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Agenda

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RIP RPI?

Did the UK Office for National Statistics avoid the political challenge from pensioners and bond-holders of moving to a lower measure of inflation when it published its decision not to change RPI? Or has it empowered those using the price indices to choose the most appropriate measure for their situation by offering an alternative in the form of RPIJ? What was wrong with RPI anyway, and what is RPIJ?

The ONS has consulted on changing the way it calculates the measure of RPI, and decided to leave the measure as it is while announcing that it would publish an alternative measure, RPIJ.[1] This process and decision have highlighted some of the shortcomings in RPI, and reopened the discussion about what is an appropriate index to link prices to.

Does the measure of inflation matter?

All the indices being discussed are proxies for the actual rate of price inflation experienced by consumers. Any changes to the methodology should affect only how close the proxy is to consumers' actual inflation.

Actual underlying prices should still be driven by supply and demand factors in each industry and, theoretically, should be unaffected. There are two sorts of reasons why, in practice, changing the measure may affect actual inflation:

- **contractual reasons**—where prices in contracts are linked to RPI, such as in index-linked bonds, regulatory settlements, and PFI (Private Finance Initiative) contracts;
- the **benchmark effect** of the common measure of inflation in creating a perception of underlying cost inflation—such as in wage negotiations, where many employees would expect an adjustment for changes

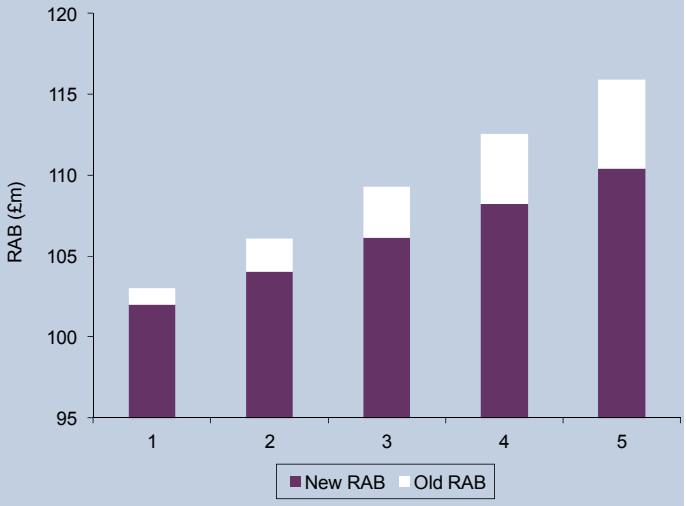
Implications for companies subject to RPI minus X regulation

RPI appears in several places in regulatory determinations. Most notably, many, but not all, regulatory asset bases (RABs) are indexed to RPI, allowing the RAB to grow in line with inflation over time. The figure on the right shows what would happen to a £100m RAB over a five-year control period if the indexed measure of inflation were reduced from 3% per year to 2% per year.

RPI also feeds into price controls, through real price effects that aim to control for costs that are expected to increase at a rate faster than RPI. Outturn costs should not be affected, but more of the cost base may be eligible for adjustments for real price effects, as the benchmark measure of inflation will be lower.

There may also be complications relating to the way efficiency targets are set using RPI. Many regulators use historical measures of RPI to identify productivity gains in the economy as a whole, which can be used as a guide to future levels of technological innovation, in order to set a rate of efficiency improvement for the best-performing companies (also known as frontier shift).

Impact of inflation changing from 3% to 2% per year



Source: Oxera.

in the cost of living, which they may proxy through the headline rate of inflation.

A move to a new, lower level of inflation index has different effects depending on how the contract is designed.

What was, and still is, wrong with RPI?

Initially designed to protect consumers from rising prices following the First World War, RPI is used as a measure of general inflation in the UK to reflect the prices of many goods and services in the economy. Uses of RPI include:

- the issuing of index-linked bonds;
- indexation of some private pension plans;
- the setting of prices in gas, water and electricity;
- fare-setting in rail;
- the setting of duty rates on alcohol, tobacco, gambling and fuel.

Moving to one of the proposed lower measures of inflation would have lowered UK repayments on index-linked debt, but also potentially have reduced investor confidence in the UK government's ability to repay debt on the basis that investors believed they had agreed to.

