

# CPI vs RPI

## Technical Factsheet

The information set out below is intended to help Avon Pension Fund scheme members understand the significance of the change from RPI to CPI. First of all, the current difference between RPI and CPI is examined. This is followed by a brief description of both indices and some relevant quotes from the 2010 version of the Consumer Price Indices Technical Manual prepared by the Office for National Statistics (ONS).

### Why is RPI currently higher than CPI?

At the time of writing this note detailed information relating to the indices was only available (via the ONS Monthly Digest of Statistics) up to June 2010. At that date the annual increase in the CPI was 3.2% compared with 5.0% for the RPI.

Any attempt to account for the difference of 1.8% is made more difficult because the CPI weights for the various expenditure categories are not the same as the RPI weights. However, the following attribution would not be far wide of the mark:-

Transport	0.8%
Clothing & Footwear	0.3%
Housing	0.3%
Leisure Goods	0.3%
Household Goods & Services	0.1%

The RPI increase for Transport costs was 13.7% compared with 8.9% for the CPI. The RPI increase for clothing & footwear was 6.26% compared with -1.4% for the CPI. It was not possible to account for these differences simply on the basis of the published information. The RPI increase for housing was higher because the RPI includes mortgage interest payments, depreciation and council tax, items which are absent from the CPI. So far as the other index

components are concerned, there were a large number of items involved and the differences could not be attributed to a few specific items.

In principle, the difference between the two indices is at three levels, viz.:

1. at the initial stage, before weights are applied, when price information is gathered for individual items (i.e. the “elementary aggregate” stage);
2. still at the initial stage, the method used to calculate the price increases; and
3. the weights attached to the various categories of expenditure.

### CPI – Origin and Construction

The Consumer Prices Index (CPI) is the UK’s version of the Harmonised Index of Consumer Prices (HICP), a price index introduced by the European Commission in 1995. Its purpose was to ensure a common framework for measuring inflation within the European Union. It is based on the collection of about 120,000 prices for over 600 different index components.

Although weights are attached to the index components, there are no pre-determined weights at the stage where prices are collected (i.e. in the construction of the “elementary aggregates”). The CPI uses the geometric mean (GM) to measure the increase in prices. According to the ONS Technical Manual: “The GM formula implicitly assumes that consumers will switch purchases of particular brands or varieties of products to cheaper alternatives when relative prices change”. (One example of this might be a switch to stores such as Aldi and Lidl from the mainstream supermarkets). The term “implicit” is important because the precise way in which consumers might switch is not identified.

## RPI – Origin and Construction

The RPI was established long before the CPI and, prior to the introduction of the CPI, was the only way in which inflation was measured in the UK. There are slightly more index components in the RPI than in the CPI and they are often not directly comparable.

The RPI uses two forms of arithmetic mean to calculate price increases. One is the Average of Ratios (AR) and the other is the Ratio of Averages (RA). The ONS Technical Manual comments: "In practice GM always shows a lower price rise than AR for given price data. However, it can be higher or lower than RA". (The manual then goes on to explain the circumstances in which the RA might be higher and those when it might be lower).

## ONS Verdict

ONS comments: "Since 1997, when the official series for the 12-month rate of change for the CPI begins, the formula effect (that is, the effect of using GM for elementary aggregation in the CPI, rather than arithmetic means) has contributed at least 0.4 percentage points, and on average 0.5 percentage points, to the difference between the CPI and RPI 12-month rates of change. In other words, the CPI annual rate would typically have been about 0.5 percentage points higher if the elementary aggregates had been calculated using arithmetic means as in the RPI."

## Summary

At any point in time the main difference between the CPI and the RPI is likely to be the relative weights and the items selected for pricing at the "elementary aggregates" (i.e. initial) stage. In principle, these factors should not transmit a bias one way or the other. **However, as indicated above, there is a systematic bias towards a lower CPI because of the use of the Geometric Mean.**

## Further Information

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## Website Sources Used:

[www.statistics.gov.uk/downloads/theme\\_economy/CPI\\_Technical\\_manual-2010.pdf](http://www.statistics.gov.uk/downloads/theme_economy/CPI_Technical_manual-2010.pdf)

[www.statistics.gov.uk/downloads/theme\\_compensia/md-aug-2010/md-aug-2010.pdf](http://www.statistics.gov.uk/downloads/theme_compensia/md-aug-2010/md-aug-2010.pdf)

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