

**Cost of Living for Different Social Groups in Ireland
1994-2003**

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Abstract

In this paper we use the Household Budget Surveys (HBS) of 1994 and 1999, along with price data from the Central Statistics Office, to calculate price indices for different social groups in Ireland from October 1996 to October 2001 (and on to October 2003 in some cases). The disaggregated data from the HBS allow the contribution of specific categories of goods to overall inflation to be calculated for the State as a whole and for the different social groups. An attempt is also made to measure the degree of substitution bias present within the indices. Certain features of the results lead us to argue that there is scant justification for replacing the traditional Laspeyres price index with so-called 'true cost of living indices'. This argument gains extra force if one accepts non-neoclassical explanations for the empirical results. We go on to draw conclusions as to how best to measure the welfare effects of changes in the price of goods. This links in to the broader debate regarding objective versus subjective measures of welfare.

Key Words: Distribution, Price Level, Welfare and Poverty

Disclaimer

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Abbreviations

CBASSE	Commission on Behavioural and Social Sciences and Education
COLI	Cost of Living Index
CPI	Consumer Price Index
CSO	Central Statistics Office
HBS	Household Budget Surveys
LA	Local Authority
SWA	Supplementary Welfare Allowance

1. Introduction

The Consumer Price Index (CPI) is the official measure of inflation in Ireland. It is designed to measure the change in the average level of prices of goods and services that private households purchase. It is an important social indicator as its value impinges on the measurement of economic growth and economic well-being. For example, when assessing whether changes in nominal wages, social welfare payments or pensions represent a real economic gain to workers, welfare recipients and pensioners respectively, these changes are usually compared to changes in inflation as measured by the CPI.

Specifically, the CPI measures changes in the cost of a broad basket of goods over time. This basket is supposed to represent the purchases of a typical or representative Irish household. Given that there is no such thing as the typical household, it would be surprising if this official measure was a good measure of inflation for everybody. Therefore, use of a single broad index to adjust the nominal incomes of broad groups of people can have an automatic distributional effect. As early as 1958, Ken Arrow, the subsequent Nobel Prize winner in economics, called for a separate cost of living index (COLI) number for different income groups, thereby taking into account the presumed differential consumption patterns of people on different income levels (Arrow, 1958).

One objective of this paper is to examine whether poorer people in Ireland experienced changes in the cost of living in the late 1990s and early 2000s that differed from what was officially reported as the Irish CPI. Using data from the Household Budget Surveys (HBS) on the expenditure patterns of households in the lowest income decile group (lowest 10 per cent classified according to income), we reconstructed the index to reflect more accurately how price developments impacted on this group. In addition, we calculated the inflation index for the lowest income decile in urban areas and in rural areas respectively, and for a number of other social groups. All inflation indices are compared to the

recalculated State measure. The indices are compiled for the period from October 1996 to November 2001 (and in some cases to November 2003). This replicates the practice of the Central Statistics Office (CSO) in compiling the official CPI.

A second objective of this paper is to examine the commodity contribution to the cost of living measurement for our different groups. This is a useful exercise if one accepts that the commodity composition of inflation is significant from a welfare perspective. In other words, the commodity price changes that determine measured inflation may not be a matter of indifference to society and to policy makers. In addition to this, the contribution of each commodity to the difference between the COLI for the State and that of each of our groups is calculated.

Finally, we address in some detail conceptual issues concerning the methodology used by the CSO (and by us) to calculate changes in the cost of living, as well as some of the assumptions that are at issue in the debate over appropriate cost of living indices (Boskin et al., 1996). The standard neoclassical view on cost of living indices is predicated upon a preference satisfaction view of economic welfare. While preferences are not directly observable, according to neoclassical theory they can be indirectly retrieved by observing actual price and income developments and consumption behaviour.

When undertaking the empirical work on inflation rates for different social groups, we had no theoretical expectations as to the flexibility or otherwise of the preferences of the different social groups, but we did expect the consumption behaviour of richer social cohorts to exhibit more flexibility than that of poorer social cohorts, due simply to the fact that the rich are less constrained than the poor in terms of the range of goods they can buy and the range of retail outlets they can access.

Some of our results showed that the consumption patterns of the rich seemed less flexible than those of the poor, despite a less constraining environment. In our

attempt to explain this feature of our results, we examined some alternative hypotheses: (i) the rich are less inclined to switch to cheaper substitute products subsequent to price rises because the relative cost to them of searching (for cheaper products and outlets) is higher than it is for the poor; (ii) optimisation as a behavioural characteristic is less apt to describe the consumption behaviour of wealthier cohorts in society; or (iii) the rich have more rigid preferences (in the sense of more Leontief-like indifference curves) than the poor. The last hypothesis encompasses a number of alternative reasons as to why the rich may have rigid preferences. It may be accidental to our sample, it may be because income is really endogenous and one cannot separate consumption preferences from work/income preferences, or it may be because preferences are endogenous and ultimately determined by income and social constraints.

The conclusions concerning rigidity or otherwise of behaviour and preferences have important real-world consequences if moves to replace the commonly used Laspeyres, or fixed-basket, CPI with a so-called 'true' COLI are actually implemented. Such a change (if accompanied by a switch to group-specific indices) would end up penalising those with more flexible consumption behaviour if any portion of welfare payments, pensions, tax deductions etc. are tied to the estimated cost of living changes. The probability of such a political development is far from hypothetical. It has already begun in the United States (US) where, in 2002, a new aggregate 'true' chained index was initiated based on the recommendations of the Boskin Report (Boskin et al., 1996). The Boskin Report claimed that changes in the cost of living had been consistently over-estimated in the past by standard approaches to measuring the CPI. This conclusion was based on a standard neoclassical subjective preferences approach to welfare evaluation.

What our study serves to highlight is that if such a development (replacing the fixed basket CPI with a so-called 'true' COLI) is accompanied by moves to develop more disaggregated indices based on the consumption patterns of distinct social groups, the outcome of the former occurrence may be patently socially regressive. We make

this case regardless of the reasons why the rich may be rigid in their consumption behaviour. In addition, by focusing on the plausibility of the neoclassical versus the non-neoclassical explanations for diverse behaviour across social groups, we find ourselves not just questioning the social consequences of core neoclassical assumptions (preference exogeneity and optimising behaviour) but also its methodological claim that economics is a positive discipline. These 'true' cost of living indices have no claim to truth in the scientific sense of the word. They are simply a reflection of an ideological perspective that underpins neoclassical economics, i.e. that individual welfare is preference satisfaction.

The paper proceeds as follows. In section 2 we review the literature on this topic. In the subsequent section we outline our main empirical procedures. We then present the principal set of results (including a fuller set of results in the appendix). We proceed to review the neoclassical theory of price indices insofar as it is relevant to the paper and discuss possible explanations for our results, some of which are consistent with neoclassical theory and others which are not. In the penultimate section, we argue that there is scant justification for replacing the traditional price index with these so-called 'true' cost of living indices. While our arguments are primarily ethical and not dependent on the results being interpreted in a non-neoclassical vein, they do gain extra force if one accepts the conclusions of the previous section. Finally, we draw some policy conclusions as to how best to measure the welfare effects of changes in the price of goods. This links in to the broader debate regarding objective versus subjective measures of welfare and whether issues of fact are really separable from issues of value, as asserted within the neoclassical canon.

2. Previous research on disaggregated indices

Some of the earliest work on cost of living measures for different demographic sub-groups comes from the United Kingdom. Allen (1958) derived disaggregated indices for 1-pensioner and 2-pensioner families and compared it to the general index and that of higher income families. Rather interestingly, despite finding the index for 1-pensioner families to be higher than the general index, he cautioned against using the index to determine the adequacy of national insurance pensions, saying that, as most pensioners lived with their families, it probably did not apply. He added rather ingeniously that, since the needs of pensioners were few and that they could live on stocks accumulated in earlier life, an index that excluded clothing, housing furniture and appliances might be more appropriate. He duly calculated this index *sans* the above items and got a cost of living figure for 1-pensioner families that approximated to the general index.

Brittain (1960) looked at the inflation rates of different income groups and found that while the poor had lower rates of inflation than the average during the war (as a result of food subsidies) this trend was reversed in the 1950s when they had a higher than average inflation rate. Deaton and Muellbauer (1980), Bradshaw and Godfrey (1983) and Fry and Pashardes (1986) also found an anti-poor bias in the inflation experienced by the poor in the periods that they analysed. However, the fact is that these effects go in cycles. When food, fuel and other necessities are cheap, the poor do relatively well and conversely when these items experience higher than average price increases. Also the poor fare worse in time of high inflation, such as the mid-1970s.