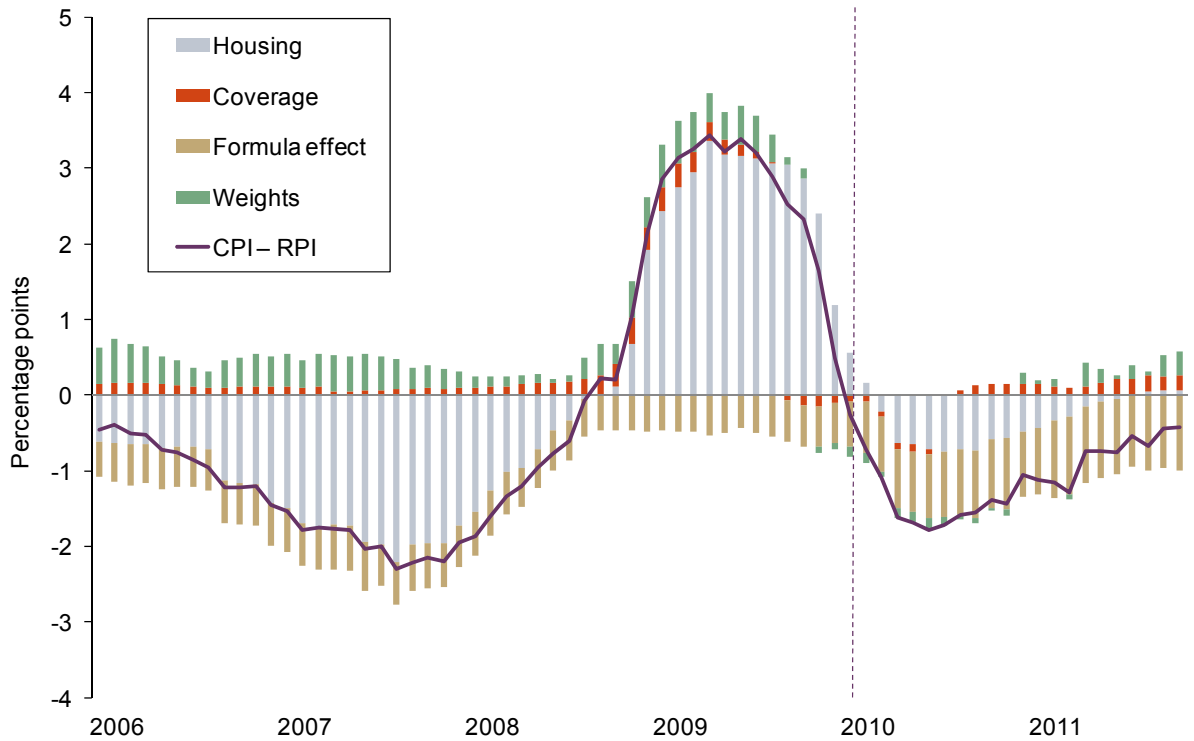
RPI, as it is currently measured, differs from the main measure of inflation used across the EU—the HICP (harmonised index of consumer prices). In the UK, this is reported as the CPI (consumer prices index). CPI is the measure targeted by the Bank of England when setting inflation, and differs from RPI in terms of the range of products included, the population base it covers, the weights applied in the calculations, and the formula used to calculate the index.

In 2010 the ONS changed the way it sampled the prices of clothing.[2] In itself, this should not have had a large effect on the value of the index. However, the gap between CPI and RPI due to the formula effect increased by around 0.5 percentage points, highlighting that the difference in formula used to calculate the two indices had a considerable impact on the value of RPI, as shown in Figure 1 below.

The ONS addressed this issue with a programme of work, culminating in a consultation to investigate the options for changing RPI.[3] The consultation highlighted that one of the formulae used by RPI, the Carli index, behaved in a counterintuitive way in certain circumstances.

