

Inflation: Impact on the Retired

Shane F. Whelan

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1.
Introduction

The Consumer Price Index (CPI) is a key element informing wage negotiations and social welfare increases and the standard adjustment made to compare monetary values over time. This measure has one very obvious drawback: it only measures one thing, namely, the change in price of the basket of goods and services consumed by the average private household in Ireland. Households whose consumption basket differs from the average may experience inflation at a different rate to measured CPI.

There is a widely held view that the burden of inflation falls unequally on pensioners and, more generally, on those in the lower income deciles. In the past, groups with different consumption patterns have experienced inflation at different, often significantly different, rates. For example, Geary (1994) reports that “white-collar” workers experienced inflation at 49 per cent in the five year period to mid-August 1944 while the official inflation index of that time, designed to measure inflation as experienced by the working class, records inflation at 71 per cent. The National Prices Commission (NPC), investigating the effect of high inflation in the early 1970s found that inflation appeared to vary systematically with income level, with those on the lower incomes most impacted and highlighted “...the urgent need for separate price indices for different groups within the community, and especially for pensioners and others with relatively low incomes”. A subsequent more detailed investigation revised the conclusions of the NPC Report but still the impression remains widespread.

There are two distinct ways by which the pensioner can be affected by inflation. The first, and the subject of this investigation, is that households classified as retired differ in some key consumption characteristics from the average household. These differences are reflected in a different consumption pattern, which leads to a different and perhaps higher inflation experience as all prices do not rise by the same amount. The

¹ This paper is based on a report of the same title commissioned by the Irish Association of Pension Funds (IAPF). The full report, giving more details on the methodology and including an index of inflation experienced by the retired monthly from November 1989 to June 2000, is available from the IAPF's website at www.iapf.ie. I thank the IAPF for permission to base this article on the report and Professor Gerard Hughes of the ESRI for valuable comments.

2. Construction of Consumer Price Index

second way, not treated here, is that the income of the retired fails to rise in compensation for the rise in inflation. Under this second mechanism, pensioners are pictured to fare worse in inflationary times due to what can broadly be described as lack of bargaining power.

The recent rise in CPI to a level not seen in a decade and a half has once again focused attention on the redistribution effects it brings with it. However, even when inflation as measured by the CPI has been relatively well-behaved as over the last decade, its redistribution effects can still operate. CPI is a weighted average of different price series with some rising, some falling, and others remaining broadly stable. Reweighting the price series could lead to a markedly different outcome. If the consumption basket of the typical retired household features goods or services that have prices that trended upwards in comparison to others, then the pensioner could have experienced markedly higher inflation. In this paper, we investigate how inflation has impacted the retired by constructing an inflation index for retired households, backdating it over the last decade and contrasting it with CPI.

The official measure of Irish inflation, CPI, is published monthly by the Central Statistics Office (CSO), with the prices relating to the second Tuesday of each month. Before January 1997 the index is available quarterly to mid-February, mid-May, mid-August, and mid-November of each year. The index is designed to track the change in price of the basket of goods and services consumed by the typical Irish household. The consumption basket is derived from investigations of the expenditure pattern of the average household. In practice such investigations have been conducted every seven years since 1968 and the weights in the index updated in line with these survey results. At the current time, the weights are derived from the 1994-1995 *Household Budget Survey* (HBS) with some adjustments. This weighting structure superseded that based on the 1987 *Household Budget Survey* in mid-November 1996.

The weighting of each item in the basket of goods used to calculate CPI, while based on the HBS, is subject to some important modifications. Certain items which form part of the regular outlay or consumption of households are excluded on the basis that the good or service does not have a market price (e.g., charitable donations), is not a market transaction (e.g., home-grown produce) or it cannot be viewed as part of current consumption (e.g., savings and loan principal repayments). The weightings of other items are altered from those reported in the HBS where it is known that the survey materially mis-states the expenditure on such items (e.g., alcoholic drink and tobacco products). Finally, the HBS was conducted between May 1994 and July 1995 so allowance must be made for the change in price of the basket of goods between that time and November 1996, the month the weights were first adopted in the calculation of CPI. Extensive details on the results of the Household Budget Survey and the construction of CPI are published by the CSO.

