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***Cost of Living Indices and Flexible Consumption  
Behaviour: A partial critique***

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## **Abstract**

This paper questions the alleged superiority of superlative prices indices (like the Fisher index) over more standard base year indices (like the Laspeyre index) as measures of changes in the “cost of living” (COL). The primary basis of our challenge is the “subjective” concept of welfare favoured by neo-classical economists. As shown by our results, a subjective welfare approach is relatively disadvantageous to those exhibiting more flexible preferences. Given that flexible behaviour could be a characteristic of the more income constrained and the not unreasonable possibility that preferences are income determined, the neo-classical COL approach is problematic in its axiomatic foundations, in its informational requirements and from an equity perspective. By contrast, with base year indices we objectively know what it is we are measuring. This is consistent with the defence by Sen (1985) and others of objective measures of welfare, which are also more conducive to progressive social policy than are subjective utility measures.

## **Keywords**

**JEL classification: C43 & I41**

## **Cost of Living Indices and Flexible Consumption Behaviour: A partial critique.**

### **Introduction**

It is customary for Statistical Agencies to estimate changes in the Consumer Price Index (CPI) using fixed expenditure weights from a base period. This is otherwise known as the Laspeyres price index. There is debate within the economics profession as to the appropriateness of such an index, given its direct and indirect influence on economic variables, such as social expenditure, pensions and wages. Some economists go so far as to say that the Laspeyres index is a Cost of Goods index (as opposed to a Cost of Living index), since what it does is track the cost of a basket of goods over time (Crawford and Smith, 2002). They call for its replacement by a Cost of Living index, which measures the change over time of the cost of achieving the “same level of welfare”. The neo-classical economic position states unambiguously that Laspeyres type price indices overstate changes in the cost of living (or changes in the cost of achieving the base year level of welfare). This academic debate took a political turn with the publication of the Boskin Report (Boskin et al, 1996).<sup>1</sup> The Boskin report claimed that changes in the cost of living had been consistently overestimated by standard approaches to measuring the CPI. Their general proposal is that the US Bureau of Labour Statistics (BLS) adopt a Cost of Living Index (COLI) as a measurable objective of the CPI.

The purpose of this paper is to illustrate a limitation of the neo-classical economic approach to measuring changes in the “cost of living” and, as a consequence, to offer a defence of the use of base year price indices for social policy purposes. The shortcoming of the neo-classical approach to measuring changes in the cost of living (which became apparent as a result of our empirical work) is the premise that welfare is determined by the extent to which people satisfy their preferences. Our empirical research highlights the possibility that preferences (and hence consumption behaviour) can be income or class determined. This would undermine the suitability of their use in the construction of an index designed to measure changes in the cost of achieving a given level of welfare, as

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<sup>1</sup> The latter was a product of work commissioned by the US Senate Advisory Committee into the Consumer Price Index. The latter was a product of work commissioned by the US Senate Advisory Committee into the Consumer Price Index.

conventionally defined within the neo-classical canon. This paper feeds into a broader debate within welfare economics regarding subjective as opposed to objective measures of individual advantage and the practical and normative superiority of the latter for social policy purposes.

## **Laspeyres, Paasche and Fisher Indices for Different Social Groups in Ireland, 1996-2001**

### **A. Some theoretical issues**

If the only factor driving changes in expenditure shares is the substitution effect, then the Laspeyres index is considered to be the upper bound of the true COLI while the Paasche index (a fixed weight index that uses expenditure shares from the most current period) is considered the lower bound. Diewert (1976) showed that certain indices, defined by him as “superlative”, such as the Fisher and Tornqvist indices, are in fact second order approximations of the true COLIs when expenditure shares do not vary with income. The difference between the Laspeyres index and a superlative index is a measure of substitution bias. The expectation is that the Laspeyres index will always exceed the other indices. In situations where this is not the case, then neo-classical theory can only accommodate such an anomaly by assuming that income effects are non uniform or that tastes have changed.

