate of inflation. The final row of the table shows the average growth rate for each group over the same period. Table 5.1 suggests that there is some variation in the long run in the rate of inflation experienced by households with differing levels of equivalised income: the average annual rate over this period varies between 2.9% for the lowest-income decile, and 2.4% for the 7th income decile. The CPI – capturing the degree of inflation for all households weighted by their expenditure – sits in the middle of this range, at 2.6%. There is some variation between years: in five out of the eleven years, the lowest-income deciles face the highest price increases but there is no discernible pattern in which households face the lowest inflation rates. These are predominantly found in the 7th and 9th income deciles but in 2010 it is the 4th decile which faces the smallest price increases, and in 2011 it is the 10th decile. Table 5.1 suggests that when the CPI rises, the rate of price increase experienced by each income decile tends to rise as well, limiting the degree of variation in any one period.

Table 5.1: Annual inflation rates for equivalised disposable income deciles, CPI, %

Year	Equivalised Disposable Income Decile										CPI
	1	2	3	4	5	6	7	8	9	10	
2003	1.5	1.3	1.3	1.5	1	1.2	1.5	1.3	1.3	1.6	1.4
2004	1.3	1.1	1.3	1.2	1.3	1.2	1.4	1.2	1.6	1.4	1.3
2005	2.5	2.9	1.9	1.9	1.9	2.1	1.8	1.9	2	2.2	2.1
2006	2.8	2.6	2.7	2.3	2.3	2.4	2.2	2.2	2.1	2.3	2.3
2007	2.6	2.5	2.5	2.5	2.5	2.2	1.9	2.2	2	2.6	2.3
2008	4.4	4	3.9	4	3.7	3.5	3.1	3.7	3.4	3.4	3.6
2009	2.3	2.4	2.4	2.4	1.9	1.7	2	2.6	2.1	2.1	2.2
2010	3.5	3.1	3.2	2.8	3.4	3.5	3.3	3.6	3.3	3.1	3.3
2011	4.4	4.7	4.3	4.9	4.4	4.2	4.4	4.2	5.1	4.1	4.5
2012	3.3	2.9	2.8	2.6	2.9	2.9	2.5	2.9	2.6	3	2.8
2013	3.5	2.8	2.8	2.6	2.4	2.4	2.4	2.4	2.3	2.6	2.6
Average	2.9	2.7	2.6	2.6	2.5	2.5	2.4	2.6	2.5	2.6	2.6

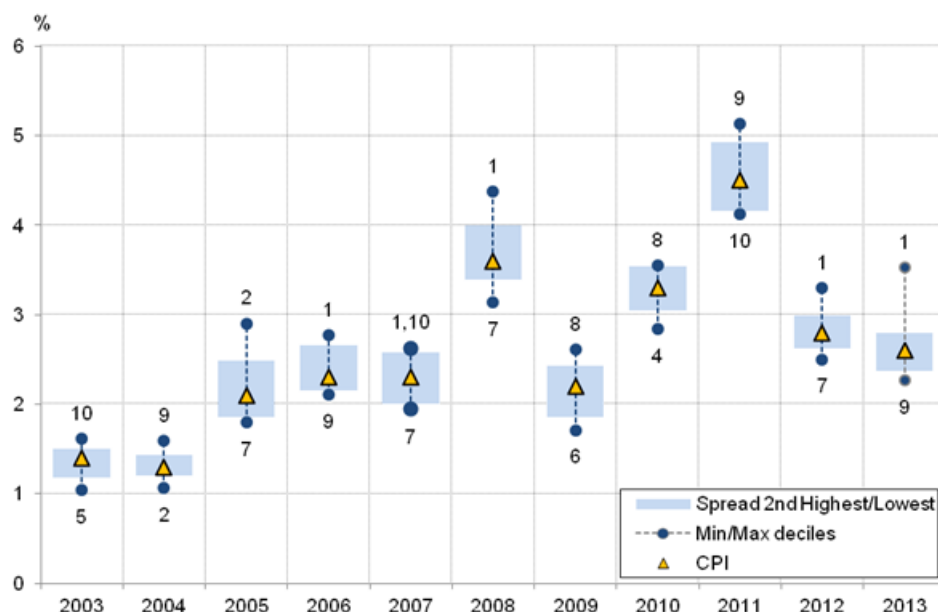
Source: Office for National Statistics, ONS Calculations

Notes:

1. The average presented is the compound average annual growth rate, and consequently may differ from the arithmetic average of the inflation rates presented.
2. Equivalised income deciles (1 = lowest-income households 10 = highest-income households)

Figure 5.2 below captures this information in a slightly different form. It shows the range of inflation rates experienced each year across the income deciles as blue points connected by the dotted line, as well as the CPI estimate of inflation (yellow triangles). It also shows the inter-decile range between the 2nd-highest and 2nd-lowest measures of inflation as a shaded bar. This measure is less affected by unusually low- or high-income households who appear in our underlying data. At the widest points in 2008 and 2013, the highest and lowest rates of decile-level inflation are around 1.3 percentage points apart, while in 2004, the differences are much smaller. However, the labels on the range of estimates confirm that – in general – it is the lowest-income groups that experience the highest rates of inflation.

Figure 5.2: Annual inflation rates by equivalised disposable income decile, %



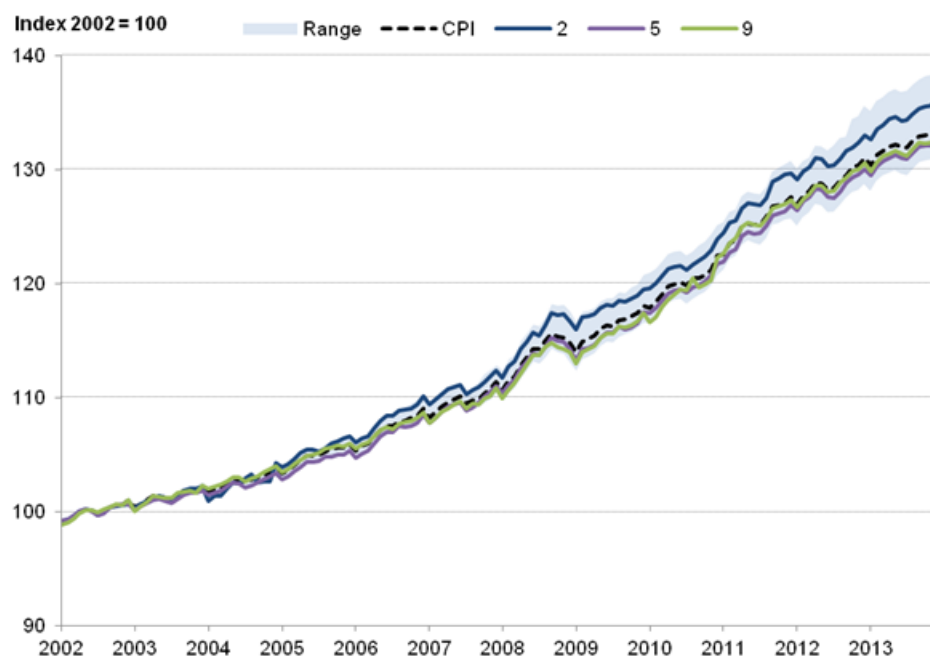
Source: ONS Calculations

Notes:

- Figure shows the CPI rate of inflation (yellow), the range of inflation outcomes (blue dots) and the inter-decile range between the 2nd-highest and 2nd-lowest measures of equivalised decile inflation rates (shaded blue bar). Data labels indicate which deciles provide the maximum and minimum inflation rate observations.

How do these changes compound over a period of eleven years? Cumulative price changes over time can be seen in Figure 5.3. Since 2002, prices for the goods purchased by the lowest-income households have risen by 39.2%, while the goods purchased by households in the 7th decile of the income distribution faced a price rise of 31.4% over the same period. While this finding has important implications – not least relating to the growth of real earnings by sub-group – there are two reasons for caution. First, as Figure 5.1 suggests, the results for lower-income deciles may be affected by the unusual compositions of the sub-groups, caused by temporarily low income effects, or by income-poor, asset-rich households. The ‘kink’ in expenditure patterns is particularly strong evidence of this effect. Secondly, note that households will only have experienced these differences if they were consistently placed in a given equivalised income decile through time. As households have been shown to move between income deciles through their life-cycle (Jenkins, 2011)³, the cumulative price impact presented in Figure 5.3 below is for the products that households in each decile purchases through time.

Figure 5.3: Range of cumulative price changes for equivalised disposable income deciles, selected equivalised disposable income deciles and CPI; 2002 = 100



Source: ONS Calculations

Notes:

1. Equivalised income deciles (1 = lowest-income households, 10 = highest-income households)
2. Figure shows the range of cumulative price changes for goods purchased by income deciles between 2002 and December 2013. Note that households have been shown to move between deciles between years.

Notes for 5.1 Income deciles

1. Disposable income is defined as total income less current transfers paid. Such transfers comprise: employers' social insurance contributions; employees' social insurance contributions; taxes on income; regular taxes on wealth; regular inter-household cash transfers; and regular cash transfers to charities.
2. The definition of 'essentials' is a matter of extensive debate and research – see, for example; Joseph Rowntree Foundation (2013), and Tullett Prebon (2013). Here, we adopt this label as a matter of convenience, rather than philosophical conviction.
3. Note that this is a broader issue, which affects a wide range of analyses of distributional outcomes. The 'axiom of anonymity' (Grimm, 2005), in which the outcomes for multiple cross sections are analysed without regard to the longitudinal movements within the distribution, may mean that the experience of a given household deviates from the results presented.

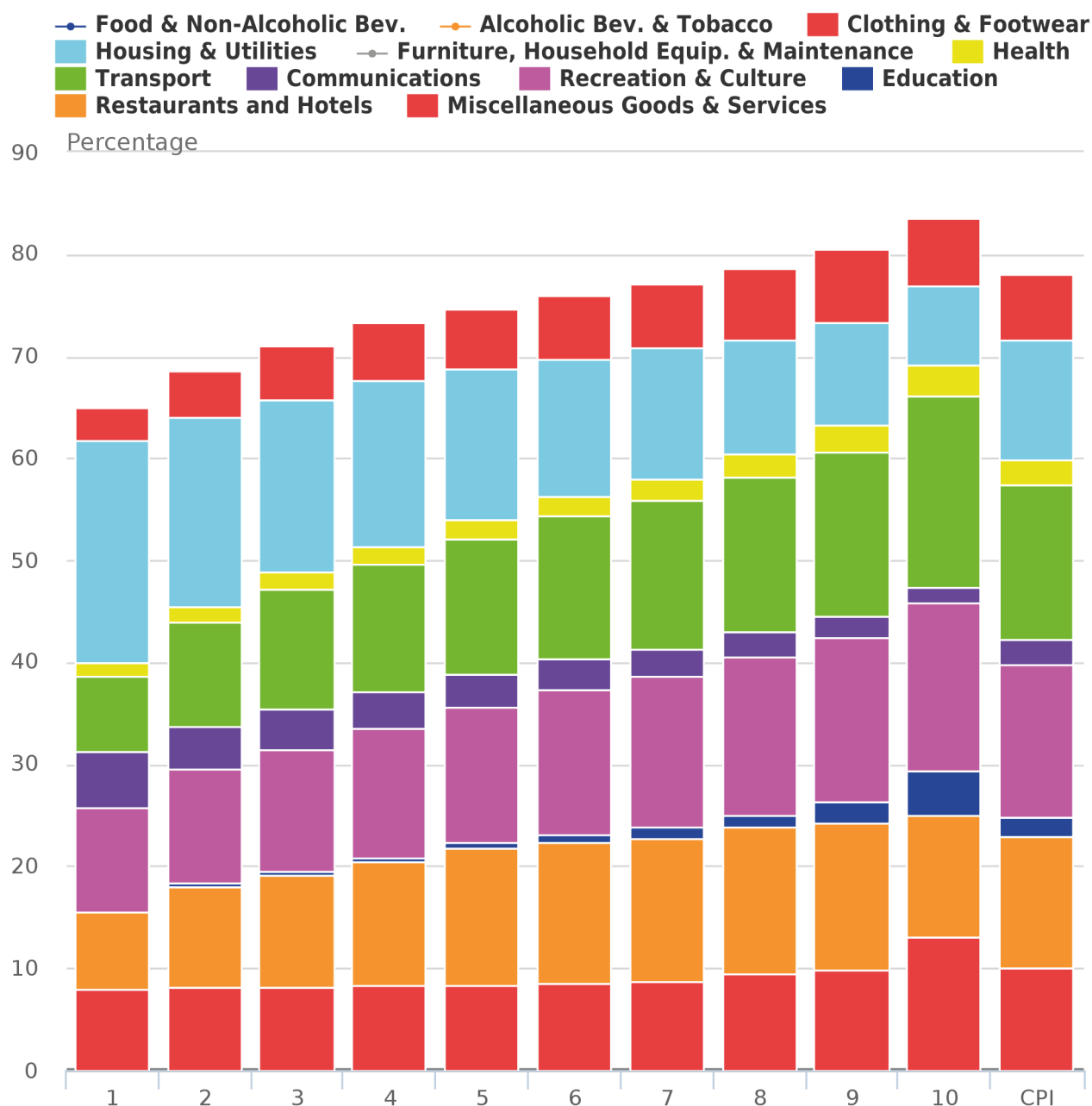
3 . 5.2 Expenditure deciles

The weakness of dividing households into equivalised income deciles as shown above is that the composition of at least one group of interest – that of the lowest-income – is affected by its unusual composition. As economists tend to think that households will smooth consumption through time in the face of income shocks, dividing them into deciles of equivalised expenditure¹ may help to avoid the ‘temporary low income’ or income-poor, asset-rich effects observed above. This section presents the results for deciles of household expenditure.

