Office for National Statistics

Compendium

About this release

Estimates of the inflation rates experienced by different types of of household in the UK.

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Release date:
15 December 2014

Next release:
To be announced

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1 . Abstract

This paper presents ONS analysis of the inflation rates experienced by different types of households in the UK between 2003 and 2014. Using micro-level data from the Living Costs and Food Survey (LCF) and national-level data from the Consumer Prices Index (CPI), it estimates price indices and inflation rates for households in different positions of the income and expenditure distributions, for households with and without children and for retired and non-retired households. It finds that the inflation experience of UK households differed widely over this period, with implications for economic policy. Low-spending households experienced faster rates of price increase than high-spending households. For the former group, prices increased by 3.3% per year on average between 2003 and 2013, while they increased by just 2.3% on average for the latter group. Inflation differentials for other sub-groups were smaller, although rates of price increase were faster for low-income households, retired households and households without children than for high-income, non-retired and households with children respectively. A 'democratically-weighted' price index was around 0.3 percentage points higher than the CPI on average over this period. This paper also sets out a range of areas for future analysis, among which an examination of how prices for specific products vary across households and the incorporation of housing costs are the most prominent.

2 . Acknowledgements

This paper has benefited from the input of a broad research team at ONS and the UKSA, including, but not limited to, Eric Crane, Rosemary Foster, Ainslie Restieaux, Richard Tonkin, Valerie Fender, Grisel.la Dial Pujol and Matthew Power. The authors are also grateful for comments and assistance from Peter Patterson, Ian Derrick, Richard Campbell, Giles Horsfield and Lorraine Haftowski, as well as Arthur Bennett, Ciaren Taylor and Fred Foxton. We also acknowledge the many useful comments provided by several external experts, including Martin Weale, from the Bank of England, and Peter Levell, of the Institute for Fiscal Studies. Any remaining mistakes or omissions remain our own.