More recent work by Crawford (1994) and Crawford and Smith (2002) showed a different trend. Crawford (1994) examined the period 1979 to 1992 using a Tornqvist index (of which more will be said later in the paper), basing it on information on price movements of the sub-indices of the retail price index. He looked at the trend for the top and bottom income decile as well as that for all

households. His study showed that by the late 1980s the cost of living was rising higher for the rich than for the poor, due to falling prices of food, fuel and clothing and an increase in the price of luxuries. This trend was exacerbated when he included mortgage interest payments as a proxy for housing costs. However, when he used a different approach to measuring housing costs, i.e. a user cost approach, the situation changed quite dramatically and the cost of living became much higher for the poor.¹

Crawford did not dwell on the sensitivity of his results to his treatment of housing costs, merely saying that it needed more work. He concluded with a rather mixed message, saying that, on the one hand, differences in the cost of living indices between income groups were small but also that inequality had decreased due to divergent inflation rates for rich and poor. Presumably, the latter statement means that he put more credence in those measures of inflation that did not adopt a user cost approach to evaluating changes in housing costs.

Crawford and Smith (2002) estimated group cost of living indices from 1976 to 2000. They reverted to a mortgage interest approach in assessing the cost of house ownership and excluded rent as an item of expenditure for public renters, on the assumption that any increase in public rents was met by housing benefit increases. Their results showed that average inflation rates for different population sub-groups often varied quite significantly, though the rankings swapped over time. Their figures showed that the average annual inflation rate for the poorest 10 per cent was less than for the richest 10 per cent over the period studied. They concluded by stating that ignoring differential inflation rates could lead to misleading conclusions about the growth in inequality, in this instance underlining the fact that inequality grew less than was commonly

¹ A user cost approach to measuring the cost of housing assumes that there is a cost to housing even when households do not make mortgage payments. This cost represents the alternative return that the capital invested in the house would earn. Allowance is also made for physical depreciation and for expected capital gains (or losses) from investment in a house. Thus in periods of rapid house price inflation, if the expected capital gain on the house exceeded the cost of borrowing, the user cost could be negative.

believed because of the standard measurement approach which deflates the nominal income of different social groups by a common price index.

In the US there is a perception, based on past research, that it is not worthwhile constructing group-specific inflation indices. The influential Boskin Report dismissed the suggestion that different groups may have faster or slower growth in their cost of living than those recorded by the official CPI figures, stating, 'We find no compelling evidence of this to date...' (Boskin et al., 1996:46). More recently the Commission on Behavioural and Social Sciences and Education (CBASSE),² which convened a panel of experts to investigate conceptual, measurement and statistical issues in the development of cost of living indexes, similarly stated, 'To date researchers have been unable to compellingly support claims that age- and income-defined sub-groups face significantly different rates of price inflation to the general population' (CBASSE, 2002:251). Nevertheless, they do recommend, as an exploratory research programme and on a small scale, the production of prices that would allow them to be associated with household characteristics. They state that 'A first objective might be the production of indexes for a few commodity categories and several demographic groups' (Recommendation 8-1, CBASSE, 2002:5).

The latter publication cited a broader range of work on group indices than did Boskin, namely research by Michael (1979), Hagemann (1982), Kokoski (1987), Garner et al. (1996), Amble and Stewart (1994) and Stewart and Pavalone (1996). In most cases, they said that either there was no discernible pattern or that when some sub-group, such as the old or the poor, had higher rates of inflation, the results were generally statistically insignificant.

² The first author of this book is referred to as: Panel on Conceptual, Measurement and other Statistical Issues in Developing Cost-of-Living Indexes (see references). For simplicity we will simply refer to the publication as CBASSE.

We reviewed the work by the above authors and did not come to the same conclusions. For example, Michael (1979), whose results generally showed higher inflation for the poor, questioned the significance of his inter-group differences on the grounds that the between-group means were small relative to within-group standard deviations. As he also supplied information on the size of the within-group standard deviations, we performed a simple ANOVA test to see if the sub-group differences were statistically significant and found it to be the case. Likewise, Hagemann's (1982) results showed that lower income households had higher rates of inflation and the results were statistically significant. Similarly, the results of Amble and Stewart (1994) showed that their price index for the elderly rose faster than that of wage earners and urban dwellers, but they were quick to point out the limitations of their study, such as the smaller sample size for the elderly.

Among the cited research, only that of Garner et al. (1996), which developed indices for categories that they defined as income poor, expenditure poor and programme participants, produced results where there was little difference between these groups and the general population. This leads us to wonder why such researchers are so reluctant to call for group indices when their work shows that, in general, the groups in question have faced higher than average inflation rates. For example, Idson and Miller (1997) examined group inflation rates where the groups were identified by the education level of the head of the household. They found that as education levels rose, inflation rates decreased. They even went so far as to calculate the extent to which the average real earnings differential between groups was underestimated by using an aggregate index as opposed to group-specific indices. However, they concluded by saying that their results did not necessarily call for the creation of a group-specific index.

Hobijn and Lagakos (2005), who estimated their indices for the period 1987–2001, found that although differences in the average rate of inflation between the

poor and non-poor was small, poorer households faced much higher inflation in certain periods, in particular when the cost of fuel rose. They also found that elderly households faced a significantly higher rate of inflation than the average and concluded that the decline in their real income under the present system of measurement was substantial. Yet they finished by ambiguously stating that while they believed the standard aggregate measurement to be a reasonable measure of the aggregate experience, one had to be careful in assuming that it accurately measured the cost of living changes for particular groups. There appears to be a lot of conservatism when it comes to advocating group indices, especially when historically these have shown that the poor and the elderly have been relatively disadvantaged by aggregate measurements. It stands in marked contrast to all the efforts that have been undertaken in the US, post-Boskin, to correct what was perceived to be an upward bias in the CPI, caused by a failure to deal with substitution bias, quality improvement and new goods. Obvious fiscal reasons may explain this asymmetry of effort when it comes to improving the measurement of changes in the cost of living. More worryingly, recent review papers on the CPI, designed to show what has been achieved since the Boskin report, while still highlighting future necessary innovations, do not even refer to group indices (or democratic indices). All the emphasis is on new methodologies that will ensure that the numbers that measure changes in the CPI are reduced even further (see Abraham, 2003 and Lebow and Rudd, 2003).

A recent paper presented by Michael Boskin to the American Economic Association (Boskin, 2008) is very revealing. In his introduction he refers to the great consequential social benefit from price index research, stating that it has led to more accurate indexing of government benefit programmes and taxes and thus to a lower national debt. He adds for good measure that such research has changed history. This does raise questions about the composition of the Boskin Commission. Apparently, its members and other economists were asked to give testimony on the accuracy of the CPI before the Commission was formed, but only those economists who gave testimony to the effect that the CPI overstates

consumer price inflation entered the group despite the existence of dissenting testimonies (see Baker, 1997).

For Ireland, McCarthy (1977) and Somerville (2004) carried out this exercise at a fairly aggregated level (between 10 and 12 goods) and found contrasting results. One finding in the earlier study was that higher income tended to be correlated with higher price rises; in Somerville's study for the later period (1996–2001), the opposite was the case. The latter result is also found for the same period in this paper.

3. Cost of Living methodology and data

The CSO calculates cost of living indices for Ireland using a base year methodology. In other words, it looks at the cost of a representative basket of goods in some base year and measures how the cost of that same basket evolves over time. Specifically the CPI is a fixed quantity index, otherwise known as the Laspeyres price index, which holds its base year quantities of goods fixed. It can be written as follows:

$$I = \frac{\sum_i P_{it} Q_{i0}}{\sum_i P_{i0} Q_{i0}}$$

where Q_{i0} is the quantity of good i purchased in time 0 (where 0 represents the base year), P_{i0} is the price of good i in time 0, P_{it} is the price of good i in some future time t and Σ is the summation of the prices and quantities of the different goods included in the index.

The basis for the selection of the goods and their quantities to be included in the index is, primarily, the expenditure pattern of the average household. The CSO is responsible for the collection and compilation of this data. To render such data usable, price developments are expressed in index form (the price of a good in time t as a percentage of the price of the good in time 0) and quantities are expenditure weights (the expenditure share of a good in total expenditure). Price surveys were conducted quarterly up to January 1997 and on a monthly basis thereafter.

Expenditure weights are determined primarily (though not exclusively) by the information revealed in the HBS. The expenditure weights attached to price changes are of fundamental importance in determining the calculation of the overall measure of consumer price inflation. If a good is assigned a high weight in the construction of the CPI, its price development will have a large impact on the overall **measure** of inflation. If a household has a very low consumption of a good with a high weight and if the price of that good rises by more than the prices

of other goods, the effect will be for official inflation measures to overstate the rate of inflation for that household. Conversely, if a household spends a larger proportion of household income on the good than the expenditure weight assigned to it in the CPI, its experienced inflation will be higher than the official measure.

The 1994 Household Budget Survey was the primary source of information for the new expenditure weights introduced in November 1996. The 1999 Household Budget Survey was the primary source for the expenditure weights introduced in October 2001. What this study does is use the detailed information contained in the published HBS to recalculate the expenditure weight for specific sub-categories. We calculate average expenditure shares for the lowest income decile in the State (State Poor), the lowest income decile in Urban Areas (Urban Poor), the lowest income decile in Rural Areas (Rural Poor), as well as recalculating the weights for the State as a whole (State Average) and for a large number of other social groups.