Most price indices use some combination of the three main ways to calculate a price index:

Figure 1 Decomposition of the difference between CPI and RPI

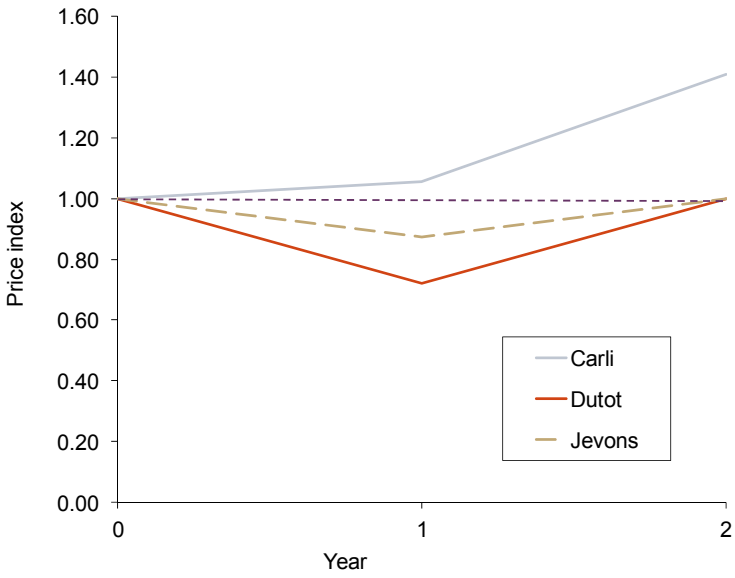


Source: Adapted from Office for Budget Responsibility (2011), 'The Long-run Difference between RPI and CPI Inflation', November.

Figure 2 What goes up should come down?

Price of good	Year 0	Year 1	Year 2
A	10	20	10
B	30	20	30
C	50	25	50

Price index			
Carli	1.00	1.06	1.41
Dutot	1.00	0.72	1.00
Jevons	1.00	0.87	1.00



Source: Oxera.

- the arithmetic mean of relative prices (the Carli index);
- the ratio of arithmetic mean prices (the Dutot index);
- the geometric mean (the Jevons index).[4]

When calculating RPI, the ONS uses a mixture of the Carli and Dutot indices. The choice of averaging method has important statistical and economic implications for how a price index moves. Figure 2 above shows how these methods lead to different conclusions about how prices have moved. If prices went up one year and came down by the same amount the following year then a good measure of inflation would conclude that, overall, there was no inflation, as prices did not change.

Figure 2 demonstrates that, while both the Dutot and Jevons indices correctly identify that there was no change in the level of prices over the two years, the Carli index erroneously estimates that prices rose over the period by more than 40%. RPI's use of the Carli index was at the centre of the debate about whether to change the definition of RPI.

Does any of this matter now that the ONS has decided not to change the official definition?

The ONS's decision to keep RPI as it is could be seen as favouring consistency (or the interests of bond-holders and pensioners) over statistical precision (or the interests of consumers and lowering the government's budget deficit). However, while the way in which the RPI is calculated will not be changing, the ONS has identified serious shortcomings with it, and has introduced a new index that removes the problematic Carli index and replaces it with the Jevons index. It is likely that, due to its construction, this new index, RPIJ, will estimate inflation at a level 0.5 to 1 percentage points per year lower than RPI. In the press, there has already been pressure from consumer groups to encourage regulators to consider the use of RPIJ,[5] given that the ONS itself considers it a better measure of inflation. More debates on this can be expected in the next few years as the choice of inflation measure is discussed for contracts such as PFIs and regulatory settlements, and the trade-off between consistency over time and statistical correctness is debated.

[1] UK Statistics Authority (2013), 'Consultation on the Retail Prices Index', January 10th.
[2] Office for National Statistics (2011), 'CPI and RPI: Increased Impact of the Formula Effect in 2010: Information Note'.
[3] See UK Statistics Authority (2013), op. cit.
[4] The arithmetic mean is the sum of all values divided by n. The geometric mean is calculated by taking the nth root of the product of all values.
[5] See, for example, *The Telegraph* (2013), 'Pressure Groups urge Government to Ditch RPI for Fuel and Rail Fare Rises', January 10th, available at http://www.telegraph.co.uk/finance/economics/9793436/Pressure-groups-urge-Government-to-ditch-RPI-for-fuel-and-rail-fare-rises.html.

If you have any questions regarding the issues raised in this article, please contact the editor, Dr Leonardo Mautino: tel +44 (0) 1865 253 000 or email l_mautino@oxera.com

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