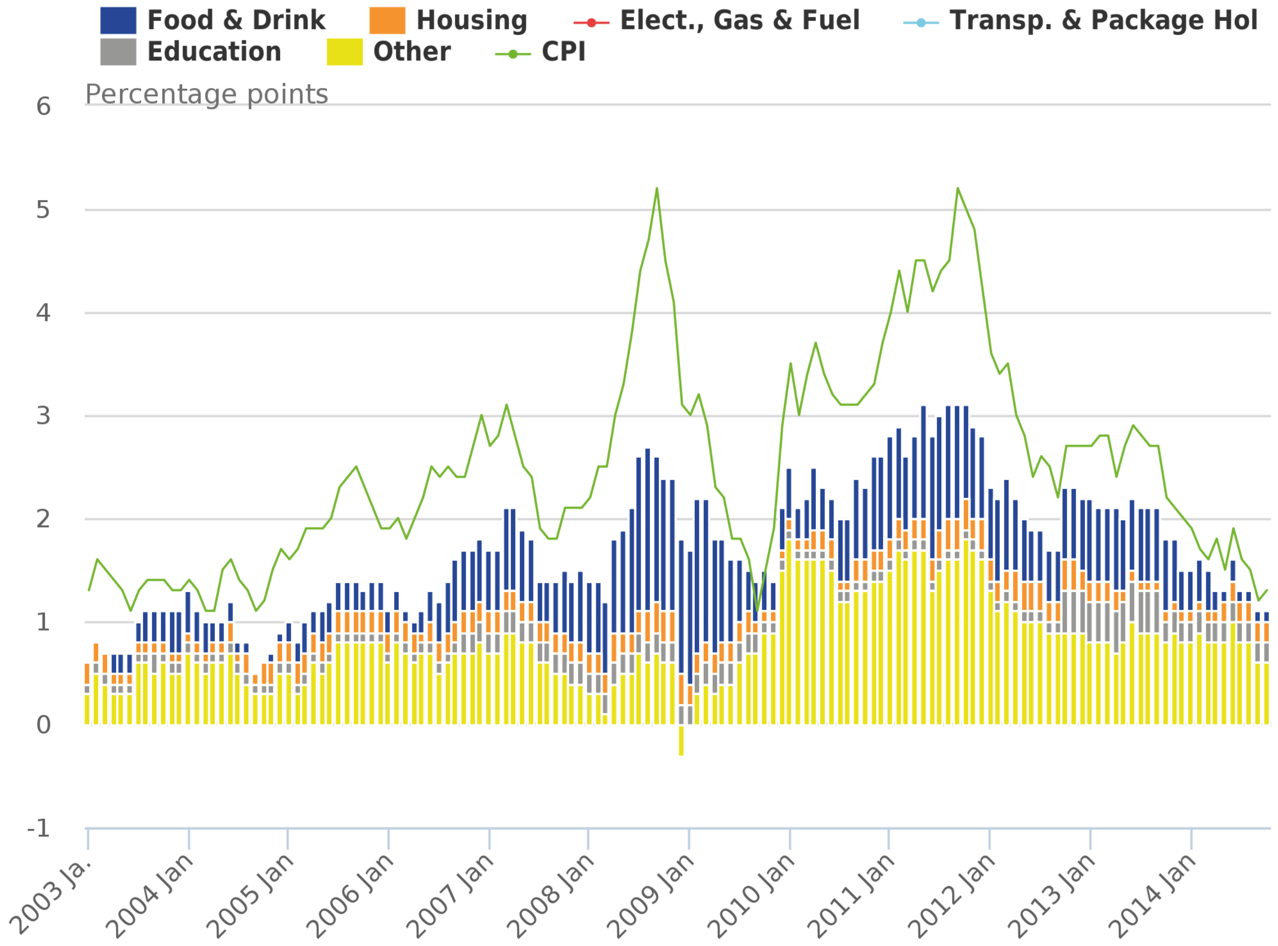
3 . Section 1. Introduction

The Consumer Prices Index (CPI) is of central importance in macroeconomic analysis. Calculated each month using more than 180,000 price quotes, it is designed to capture the average price movement of the goods and services purchased by the household sector. However, because the consumption baskets of specific households differ and because prices do not all change at the same rate, the price experience of individual households may differ from the average shown in official statistics. In a similar manner to the average of any variable, some households will experience higher rates of inflation, while others will observe a lower rate of price increase. These differences are the subject of this paper.

The motivation for this work is three-fold. First, the estimation of inflation rates for different households has an intrinsic interest in and of itself. The rate of price change experienced by households of different types and at different points in the income and expenditure distribution can help policy-makers and researchers alike to understand their behaviour. The unusual nature of the 2003-2014 period – taking in phases of both economic expansion and contraction, of relatively high and low average inflation – heightens this interest. Secondly, the findings offer some important insights for debates on economic policy in the UK. Thirdly, this work has been a central focus of the Johnson Review, to be published in January 2015. This work has benefited from their insights and involvement throughout the process.

Figure 1.1 shows the rate of annual inflation estimated using the CPI between January 2003 and October 2014. Between 2003 and 2006, the annual rate of price change was relatively stable: inflation varied around an average rate of 1.8% per month, between a low of 1.1% and a high of 3.0%. However, between 2007 and 2012, UK inflation was affected by a range of inter-related shocks including the global financial market shock, a substantial depreciation of the trade-weighted sterling exchange rate, volatile movements in commodity prices, and changes in the rate of VAT. All of these factors are likely to have contributed to a sharp increase in both the level and the variation of inflation. In the period since mid-2012, this pattern has reversed: the variation in inflation returned to its pre-downturn level, and the rate itself has now been within the Bank of England's target range of 1.0% to 3.0% for the last 30 months. In particular, the moderation of inflation over the last ten months – shown in the shorter bars to the right of Figure 1.1 – appears to be partly a result of abating energy costs, movements in the exchange rate and falling food & drink prices.

Figure 1.1: Contributions to the annual rate of CPI inflation, % 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 Consumer Prices Index (CPI). The contribution of each class-level item is estimated separately, before being aggregated to the categories above. Note that a reduction in the contribution of a 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 and a small rounding error, bringing the sum of contributions to the CPI (ONS 2014a).