We use only the raw HBS data (with the sample weights for each household provided by the CSO), whereas the CSO find that cigarette and tobacco expenditure tend to be under-reported and use excise information to adjust HBS expenditure weights in these two areas upwards (and expenditure weights on other goods downwards) in their final tallies for the State as a whole.

As well as the HBS data, monthly price data on 129 categories of goods (for period 1: 1996-2001) and 146 categories of goods (period 2: 2001-2003) are taken from published CSO price data. To match household budget survey goods with CPI categories, the weights from the two Household Budget Surveys (647 goods in 1994 and 890 goods in 1999) are summed appropriately. In some cases where we were not sure which CPI category a HBS good should be entered in, we checked with the CSO by telephone. The far larger number of Household

Budget Survey goods in 1999 is certainly worth pointing out. It makes cost of living comparisons between periods difficult.

Furthermore, many of the 129 CPI categories for 1994 are not perfect matches with categories from 1999, and when we try to put them together we find that if we reduce the number of categories to 80 new larger categories we can accommodate all the categories from both periods. Using 80 categories we create Paasche and Fisher indices (which need expenditure weight data for more than one time period).

Because of the amount of calculations involved and the resulting number of tables, we are consigning some of the results to appendices. The paper as a whole will focus on the results in the main body of the text, although sometimes references will be made to tables in the appendices.

4. Results

Table 4.1 below gives information on the final Laspeyres price index in 2001 for a variety of social groups.³ Some of the groups are small in number. We concentrate for most of this paper on income deciles (decile 1 = poor) and these are the main groups reported on and discussed throughout the body of the paper. Nevertheless, as we see from Table 4.1, indices can be calculated for a wide variety of groups.

Table 4.1: Indices for period 1 (October 2001; base October 1996)

	N	Index
State	7877	117.98
State Income Decile 1	911	119.3
State Income Decile 2	830	119.7
State Income Decile 3	747	118.5
State Income Decile 4	756	118.4
State Income Decile 5	767	118.1
State Income Decile 6	753	117.3
State Income Decile 7	773	117.8
State Income Decile 8	755	117.4
State Income Decile 9	770	117.9
State Income Decile 10	815	118.0
Rural Income Decile 1	309	116.9
Rural Income Decile 2	269	118.4
Rural Income Decile 3	246	118.4
Rural Income Decile 4	260	117.3
Rural Income Decile 5	266	117.2
Rural Income Decile 6	256	116.6
Rural Income Decile 7	282	116.5
Rural Income Decile 8	286	116.9
Rural Income Decile 9	279	117.6
Rural Income Decile 10	358	117.2
Urban Income Decile 1	626	121.6
Urban Income Decile 2	553	120.0
Urban Income Decile 3	501	119.4
Urban Income Decile 4	492	118.9
Urban Income Decile 5	505	118.6
Urban Income Decile 6	488	118.3
Urban Income Decile 7	482	117.9

³ Table A1 in the Appendix contains Laspeyre indices for other social groups.

	N	Index
Urban Income Decile 8	476	117.5
Urban Income Decile 9	475	118.1
Urban Income Decile 10	468	118.3
State Aged (Household members all aged 65 or older)	1411	118.2
Urban Aged (Household members all aged 65 or older)	840	118.5
Rural Aged (Household members all aged 65 or older)	571	117.8
Single Parents	327	120.3
Own House (House owned outright, by mortgage or under Tenant Purchase Scheme)	6247	117.2
Local Authority House (Renting from Local Authority)	860	120.2
Renting Private House (Renting from a private owner)	630	125.7
Free Housing (Receiving Rent-free housing)	140	118.4

One of the most important figures in Table 4.1 is the price index for the urban poor. The index for the bottom decile is approximately 3.6 percentage points higher, in 2001, than the index for the State as a whole. This is a key result that is returned to below.

Adjustment for family size using the square root of the number of household members to calculate equivalences makes little difference to the inter-group results (though it affects group composition), while statistical tests reject equality of rates for the poor and various other, better-off groups in the State. In general we can see that indices fall with income in period 1.

Inflation is especially high for those in private rental; for a few small groups with a lot of children in education; and, somewhat less so, but still above the average, for single parents and those in Local Authority (LA) housing. While inflation is quite similar to the State average in households where all members of the household are elderly (State Aged in the table), households fully comprised of retirees (Retired Households in the table) is 1.6 percentage points above the State average. Table 4.2 below contains the final Laspeyres price indices for a variety of social groups in 2003.⁴

In contrast to period 1, the lowest decile of urban households has experienced inflation at 0.2 percentage points below that of the State as a whole in period 2. As in period 1, however, we see that urban dwellers typically experience higher rates of inflation than do their rural counterparts.

Table 4.2: Indices for period 2 (October 2003; base October 2001)

	N	Index
State	7644	106.6
State Income Decile 1	743	106.4
State Income Decile 2	774	106.2
State Income Decile 3	791	106.0
State Income Decile 4	768	106.2
State Income Decile 5	785	106.4
State Income Decile 6	797	106.1
State Income Decile 7	760	106.4
State Income Decile 8	759	106.5
State Income Decile 9	751	106.5
State Income Decile 10	716	106.4
Rural Income Decile 1	294	106.5
Rural Income Decile 2	320	106.8
Rural Income Decile 3	348	106.5
Rural Income Decile 4	356	106.2
Rural Income Decile 5	350	106.8
Rural Income Decile 6	364	106.3
Rural Income Decile 7	358	106.1
Rural Income Decile 8	365	106.3
Rural Income Decile 9	354	106.3
Rural Income Decile 10	359	106.2
Urban Income Decile 1	433	106.4
Urban Income Decile 2	436	106.8
Urban Income Decile 3	414	106.3
Urban Income Decile 4	412	106.6
Urban Income Decile 5	421	107.0
Urban Income Decile 6	410	106.6
Urban Income Decile 7	416	107.1
Urban Income Decile 8	409	107.2
Urban Income Decile 9	410	107.0
Urban Income Decile 10	415	106.5
State Aged (Household members all aged 65 or older)	1312	106.7
Urban Aged (Household members all aged 65 or older)	727	107.1
Rural Aged (Household members all aged 65 or older)	585	106.0

⁴ Table A2 in the Appendix contains Laspeyre indices for other social groups.

	N	Index
Single Parents	318	105.9
Retired Households (Households comprised of only Retirees)	617	107.0
Own House (House owned outright, by mortgage or under Tenant Purchase Scheme)	6385	106.7
Local Authority House (Renting from Local Authority)	572	108.8
Renting Private House (Renting from a private owner)	613	103.9
Free Housing (Receiving Rent-free housing)	74	107.0

Inflation is high for those in LA housing, 2.2 percentage points above the State average. Also of interest is the fact that those in private rental housing experienced very low inflation, 2.7 percentage points below the State as a whole. Young households and those in full-time education also experienced inflation well below the State average.

Table 4.3 below helps us to understand the causes of the gap between the urban poor and the State average, among others in period 1. In Table 4.3, ratios calculated using gaps between indices are decomposed to see which goods are contributing most to the gap. The formula for relative discrepancy is:

$$100 * [I_{tc} - I_{tr}] / I_{tr} = \sum_{j=1}^m \frac{I_{j,t}}{I_{j,r}} - 1 * \left[\frac{w_{jc}}{w_{jr}} - 1 \right] * [w_{jr} * 100]$$

where w is the weight of the good in the relevant basket, $j=1, \dots, m$ identifies each of the 129 composite goods, t identifies the time period, c and r are the two population groups or sub-groups being compared and I signifies an index.

This ratio, for the gap of 3.6 percentage points between the urban poor and the State average is $100 * (1 - (1.216/1.18)) = -3.05$. In other words, the sum for all 129 goods, of all the positive and negative contributions (goods which widen and narrow the gap between the urban poor and the State average) totals -3.05 percentage points. A positive sign beside a number signifies that the good in question has a higher than average expenditure weight for the relevant group, while a negative number signifies a lower than average weight.

Table 4.3: Decomposition of difference between Index for Urban Poor and the State Average in 2001

Rank(Exp) Highest	Category of good	Amount of Relative Difference due to Good	Wt above or below ref.Wt
1	Rent	1.85	+ (+ = group exp. weight higher than State average weight)
2	Clothing	0.83	- (- = group exp. weight lower than State average weight)
3	Motor Cars	0.42	-
4	Cigarettes	0.41	+
5	Coal, Turf, Briquettes & Firelighters	0.23	+
6	Motor Fuel	0.21	-
7	Potatoes	0.20	+
8	Other Exp	0.17	-
9	Footwear	0.15	-
10	Mortgage Interest	0.10	-
1	Electricity	-0.10	-
2	Milk	-0.10	-
3	Other Entertainment	-0.11	+
4	Other Medical Expenses	-0.16	+
5	Medical Fees	-0.16	+
6	Other Services	-0.16	+
7	Meals Out	-0.17	+
8	Telephones	-0.22	-
9	Motor Insurance	-0.34	+
10	Education & Training	-0.42	+

Tables 4.4 and 4.5 below show the same decompositions for single parents and those in private housing respectively (for the ten goods doing most to widen the gap with the State index; and the ten doing most to narrow it). Similar decompositions have been carried out for other groups and are reported in the appendix.