5.2.1 Expenditure weights

Figure 5.4 shows the share of total expenditure which is allocated to each of the 12 COICOP divisions for each of the equivalised expenditure deciles – ten equally-sized groups of households ranked according to their equivalised expenditure totals. As before, the lowest-expenditure group is accorded the lowest decile number, and the highest-expenditure group is accorded the highest number. As in the income analysis, the weight accorded to some products falls over the deciles, while the weight accorded to others rises. In this analysis, the apparent ‘kink’ between deciles 1 and 2 in the income analysis has disappeared – possibly replaced by a ‘kink’ between deciles 9 and 10. This latter group is now more likely to be composed of those households who had unusually high expenditure in the survey period – perhaps because of a single, large purchase². By eliminating one potential source of bias at the lower expenditure and income end, this may introduce a new, different bias at the top of the expenditure distribution. Consequently, in what follows we present the differences between the 2nd and 9th deciles, in an effort to avoid these potential effects.

Figure 5.4: Expenditure shares by COICOP division, by equivalised expenditure decile; average 2002 – 2014, %



Source: Living Costs and Food Survey, ONS Calculations

Notes:

1. Equivalised expenditure deciles (1 = lowest-expenditure households, 10 = highest-expenditure households)

Perhaps the most striking feature of this analysis is the proportion of expenditure accounted for by food & non-alcoholic beverages. The share of expenditure these products account for falls from 20.9% on average for the 2nd decile, to just 8.5% in the 9th decile. This is a clear Engel curve pattern – in which the income elasticity of demand is bounded between zero and one. As a result, when income rises, spending on these categories may rise, but accounts for a declining fraction of total spending. Housing rentals and utilities display a similar pattern – falling from 18.6% of total expenditure in the 2nd expenditure decile to just 10.1% in the 9th decile. However, higher rent payments (included in this analysis) among the lower expenditure groups may give way to higher mortgage and owner occupier costs (excluded from this analysis) among the higher deciles.

By contrast, it is clear from Figure 5.4 that there is a range of products for which demand rises more quickly than total expenditure growth. These include some products within the recreation & culture division, to which the 2nd expenditure decile allocates 11.2% of its expenditure on average while the 9th decile allocates 16.1%, and transport (10.2% and 16.0% in the 2nd and 9th deciles respectively). When analysed at the class-level, the main driving force behind the higher weight for transport is due to the higher spending on new cars and fuels & lubricants, suggesting that the incidence of car ownership and use may rise with total expenditure.

5.2.2 Inflation rates

As with the income decile analysis, these differences in weights drive differences in the rates of price increase that households experience. Table 5.2 below shows the inflation rates experienced by each of the expenditure deciles throughout the period 2003 to 2013³. It indicates that – with the exception of 2010 – inflationary pressures tend to weaken as the level of household expenditure increases. While the differences between the lowest- and highest-expenditure deciles are greatest, on our preferred measure, the 9th expenditure decile has an inflation rate 1.0 percentage points lower than that of the 2nd expenditure decile over this period. The spread within years can be even higher; in 2008, the 2nd expenditure decile has an inflation rate of 5.4%, compared with 3.1% for the 9th expenditure decile.

Table 5.2: Annual inflation rates for equivalised expenditure deciles, CPI, %

Year	Equivalised Expenditure Decile										%
	1	2	3	4	5	6	7	8	9	10	CPI
2003	1.8	1.7	1.6	1.5	1.6	1.4	1.5	1.4	1.2	1.2	1.4
2004	2	1.7	1.6	1.6	1.5	1.4	1.3	1.2	1.2	1.2	1.3
2005	3	2.7	2.4	2.2	2.1	2	1.9	2	1.8	2.1	2.1
2006	4.6	3.8	3.3	3	2.8	2.5	2.4	2.2	1.9	1.7	2.3
2007	3.5	3	2.9	2.7	2.5	2.4	2.5	2.3	2.1	1.9	2.3
2008	6.2	5.4	4.9	4.4	4.1	4	3.6	3.4	3.1	2.8	3.6
2009	4	3.2	2.8	2.4	2.2	2.3	2	2.1	1.9	1.9	2.2
2010	2.9	3.2	3.3	3.2	3.4	3.5	3.4	3.3	3.3	3.3	3.3
2011	5.6	5.2	5.1	4.9	4.8	4.8	4.5	4.4	4.1	4	4.5
2012	3.7	3.4	3.2	3.1	3	2.9	2.7	2.7	2.7	2.6	2.8
2013	3.5	3.1	2.8	2.7	2.6	2.5	2.5	2.5	2.3	2.5	2.6
Average	3.7	3.3	3.1	2.9	2.8	2.7	2.6	2.5	2.3	2.3	2.6

Source: Office for National Statistics, ONS Calculations

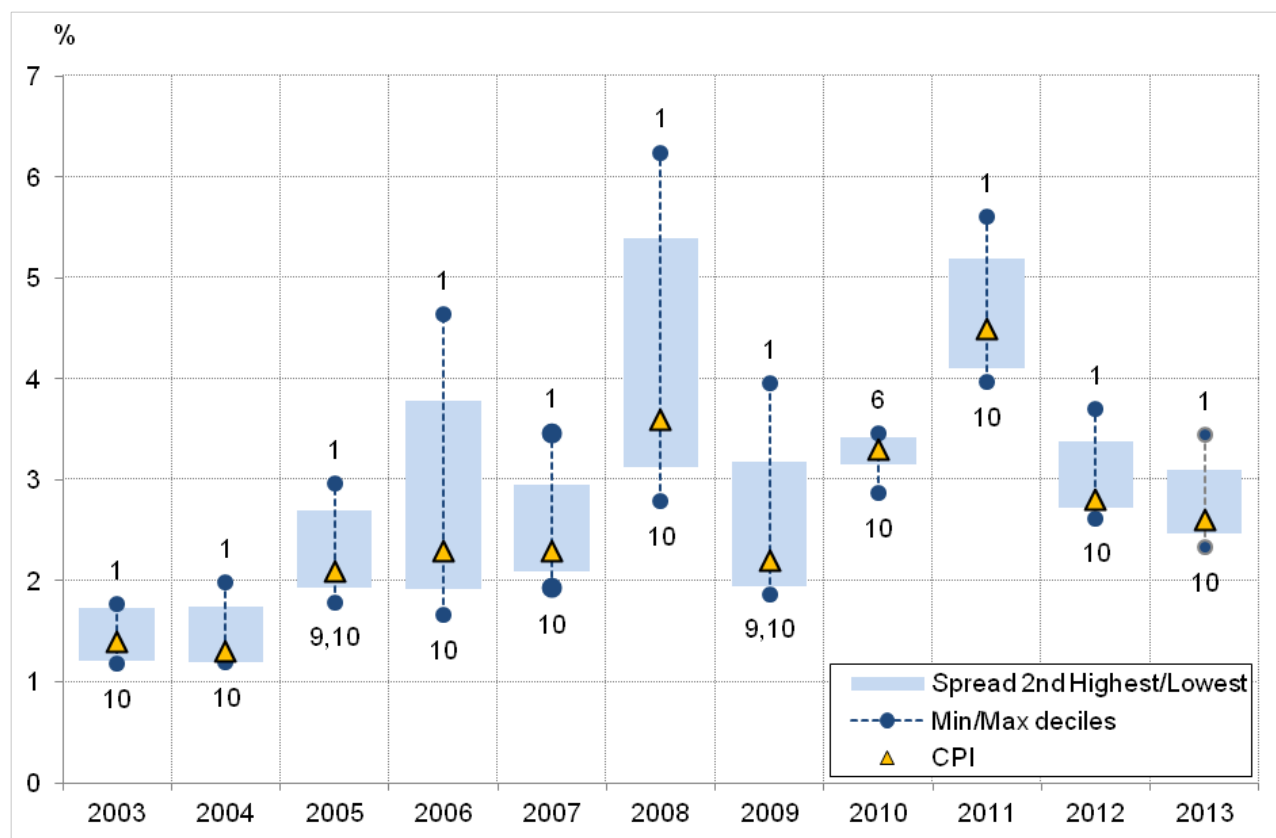
Notes:

1. The average presented is the compound average annual growth rate, and consequently may differ from the arithmetic average of the inflation rates presented.

2. Equivalised income deciles (1 = lowest-income households 10 = highest-income households)

Figure 5.5 below presents the equivalent picture for expenditure deciles as Figure 5.2 does for income deciles. The broader range of inflation outcomes on this measure is obvious, with greater dispersion in years when the average level of inflation is high⁴. CPI – again shown as a yellow triangle – remains within the range of decile-level outcomes – shown by the blue dots and the shaded bars, which represents the inter-decile range between the 2nd-highest and 2nd-lowest measures of equivalised decile inflation rates. However, in comparison with the income decile results, the degree of variation now implies that some households have experienced very different rates of inflation to that presented in the headline rate. The lowest expenditure decile experiences the highest inflation rate in ten of the eleven years presented, while the highest expenditure decile experiences the lowest rate in all but three.