A situation that we would like to look at, in order to highlight what we perceive to be a deficiency of COLIs, is one where the measured substitution bias differs among different social groups. For example, if the bias is greater for higher income groups compared to lower income groups, this could be explained by the not unreasonable premise that higher income consumers have a greater range of choice and thus more opportunities to substitute between goods and outlets. (Renwick, 1998; Murphy and Garvey, 2004). In this instance, more flexible behaviour can then be seen to be a result of a less constraining environment, which mitigates the adverse welfare effects of price increases. Our apriori expectation when starting our empirical research was that substitution bias would always be greater for higher income groups than for lower income groups.

Alternatively, if measured substitution bias is greater for lower income groups, then either lower income groups are less constrained than higher income groups by price and income developments (a scenario that we consider unlikely) or lower income individuals must have more flexible preferences to begin with. The challenge is then how to interpret the welfare implications of price developments when individuals have different capacities to be satisfied, as exemplified by their consumption behaviour? This is what impelled us to address the subjective welfare theory which underpins the normative implications of COLIs.

## **B Data**

Some results from ongoing empirical work on inflation in Ireland formed the springboard for this paper. In this work we calculated the Laspeyres, Paasche and Fisher for a number of social groups in Ireland for October 2001 (base, October 1996). In order to calculate these indices, data on both household expenditure and prices is necessary. The expenditure data we use is from the household budget surveys (HBS) of 1994 and 1999. This data was used by the Central Statistics Office (CSO) in October 1996 and October 2001 to re-weight the baskets for the published Consumer Price Index (CPI). We use the raw HBS data (with the sample weights for each household provided by the CSO), whereas the CSO make some adjustments to the figures for cigarettes and tobacco based on national fiscal aggregates. Because we were interested in inter-group differences, this is not possible in our case. In any event, our figures for the state as a whole closely track the CSO's, so it is unlikely that ignoring these adjustments is very important.

In addition to HBS data, monthly price data on 129 CPI categories of goods is taken from published CSO price data. In order to harmonise HBS with CPI goods categories, the expenditure weights from the two household budget surveys (647 goods in 1994 and 890 goods in 1999) are aggregated. In cases where we were not sure of the appropriate CPI categorisation of a particular HBS good, we checked with the CSO by phone. In addition, harmonisation of the CPI categories for 1994 and 1999 necessitated further aggregation, resulting in the indices being calculated on the basis of 80 CPI goods categories. This is

the maximum number of categories that were feasible for the creation of our price indices. Up to now for Ireland, these indices have only been created using relatively aggregated data on 10 or 11 larger expenditure categories (McCarthy, 1976; Madden, 1993; Somerville, 2004).

### **C Results**

The main results are shown in table 1. The result that stood out and that was the initial focus of our attention was the difference of 3.6 percentage points in the Laspeyres index between the lowest urban income decile and the state average. This appeared to indicate that price developments in the period under review had affected the poor more adversely than the general population. Our apriori expectation was that 3.6 percentage points was an underestimate of the difference in the COL between the urban poor and the general population. In order to test same, we considered the Paasche and Fisher prices indices. Surprisingly, the latter indices indicate less of a COL gap between the two groups. The statistical reason for this result is that the consumption patterns of the urban poor revealed more switching behaviour to relatively cheaper goods than was the case for the population as a whole. If we are then to accept the Fisher index as a more accurate COLI, the conclusion must be that price developments over the period of our investigation had a more adverse impact on the urban poor than the state average but not as adverse as indicated by our initial Laspeyres result.

Table 1 here

This anomalous result forced us to address the possible reasons for such flexible behaviour on the part of the urban poor and to question the normative foundations of COLIs as generally understood within neo-classical economic analysis.

### **Discussion**

The Fisher index is an acceptable measure of the COL effects of prices if we accept that welfare is best approximated by the extent to which individuals satisfy their preferences. This is a subjective view of welfare, which has been challenged by philosophers and