Table 4.4: Decomposition of difference between Index for Single Parents and the State Average in 2001

Rank(Exp) Highest	Category of good	Amount of Relative Difference due to good	Wt above or below ref.Wt
1	Rent	1.54	+(+ = group exp. weight higher than State average weight)
2	Clothing	0.42	- (- = group exp. weight lower than State average weight)
3	Other Services	0.39	+
4	Cigarettes	0.29	+
5	Motor Cars	0.20	-
6	Other Travel	0.19	+
7	Motor Fuel	0.18	-
8	Other Exp	0.13	-
9	Potatoes	0.13	+
10	Breakfast Cereals	0.10	+
1	Repairs & Maintenance	-0.06	+
2	Beer	-0.11	+
3	Milk	-0.12	-
4	Other Medical Expenses	-0.15	+
5	Acoustic Appliances	-0.16	-
6	Meals Out	-0.17	+
7	Electricity	-0.17	-
8	Telephones	-0.17	-
9	Education & Training	-0.27	+
10	Motor Insurance	-0.29	+

Table 4.5: Decomposition of difference between Index for those in Private Housing and the State Average in 2001

Rank(Exp) Highest	Category of good	Amount of Relative Difference due to good	Wt above or below ref.Wt
1	Rent	4.84	+(+ = group exp. weight higher than State average weight)
2	Education & Training	0.72	+
3	Clothing	0.36	- (- = group exp. weight lower than State average weight)
4	Motor Cars	0.19	-
5	Telephones	0.18	-
6	Mortgage Interest	0.17	-
7	Local Authority Charges	0.16	-
8	Motor Fuel	0.15	-
Rank(Exp) Highest	Category of good	Amount of Relative Difference due to good	Wt above or below ref. Wt
9	Meals Out	0.15	+
10	Other Exp	0.12	-
1	Bus Fares	-0.05	-
2	Breakfast Cereals	-0.05	+
3	Coal, Turf, Briquettes & Firelighters	-0.06	+
4	Medical Fees	-0.10	+
5	Lamb	-0.12	+
6	Potatoes	-0.13	+
7	House Insurance	-0.16	+
8	Other Medical Expenses	-0.17	+
9	Other Services	-0.19	+
10	Motor Insurance	-0.25	+

For the three groups compared with the State average in Tables 4.3–5 (the urban poor, single parents and those in private rental housing) rental costs play by far the largest part in the increase in their cost of living compared to the State average. Fahey (2004), using HBS figures to track the evolution of rent/mortgage costs for main tenures from 1973 to 2001, showed that 1999/2000 average private weekly rents were 57.7 per cent higher in real terms than they had been in 1994/1995. Average mortgage repayments were also higher but the increase was much smaller, at 13.8 per cent. Rather interestingly, this was merely a continuation of a trend that began in the late 1980s. For private renters, average

real rents were 77 per cent higher in 1994/1995 compared to 1987, whereas average real mortgage repayments for the same period were only 25 per cent higher. This was a complete reversal of trends in rents and mortgage repayments from 1973 to 1987, when rents rose less than average mortgage repayments.

According to the figures presented by Fahey (2004) (figures 4 and 5), average mortgage repayment in 1987 was 15 per cent higher than the average rental. By 1994/1995 this was reversed and the average rental was 23 per cent higher than the average mortgage repayment, a trend that was exacerbated in the 1990s, so that by 1999/2000 private renters were paying on average 70 per cent more for their accommodation than owner occupiers with mortgages. After this period rents started to decline marginally. For those renting LA housing, average rents were much lower than either mortgage repayments or private rents and grew at a much slower rate. In fact from 1987 to 1994/1995 LA rents were unchanged in real terms, while from 1994/1995 to 1999/2000 they grew by 46 per cent, albeit from a low base.

So it would seem clear that during the boom years of the late 1990s, high housing costs impacted most adversely on those in private rented accommodation. That this relative and absolute disadvantage, experienced by those in private rented accommodation, started before the economic boom is worthy of note. It coincided with a fall off in LA housing that happened from 1987 onwards. By 2000 the level of new social housing construction has fallen from 20–35 per cent of total new housing construction in the 1970s and 1980s to less than 10 per cent by the new millennium (see Fahey, 2004:13).

While welfare recipients who seek accommodation in the private rental sector do get a rent allowance under the Supplementary Welfare Allowance (SWA) scheme, these supports are not available to low-income families outside the welfare net. Effectively started in the late 1980s as a result of government policies, and exacerbated by the economic boom in the 1990s, low income

families found themselves with a more limited set of options when it came to housing arrangements. Social housing was scarce and renting was both scarce and expensive. They would have also faced financial barriers that would have made getting into private house ownership difficult, even though once there, such housing proved more affordable than renting.

For the urban poor other factors such as cigarettes, fuel, car costs and clothing costs have contributed importantly to the widening of the gap in their cost of living from that of the State average. From the HBS it appears that few people surveyed receive rent allowance (18 declared for the whole sample), so most of these higher rental costs would have been paid by the households concerned.

Table 4.6 reproduces the democratic index for the State. In this index, every household is weighted equally and not by its expenditure (as in the 'plutocratic' or usual index).

Table 4.6: Democratic Indices 2001 (base: October 1996)

Plutocratic Index (October 2001)	Democratic Index (October 2001)
117.98	118.79

From these results we see that in the State as a whole the price index as **experienced** by households was higher in 2001 than the published index (the 'plutocratic index' or CPI). This pattern is repeated also **within** virtually every income decile.

In Table 4.7 we report the Laspeyres, Paasche, and Fisher indices for 2001. Theory would suggest the latter index measures actual cost of living, as long as preferences are constant homothetic and income effects are negligible. One would expect the Laspeyres index to be greater than the Paasche index. However, for some of the groups below this is not the case.⁵

⁵ This may also be due to the aggregation of expenditure weights from period 2 to match aggregated prices from period 1.

Table 4.7: Laspeyre, Paasche and Fisher Indices

Group	Laspeyre Index (PNQ0/P0Q0)	Paasche Index (PNQN/P0QN)	Fisher Index (L*P ^{1/2})	Difference between Fisher and Paasche
State	117.98	118.06	118.02	-0.04
State Income Decile 1	119.33	119.08	119.21	0.12
Urban Income Decile 1	121.61	119.19	120.39	1.21
Rural Income Decile 1	116.86	118.47	117.66	-0.80
Urban Income Decile 2	120.01	118.84	119.43	0.59
Rural Income Decile 2	118.42	117.81	118.11	0.31
State Income Decile 3	118.51	118.25	118.38	0.13
Urban Income Decile 3	119.40	118.73	119.06	0.34
Rural Income Decile 3	118.36	117.90	118.13	0.23
State Income Decile 4	118.41	117.89	118.15	0.26
Urban Income Decile 4	118.87	117.91	118.39	0.48
Rural Income Decile 4	117.31	117.74	117.52	-0.22
State Income Decile 5	118.12	117.05	117.59	0.54
Urban Income Decile 5	118.60	117.02	117.81	0.79
Rural Income Decile 5	117.17	116.75	116.96	0.21
State Income Decile 6	117.35	117.31	117.33	0.02
Urban Income Decile 6	118.29	117.41	117.85	0.44
Rural Income Decile 6	116.57	116.44	116.50	0.07
State Income Decile 7	117.78	117.00	117.39	0.39
Urban Income Decile 7	117.92	117.10	117.51	0.41
Rural Income Decile 7	116.50	116.86	116.68	-0.18
State Income Decile 8	117.42	117.25	117.34	0.09
Urban Income Decile 8	117.53	117.17	117.35	0.18
Rural Income Decile 8	116.89	117.24	117.06	-0.17
State Income Decile 9	117.87	117.11	117.49	0.38
Urban Income Decile 9	118.11	117.39	117.75	0.36
Rural Income Decile 9	117.56	117.24	117.40	0.16
State Income Decile 10	117.98	117.62	117.80	0.18
Urban Income Decile 10	118.26	117.62	117.94	0.32
Rural Income Decile 10	117.20	117.22	117.21	-0.01
State Aged (Household members all aged 65 or older)	118.24	119.30	118.77	-0.53
Urban Aged)	118.52	119.68	119.10	-0.58
Rural Aged	117.83	118.51	118.17	-0.34
Single Parents	120.31	118.08	119.19	1.12
Own House (owned outright, by mortgage or under Tenant Purchase Scheme)	117.18	117.07	117.13	0.06
Local Authority Housing)	120.24	120.28	120.26	-0.02
Privately Rented Housing	125.70	117.39	121.48	4.23
Free Housing (Receiving Rent-free housing)	118.42	118.65	118.54	-0.11

Where the Laspeyre index exceeds the Fisher index, the difference can be attributed to the existence of substitution bias (although changing tastes and income effects may also be important). It is noteworthy that the gap between Fisher indices for the urban poor and the State is a good deal less than the gap between Laspeyres indices for the same two groups. This result is followed up in the discussions of the next section.