Figure 5.5: Annual inflation rates by equivalised expenditure decile, %



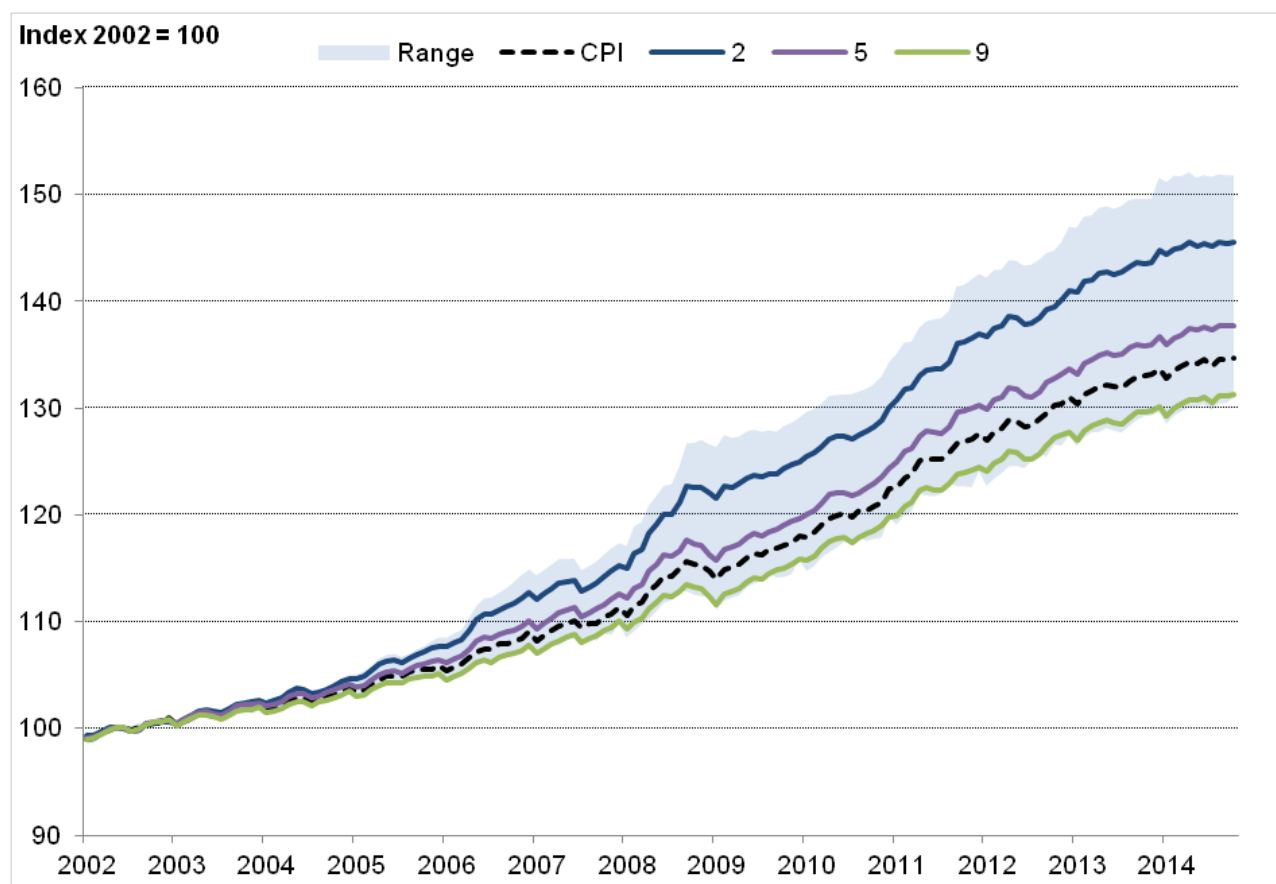
Source: ONS Calculations

Notes:

1. Figure shows the CPI rate of inflation (yellow triangle), the range of inflation outcomes (blue dots) and the inter-decile range between the 2nd-highest and 2nd-lowest measures of equivalised decile inflation rates (shaded blue bar). Data labels indicate which deciles provide the maximum and minimum inflation rate observations.

The cumulative effect of these differences is presented in Figure 5.6. It suggests that since 2002, the goods purchased by the highest-expenditure decile have seen prices increase by a total of 31.0%, while the lowest-expenditure decile experienced price growth of 51.7%. On our preferred, narrower measure, prices have risen by 45.5% for the goods purchased by the 2nd decile, compared with 31.2% for the 9th decile. Following the predictions of Section 2 above, the published CPI inflation figure, which saw a rise of 34.7% between 2002 and October 2014, is more in line with the experience of the higher expenditure deciles⁵. While this finding has important implications, note that households will only have experienced these cumulative differences if they were consistently placed in a given equivalised expenditure decile through time.

Figure 5.6: Range of cumulative price changes for equivalised expenditure deciles, selected equivalised expenditure deciles and CPI; 2002 = 100



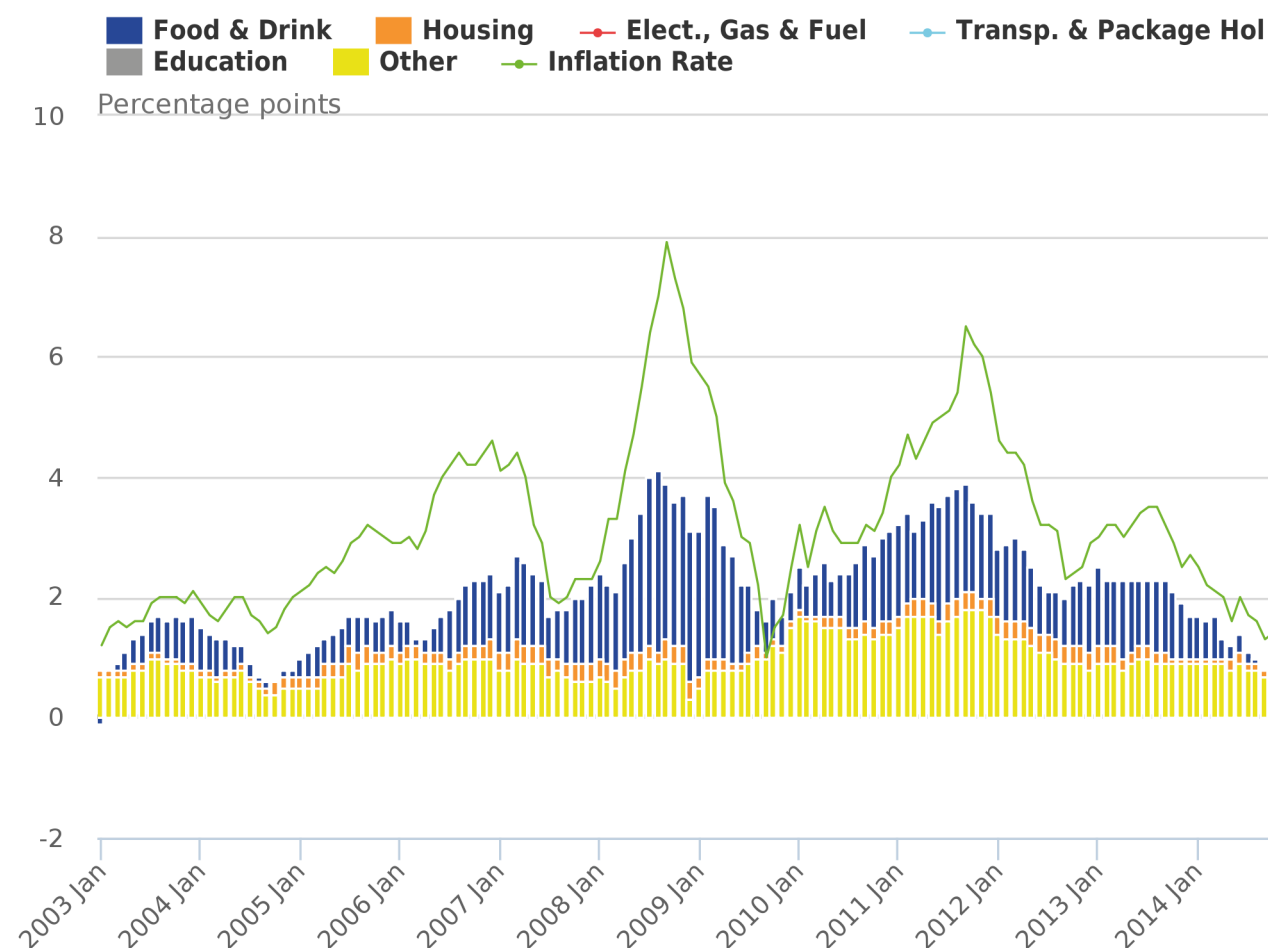
Source: ONS Calculations

Notes:

1. Equivalised expenditure deciles (1 = lowest-expenditure households, 10 = highest-expenditure households)
2. Figure shows the range of cumulative price changes of products purchased by the respective expenditure deciles between 2002 and October 2014. Note that households may move between deciles between years.

To identify why lower expenditure groups have experienced amongst the highest rates of inflation in recent years, it is necessary to examine the contribution of different types of product to the inflation rate for each decile. Figure 5.7 below is therefore divided into three panels: Panels A and B show contributions to the annual rate of inflation experienced by the 2nd and 9th expenditure deciles respectively, while Panel C shows the difference in these contributions: capturing precisely how these different categories generate inflation differentials.

Figure 5.7A: Contributions to annual inflation experienced by equivalised expenditure decile 2: % and percentage points

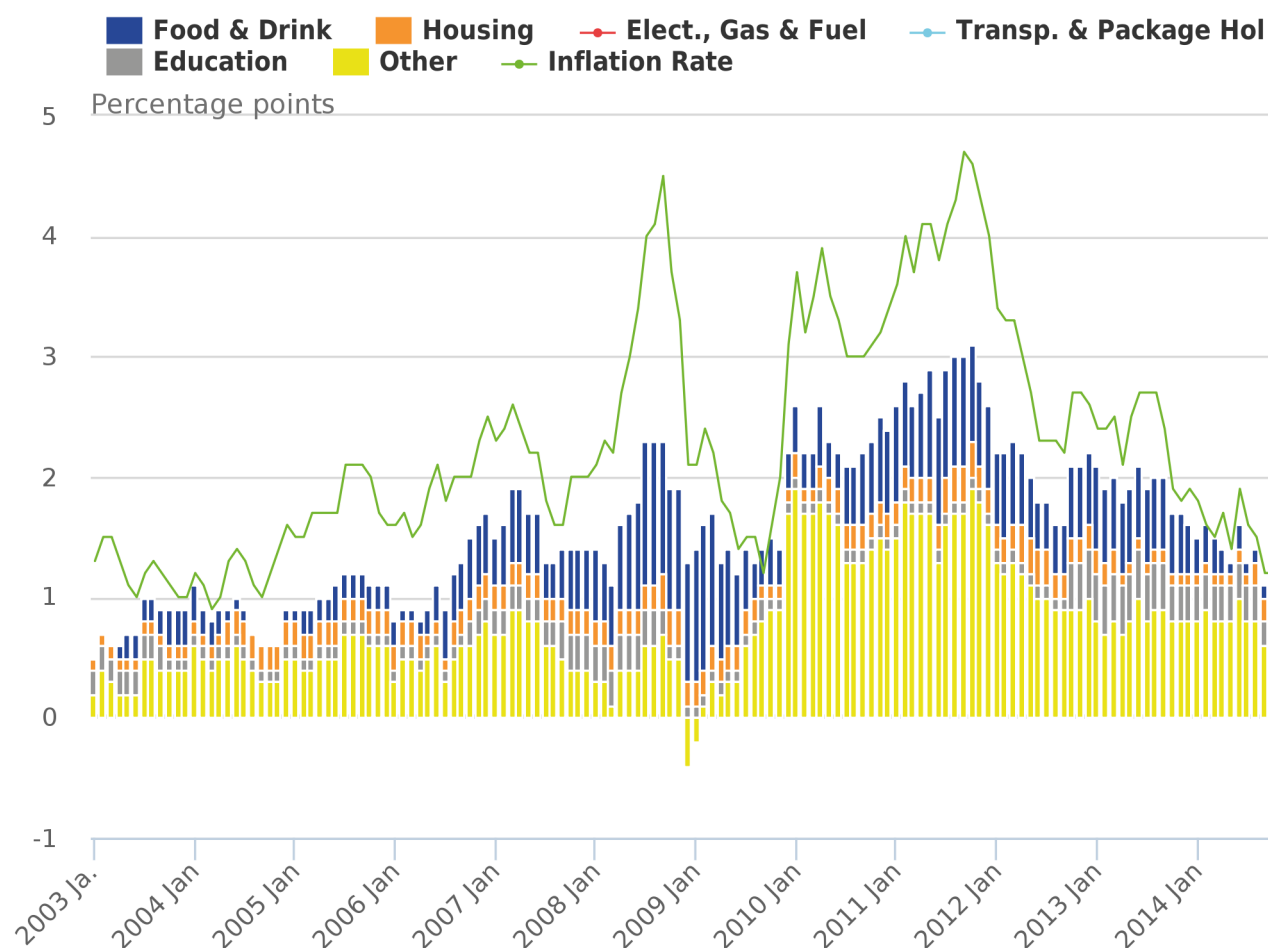


Source: INS Calculations

Notes:

1. Stacked bars reflect the percentage point contributions of each of the 85 class-level items in the Classification of Individual Consumption by Purpose (COICOP) to the annual percentage change in the CPI-consistent inflation rate. The contribution of each of the 85 class-level items is estimated separately, before being aggregated to the categories above. Note that a reduction in the contribution of series to the annual rate of change need not imply falling prices, but could also reflect a lower rate of increase.
2. Food, drink & tobacco is composed of food, non-alcoholic and alcoholic beverages and tobacco. Housing is composed of actual rents and products and services for the repair of dwellings. Elect., gas & fuel includes electricity, gas and other household fuels as well as fuels and lubricants for motor vehicles. Transport & package holidays includes passenger transport by road, rail, air and sea, as well as package holidays. Education reflects the division-level contribution. The 'other' category reflects the combined contributions of the remaining 56 class-level items, bringing the sum of contributions to the inflation rate.
3. Contributions may not sum due to rounding.