To calculate an inflation index, it is obviously necessary to know how the price of each item changes over time as well as the weighting given to that item. Price series are readily available from the CSO for each of the ten major sub-divisions of the CPI basket: Food, Alcoholic Drink, Tobacco, Clothing & Footwear, Fuel & Light, Housing, Durable

Household Goods, Other Goods, Transport, and Services & Related Expenditure. These ten major groupings are further sub-divided into 160 sub-categories each of which is priced and weighted separately in the calculation of CPI. More than 45,000 prices are gathered each month to ensure adequate coverage of both the variety of goods in each sub-category and the type of retail outlet where purchased.

Historic price series for the 160 sub-categories are not generally available but, on request, the CSO kindly made available a detailed breakdown of the price movement of some 134 of the 160 categories of goods and services each month over the last decade.² We acknowledge our gratitude to the CSO for making these price series available.

To construct an index that measures the inflation experienced by retired households, we require:

- (i) the proportion spent on each good or service by the typical retired household. This, subject to the same modifications made to arrive at the CPI weightings, gives the appropriate weighting to each item in the basket.
- (ii) the price change of each item over the period.

The value of the index, I_t , at time t is then computed as:

$$I_t = 100 \cdot \sum_i w_i \left(\frac{P_{it}}{P_{i0}} \right)$$

where

$w_i > 0$ is the weight given to item i in the basket, $\sum_i w_i = 1$,

and

P_{it} is the price index of item i at time t .

In this paper, we construct an inflation measure for the retired adhering as closely as possible to the manner in which the official CPI is calculated. No investigation is made into how closely CPI itself measures underlying inflation. It is well-known that such inflation measures have several biases which tend to overstate inflation. First, the basket of goods on which the index is based tends to be several years out of date and, in the meantime, households could be expected to substitute goods that have risen markedly in price with other comparatively less expensive goods. Second, the quality of goods can change with time and this cannot be explicitly allowed for in the index. Third, new goods introduced will not become part of the index for many years and often these early years in a product's life have pronounced price declines. Fourth, new methods of distribution can lead to lower prices and typically there is a time lag before prices are sampled from these new retail outlets. The result is an upward bias to measured inflation which recent work suggests might be of the order of 1/2 per cent to 1 1/2 per cent per annum.³

² The further sub-classifications made in the computation of CPI for which we lack a price series are the 24 sub-categories of Clothing & Footwear and individual price series for personal computers (weighting of 0.0470 per cent in November 1996), therapeutic equipment (0.0573 per cent), and musical instruments (0.1519 per cent).

³ See, for instance, *Problems of Inflation Measurement*, Deutsche Bundesbank, Monthly Report, May 1998, pp. 51-64, or *Towards a More Accurate Measure of the Cost of Living*, Boskin, M.J., et al.,

3. Expenditure Patterns of Retired Household Compared to Average Household

The 1994-1995 *Household Budget Survey* (HBS) gives details of the expenditure pattern of households grouped by different distinguishing characteristics. In particular, it gives a separate breakdown of the consumption basket of households termed “Retired” by reference to the classification of the head of the household. There are 1,240 households classed as “Retired” out of the total sample of 7,877. They differ in some key characteristics from the average household. They have a disposal income just two-thirds the national average, the household consisting of just 2.06 persons against the average household size of 3.28 and, of course, the age of the reference person at 71.4 was considerably above the average age of 50.6. All these differing characteristics suggest that the retired household may have a consumption basket different from that of the average household. The HBS confirms and measures the extent of the differences.

However, as in the determination of the weights used in CPI, the weights assigned to the different items by the HBS require to be adjusted to be suitable for use in a consumer price index. We follow the methodology adopted by the CSO in adjusting the weights found in the HBS described, in summary form, below.