Finally, a very simple univariate K-means cluster analysis using four groups divides the sample into four reasonably identifiable groups with differing average rates of inflation. The procedure simply creates the four groups with the greatest possible gap in inter-group rates, for given within-group rates. These are:

Table 4.8: Clusters using only 2001 Price Indices as the selection variable

Group 1	High Inflation Group	920 members; index in 2001= 129.8 ; Characteristics: Small Household, Exp.= £211, living Dublin/large towns, rented houses, single (or single parents), 56% Male headed
Group 2	Medium–High Inflation Group	3013 members; index in 2001= 121.7 ; Characteristics: Exp.= £255, Older/Mature, Rural/Dublin/Smaller Town, 76% Male headed, Mortgage
Group 3	Medium–Low Inflation Group	2978 members; index in 2001= 116 ; Characteristics: Larger Household, Exp.= £295, married w. kids, 76% Male headed, Mortgage
Group 4	Low Inflation Group	966 members; index in 2001= 108.8 ; Characteristics: Exp.= £346, Otherwise like Cluster 3.

Group 1 (the highest inflation group, with 920 members in the HBS sample, and an index in October 2001 of 129.8) has very low expenditure (only £211 p/w on average); its members live mainly in cities and include far fewer male-headed households than the average. Proportionately more single parents fall into this group than any other. This is a group of people comprising approximately 10–15 per cent of the total population with a very high average inflation rate indeed. They do not have one identifiable characteristic; but it is clear that they are

closely related to particular sections of the urban poor. Group 2 is a more rural group, although it also includes households in Dublin and in small towns. Its inflation rate is 3.7 percentage points higher than the State average. Groups 3 and 4 are very similar, apart from expenditure variable, which is highest in the low inflation group (about 9 percentage points lower than the State average). As we can see clearly by comparing Groups 3 and 4 with Groups 1 and 2, mortgage holders undoubtedly gained over renters during this period because of the low interest rates.

5. Discussion of statistical results

The results relevant to the rest of this paper are shown in Table 5.1 below. 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 *a priori* expectation was that 3.6 percentage points was an underestimate of the difference in the cost of living between the urban poor and the general population. In order to test this, we considered the Paasche and Fisher price indices. Surprisingly, the latter indices indicate less of a cost of living gap between the two groups. The statistical reason for this result is probably 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 cost of living index (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.

This counter-intuitive (in terms of neoclassical theory) phenomenon of greater substitution behaviour among the poorest sectors of society is not something that has been an issue in empirical testing to date. This is partly due to the fact that when researchers are estimating group-specific price indices, they usually adopt a single measure, either a standard Laspeyres index or a superlative index (see for example, Crawford, 1994; Crawford and Smith, 2002; Somerville, 2004; Hobijn and Lagakos, 2005). Even when they do use more than one index, they do not always report all of the results, thus indicating that differences in substitution bias across demographic sub-groups is not their main focus (see for example, Idson and Miller, 1997). Exceptions are Kokoski (1987), Garner et al. (1996) and Sakashita and Shimizu (2004).

Kokoski's results are not enlightening in this regard as her demographic categories are determined by gender, marital status and age and her indices are confined to food. She does find greater substitution bias for the elderly, which she finds unsurprising in light of their revealed higher own-price elasticity of demand for specific food products. Deeper than this she does not delve (such as why the elderly should exhibit demand behaviour that is more sensitive to changes in prices) and she draws no normative conclusions from her research.

Table 5.1 Indices for the State and Urban Income deciles in Ireland (October 2001; base October 1996)

Group	Laspeyre Index	Paasche Index	Fisher Index
State	117.98	118.06	118.02
Urban Poor (decile 1)	121.61	119.19	120.39
Urban Income Decile 2	120.01	118.84	119.43
Urban Income Decile 3	119.40	118.73	119.06
Urban Income Decile 4	118.87	117.91	118.39
Urban Income Decile 5	118.60	117.02	117.81
Urban Income Decile 6	118.29	117.41	117.85
Urban Income Decile 7	117.92	117.10	117.51
Urban Income Decile 8	117.53	117.17	117.35
Urban Income Decile 9	118.11	117.39	117.75
Urban Income Decile 10	118.26	117.62	117.94

Garner et al. (1996) did distinguish their sub-groups according to definitions of poverty and found (unlike our results) a lower degree of substitution behaviour among two of their three poverty categories compared to the average. They categorically refrain from drawing any normative conclusions and simply say that it needs more work as they (unlike us) did not test to see if demographic group differences were statistically significant. Finally Sakashita and Shimizu (2004), in their study of Japan during what was a general deflationary period, did find that substitution bias was greatest for the highest income quintile. Their only comment was that this result was unsurprising as they concluded that lower income groups 'have tighter supplies and demands, and they benefit less from substitution' (Sakashita and Shimizu, 2004:8). In other words, their results were consistent with standard theory which makes no assumption as to the distribution of preferences across income classes.

While our results seem to be anomalous, it needs to be remembered (as pointed out above) that this is an under-researched area. What it did in our instance was force us to address the possible reasons for such flexible behaviour on the part of the urban poor and possible inflexible behaviour by the better off. This led us to question the normative foundations of COLIs as generally conceptualised.⁶ It is with these broader theoretical issues that the rest of the paper is concerned.

5.1 Some theoretical issues

True cost of living indices as defined by neoclassical economic theory are inseparable from neoclassical welfare theory which views economic welfare as preference satisfaction. Consumer theory is based on certain axioms that are considered universal, such as completeness, reflexivity and consistency. These axioms constitute a formal definition of rationality as used in neoclassical economic theory, the consequence of which is the assumption that the consumer can rank all possible consumption options available to him/her. An additional axiom of continuity implies that for any two consumption options it will always be possible to accept an amount of the second alternative in order to compensate for the loss of a small amount of the first. This effectively rules out the possibility of lexicographic preferences, which are preferences that do not allow such tradeoffs. Moreover, to the extent that lexicographic orderings are income related, they also violate the neoclassical assumption of exogenous preferences.⁷

⁶ While most economists accept a cost of living (as defined in neoclassical theory) objective for the CPI, there are a few dissenting voices. Deaton (1998) questions what cost of living means in the context of heterogeneous agents and advises caution in assuming that differences between superlative indices and the Laspeyres index captures substitution bias. Even Schultze (2003), who is in favour of a cost of living basis for the CPI, admits that substitution behaviour may not be due solely to changes in relative prices, in which case superlative indices lose their accuracy as a measure of the cost of maintaining a reference period's standard of living. None of these reservations even begin to address the welfare basis underpinning the neoclassical approach to cost of living measurement, which is the focus of the latter part of this paper.

⁷ This would also be true for any kinds of preferences where the indifference map of a consumer changes as his/her income changes, for example, by exhibiting more or less substitutability in preferences.

Within the neoclassical framework, variation in preferences across individuals can be accommodated according to the relative convexity or otherwise of their map of indifference curves. The more inflexible the preferences of an individual, the more convex his/her indifference map and the more likely it is that the Laspeyres price index approximates to a true COLI for that person. On the other hand, the greater the degree of substitutability (the less convex the indifference map), the greater the upward bias of the Laspeyres index. A true COLI is one that measures changes in prices relative to some base year level of economic welfare. If preferences are homothetic and if the only factor driving changes in expenditure shares is the substitution effect, then, according to neoclassical economic theory, the Laspeyres index is an upper bound of the true COLI and the Paasche index (a fixed weight index that uses expenditure shares from the most current period) is the lower bound. Implicit in this interpretation is the assumption of consumer rationality, interpreted as the lowest expenditure necessary to achieve the reference level of welfare.

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; that is to say, an indication of the extent to which the former, by focusing on the cost changes of the base year bundle of goods, overestimates changes in the cost of living. The expectation is that the Laspeyres index should always exceed the other indices. In situations where this is not the case, neoclassical theory can only accommodate such an anomaly by assuming that income effects are non-uniform or that tastes have changed. If tastes have changed, neoclassical theory cannot draw any normative conclusions about the welfare effects of price changes.

Substitution bias could differ among social groups for a variety of reasons. Nearly all of those reasons lead us, *a priori*, to expect the rich to exhibit more flexibility of consumption behaviour than the poor and hence for their price indices to show more substitution bias. For example, if we accept the neoclassical premise that

preferences are exogenous and unique to the individual and in no way socially determined, we are led to conclude that they are randomly distributed throughout the population. So variations in behaviour must then be attributed to variations in the economic constraints of the groups involved. Hence, the rich, being less constrained in their choices than the poor, should rationally behave in a more flexible way, if their preferences are, on average, no way different to those of the poor (Renwick, 1998; Murphy and Garvey, 2004). Another reasonable hypothesis is to expect that the degree of substitutability exhibited by social groups depends on the intrinsic nature of the goods in their consumption basket, i.e. whether they are necessities or luxuries, with demand for the former being relatively rigid because of their essential nature. However, this would lead us to expect the poor to have more rigid consumption patterns than the rich, not the contrary.