Figure 5.7B: Contributions to annual inflation experienced by equivalised expenditure decile 9: % and percentage points

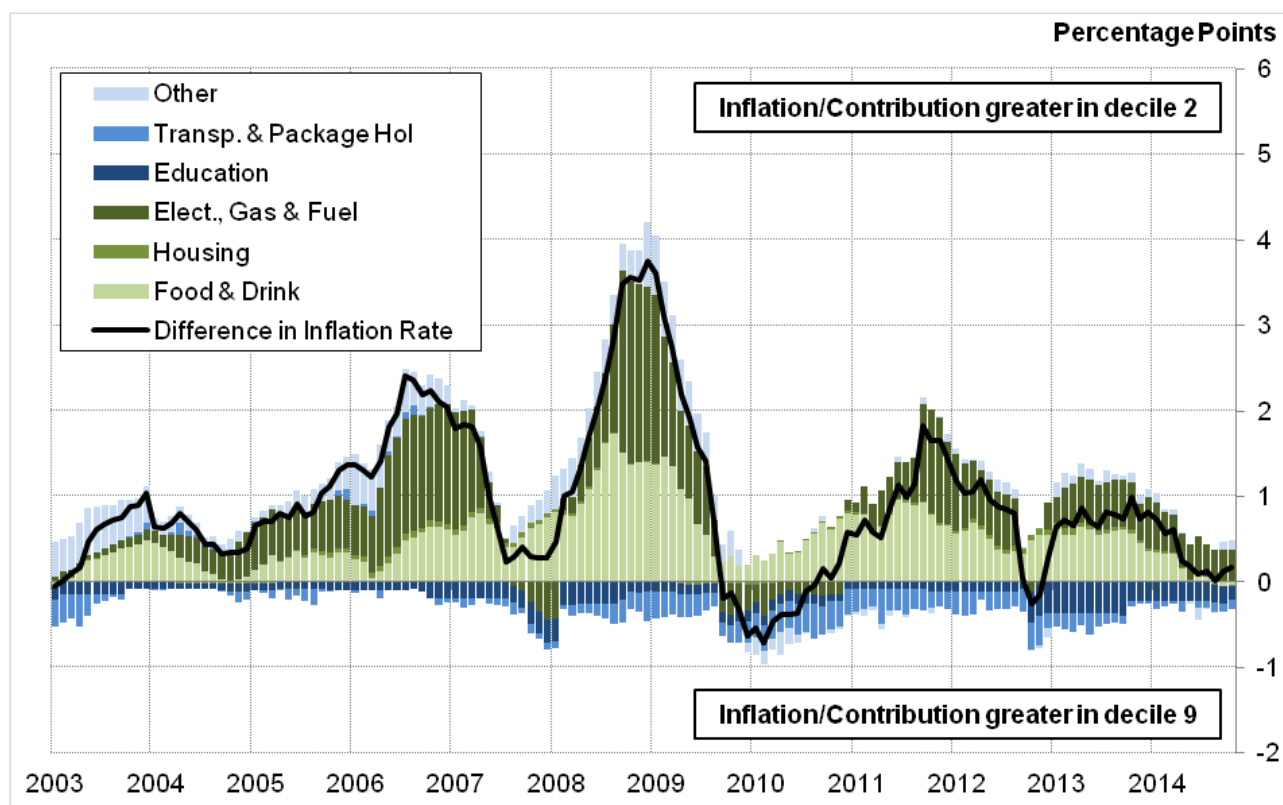


Source: ONS Calculations

Notes:

1. Stacked bars reflect the percentage point contributions of each of the 85 class-level items in the Classification of Individual Consumption by Purpose (COICOP) to the annual percentage change in the CPI-consistent inflation rate. The contribution of each of the 85 class-level items is estimated separately, before being aggregated to the categories above. Note that a reduction in the contribution of series to the annual rate of change need not imply falling prices, but could also reflect a lower rate of increase.
2. Food, drink & tobacco is composed of food, non-alcoholic and alcoholic beverages and tobacco. Housing is composed of actual rents and products and services for the repair of dwellings. Elect., gas & fuel includes electricity, gas and other household fuels as well as fuels and lubricants for motor vehicles. Transport & package holidays includes passenger transport by road, rail, air and sea, as well as package holidays. Education reflects the division-level contribution. The 'other' category reflects the combined contributions of the remaining 56 class-level items, bringing the sum of contributions to the inflation rate.
3. Contributions may not sum due to rounding.

Figure 5.7C: Contributions to the difference in annual inflation experienced by equivalised expenditure deciles: Decile 2 less 9: percentage points



Source: ONS Calculations

Notes:

1. Stacked bars reflect the percentage point contributions of each of the 85 class-level items in the Classification of Individual Consumption by Purpose (COICOP) to the annual percentage change in the CPI-consistent inflation rate. The contribution of each of the 85 class-level items is estimated separately, before being aggregated to the categories above. Note that a reduction in the contribution of series to the annual rate of change need not imply falling prices, but could also reflect a lower rate of increase.
2. Food, drink & tobacco is composed of food, non-alcoholic and alcoholic beverages and tobacco. Housing is composed of actual rents and products and services for the repair of dwellings. Elect., gas & fuel includes electricity, gas and other household fuels as well as fuels and lubricants for motor vehicles. Transport & package holidays includes passenger transport by road, rail, air and sea, as well as package holidays. Education reflects the division-level contribution. The 'other' category reflects the combined contributions of the remaining 56 class-level items, bringing the sum of contributions to the inflation rate.
3. Contributions may not sum due to rounding.

Panels A and B suggest that while the main drivers of inflation rates in both the 2nd and 9th expenditure deciles are broadly similar – including both food & drink and energy prices – the rate of inflation in the 2nd expenditure decile is higher than the 9th expenditure decile in all but 13 months between January 2003 and October 2014. Panel C also indicates that the majority of this difference is attributable to larger contributions from electricity, gas & fuel, and food & drink. Over this period, these products add 1.0 percentage points on average to the difference in inflation rates of low expenditure households. Stronger price growth for education and transport & package holidays – which receive a larger weight in the higher-expenditure group – act to reduce this differential throughout the period. In recent months, abating energy costs and the moderation in food & drink prices have led to the difference between inflation rates experienced by the 2nd and 9th deciles falling to less than 0.5 percentage points.

Notes for 5.2 expenditure deciles

1. For each dataset listed in Section 3.2, equivalised expenditure deciles are created based on the respective total measure of expenditure. In this section, expenditure based on the CPI-consistent weights is used to create the expenditure deciles.
2. For each household, we calculated the share of expenditure accounted for by the highest-expenditure COICOP class. This share was largest on average in the highest expenditure decile, suggesting that some of the strength of spending in this group is accounted for by large purchases on a single category. Much of this effect is concentrated in miscellaneous goods & services. See Appendix B for more detail.
3. When presenting annual inflation rates in the following tables and figures, this paper does not include data for 2014 as price data is only available up to October 2014.
4. This is consistent with work conducted by Crawford and Smith (2002), who found a 1 percentage point increase in the level of inflation led to 0.1 percentage point widening of the inter-quartile range.
5. This is because the CPI is a plutocratic measure of inflation, and therefore gives a greater weight to households with higher expenditure.

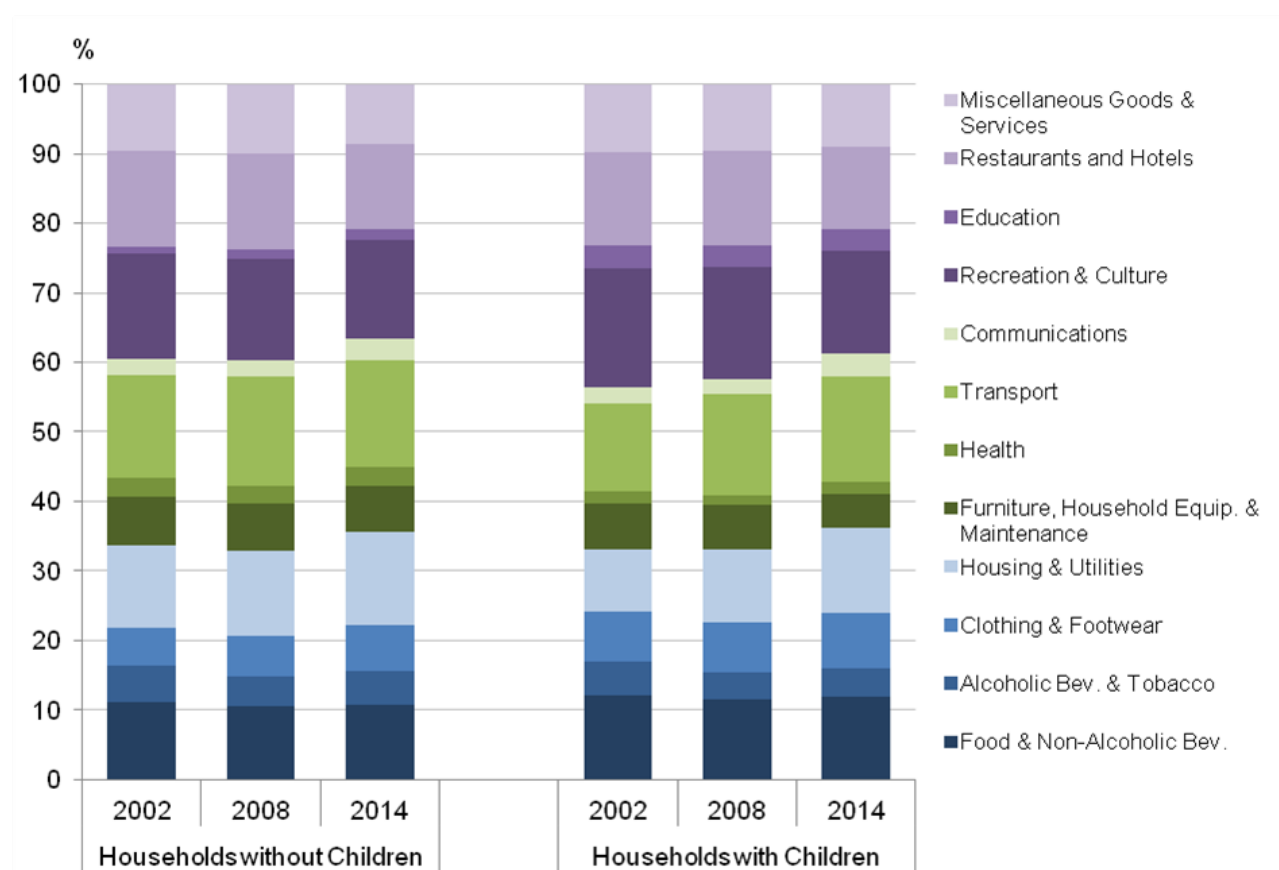
4 . 5.3 Households with and without children

While the income and expenditure characteristics present two methods of grouping households, there is also significant policy interest in differences in the inflation experience of households categorised by other factors. Whether a household contains children¹ is one such dimension, as the goods and services that these households purchase may differ from the purchases of other households.

5.3.1 Expenditure weights

As with the income and expenditure deciles, only differences in expenditure weights can produce inflation rate differentials. Figure 5.8 below shows the weight accorded to each of the COICOP division-level product groups in 2002, 2008 and 2014, by households with and without children. These differ very little through time and between groups, suggesting that at this level of detail, household purchases of the two groups are quite similar. On average, households with children spend more of their budget on education (an average difference of 1.8 percentage points), clothing & footwear (1.6 percentage points) and recreation & culture (1.4 percentage points). These positive weights are offset by a smaller weight on housing & utilities (-2.3 percentage points), reflecting a tendency among these households to use less energy, and for these households to be located in owner-occupied dwellings, rather than rented accommodation (see Section 6).