- (i) Items of expenditure listed in the HBS that either cannot be priced or are not items of current consumption were excluded, viz., contributions to churches, charities and those made voluntarily to schools, pocket money, betting & lottery tickets, life assurance premiums, pension & private health insurance contributions.
- (ii) The weights attached to each item of expenditure in the HBS relate to the price of such goods and services in the period of the survey between May 1994 and July 1995. To reflect the appropriate weights at November 1996 (the date that these survey results were adopted for determining inflation), the price of each item was increased by the appropriate sub-price index over the period and the weights recalculated.
- (iii) The expenditure on tobacco products and alcoholic drink can be expected to be as understated for the retired section as it was for the average household. We have, accordingly, adjusted the percentage expenditure on these items by the same proportional amount that the percentage expenditure on these items in CPI bears to their proportion in the average household budget in the HBS.
- (iv) It proved difficult to reconcile the weighting to Mortgage Interest in CPI to the most closely corresponding categories in the HBS.⁴ Accordingly, we approximated the weighting for the inflation index for retired households as the HBS weighting adjusted by the same proportional amount that the percentage expenditure on these items in the official CPI bears to their proportion in the average household budget in the HBS.

Final Report to the Senate Finance Committee from the Advisory Commission to Study the Consumer Price Index, Washington, 1996.

⁴ Mortgage Repayments-Principal & Interest, Interest Only and Subsidiary Loans.

Due to a lack of information, certain items such as benefits-in-kind (from social welfare or elsewhere) and home-grown produce are not excluded, unlike in the computation of CPI. The adjustment necessary to allow for benefits-in-kind can be expected to be greater for those on low incomes so our results are not applicable to this group without further investigation.

The results of the above analysis can be presented at two levels of detail. Table 1 below gives the breakdown into the ten major consumption groups.⁵

Table 1: Expenditure Pattern of Retired Household Compared with Average Household as at November 1996, to Estimate Inflation

Major Consumption Groups	% Weightings	
	Average Household	Retired Household
Food	22.8	23.8
Alcoholic Drink	12.6	14.3
Tobacco	4.8	6.1
Fuel & Light	4.9	6.5
Housing	8.0	6.0
Household Durables	3.6	3.2
Other Goods	6.4	6.3
Transport	13.9	12.7
Services & Related Expenditure	16.7	15.9
Clothing & Footwear	6.13	5.27

The breakdown into the finest level of detail, that is into the 134 sub-categories of goods and services, is given in Whelan (2000). An extract from the complete table is given below, showing only those sub-categories where the consumption basket of the retired household differs appreciably from the average household. We take weighting differences of more than ½ per cent as our measure of appreciable.

Table 2: Weighting Differences between Sub-Categories of Retired and Average Households Consumption Baskets that exceed ½ per cent

Category	Sub-Category	% Weightings		
		Average	Retired	Difference
Food	Bacon	0.9	1.4	0.5
	Meals Out	4.3	3.2	-1.1
Alcoholic Drink	Spirits	2.7	4.3	1.6
	Cigarettes	4.6	5.6	1.0
Housing	Mortgage Interest	3.6	1.2	-2.4
	Newspapers	1.1	1.9	0.8
Transport	Motor Cars	3.9	3.2	-0.7

⁵ The percentage figures in the tables are rounded to the first decimal place. They were carried to at least four decimal places in the calculations.

Services & Related Exp.	Education & Training	1.6	0.8	-0.8
	Hospital Charges	0.2	1.6	1.4
	Other Medical Expenses	1.4	0.5	-0.9
Clothing & Footwear	Clothing & Footwear	6.1	5.3	-0.9

4. Inflation Index for Retired Households

The weighting differences found between the typical basket of goods consumed by the retired household and the average household will only give rise to a different inflation measure if the price of those goods has evolved differently. The CSO collate some 160 sub-price indices and, using the relative weighting of the goods as consumed by the typical household, compute ten price indices corresponding to the major commodity groupings. Inflation within these ten principal groups over the year to June 2000 and longer periods is set out below and compared with the overall CPI. We highlight the significance of each commodity group by showing how much the retired basket differs from the average basket.