If, against all expectations, the rich should exhibit more rigid consumption behaviour as prices change, the explanation must reside either in the nature of their preferences, the nature of their behaviour, or the nature of their constraints (which are more than just financial).

5.2 Explanations

There are a number of possible neoclassical explanations for the empirical anomaly of our results. The first is that our results were simply that, an anomaly, and that there is no reason to assume that in a different sample these results would be replicated. It was simply accidental that in this particular instance the rich had more rigid preferences than the poor. Obviously this can only be verified by conducting other studies.

A second neoclassical explanation is that income is really endogenous and that preferences in consumption are not really separable from preferences regarding work, production and income. In other words individuals choose to work hard, be rich and have rigid consumption patterns or to work less hard, be poorer and have more flexible consumption patterns. Again, as with the first explanation, this is

difficult to verify empirically but it does strike us as being implausible that income status is strictly the product of choice (and possibly the capacity for hard work and risk taking) as opposed to something more arbitrary. In any case, as with the first explanation, it would still be insufficient to justify the use of COLIs that reward inflexible consumption behaviour.

A third neoclassical explanation is that there are search costs associated with seeking out cheaper outlets and better bargains and that these costs are higher for the rich than for the poor. According to neoclassical economics, the ultimate scarce resources that constrain individuals in their behaviour are real income and time. Search involves the use of scarce time, the foregoing of leisure, the value of which is higher for the rich than for the poor, since the shadow price of leisure in equilibrium is the wage rate. (Here of course we are presuming that the principal reason for income differences among social groups is difference in labour income.) However, an explanation that rests on search costs is not adequate to the task of explaining why the rich might have more rigid consumption preferences than the poor, as search costs are not just psychic (disutility of searching) but also real (the resources necessary to search). Given the relative immobility of the poor compared to the rich, they require more time and financial resources than do the rich to search for the best bargains and relatively cheaper goods. So we assert that it is hard to be conclusive either way as to whether search costs are higher or lower for the rich compared to the poor. Also, if it were the case that search costs were higher for the rich, this would still provide an inadequate case for the replacement of the Laspeyres index with the proposed COLIs, as neither index manages to encompass such costs.

A non-neoclassical explanation would be to question the universality of optimisation as a behavioural construct. Possibly only the poor optimise, since the very constraints under which they operate compel them to do so. The corollary of this is to assert that the rich do not optimise, that their behaviour exhibits more inertia because they are possibly satisficers as opposed to optimisers. Reasons for satisficing could be informational constraints or cognitive limitations (Simon, 1957).

However, for the purposes of analysing the results of this study, it is not the most plausible of explanations. While bounded rationality may be a valid description of how individuals make decisions, there is no reason or evidence to indicate that the wealthier are more cognitively limited or have access to less information than the poor. On the contrary, some studies have shown that real-world optimising behaviour is more likely to be positively correlated with variables associated with higher levels of education (Frederick, 2005). If we accept that wealth is positively correlated with levels of education, we would have expected the rich to optimise at least as much as the poor. A related hypothesis is the differential impact of advertising on consumption behaviour. In this instance, if one accepts the results of certain sociological studies which imply that poorer and less-educated social groups are the most susceptible to the lures of advertising, one would once again expect their consumption patterns to exhibit more, not less, rigidity (Richards and Patterson, 1998).

Our final non-neoclassical explanation is that preference formation is not independent of economic and social conditions. This is not the same as simply saying that the rich consume different goods to the poor; it is saying that the preferences sphere (the shape of indifference curves) changes as we become richer. Such an assertion is in direct contradiction of the neoclassical assumption of exogenous preferences and directly questions the cherished neoclassical notion of consumer sovereignty and the presumed efficiency of market outcomes. If, for example, Veblenian considerations of conspicuous consumption become more important with income, these cannot be excluded from potential explanations as to why the rich show more resistance to consuming relatively cheaper goods than the poor when prices rise, or indeed why they show more inclination to consume relatively more expensive goods. This could be especially relevant in a period of unprecedented growth and social change, such as Ireland enjoyed between 1995 and 2001. More generally, it could also be that 'fussiness' rises with income, or that certain tastes are cultivated more as income rises and, as a result, become more deeply ingrained.

6. General discussion of Cost of Living Indexes

None of the above possible explanations justifies the use of COLIs to measure the welfare effects of price changes. Either the index fails to be an improvement on the Laspeyres index because it does not include search costs that impact on the welfare of consumers or it fails on ethical grounds. Any ethical criticism has to be targeted at the neoclassical standard of individual welfare evaluation, which is subjective preference satisfaction. This holds regardless of whether preferences are viewed as exogenous or endogenous, though obviously the criticism holds with even greater force in the latter instance. Furthermore, the explanation that strikes us as being most plausible to elucidate our results, that preferences are endogenous and ultimately determined by income and social constraints, directly questions not just the welfare basis of COLIs as a measurement tool but the status of neoclassical economics as a supposedly 'positive' science free from normative bias.

Take the case of two of the neoclassical explanations, the accidental nature of the results and the endogeneity of income. It may be the case that it is impossible to explain why one social group have more rigid (or 'fussier') preferences than another. The answer may be rooted in the psychology of the individual, and in this particular instance it may simply be accidental that richer people are revealed to be less inclined to change their behaviour than their less well-off counterparts. However, this is not sufficient to vindicate the use of neoclassical COLIs, as it gives rise to social situations that are patently absurd and violate most commonsense notions of social justice.

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. Neoclassical economists go no further. They do not ask why Mary has more flexible preferences than John, since preferences are assumed to be a psychological black box. All that matters is that Mary is presumed to be less adversely affected than John by an identical increase in the cost of their base year consumption baskets because she has shown herself to be flexible and willing to consume cheaper substitutes. Welfare is simply a matter of subjective preference satisfaction, the source of which remains unexamined and the consequences of which are that the flexible get penalised in the social evaluation of the welfare effects of economic developments.

Treating income as endogenous in order to explain our results is an extreme form of neoclassical reasoning, even for neoclassical economists, who usually analyse consumption behaviour by treating income as a constraint (as in the budget constraint) and separable from preferences. However, if we set aside the implausibility of the income endogeneity assumption for now and, on top of that, accept the additional assumption that income and consumption are joint products that are not separable, we can only conclude that those who choose to work hard, take risks and earn high income are doubly compensated, in our situation, when COLIs are employed. They get a high income because of their choice to (and capacity for) work and they get an extra benefit for their life's choices by being favoured by a measurement index that rewards their consumption inflexibility. We would claim, on ethical grounds, that this extra pecuniary award for the rich is not justified, since such persons have already reaped the benefits of their choices in the form of high income. Furthermore, their additional social entitlement derives not from hard work (which might have some social justification) but from consumption rigidity (which has less social justification). Most importantly, since we can never know whether income is totally the product of choice as opposed to something more arbitrary (inheritance, social stratification, luck) or a mixture of the arbitrary and

choice, employing COLIs seems to err on the side of injustice, being excessive in the former instance and totally unjust in the latter.

The fact is that COLIs give more social account to the rights of the demanding and the inflexible than to that of their opposites. This has to raise serious questions about the suitability of devising social measures, like cost of living indices, that use preferences as the basis for analysing the welfare consequences of social and economic developments. The potential of such measurement tools to be socially regressive is even greater if consumption inflexibility is a trait that one develops with wealth. The results of our study would seem to give support to the view that consumption preferences are endogenous and determined by income. If economic constraints are the ultimate exogenous determinant of both preferences and choice, subjective preference satisfaction cannot be an appropriate standard by which to evaluate a person's welfare. Welfare measures need to be divorced from subjective preferences and given a more objective grounding.

The issues raised by the challenges of devising an adequate COLI form part of the broader critique of the 'new' welfare economics of Kaldor (1939), Hicks (1939) and Scitovsky (1941), with its emphasis on the impossibility of interpersonal 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. This logically follows from the assumption that welfare derives from preference satisfaction and that the latter is subjective (experienced only by the subject and known only to him/her) and therefore incapable of being observed by any third party.

One basis for challenging the subjective preference base of new welfare economics (and one which was a major focus of this paper) is simply equity (Dworkin, 1981). Dworkin concludes that when one is responsible for preferences that may be deemed to be unreasonable or difficult to satisfy, that person is not entitled in equity to compensation if his/her preferences are not satisfied. Another criticism is that

preferences may change to suit prevailing circumstances. Elster (1983) and Sen (1985) both raise this 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, 1983:25). '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, 1985:21–22).

The bottom line is that if preferences are endogenous and mutable, they should not be the basis for judgements about welfare, since the informational basis is too poor. 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.