Figure 5.8: Expenditure shares by COICOP division for households with and without children, 2002, 2008, 2014, %



Source: Living Costs and Food Survey, ONS Calculations

However, while the differences between these two groups appears relatively small, the degree of aggregation in Figure 5.8 above masks some more interesting, intuitive differences at a more detailed level. In particular, while households with children spend more on recreation & culture than households without children, this aggregate reflects a different mix of products purchased. Within the recreation & culture division, households with children, for instance, spend a greater fraction of their budget on games, toys & hobbies than households without children. This latter group spends a larger fraction on package holidays. Within food & drink spending, households with children spend a larger fraction of their budget on 'basic' foods – including bread & cereals – as well as other items such as soft drinks. Households without children allocate a larger fraction of their spending to fruit, fish, tea & coffee. Together, these trends present indications of the different types of products that households purchase, which will affect their price experience insofar as rates of price increase differ across these products.

5.3.2 Inflation rates

The inflation rate differentials experienced by households with and without children are set out in Table 5.3, which presents annual rates of price increase as well as the compound average annual growth rate. It shows that households without children have experienced slightly faster inflation than households with children over this period. Between 2003 and 2013, households with children experienced inflation of 2.4% per year on average, while prices for the former group increased by 2.7% on average. Figure 5.9 presents the annual inflation rate for both sub-groups on a monthly basis between January 2003 and October 2014. The spread between inflation rates is widest in the period to 2007, and in mid-2011. In recent months, both groups have seen very similar inflation rates.

Table 5.3: Annual inflation rates for households with and without children, CPI, %

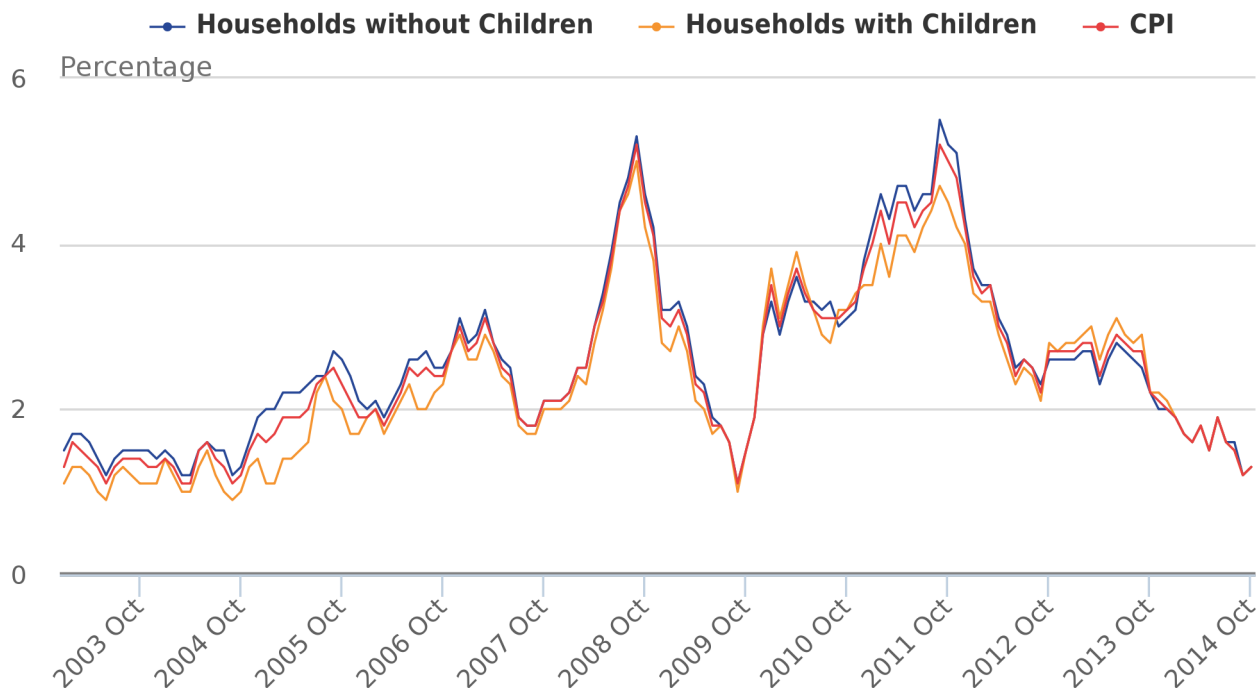
			%
	Households without Children	Households with Children	CPI
2003	1.5	1.2	1.4
2004	1.4	1.2	1.3
2005	2.3	1.7	2.1
2006	2.4	2.2	2.3
2007	2.4	2.2	2.3
2008	3.7	3.5	3.6
2009	2.2	2.1	2.2
2010	3.3	3.3	3.3
2011	4.7	4.1	4.5
2012	2.9	2.8	2.8
2013	2.5	2.7	2.6
Average	2.7	2.4	2.6

Source: ONS Calculations

Notes:

1. The average presented is the compound average annual growth rate, and consequently may differ from the arithmetic average of the inflation rates presented.

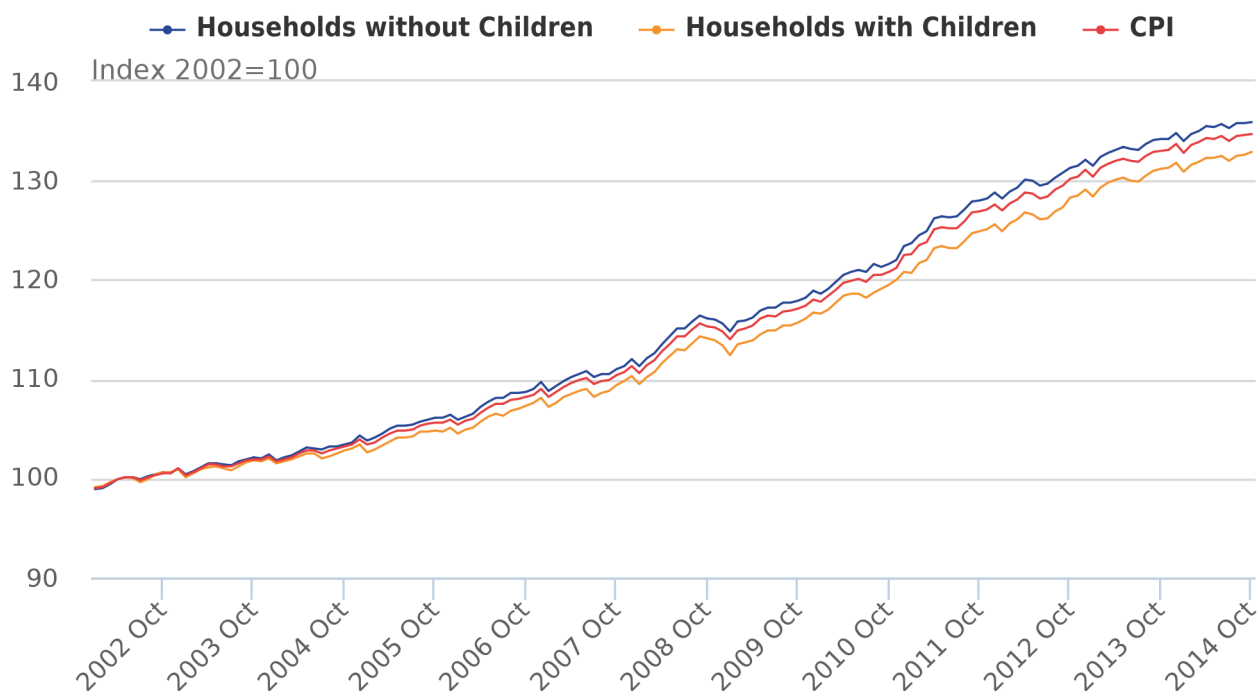
Figure 5.9: Annual inflation rates for households with and without children, CPI, %



Source: ONS Calculations

The cumulative impact of these differences is presented in Figure 5.10 below. Since 2002, prices for households without children have risen by 35.9%, while households with children saw prices rise 32.9% over the same period. As households without children make up a greater proportion of the UK population (in the 2011 Census (ONS 2014g), less than 30% of households included children), the published CPI tracks their inflation experience to a greater extent than that of households with children.

Figure 5.10: Cumulative price changes for households with and without children, CPI, 2002 = 100



Source: ONS Calculations

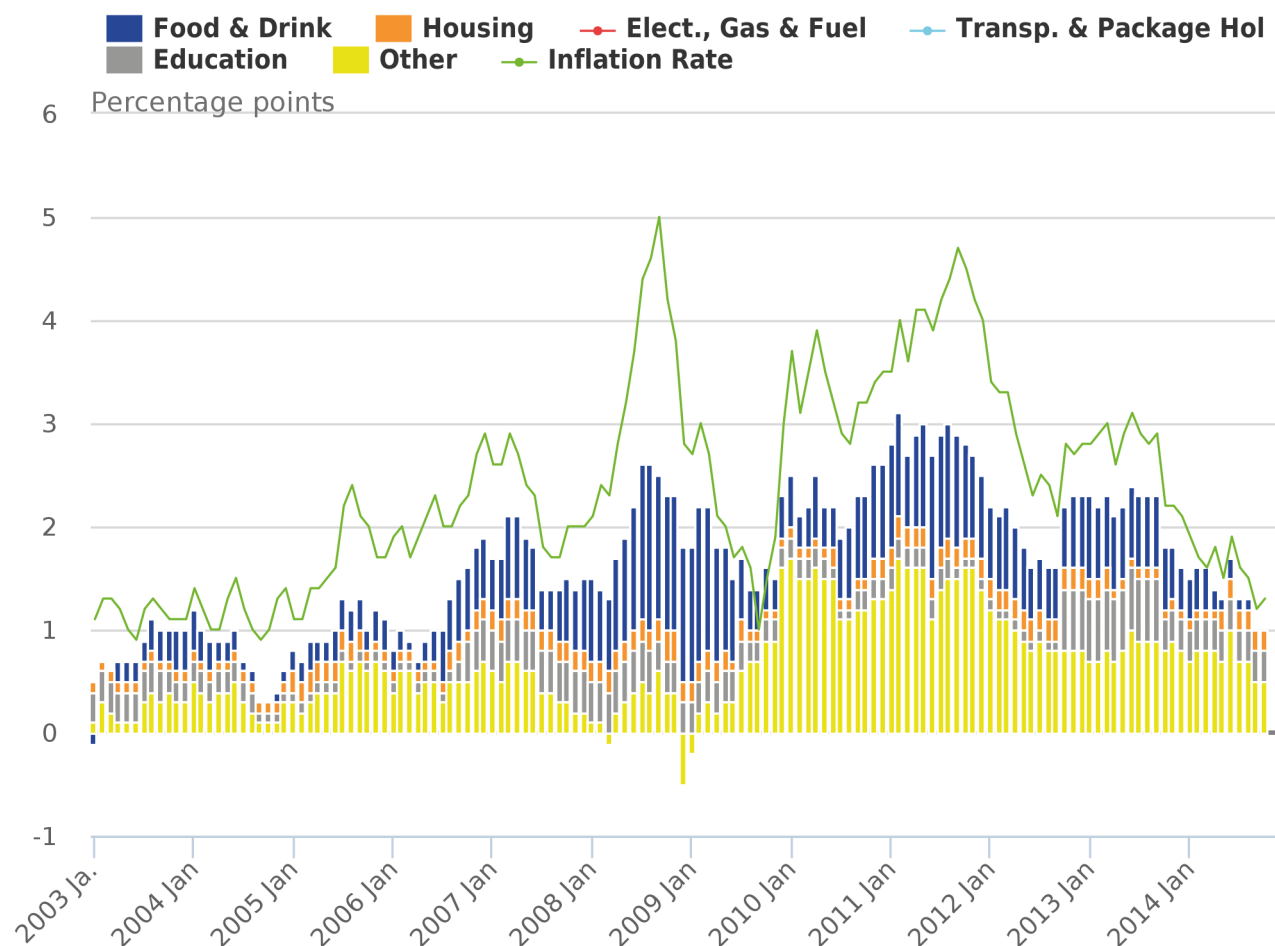
Notes:

1. Figure shows the cumulative price change experienced by a given sub-group between 2002 and October 2014.

5.3.3 Contributions to inflation differentials

What is driving the differences between the inflation rates experienced by households with and without children? Figure 5.11 presents the main drivers of inflation for households with children (Panel A), without children (Panel B) and contributions to the difference (Panel C). Panels A and B show that the broad drivers of rising prices for both groups have been similar. Both groups saw spikes in inflation in 2008 and 2011 which were driven by increasing contributions from electricity, gas & fuel, and food & drink, and both groups have seen these pressures moderate in recent periods, resulting in lower rates of inflation.

