RPI: a Really Profligate Index?

High on the list of the top 10 most important statistics in any country must be the consumer (or retail) prices index. So it is not surprising to find that enormous effort goes into its calculation. But is this effort justified? Looking at lessons from history, **Shane Whelan** argues that, on the contrary, the index is profligately over-engineered.

In bygone times, there was a widespread belief—created by the magic of data-mining and confounding correlation with causation—that manipulating the retail prices index (RPI) higher could bring unemployment down[1]. Nowadays, the statistic generally comes with an institution, the central bank, charged to manage its trajectory, empowered with the key policy instrument of the short-term interest rate. RPIs have been cynically manipulated to play their part in times of war[2], and been allowed to climb to hyper-highs to help to generate revenue for crippled and defeated nations after wars[3]. Even in peacetime, they can awaken nationalist pride—as inflation is linked to the stability and strength of a currency and can help to put in a "sterling" performance.

It therefore is no surprise that a small industry has grown up around computing the inflation index in each developed economy. In the UK, for instance, over 100 000 prices are collected each month in about 150 locations, before weighting the prices by expenditure patterns derived from sampling over 6000 households, with the weights themselves subject to meticulous special adjustments (such as the Potato Quality Ratio) and amendments (such as the allowance for the understatement of expenditure on soft drinks)[4]. For such an important number, such a Herculean effort appears justified. But is it?

Frank Duckworth challenged as "unfit for purpose" the widespread use of the RPI to index pensions in one of the first issues of this magazine[5]. The gist of the argument is: how could such a broad average measure of inflation as the RPI be suitable to apply to a non-random subset of the population? Put another way, if the RPI does adequately capture the inflation experience of most subgroups of society, then why go to all the fuss over all the prices at all the locations, weighted in such a precise way?

This article contends that inflation does not vary in any significant way from one subgroup to another or from one location to another in the same economy. So, in essence, the hypothesis is that, far from the RPI being "unfit for purpose", the method of measuring inflation adopted in developed economies is profligately over-engineered for the phenomenon it measures—a simpler method of calculation could produce just as good an estimate. Merely because the index is important does not mean that it requires huge effort.

Lessons from history

Let us start with a pertinent history lesson. For more than 100 years up to December 1921, Ireland was a small part of the UK and, accordingly, was represented with a small weight in the official cost of living index of the UK when it was originally established in July 1914. On independence, the first problem of a statistical nature was posed in February 1922 when the public service queried the use of the UK cost of living index in determining their pay bonus, arguing that a specifically Irish index was required (with the expectation that this would lead to a higher bonus)[6]. A committee was established, calculated an Irish cost of living index for July

1914 and again for March 1922, and reported only a small difference between movements in the Irish and UK cost of living indices—over the 8 years to 1922 the annualised rate was 8.2% for Ireland and 7.8% for the UK, giving an accumulated difference of just 5.3%[7].

This is not the remarkable part of the story, though. Figure 1 shows how inflation evolved between the two distinct economies as long as a fixed exchange rate was maintained.

The record shows inflation in Ireland and the UK was very similar year on year, with accumulated differences of less than 7% over the period from political independence of Ireland at the end of 1921 to the breaking of the fixed exchange rate in early 1979. This remarkably similar inflation experience was recorded despite different standards of living, consumption preferences and taxation regimes (the last of which were used as a key instrument in an economic war[9] between the nations over post-colonial land annuity payments between 1932 and 1938).

The similarity between the experiences of inflation in Ireland and the UK over the greater part of the 20th century allows us to postulate a general law: average price escalation is very similar across a single currency region. Figure 2 provides further supporting evidence, comparing the inflation reported between US cities over the last 90-odd years. The difference in the annualised inflation rate from the highest to the lowest is 0.4%, which, according to Boskin *et al.*[10], falls well within estimates of the accuracy with which actual inflation is measured.