economists in more recent times and to which we will turn our attention shortly. Inflexible preferences will be revealed as inflexible consumption patterns. The “true” COLIs that economists are promoting would favour the inflexible over the flexible. To illustrate this point let us take the hypothetical example of two individuals, Mary and John and let us assume that the cost of their original basket of goods rose by the same amount. (They have identical Laspeyres indices). However, Mary exhibits more flexible consumption behaviour in response to price developments than does John. Mary’s COLI (Fisher index) would therefore be lower than John’s. Society has evaluated that price developments have had less of an adverse economic effect on Mary than on John. Given the importance of price indices for economic and social policy, Mary has revealed herself to be less entitled on a welfare basis to compensation for such price developments than has John. Flexibility is a psychological attribute that gets penalised in the social evaluation of the welfare effects of economic developments. Neo-classical economics does not address the issue of preference formation. In fact an important axiom of neo-classical economic theory is that preferences are exogenous and that all agents optimise. It is not the role of the researcher to examine or question why it might be the case that Mary has more flexible preferences than John or, in the case of our study, why the poor have more flexible consumption behaviour than the rich. From this normative perspective, where welfare is assumed to be determined by the extent to which we satisfy our preferences, the easily satisfied are judged to have less social entitlement than those with more demanding preferences.

Contrary to the neo-classical view, we do question why the poor might exhibit more flexible consumption behaviour than the rich. Could flexibility be a product of their relatively disadvantaged economic situation? Is there a psychic cost to changing one’s consumption pattern and seeking out cheaper substitutes when relative prices change? Is it only the poor who optimise? Flexible preferences, search costs, optimisation, all are different ways of rationalising the same phenomena. If we assume that preferences are a product of one’s economic situation, then this directly challenges the neo-classical welfare perspective, which assumes the separation of preferences and real income (or economic and social circumstances). Consequently, proposed COLIs can be challenged,

since one is questioning a fundamental axiom of neo-classical economic theory; that is, that welfare is synonymous with preference satisfaction. Another way of conceptualising the issue is to say that there is a cost to searching for the goods that best satisfy our preferences. Goods give utility, search gives disutility. All agents are assumed to optimally allocate their scarce resources, which in this instance are money and time. The inflexible consumption behaviour of the better off may be rationalised if they are saving on search costs. Conversely, the poor might exhibit flexible consumption behaviour because the disutility of searching is less than the disutility of inertia in the face of relative price changes. This conceptualisation of the issue does not directly challenge any canonical assumption of neo-classical economic theory but it still does not provide an adequate defence of COLIs on informational grounds. COLIs are not up to the task of measuring the cost changes necessary to achieve a base year level of welfare because they do not include the disutility or psychic cost of search behaviour. Finally we could question the whole behavioural foundations of neo-classical economic theory, the idea that people necessarily optimise and that they are always engaged in making marginal decisions when it comes to the allocation of scarce resources. Optimisation may be a more rational strategy when the costs of non-optimisation are high. In other words, from a behavioural perspective (and allowing for differences between persons) optimisation in the form of more flexible consumption behaviour and more finely honed marginal decisions, may be a product of the extent to which one is or is not income constrained. COLIs prove inadequate in this instance because they assume that behaviour (optimisation) is independent of economic circumstances.

Whichever way we look at it and however we want to explain the varying consumption flexibility of different social groups, the so called superlative cost of living indices remain a problematic way of evaluating the welfare effects of changes in the cost of goods and services. If preferences or behaviour are endogenous, then they cannot be the basis for welfare judgements. If search cost information is not observable, then an index that excludes such costs is also not up to the task of making welfare comparisons. The fact is that we cannot directly observe and test whether different baskets of goods are substitutable in the preferences of people and whether or not they optimise. All we can

observe is how baskets change over time. Changes in baskets of goods may reflect substitution effects, they may reflect income effects or they may reflect changes in preferences. We don't know and we cannot realistically disentangle these effects. Why limit ourselves to begin with? Why not confine ourselves to what we can measure, which is how the cost of a basket (or baskets) of goods changes over time? An advantage of the Laspeyres index is that we objectively know what we are measuring and there is no need to base our interpretation of the index on some unverifiable assumptions about tastes and behaviour. It most conforms to Pigou's notion of the standard of living, which is that part of welfare that can be brought directly or indirectly into relation with the measuring rod of money. If we wish to draw welfare implications from price developments, a more fruitful line of investigation is to see what goods most contributed to the indices of the different groups. This would be most in keeping with an objective theory of welfare, in which third party observation and interpersonal comparisons of the measurable economic situation of different persons is accepted as valid.