Figure 5.11A: Contributions to annual inflation experienced by households with children: % and percentage points

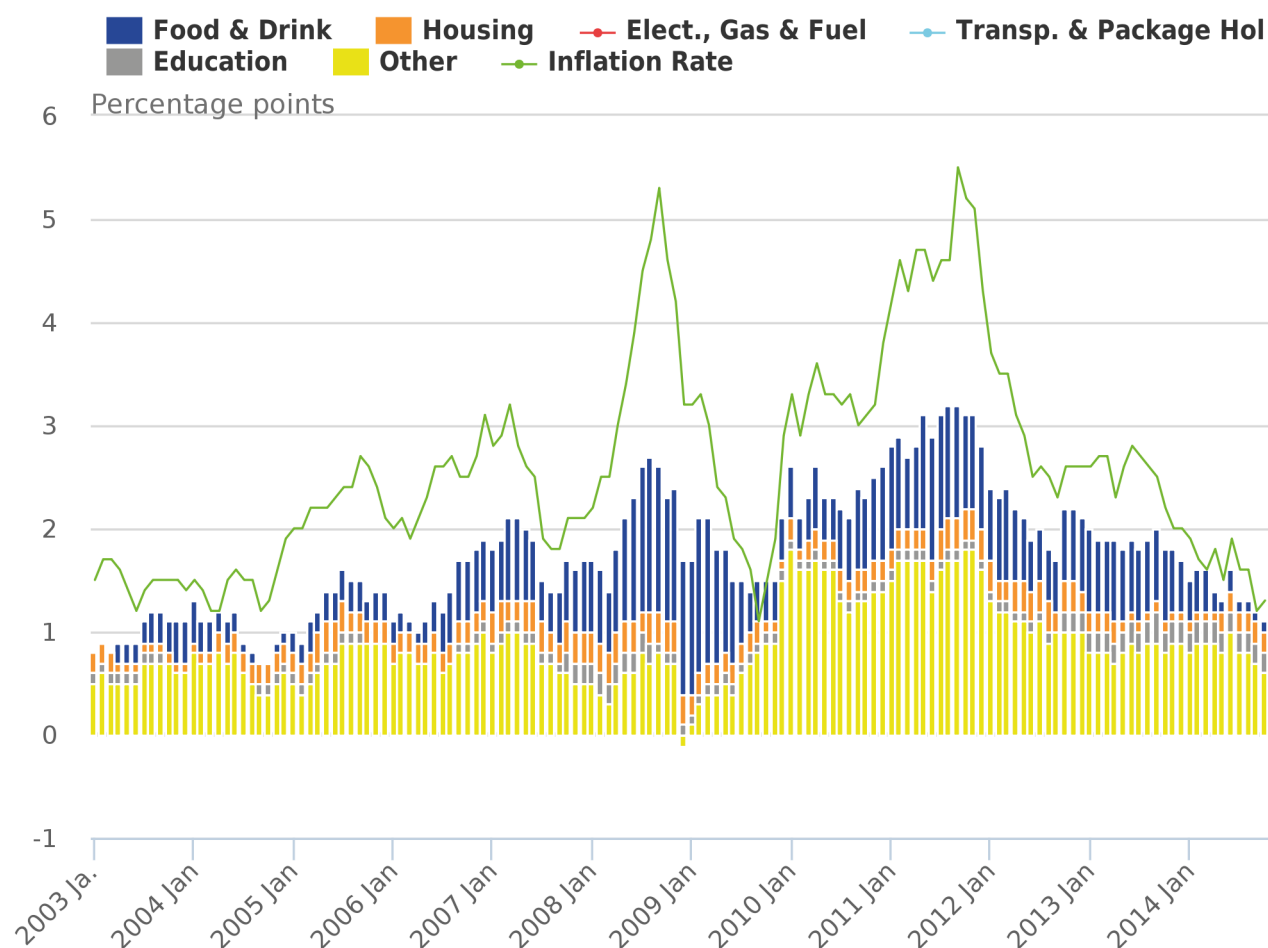


Source: ONS Calculations

Notes:

1. Stacked bars reflect the percentage point contributions of each of the 85 class-level items in the Classification of Individual Consumption by Purpose (COICOP) to the annual percentage change in the CPI-consistent inflation rate. The contribution of each of the 85 class-level items is estimated separately, before being aggregated to the categories above. Note that a reduction in the contribution of series to the annual rate of change need not imply falling prices, but could also reflect a lower rate of increase.
2. Food, drink & tobacco is composed of food, non-alcoholic and alcoholic beverages and tobacco. Housing is composed of actual rents and products and services for the repair of dwellings. Elect., gas & fuel includes electricity, gas and other household fuels as well as fuels and lubricants for motor vehicles. Transport & package holidays includes passenger transport by road, rail, air and sea, as well as package holidays. Education reflects the division-level contribution. The 'other' category reflects the combined contributions of the remaining 56 class-level items, bringing the sum of contributions to the inflation rate.
3. Contributions may not sum due to rounding.

Figure 5.11B: Contributions to annual inflation experienced by households without children: % and percentage points

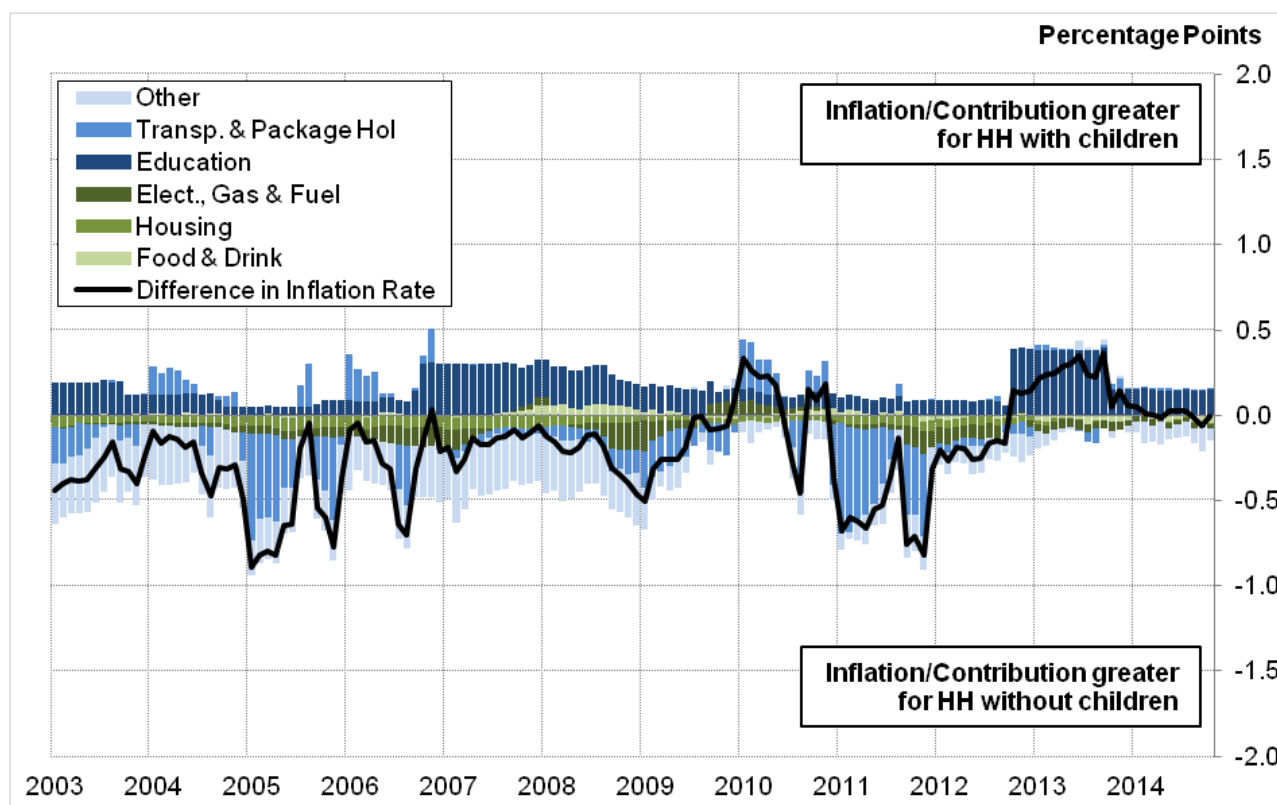


Source: ONS Calculations

Notes:

1. Stacked bars reflect the percentage point contributions of each of the 85 class-level items in the Classification of Individual Consumption by Purpose (COICOP) to the annual percentage change in the CPI-consistent inflation rate. The contribution of each of the 85 class-level items is estimated separately, before being aggregated to the categories above. Note that a reduction in the contribution of series to the annual rate of change need not imply falling prices, but could also reflect a lower rate of increase.
2. Food, drink & tobacco is composed of food, non-alcoholic and alcoholic beverages and tobacco. Housing is composed of actual rents and products and services for the repair of dwellings. Elect., gas & fuel includes electricity, gas and other household fuels as well as fuels and lubricants for motor vehicles. Transport & package holidays includes passenger transport by road, rail, air and sea, as well as package holidays. Education reflects the division-level contribution. The 'other' category reflects the combined contributions of the remaining 56 class-level items, bringing the sum of contributions to the inflation rate.
3. Contributions may not sum due to rounding.

Figure 5.11C: Contributions to the difference in annual inflation: Households with children less households without children: percentage points



Source: ONS Calculations

Notes:

1. Stacked bars reflect the percentage point contributions of each of the 85 class-level items in the Classification of Individual Consumption by Purpose (COICOP) to the annual percentage change in the CPI-consistent inflation rate. The contribution of each of the 85 class-level items is estimated separately, before being aggregated to the categories above. Note that a reduction in the contribution of series to the annual rate of change need not imply falling prices, but could also reflect a lower rate of increase.
2. Food, drink & tobacco is composed of food, non-alcoholic and alcoholic beverages and tobacco. Housing is composed of actual rents and products and services for the repair of dwellings. Elect., gas & fuel includes electricity, gas and other household fuels as well as fuels and lubricants for motor vehicles. Transport & package holidays includes passenger transport by road, rail, air and sea, as well as package holidays. Education reflects the division-level contribution. The 'other' category reflects the combined contributions of the remaining 56 class-level items, bringing the sum of contributions to the inflation rate.
3. Contributions may not sum due to rounding.

Differences between the two inflation rates are more clearly identified in Panel C. In this Panel, positive (negative) bars indicate products that raise (lower) the inflation rate for households with children relative to the inflation rate for households without children. It indicates that housing and utilities (electricity, gas & fuel) have made a negative contribution to the difference – tending to raise the inflation rate of households without children more than the inflation rate of households with children. Contributions from transport & package holidays are volatile, but generally act to reduce the rate of price increase for households with children. The different mix of food products purchased by the two groups has a substantial impact only when the price of food staples increased markedly in 2008, resulting in a larger contribution from these goods to the inflation rate of households with children.

However, perhaps the most striking feature of Panel C is the impact of education, which largely offsets all of the downwards pressures outlined above from housing, utilities and transport. As households with children spend a greater proportion of their expenditure on this group, increases in the cost of schooling and university attendance will affect those households most strongly. The step-changes that are noteworthy in Figure 5.11 occur as a result of the increases in university tuition fees in October 2006 and October 2012 respectively. The latter increase was enough to raise the inflation rate experienced by households with children above that experienced by households without children for the first sustained period in a decade to 2013.

However, while the drivers of price pressure differ between groups, the magnitude of the inflation rate differential between households with and without children is clearly an order of magnitude smaller than that between households at different points in the income and expenditure distribution. Section 7 presents some further evidence which develops this point, highlighting substantial intra-group variation in inflation experiences for both households with and without children over this period.

Notes for 5.3 households with and without children

1. Households with children are defined here as any household with one or more household members who are under 18 years of age, in full-time education and have never been married.