Table 3: Evolution of Price Indices of Major Commodity Groupings

Major Commodity Grouping	Retired Over (+) /Under (-) Spend (%)	Period to June 2000 (% p.a.)				
		1 Year	3 Years	Since November 1996	5 Years	10 Years
Food	1.0	3.1	3.7	3.7	2.9	2.4
Alcoholic Drink	1.7	5.0	4.5	4.0	3.6	3.7
Tobacco	1.2	17.5	8.3	7.9	6.7	6.7
Fuel & Light	1.6	8.2	3.0	2.1	2.0	1.7
Housing	-2.1	6.1	-1.8	-0.6	-0.3	0.6
Household Durables	-0.4	0.2	0.3	0.2	0.4	1.1
Other Goods	0.0	4.3	3.0	2.7	2.5	2.7
Transport	-1.3	9.3	4.2	3.8	3.6	3.0
Services & Related Expenditure	-0.8	6.7	4.9	4.2	3.6	3.7
Clothing & Footwear	-0.9	-5.8	-5.9	-6.4	-4.9	-2.0
Overall CPI (annualised)		5.5	3.2	2.9	2.5	2.6

It can reasonably be questioned whether the retired household can avail of the goods and services at the recorded prices. Perhaps the shopping habits of the retired favour local smaller shops and the smaller family size reduces the quantity purchased, leading to systematically different prices being paid by the retired for the same goods. We ignore this possible bias and, in our calculations, we use the CSO price series.

The extent to which inflation experienced by retired households differs from that experienced by the average household obviously depends on the period under review. The table above suggests that the retired may have suffered inflation at a higher rate over most periods given their proportionately greater spend on Alcoholic Drink and Tobacco (which have risen in price more steeply than the average good) and their corresponding reduced spending on Housing, Clothing & Footwear and Household Durables (which have either risen less steeply or posted declines). A crude approximation of the extent of the difference is obtained from multiplying the second column vector in the previous table by the later columns. This calculation suggests that the order of the inflation differences is as follows:

Table 4: Crude Estimate of Inflation for Retired Compared with CPI

Inflation Measure (annualised)	Period to June 2000 (% p.a.)				
	1 Year	3 Years	Since November 1996	5 Years	10 Years
Crude Approximation for Retired	5.7	3.5	3.1	2.7	2.7
Overall CPI	5.5	3.2	2.9	2.5	2.6
Difference	0.2	0.3	0.2	0.2	0.1

Inflation as experienced by the retired has averaged 0.1 - 0.3 per cent per annum above general inflation over the recent past according to this approximation.

As a subsidiary exercise, we looked at how the expenditure pattern of the retired depends on their income level. In 1994-95, just under half of the retired spent less than IR£136 a week (Group 1), about 30 per cent spent between IR£136 and IR£267 a week (Group 2), 15 per cent between IR£267 and IR£472 (Group 3) and 7 per cent spent over IR£472 per week (Group 4). We find that the more affluent the retired household the less it spends proportionately on Food (falling from 28.6 per cent to 18.5 per cent between Group 1 and Group 4), Fuel & Light (10.2 per cent falling to 3.5 per cent) and Alcoholic Drink and Tobacco (19.9 per cent to 14.0 per cent). The wealthier retired household spends proportionately more on Services & Related Expenditure (16.3 per cent rising to 27.6 per cent), Transport (8.7 per cent rising to 16.3 per cent) and Clothing & Footwear (3.4 per cent to 6.3 per cent). It is possible to get a rough approximation to the inflation experienced by each income group by taking the proportional spend in each of the nine main commodity groupings⁶ and multiplying it by the price index for that commodity grouping. The results of this exercise are surprising, indicating that there has been little difference in the inflation experienced by the different groups in the recent past, despite significantly different consumption patterns. The extent of the inflation differences are given in the table below.

Table 5: Annualised Inflation for Retired in Different Income Groups (Approx.)

Inflation Measure (annualised)	Period to June 2000 (% p.a.)				
	1 Year	3 Years	Since November 1996	5 Years	10 Years

⁶ Alcoholic Drink and Tobacco are not separated in the HBS when the expenditure of retired households is broken down by income group.

⁷ In their calculations they sub-divide the Food category (which represented as much as 50 per cent of the expenditure of some of the households) into 12 sub-categories but otherwise used the major commodity groupings.