Figure 1.1 also suggests that, as well as the recent moderation, much of the variation in the rate of inflation between 2003 and 2014 has been due to changes in the prices of energy and food & drink. These products account for a larger fraction of total spending for households with low levels of income or expenditure. As a consequence, households have differed in their exposure to these recent movements in prices, which in turn has influenced their experience of average price movements.

To assess the impact of these movements in prices and expenditure weights, this paper uses micro-level data from the Living Costs and Food Survey (LCF) and detailed data from CPI, to calculate price indices for individual groups of households, including households in different positions of the income and expenditure distributions, households with and without children, and retired and non-retired households. It sets out how expenditure patterns vary across each of these groups, examines how they drive differences in rates of price increase and assesses the impact of these differentials over the 2003-2014 period: encompassing periods of both relative stability and of substantial variation in the average inflation rate. It provides some evidence of the impact of housing costs on price pressure faced by households, and it presents a set of ‘democratically-weighted’ inflation rates that yield some information about the distribution of inflation outcomes in the UK [1].

In so doing, this paper makes three significant contributions to the existing literature. First, it presents a more detailed analysis of CPI inflation rates for different sub-groups of the population than has previously been published, using expenditure weights at the class-level of the Classification of Individual Consumption According to Purpose (COICOP). Secondly, to the authors’ knowledge, it presents the first sub-group estimates of UK inflation that are directly comparable with the CPI. This involves both reconciling the household-level expenditure data with the expenditure weights used in the construction of the CPI, and using the same processing techniques to deliver a set of sub-group inflation rates which aggregate to the published CPI series. Finally, the paper provides a detailed discussion of methodological approaches in the field and identifies a range of ways in which the estimates presented here could be improved in the future.

The results of this paper have obvious implications for policy debates concerning the cost of living, the macroeconomic management of the economy as a whole and a range of wider issues. We conclude that rates of inflation differ across household types, with some of the largest differences existing between high- and low-expenditure households. Between 2002 and October 2014, prices increased 24.2 percentage points more for products consumed by households with the lowest levels of equivalised [2] expenditure than for products consumed by the highest spending households [3]. By comparison, average prices for retired households and households without children grew more quickly than non-retired and households with children respectively. Prices increased around 6.5 percentage points more quickly for the products purchased by the lowest compared with the highest-income groups in the period January 2002 to December 2013. Finally, we present evidence that a ‘democratically-weighted’ consumer prices index – which weights the price experience of each household equally – would have risen more sharply than the ‘plutocratically-weighted’ CPI – which draws on household sector expenditure weights – over this period. These results are summarised in Table 1.1 below:

Table 1.1: Average annual inflation rates for selected groups, %, 2003-2013

				%
Group	Inflation			
Decile of	1	2	9	10
Disposable Income	2.9	2.7	2.5	2.6
Expenditure	3.7	3.3	2.3	2.3
Households with Children	2.4			
Households without Children	2.7			
Retired Households	2.8			
Non-Retired Households	2.5			
'Democratically-weighted'	2.9			
CPI	2.6			

Source: ONS Calculations

Notes:

1. Deciles of disposable income and expenditure are calculated on an equivalised basis, adjusting for the composition of the household. See Section 3 for more details.

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

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

4. Differences may not sum due to rounding.

The rest of this paper proceeds as follows. Section 2 presents a brief discussion of the theoretical concepts invoked in this paper, while Section 3 examines the methods and data used in our analysis. Section 4 offers a summary of previous research on inflation rate differentials for both the UK and abroad, while Section 5 presents our findings on inflation rates for households with different levels of income and expenditure, with and without children, and for retired and non-retired households. Section 6 examines how price changes for these households can be affected by the inclusion of some owner-occupier housing costs, while Section 7 considers a 'democratically-weighted' measure of inflation. Section 8 examines some of the limitations of our analysis and identifies several areas for future work. Section 9 offers some concluding thoughts.

Notes for section 1. Introduction

1. See Sections 2 and 7 for more detail.

2. 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.

3. Note that there is evidence that households move between deciles during their life-cycle: only households that are consistently placed in a given equivalised expenditure decile through time will have experienced this rise. Instead, these cumulative changes are better interpreted as changes in the cost of products that households in a given decile consume.

4. 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.gsi.gov.uk