7. Policy conclusions

Our first conclusion is that the Laspeyres price index is worth conserving and should not be replaced by cost of living indices that are predicated on a subjective theory of welfare. It must be acknowledged that the Laspeyres price index is a cost of goods index but at least we 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. By contrast, the superlative indices remain an inherently problematic way of evaluating the welfare effects of changes in the prices of goods and services, for all the reasons alluded to in this paper. If search costs are not observable, an index that excludes such costs is inaccurate. If optimisation is not ubiquitous, one cannot assume that the bundle of goods chosen by consumers represents the least costly way of satisfying one's preferences. If preferences are endogenous, preference satisfaction is a patently erroneous conception of individual welfare. Even if preferences were exogenous, a COLI that rewards those with rigid preferences appears to be contrary to natural justice.

Our second conclusion is that theories of welfare need to have an objective basis in which third-party observation and interpersonal comparisons of the measurable economic situation of different persons is accepted as valid. The arguments in favour of objective theories of welfare are that they are less informationally demanding than subjective theories of welfare, they are more defensible psychologically and philosophically and they lead to more progressive social policies.⁸ This just echoes the conclusions of Sen, Rawls, Dworkin and Elster.

⁸ A logical conclusion of the new welfare economics is the impossibility of policies designed to help the worse off because the policy maker has no basis for knowing who is worse off and who is better off.

Our third conclusion is that our results provide some empirical ammunition against the neoclassical assertion that preferences are exogenous, with all that that implies as to the presumed efficiency and welfare effects of liberalised markets.

Finally and perhaps most importantly, the results of this simple empirical exercise serve to highlight that the axioms on which neoclassical economic theory is based are far from innocuous, i.e. they can provide theoretical justification for socially regressive policies. Moreover, it reveals quite clearly how matters of value can never be clearly separated from matters of fact. Despite neoclassical assertions to the contrary, economics is revealed as a normative discipline.

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Appendix:**Table A1.1: Indices for Other Social Groups for period 1 (October 2001; base October 1996)**

		N	Index
Working Status of Household Head	Employee - full-time	2770	117.6
Working Status of HOH	Employee - part-time	240	118.2
Working Status of HOH	Assisting Relative - full-time	2	119.8
Working Status of HOH	Assisting Relative - part-time	3	117.3
Working Status of HOH	Self-employed - full-time	1274	117.3
Working Status of HOH	Self-employed - part-time	60	116.1
Working Status of HOH	Unemployed, seeking work	625	118.7
Working Status of HOH	Unemployed due to illness	72	119.5
Working Status of HOH	Not yet at work	12	114.8
Working Status of HOH	Engaged in home duties	1107	118.2
Working Status of HOH	Retired	1240	118.1
Working Status of HOH	Full-time Education	143	130.4
Working Status of HOH	Permanent incapacity to work	319	118.4
Working Status of HOH	Other	10	119.3
Age of HOH	0-14 years	1!	115.7
Age of HOH	15-24 years	299	126.1
Age of HOH	25-34 years	1175	118.4
Age of HOH	35-44 years	1891	117.3
Age of HOH	45-54 years	1489	117.5
Age of HOH	55-64 years	1082	118.0
Age of HOH	65-74 years	1183	117.5
Age of HOH	75+ years	757	118.9
	Farm size 1 (Less than 30 acres)	104	117.0
	Farm size 2 (30 to 50 acres)	161	117.2
	Farm size 3 (50 to 100 acres)	283	115.9
	Farm size 4 (100+ acres)	321	116.1
	Town size 1 (Dublin Metropolitan Area)	2148	118.9
	Town size 2 (Greater than 20,000 inhabitants)	1047	118.9
	Town size 3 (3,000 to 20,000 inhabitants)	1353	117.5
	Town size 4 (1,000 to 3,000 inhabitants)	309	117.0
	Town size 5 (less than 1,000 inhabitants)	209	118.4
	Urban Non Farmers	5053	118.4
	Urban Farmers	13	116.2
	Rural Non Farmers	1953	117.6
	Rural Farmers	858	116.4

Table A1 continued (page 2 of 3)

		N	index
State transfer payments (STP) as % of GHI	100%	1022	119.6
State transfer payments (STP) as % of GHI	90% but less than 100%	795	119.2
State transfer payments (STP) as % of GHI	80% but less than 90%	246	118.4
State transfer payments (STP) as % of GHI	70% but less than 80%	208	118.6
State transfer payments (STP) as % of GHI	60% but less than 70%	206	118.6
State transfer payments (STP) as % of GHI	50% but less than 60%	193	119.5
State transfer payments (STP) as % of GHI	40% but less than 50%	204	117.8
State transfer payments (STP) as % of GHI	30% but less than 40%	255	118.1
State transfer payments (STP) as % of GHI	20% but less than 30%	384	117.8
State transfer payments (STP) as % of GHI	under 20%	4364	117.7
Social group	Employers & Managers	232	117.5
Social group	Higher Professional	354	118.4
Social group	Lower Professional	518	118.6
Social group	Non-Manual	499	118.0
Social group	Manual Skilled	166	118.3
Social group	Semi-Skilled	886	117.7
Social group	Unskilled	976	118.1
Social group	Own Account Workers	1237	117.6
Social group	Farmers	335	117.4
Social group	Agriculture Workers	911	116.7
Social group	All Other Gainfully Occupied	453	117.7
Social group	Unknown	1310	121.0
Economically active persons	Only the HOH	2769	117.5
Economically active persons	HOH and the spouse	1330	118.1
Economically active persons	HOH, spouse and at least one other	169	117.5
Economically active persons	HOH and at least one other person (not the spouse)	790	117.5
Economically active persons	Only the spouse	86	118.7
Economically active persons	The spouse and at least one other (not the HOH)	36	118.1
Economically active persons	At least one person who is not the HOH or spouse	331	118.2
Economically active persons	Household composed of pensioners	890	118.3
Economically active persons	Nobody engaged in economic activity and it is not a pensioners house.	1476	119.9

		N	Index
Receiving Education grant for x Kids	0	7725	117.9
Receiving Education grant for x Kids	1	115	119.8
Receiving Education grant for x Kids	2	24	124.0
Receiving Education grant for x Kids	3	7	128.9
Receiving Education grant for x Kids	4	4	131.9
Receiving Education grant for x Kids	5	2	131.9
Paying for Education for x Kids	0	7516	117.7
Paying for Education for x Kids	1	272	120.2
Paying for Education for x Kids	2	53	121.4
Paying for Education for x Kids	3	19	129.6
Paying for Education for x Kids	4	11	129.4
Paying for Education for x Kids	5	4	125.5
Paying for Education for x Kids	6	2	127.3

Table A1.2: Indices for other social groups for period 2 (October 2003; base October 2001)

		N	Index
Working Status of HOH	Employee - full-time	2933	106.7
Working Status of HOH	Employee - part-time	354	106.2
Working Status of HOH	Assisting Relative - full-time	2	106.1
Working Status of HOH	Assisting Relative - part-time	4	104.7
Working Status of HOH	Self-employed - full-time	1061	106.6
Working Status of HOH	Self-employed - part-time	128	106.6
Working Status of HOH	Unemployed, seeking work	262	106.5
Working Status of HOH	Unemployed due to illness	102	106.7
Working Status of HOH	Not yet at work	5	108.0
Working Status of HOH	Engaged in home duties	946	106.4
Working Status of HOH	Retired	1402	106.8
Working Status of HOH	Full-time Education	64	104.1
Working Status of HOH	Permanent incapacity to work	267	106.6
Working Status of HOH	Other	20	102.9
Age of HOH	0-14 years	-	-
Age of HOH	15-24 years	208	104.1
Age of HOH	25-34 years	969	105.7
Age of HOH	35-44 years	1784	106.6
Age of HOH	45-54 years	1622	107.0
Age of HOH	55-64 years	1231	107.0
Age of HOH	65-74 years	1103	106.7
Age of HOH	75+ years	727	106.4
	Farm size 1 (Less than 30 acres)	81	106.0
	Farm size 2 (30 to 50 acres)	110	107.2
	Farm size 3 (50 to 100 acres)	264	106.7
	Farm size 4 (100+ acres)	297	107.0
	Town size 1 (Dublin Metropolitan Area)	1789	106.6
	Town size 2 (Greater than 20,000 inhabitants)	1058	106.3
	Town size 3 (3,000 to 20,000 inhabitants)	1132	106.7
	Town size 4 (less than 3,000 inhabitants)	197	106.7
	Urban Non Farmers	4170	106.5
	Urban Farmers	6	107.9
	Rural Non Farmers	2831	106.6
	Rural Farmers	637	106.8
State transfer payments (STP) as % of GHI	100%	921	106.8
State transfer payments (STP) as % of GHI	90% but less than 100%	306	106.2
State transfer payments (STP) as % of GHI	80% but less than 90%	187	106.5
State transfer payments (STP) as % of GHI	70% but less than 80%	152	106.9