Group 1 (<IR£136 in 1994-95)	5.7	3.6	3.3	2.8	2.8
Group 2 (IR£136-268)	5.6	3.5	3.1	2.7	2.7
Group 3 (IR£269-472)	5.8	3.6	3.2	2.8	2.8
Group 4 (>IR£472)	5.8	3.5	3.1	2.7	2.7
Overall CPI	5.5	3.2	2.9	2.5	2.6

Kennedy and Bruton (1975) previously investigated how inflation varies with income and household size. They studied the period from November 1968 to February 1975, a period of high and variable inflation (CPI averaged 12.0 per cent per annum over the period). They report a narrow range for inflation experienced between the different groups, with inflation lying in the range 11.9 per cent to 12.2 per cent per annum when decomposed by ten income groups and similar small differences when analysed by household size and income group (11.9 per cent to 12.1 per cent p.a.).⁷

The principal objection to the approximations above is that it implicitly assumes that the retired distribute their expenditure within each broad commodity group in the same manner as that of the average household. While a case can be made that items within each main commodity group are more readily substitutable so that relative price movements are likely to shift expenditure from the more expensive good to the cheaper one, this argument has its limitations. For instance, the largest difference in expenditure is in Housing (the weighting for the retired being 2.0 per cent lower, see Table 1) and, within that category, the single item that accounts for most of the discrepancy is Mortgage Interest (at 2.4 per cent lower, see Table 2). However, the price index for Mortgage Interest has persistently lagged the Housing price average over the recent past as highlighted below.

Table 6: Housing Price Index and Mortgage Interest Sub-Component

	Period to June 2000 (% p.a.)				
	1 Year	3 Years	Since November 1996	5 Years	10 Years
	%	%	%	%	%
Housing	6.1	-1.8	-0.6	-0.3	0.6
Mortgage Interest	4.3	-7.9	-4.7	-4.3	-2.6

This example shows that in order to obtain a better indication of the inflation experienced by the retired it is necessary to take account of differences in expenditure patterns within the broad commodity groups and apply the corresponding sub-price indices.

We have done this. We have computed an inflation index for the average retired household by multiplying the price change of each of the 134 sub-categories of goods and services to the weighting each has in the consumption basket of the retired. For clarity, we call the index the *Consumer Price Index for Retired Households*, abbreviate it CPI-R. We backdated CPI-R from its mid-November 1996 start date to the end of the 1980s, using the weighting structure as at mid-November 1996. This backdating introduces another difference in our methodology when compared with CPI as we use weights derived from the 1994-1995 HBS to

estimate inflation prior to November 1996 when, for this earlier period, CPI uses weights derived from the 1987 HBS.

The table below summarises the rate of inflation on both CPI and CPI-R measures over selected periods ending June 2000.

Table 7: Annualised Inflation as Measured by CPI-R and CPI to June 2000

Inflation Measures	Period to June 2000				
	1 Year	3 Years	Since November 1996	5 Years	10 Years
CPI-R	5.56	3.40	3.08	2.76	2.72
CPI	5.52	3.20	2.90	2.53	2.56
Difference	0.04	0.20	0.18	0.23	0.16

The above table suggests that retired households have experienced inflation marginally above the average household by 0.1 per cent – 0.2 per cent per annum on average over the recent past.