So we may tentatively conclude the inflation does not seem to vary much from location to location within a currency region. But can it vary much when different weighting structures are applied to the constituent price series? Again looking at history, A. L. Bowley showed that inflation estimated using the limited and dated weightings derived from the budgets of working class families in 1904 (and the basis of the original cost of living index in the UK) up to 1938 would not differ in any appreciable way if the more complete and considerably different working class budgets of 1937–1938 were used instead over the decades[11] (nor would an appreciable difference be introduced if aggregate implied deflators for consumer expenditures were used[8]).

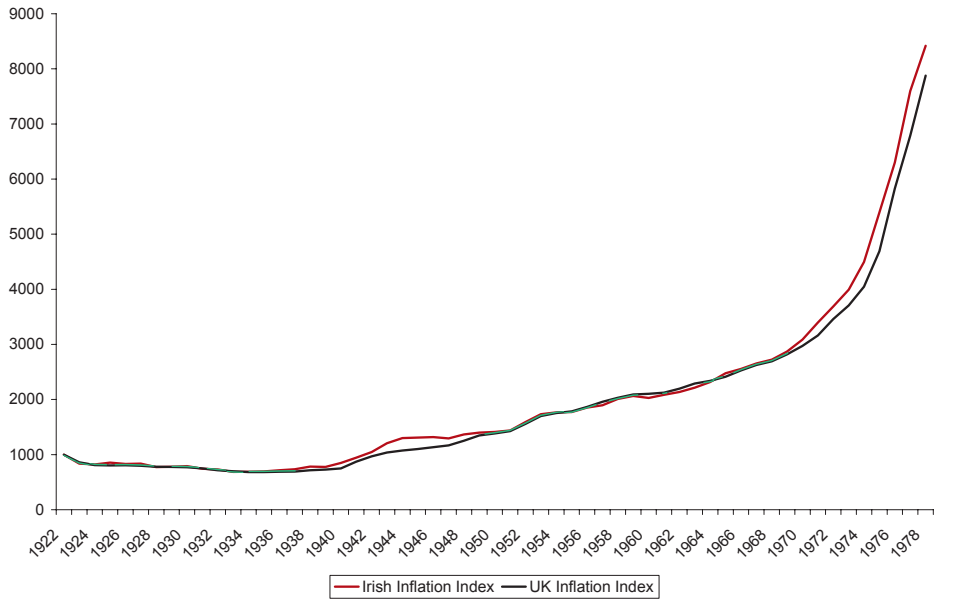

Figure 1. Comparison of inflation indices between Ireland and UK when currencies linked, 1922–1978. (Sources: for the UK, O'Donoghue, Goulding & Allen[7]; for Ireland, sourced from various publications of the Central Statistics Office, Ireland)