5 . 5.4 Retired and non-retired households

The rate of price increase experienced by retired or pensioner households has also been of significant policy interest in recent years. Following debate about the extent of increases in the basic state pension, these benefits are now uprated by a 'triple-lock', in which the state pension rises by the rate of CPI inflation, the rate of earnings growth or 2.5%, whichever is greatest. This section examines how inflation rates have varied for retired households between 2003 and 2014, while Section 7 examines the distribution of inflation outcomes for retired households¹ in more detail.

5.4.1 Expenditure weights

The shares of expenditure accorded to broad product groups by retired and non-retired households in 2002, 2008 and 2014 are shown in Figure 5.12. It indicates that the expenditure weights vary quite substantially between these groups. The expenditure share of food & non-alcoholic beverages has been consistently higher for retired than non-retired, although the share for retired households has been converging to the level of non-retired households over time. In 2002 the difference between the expenditure shares was 5.3 percentage points, but by 2014 this has reduced to 2.8 percentage points. Retired households also allocated a greater proportion of their expenditure budget on health (an average gap of 1.9 percentage points) and furniture, household equipment & maintenance (2.1 percentage points). When analysed at a class-level, the increase in proportion of furniture, household equipment & maintenance is related to a higher expenditure share for domestic & household services as well as furniture & furnishings.

Figure 5.12: Expenditure shares by COICOP division for retired and non-retired households; 2002, 2008, and 2014, %



Source: Living Costs and Food Survey, ONS Calculations

By comparison, non-retired households allocate a higher proportion of their expenditure to transport (an average gap of 2.5 percentage points), and in particular to fuels & lubricants – perhaps reflecting the cost pressures that working households face from driving to work. Education (1.8 percentage points) and restaurants & hotels (3.3 percentage points) also receive a higher weight in non-retired households. The gap between restaurants & hotels has slowly been closing over the period, a result of non-retired households allocating a smaller proportion of their expenditure to the class-level restaurants & cafes in recent years – perhaps because of rising cost pressures elsewhere. The lower share of expenditure on education is likely to be a result of the demographic mix of these respective groups.

5.4.2 Inflation rates

Table 5.4 shows the inflation rates experienced by retired and non-retired households over the period 2003-2013, while Figure 5.13 presents this information on a monthly basis between January 2003 and October 2014. Apart from two periods – 2010 and since late 2012 – retired households have consistently experienced a rate of inflation equal to or higher than that of non-retired households. On average between 2003 and 2013, the inflation rate for retired households was 0.3 percentage points higher than non-retired households each year. However, the spread in individual months varied a great deal. In some months there was little or no difference between the groups, while in other periods there was a more pronounced spread. In November 2008 in particular, the difference in annual inflation rates between retired and non-retired households was 1.5 percentage points.

Table 5.4: Annual inflation rates for retired and non-retired households, CPI; %

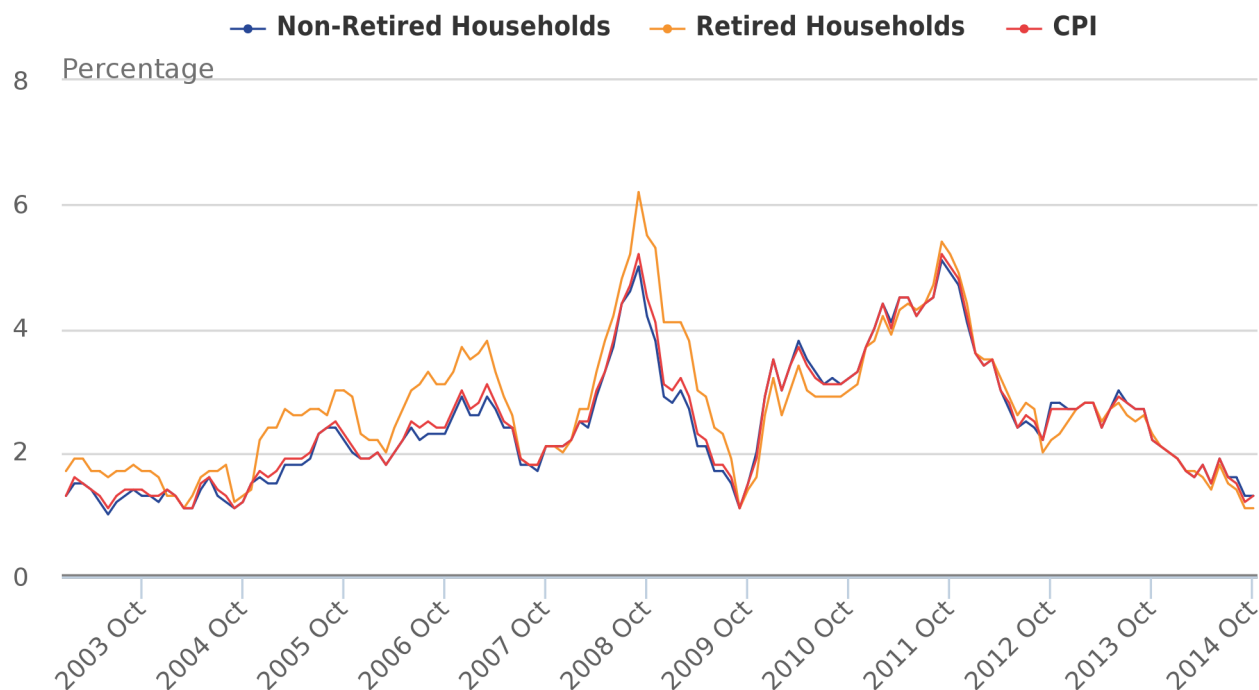
			%
	Non-Retired Households	Retired Households	CPI
2003	1.3	1.7	1.4
2004	1.3	1.5	1.3
2005	1.9	2.7	2.1
2006	2.2	2.9	2.3
2007	2.3	2.6	2.3
2008	3.5	4.2	3.6
2009	2.1	2.6	2.2
2010	3.3	3.1	3.3
2011	4.5	4.5	4.5
2012	2.8	2.8	2.8
2013	2.6	2.5	2.6
Average	2.5	2.8	2.6

Source: ONS Calculations

Notes:

1. The average presented is the compound average annual growth rate, and consequently may differ from the arithmetic average of the inflation rates presented.

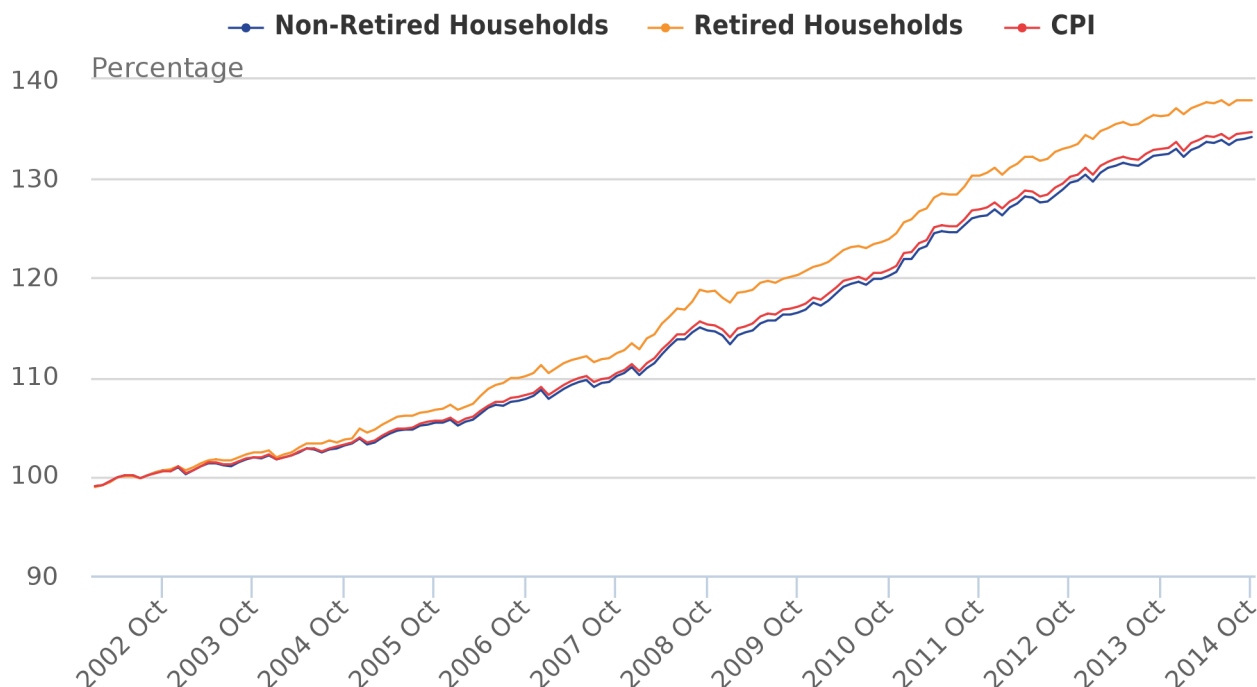
Figure 5.13: Annual inflation rates for retired and non-retired households, CPI, %



Source: ONS Calculations

The cumulative effect of these changes in prices can be seen in Figure 5.14. Since 2002, prices for retired households have risen by 37.9%, while non-retired households have experienced a rise of 34.2%. The published rate of CPI inflation falls between these two measures – indicating that prices rose by 34.7% over this period. This suggests that prices have risen 3.2 percentage points more quickly for retired households than indicated by the all-households CPI over this period, reflecting the expenditure patterns of retired households and their weight in the household population.

Figure 5.14: Cumulative price changes for retired and non-retired households, CPI, 2002 = 100



Source: ONS Calculations

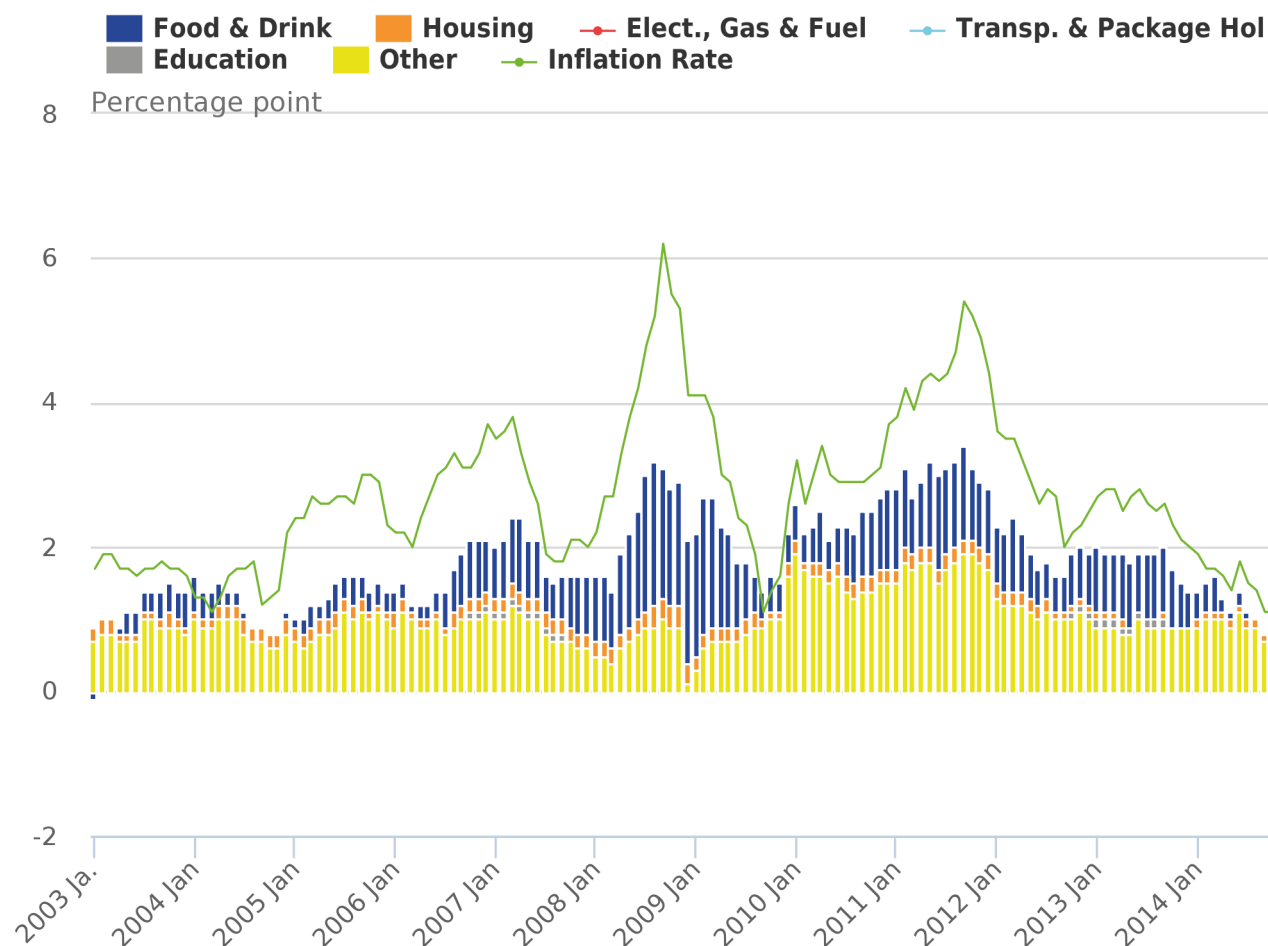
Notes:

1. Figure shows the range of cumulative price changes of products purchased by the respective sub-groups between 2002 and October 2014.