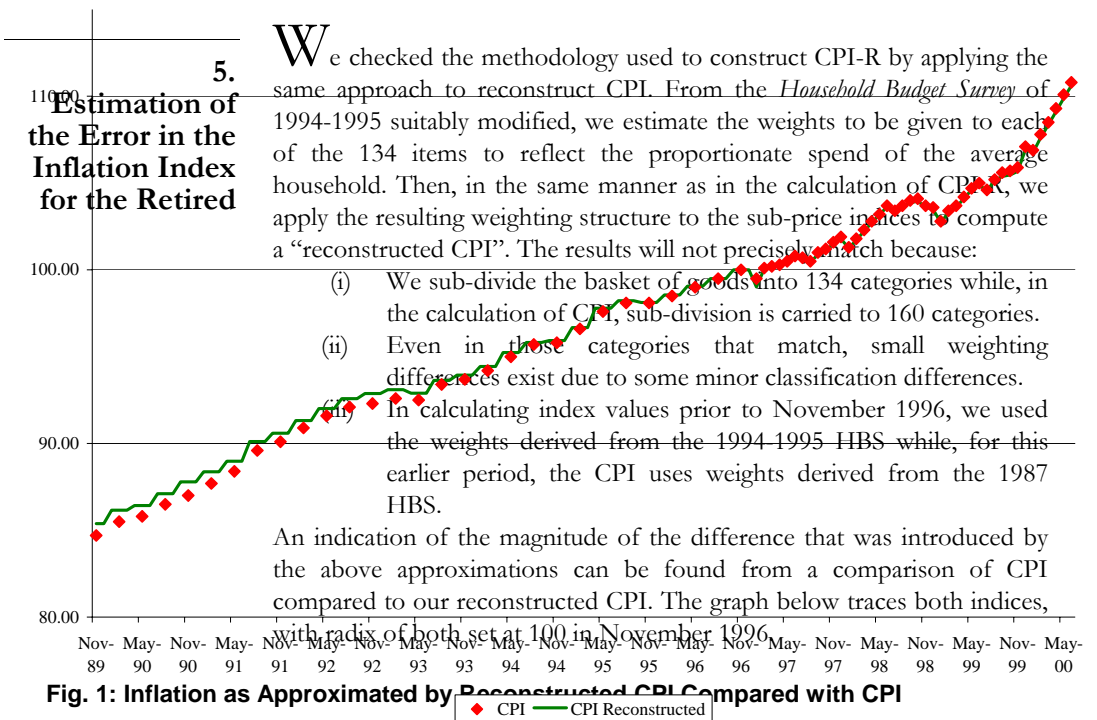


Figure 1 shows that our approximation produces a very similar series to CPI. Reconstructed CPI tends to produce somewhat higher index values in the early 1990s which can be explained partially by the “substitution effect” as goods that rise more steeply in price are substituted with similar goods that have not so appreciated. The differences in the inflation rate to which the small disparities in index values give rise are shown in the table below.

Table 8: Inflation as Approximated by Reconstructed CPI Compared with CPI

Inflation Measures	Period to June 2000
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		Since November			
	1 Year	3 Years	1996	5 Years	10 Years
Reconstructed CPI	5.45	3.12	2.85	2.49	2.50
CPI	5.52	3.20	2.90	2.53	2.56
Difference	-0.07	-0.08	-0.05	-0.04	-0.06

The approximation to CPI by our methodology is good to within 0.1 per cent per annum even over the ten years to June 2000. We may use this as a rule-of-thumb to suggest that our CPI-R Index is accurate in measuring the inflation experienced by the retired to within an acceptable 0.1 per cent per annum of an official measure if it existed. In fact, the results of this latter exercise in reconstructing CPI are of some interest in themselves as they provide a good approximation to CPI each month prior to January 1997 when, heretofore, it has only been available quarterly.

6. Conclusion

We constructed an inflation index for retired households following as closely as possible the procedure used in the construction of CPI. The index was backdated monthly over the last decade and compared with CPI. Our principal finding is that inflation experienced by the retired was marginally higher, at between 0.1 per cent and 0.2 per cent per annum. We estimated the error involved in our procedure by reconstructing the official inflation measure using our approximations and put the error within 0.1 per cent per annum. As a subsidiary exercise, we studied how inflation experienced by the retired varied by income group. The results showed a surprisingly narrow range despite the significant differences in expenditure patterns. While, of course, it is necessary to investigate periodically that no material gap develops between inflation as experienced by the retired and that of the rest of the population, in the meantime, the Consumer Price Index can reasonably be taken as a very close approximation to the rate of inflation experienced by the retired.

Our finding is that the retired household experiences inflation at almost the same rate as the average household. It follows that if the retired suffer disproportionately as a result of inflation, we must look to the failure of their incomes to rise in compensation and not to the differential impact of price rises on expenditure.

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