The issues raised by the challenge of devising an adequate cost of living index form part of the broader critique of the "new" welfare economics of Kaldor (1939), Hicks (1939) and Scitovsky (1941) and the consequent impossibility of inter-personal comparisons of individual utility. A defining feature of this "new" welfare economics is that it lends theoretical justification to a more conservative social policy that is less inclined to redistributive measures. Elster (1983) and Sen (1985) raise the spectre of adaptive preference formation whereby people adjust their preferences to their situation, especially in difficult circumstances, as a coping mechanism: *"behind this adaptation there is the drive to reduce the tension or frustration that one feels in having wants that one cannot possibly satisfy"* (Elster, 1983, p. 25). *"Considerations of feasibility and practical possibility enter into what we dare to desire and what we are pained not to get....The deprivations are suppressed and muffled in the scale of utilities by the necessity of endurance...."* (Sen, 1985, pp. 21-22). The bottom line is that if preferences are endogenous and mutable, they should not be the basis for judgements about welfare. Dworkin (1981) challenged the subjective preference base of new welfare economics from an equity perspective. He concludes that when one is responsible for preferences

that may be deemed to be unreasonable or difficult to satisfy, then that person is not entitled in equity to compensation if their preferences are not satisfied. Rawls (1971), Dworkin (1981) and Sen (1985) all propose replacing the subjective utility base of welfare economics with some objective measure of an individual's situation, which lends itself to progressive social policies.

#### **IV Conclusion**

In this paper we challenge the alleged superiority of superlative price indices (like the Fisher index) over more standard base year indices (Laspeyres) as measures of changes in the cost of living. We illustrate that the cost of living indices favoured by neo-classical economists are predicated upon a subjective concept of welfare. Philosophers like Ronald Dworkin and economists such as Amartya Sen have vigorously critiqued the subjective approach to welfare on the grounds of equity and the unreliability of preferences as a basis for welfare judgements. Our empirical results illustrate that, in the period under review, the poor exhibited more flexible behaviour than the rich. If such flexibility is because of different preferences of the poor compared to the less poor (as opposed to a less constraining environment), then using a cost of living index (like the Fisher index) would be relatively disadvantageous to those with more flexible preferences. In keeping with the spirit of developing more "objective" measures of welfare, we defend the use of disaggregated Laspeyres indices and believe that a more fruitful line of research would be that which investigates what goods have most contributed to changes in the cost of a basket of goods for different social groups. This is in keeping with the idea that an increase in the price of a "necessity" (like the cost of accommodation) has a qualitatively different welfare impact than has an increase in the price of a "luxury" good (such as the cost of foreign holidays).

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Table 1: 3 Indices for Different Groups, Oct. 2001 (base=Oct. 1996)

Group	Poor = 1st Income Decile		
	<b>Laspeyre Index</b>	<b>Paasche Index</b>	<b>Fisher Index</b>
State	<b>117.98</b>	<b>118.06</b>	118.02
Urban Poor	<b>121.61</b>	<b>119.19</b>	120.39
Urban decile 2	<b>120.01</b>	<b>118.84</b>	119.43
Urban decile 3	<b>119.40</b>	<b>118.73</b>	119.06
Urban decile 4	<b>118.87</b>	<b>117.91</b>	118.39
Urban decile 5	<b>118.60</b>	<b>117.02</b>	117.81
Urban decile 6	<b>118.29</b>	<b>117.41</b>	117.85
Urban decile 7	<b>117.92</b>	<b>117.10</b>	117.51
Urban decile 8	<b>117.53</b>	<b>117.17</b>	117.35
Urban decile 9	<b>118.11</b>	<b>117.39</b>	117.75
Urban decile 10	<b>118.26</b>	<b>117.62</b>	117.94
Aged	<b>118.24</b>	<b>119.30</b>	118.77
Single Parents	<b>120.31</b>	<b>118.08</b>	119.19
Own House	<b>117.18</b>	<b>117.07</b>	117.13
Local Authority Housing	<b>120.24</b>	<b>120.28</b>	120.26
Privately Rented Housing	<b>125.70</b>	<b>117.39</b>	121.48