5.4.3 Contributions to the difference in inflation rates

What is driving the differences between the inflation rates experienced by retired and non-retired households? As in previous sections, Figure 5.15 below shows the main drivers of price rises for both groups and the difference between them. Panel A shows contributions to the rate of inflation for retired households, Panel B shows contributions to the inflation rate for non-retired households, while Panel C shows contributions to the difference in inflation rates.

Figure 5.15A: Contributions to annual inflation experienced by retired households: % and percentage points

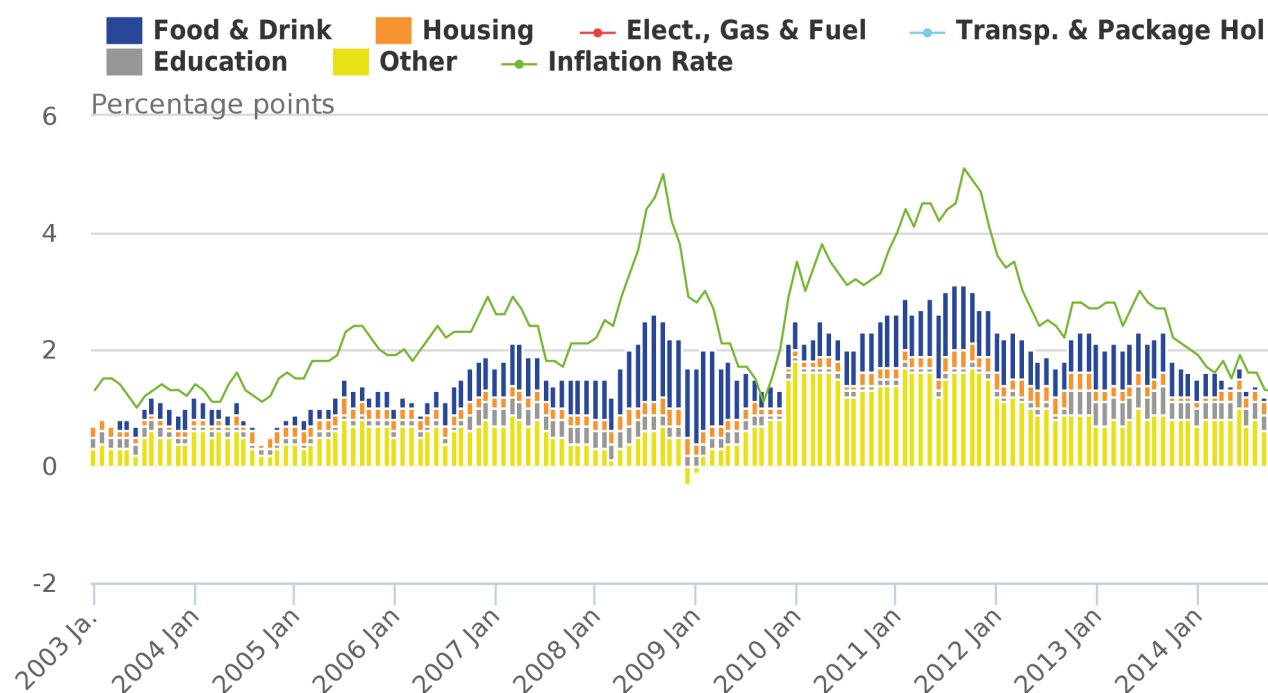


Source: ONS Calculations

Notes:

1. Stacked bars reflect the percentage point contributions of each of the 85 class-level items in the Classification of Individual Consumption by Purpose (COICOP) to the annual percentage change in the CPI-consistent inflation rate. The contribution of each of the 85 class-level items is estimated separately, before being aggregated to the categories above. Note that a reduction in the contribution of series to the annual rate of change need not imply falling prices, but could also reflect a lower rate of increase.
2. Food, drink & tobacco is composed of food, non-alcoholic and alcoholic beverages and tobacco. Housing is composed of actual rents and products and services for the repair of dwellings. Elect., gas & fuel includes electricity, gas and other household fuels as well as fuels and lubricants for motor vehicles. Transport & package holidays includes passenger transport by road, rail, air and sea, as well as package holidays. Education reflects the division-level contribution. The 'other' category reflects the combined contributions of the remaining 56 class-level items, bringing the sum of contributions to the inflation rate.
3. Contributions may not sum due to rounding.

Figure 5.15B: Contributions to annual inflation experienced by non-retired households: % and percentage points

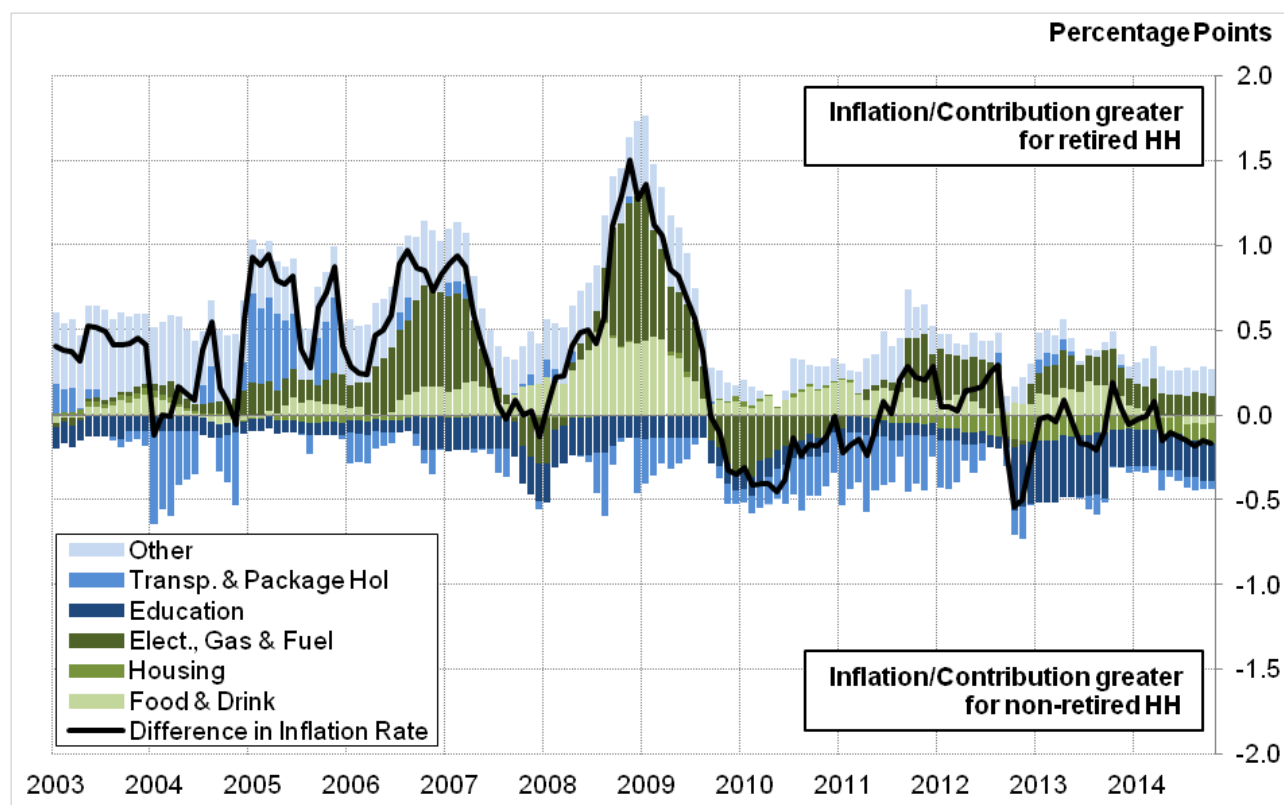


Source: ONS Calculations

Notes:

1. Stacked bars reflect the percentage point contributions of each of the 85 class-level items in the Classification of Individual Consumption by Purpose (COICOP) to the annual percentage change in the CPI-consistent inflation rate. The contribution of each of the 85 class-level items is estimated separately, before being aggregated to the categories above. Note that a reduction in the contribution of series to the annual rate of change need not imply falling prices, but could also reflect a lower rate of increase.
2. Food, drink & tobacco is composed of food, non-alcoholic and alcoholic beverages and tobacco. Housing is composed of actual rents and products and services for the repair of dwellings. Elect., gas & fuel includes electricity, gas and other household fuels as well as fuels and lubricants for motor vehicles. Transport & package holidays includes passenger transport by road, rail, air and sea, as well as package holidays. Education reflects the division-level contribution. The 'other' category reflects the combined contributions of the remaining 56 class-level items, bringing the sum of contributions to the inflation rate.
3. Contributions may not sum due to rounding.

Figure 5.15C: Contributions to the difference in annual inflation: Retired households less non-retired households: percentage points



Source: ONS Calculations

Notes:

1. Stacked bars reflect the percentage point contributions of each of the 85 class-level items in the Classification of Individual Consumption by Purpose (COICOP) to the annual percentage change in the CPI-consistent inflation rate. The contribution of each of the 85 class-level items is estimated separately, before being aggregated to the categories above. Note that a reduction in the contribution of series to the annual rate of change need not imply falling prices, but could also reflect a lower rate of increase.
2. Food, drink & tobacco is composed of food, non-alcoholic and alcoholic beverages and tobacco. Housing is composed of actual rents and products and services for the repair of dwellings. Elect., gas & fuel includes electricity, gas and other household fuels as well as fuels and lubricants for motor vehicles. Transport & package holidays includes passenger transport by road, rail, air and sea, as well as package holidays. Education reflects the division-level contribution. The 'other' category reflects the combined contributions of the remaining 56 class-level items, bringing the sum of contributions to the inflation rate.
3. Contributions may not sum due to rounding.

Taken together, the three panels of Figure 5.15 indicate that the inflation rate of retired households has been above non-retired households' level of inflation throughout much of the period up to late 2009. Since then, both sub-groups have alternated between experiencing the higher rates of inflation. Panels A and B suggest that many of the drivers of sub-group inflation are the same: both retired and non-retired households experienced increases in their rate of inflation during 2008 and 2011, but the former group was more affected as a consequence of its greater exposure to products with relatively high rates of inflation.

Panel C indicates that food & drink consistently push retired household price inflation above that of the non-retired. These effects are offset by smaller contributions from transport and education prices in particular. By comparison, the main reasons for the inflation rate differentials are the large, volatile contributions of electricity, gas & fuel. When analysed at a class-level, there are clear differences in the contributions from electricity, gas & fuel for retired and non-retired households. In general, household energy (electricity and gas) acts to increase the rate of price increases for retired households. Fuels & lubricants instead act to reduce price increases for the retired by comparison with non-retired households.

Notes for 5.4 Retired and non-retired households

1. Retired persons and households: A retired person is defined as anyone who describes themselves (in the LCF) as 'retired' or anyone over minimum National Insurance pension age describing themselves as 'unoccupied' or 'sick or injured but not intending to seek work'. A retired household is defined as one where the combined income of retired members amounts to at least half the total gross income of the household.

6. Background notes

1. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gov.uk