		N	Index
State transfer payments (STP) as % of GHI	60% but less than 70%	175	106.4
State transfer payments (STP) as % of GHI	50% but less than 60%	215	105.8
State transfer payments (STP) as % of GHI	40% but less than 50%	232	106.1
State transfer payments (STP) as % of GHI	30% but less than 40%	296	106.0
State transfer payments (STP) as % of GHI	20% but less than 30%	425	106.3
State transfer payments (STP) as % of GHI	under 20%	4735	106.6
Economically active persons	Only the HOH	2095	106.6
Economically active persons	HOH and the spouse	1731	106.8
Economically active persons	HOH, spouse and at least one other	293	106.7
Economically active persons	HOH and at least one other person (not the spouse)	732	106.3
Economically active persons	Only the spouse	233	106.6
Economically active persons	The spouse and at least one other (not the HOH)	71	107.2
Economically active persons	At least one person who is not the HOH or spouse	287	106.4
Economically active persons	Household composed of pensioners	783	106.9
Economically active persons	Nobody engaged in economic activity and it is not a pensioners house.	1419	106.1
Receiving Education grant for x Kids	0	7539	106.6
Receiving Education grant for x Kids	1	80	106.0
Receiving Education grant for x Kids	2	18	104.4
Receiving Education grant for x Kids	3	3	103.9
Receiving Education grant for x Kids	4	3	100.4
Receiving Education grant for x Kids	5	1	105.3
Paying for Education for x Kids	0	7257	106.5
Paying for Education for x Kids	1	307	106.9
Paying for Education for x Kids	2	60	107.5
Paying for Education for x Kids	3	12	105.0
Paying for Education for x Kids	4	5	103.2
Paying for Education for x Kids	5	3	104.7

Table A1.3: Relative discrepancies for State Poor

Rank(Exp) Highest	Category of good	Rel.Desc.	Wt above or below ref.Wt
1	Rent	0.77	+
2	Clothing	0.71	-
3	Coal, Turf, Briquettes & Firelighters	0.31	+
4	Potatoes	0.29	+
5	Cigarettes	0.27	+
6	Motor Cars	0.25	-
7	Lamb	0.17	+
8	Other Exp	0.17	-
9	Mortgage Interest	0.13	-
10	Motor Fuel	0.11	-
1	Other Entertainment	-0.11	+
2	Local Authority Charges	-0.13	-
3	Motor Insurance	-0.15	+
4	Milk	-0.15	-
5	Medical Fees	-0.17	+
6	Other Medical Expenses	-0.21	+
7	Meals Out	-0.23	+
8	Other Services	-0.28	+
9	Telephones	-0.29	-
10	Education & Training	-0.54	+

Table A1.4: Relative discrepancies for Rural Poor

Category of good		Rel.Desc.	Wt above or below ref.Wt	
	1	Clothing	0.48	-
	2	Coal, Turf, Briquettes & Firelighters	0.38	+
	3	Potatoes	0.36	+
	4	Lamb	0.25	+
	5	Other Exp	0.17	-
	6	Mortgage Interest	0.16	-
	7	Acoustic Appliances	0.12	-
	8	Tea	0.12	+
	9	Cigarettes	0.10	+
	10	Toys	0.08	-
	1	Bread	-0.11	-
	2	Local Authority Charges	-0.15	-
	3	Medical Fees	-0.18	+
	4	Milk	-0.18	-
	5	Other Medical Expenses	-0.25	+
	6	Meals Out	-0.28	+
	7	Rent	-0.29	+
	8	Telephones	-0.35	-
	9	Other Services	-0.36	+
	10	Education & Training	-0.62	+

Table A1.5: Relative discrepancies for State Aged

Rank(Exp) Highest	Category of good	Rel.Desc.	Wt above or below ref.Wt
1	Clothing	0.52	-
2	Motor Cars	0.24	-
3	Coal, Turf, Briquettes & Firelighters	0.22	+
4	Lamb	0.21	+
5	Potatoes	0.20	+
6	Other Exp	0.16	-
7	Mortgage Interest	0.14	-
8	Footwear	0.12	-
9	Motor Fuel	0.10	-
10	Acoustic Appliances	0.09	-
1	Medical Fees	-0.06	+
2	Electric/Gas Appliances	-0.07	-
3	Beer	-0.07	+
4	Other Entertainment	-0.09	+
5	Milk	-0.09	-
6	Rent	-0.15	+
7	Local Authority Charges	-0.17	-
8	Meals Out	-0.22	+
9	Telephones	-0.32	-
10	Education & Training	-0.67	+

Table A1.6: Relative discrepancies for Rural Aged

Rank(Exp) Highest	Category of good	Rel.Desc.	Wt above or below ref.Wt
1	Clothing	0.70	-
2	Coal, Turf, Briquettes & Firelighters	0.36	+
3	Potatoes	0.33	+
4	Lamb	0.29	+
5	Motor Cars	0.25	-
6	Other Exp	0.18	-
7	Mortgage Interest	0.16	-
8	Tea	0.12	+
9	Cigarettes	0.10	+
10	Toys	0.09	-
1	Other Entertainment	-0.11	+
2	Medical Fees	-0.14	+
3	Local Authority Charges	-0.15	-
4	Other Medical Expenses	-0.15	+
5	Milk	-0.19	-
6	Other Services	-0.23	+
7	Meals Out	-0.28	+
8	Telephones	-0.31	-
9	Rent	-0.38	+
10	Education & Training	-0.70	+

Table A1.7: Relative discrepancies for Urban Aged

Rank(Exp) Highest	Category of good	Rel.Desc.	Wt above or below ref.Wt
1	Clothing	0.40	-
2	Motor Cars	0.23	-
3	Other Medical Expenses	0.18	+
4	Footwear	0.17	-
5	Motor Fuel	0.15	-
6	Hairdressing	0.15	+
7	Lamb	0.15	+
8	Other Exp	0.15	-
9	Other Services	0.13	+
10	Coal, Turf, Briquettes & Firelighters	0.13	+
1	Other Travel	-0.05	+
2	Motor Insurance	-0.06	+
3	Soft Furnishings	-0.06	-
4	Beer	-0.07	+
5	Other Entertainment	-0.07	+
6	Piped Gas	-0.13	-
7	Meals Out	-0.18	+
8	Local Authority Charges	-0.19	-
9	Telephones	-0.33	-
10	Education & Training	-0.66	+

Table A1.8: Relative discrepancies for House Owners

Rank(Exp) Highest	Category of good	Rel.Desc.	Wt above or below ref.Wt
1	Motor Insurance	0.05	+
2	Other Medical Expenses	0.04	+
3	Other Services	0.03	+
4	House Insurance	0.03	+
5	Medical Fees	0.02	+
6	Lamb	0.01	+
7	Acoustic Appliances	0.01	-
8	Repairs & Maintenance	0.01	+
9	Hairdressing	0.01	+
10	Electricity	0.01	-
1	Education & Training	-0.02	+
2	Local Authority Charges	-0.02	-
3	Motor Fuel	-0.02	-
4	Other Exp	-0.02	-
5	Mortgage Interest	-0.03	-
6	Telephones	-0.03	-
7	Clothing	-0.04	-
8	Motor Cars	-0.04	-
9	Cigarettes	-0.07	+
10	Rent	-0.50	+

Table A1.9: Relative discrepancies for Local Authority Housing

Rank(Exp) Highest	Category of good	Rel.Desc.	Wt above or below ref.Wt
1	Rent	1.59	+
2	Cigarettes	0.86	+
3	Motor Cars	0.40	-
4	Potatoes	0.32	+
5	Telephones	0.23	-
6	Other Exp	0.17	-
7	Mortgage Interest	0.17	-
8	Clothing	0.17	-
9	Motor Fuel	0.16	-
10	Coal, Turf, Briquettes & Firelighters	0.13	+
1	Meals Out	-0.15	+
2	Acoustic Appliances	-0.15	-
3	House Insurance	-0.16	+
4	Milk	-0.17	-
5	Medical Fees	-0.18	+
6	Footwear	-0.20	-
7	Other Medical Expenses	-0.31	+
8	Other Services	-0.34	+
9	Motor Insurance	-0.36	+
10	Education & Training	-0.57	+

Table A1.10: Relative discrepancies for Free Housing

Rank(Exp) Highest	Category of good	Rel.Desc.	Wt above or below ref.Wt
1	Other Services	0.95	+
2	Mortgage Interest	0.17	-
3	Meals Out	0.09	+
4	Cigarettes	0.08	+
5	Soft Furnishings	0.08	-
6	Other Exp	0.07	-
7	Repairs & Maintenance	0.07	+
8	Toys	0.06	-
9	Footwear	0.06	-
10	Local Authority Charges	0.05	-
1	Other Medical Expenses	-0.06	+
2	Motor Fuel	-0.07	-
3	Electricity	-0.07	-
4	Other Entertainment	-0.08	+
5	Telephones	-0.08	-
6	Clothing	-0.09	-
7	Motor Cars	-0.10	-
8	House Insurance	-0.11	+
9	Education & Training	-0.20	+
10	Rent	-0.50	+