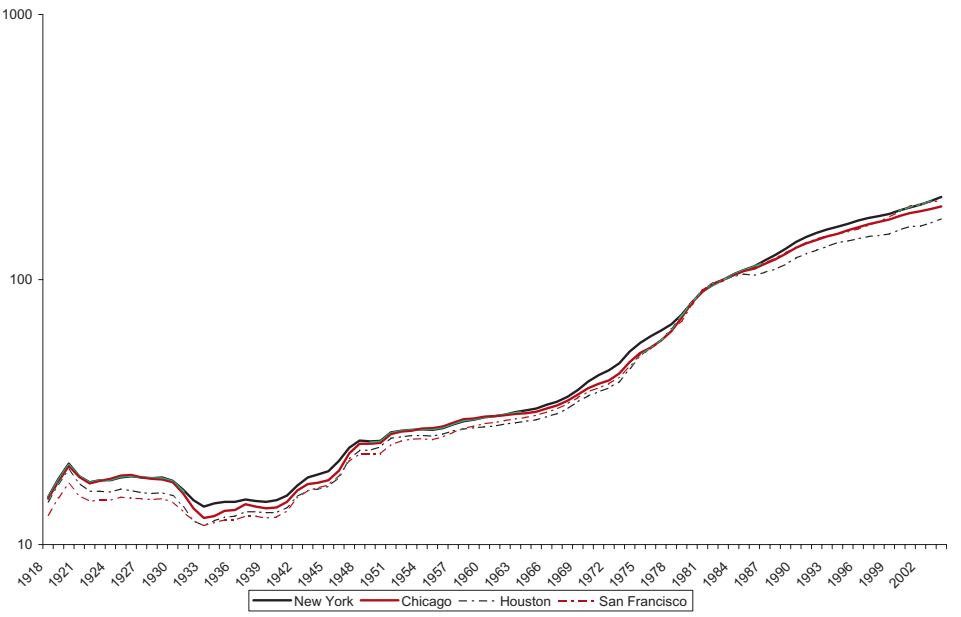

Figure 2. Inflation indices from 4 US cities, 1918–2004 (log-scale). (Sources: US Department of Labor)

Inflation experienced by the retired

But let us take Dr Duckworth's suggestion and look more closely at how appropriate it would be to use RPI as a measure of the inflation experienced by the retired. The Office for National Statistics (UK) does publish a couple of pensioner inflation indices—one for one-person pensioner households and another for two-person pensioner households—dating from the start of 1987. No weight is given to the housing section in these indices, which, together with other weighting differences, produce a somewhat different inflation measure.

According to these indices, over the period from January 1987 to September 2004 one-person pensioner households experienced inflation at an annualised rate of 2.7% per annum, compared with that experienced by two-person pensioner households of 2.9% per annum and general inflation (RPI) of 3.6% per annum.

At first sight, it appears that the two groups experienced quite divergent levels of inflation. But take a closer look. The considerable housing subsection (about 19% of the weighting in the RPI) is entirely excluded from the pensioner indices on the basis that "it would be technically difficult to compile

separate house price indicator items for these households". The exclusion of housing accounts for 0.6% per annum, that is, almost the total discrepancy between the inflation measures. So the reported difference seems completely down to the approximation used to avoid some technical difficulties.

The Irish experience can again shed some light on the issue. The Irish Association of Pension Funds recently commissioned the construction of an inflation index for the retired in Ireland[12] over the 1990s. It was computed directly from household budget surveys and over 100 sub-price indices. The study found, as could be expected, that the consumption basket of the typical retired household had a lower expenditure on items included under housing but that their typically lower income (at about two-thirds of that of the average household) ensured that certain items such as house insurance, repairs and decoration had a higher percentage weighting. The upshot was that the weighting of retired households in Ireland to the housing subsection was a full two percentage points lower than the average household, at 6%, and there was a different subdivision of the 6%.

But the analysis concluded that, despite these and other differences, there was essentially no divergence between inflation as experienced by the retired and the official measure in Ireland over the decade and, furthermore, that this conclusion remained true even when the retired were subdivided by broad income group (which, incidentally, produced considerably greater differences in the consumption profile). A previous study in Ireland in the inflationary 1970s came to the same conclusion.

"If inflation seems sufficiently well measured by analysing its impact on one subgroup or in one geographical region, is not the current RPI profligately over-estimated?"

It is a short step to conjecture that inflation experienced by the retired in the UK must similarly be close to the official estimate. If the retired do suffer disproportionately as a result of inflation, as intimated in Dr Duckworth's letter, then we must look to the failure of their incomes to rise in compensation and not to the differential impact of price rises on their expenditure.

A concluding conjecture

The evidence above—the coincidence of inflation rates in different locations in a single currency region over extended periods, and (admittedly somewhat patchy) evidence that different weighting structures suitable for different subgroups produce very similar results—allows my unifying conjecture. If inflation seems sufficiently well measured by analysing its impact on one subgroup or in one geographical region, is not the current RPI (likewise, other national inflation indices) profligately over-estimated? An immediate and important corollary of this hypothesis is that inflation measures would then be numerically indifferent as to whether the existing aggregate expenditure is used to calculate the weighting structure (so that the expenditure patterns of the rich are weighted more highly than those of the poor) or the weighting structure is changed to be more egalitarian (so that each household gets equal weight).

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