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OWNER-OCCUPIED HOUSING COSTS AND BIAS IN THE IRISH CONSUMER PRICE INDEX

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Abstract
The treatment of owner-occupied housing costs is a recurring problem in the construction of consumer price indices, and there are competing methodologies. In the most widely-used Irish index, the Payments Approach, which attaches a weight to a term involving historical house prices and an interest rate, is used to measure these costs. It is argued that this has resulted in a substantial over-statement of inflation in recent quarters, and that the over-statement will continue for some time. The Irish version of Eurostat's Harmonised Index of Consumer Prices, recently running well below the CPI, is a more reliable guide. Few national statistical offices use the Payments Approach, and it is argued that the procedure used in Ireland should be reviewed.

1. Introduction

The rate of inflation in consumer prices is an important concern of economic policy, but its measurement is not straightforward and the construction of real-world price index numbers is beset with both conceptual and practical difficulties. Most national statistical

offices publish several alternative measures, and they can differ substantially. There is a tendency for one of the measures to predominate, and to be seen as 'the' rate of inflation. Where a measured inflation rate plays an economic policy role as, for example, a monetary policy target, or as the basis for escalator clauses in centralised pay deals, the methodology of index construction is critical and can have important consequences. A principal concern of the extensive technical literature is the accuracy of published indices as measures of the cost of living, that is, the cost of attaining a fixed living standard as prices of goods and services change.

There are well-known sources of potential bias[1] in fixed-weight indices of consumer prices when they are viewed as measures of the cost of living. These include substitution bias, which arises from the failure of a fixed-weight index to accommodate consumer response to relative price changes, as well as bias due to quality change and bias due to the introduction of new goods. Numerous studies conclude that published indices often over-state the rate of inflation, although some of the possible sources of bias (for example quality change) can in principle distort the measure below, as well as above, the 'true' rate of inflation in the cost of living.

The monthly Irish Consumer Price Index is conceived as a base-weighted (Laspeyres) index of goods and services prices, and thus it is not a cost-of-living index in the sense of Konus (1939), as the Central Statistics Office (2003) point out in their methodology note. In the terminology of Crawford and Image (2004), it is intended as a COGI (cost of goods index), not a COLI (cost of living index), and therefore ignores the consumer's opportunities to substitute as relative prices change. The same is true of the Irish and other national versions of Eurostat's HICP (Harmonised Index of Consumer Prices).[2] But the most troublesome feature of the Irish CPI, and it is argued below the most significant source of potential bias, lies in its inclusion of a measure of cost for owner-occupied housing. The HICPs for the EU member-states exclude this item altogether.

While fixed-weight indices, such as the Irish CPI or the family of HICPs for EU member countries, may lack a ready interpretation in economic theoretical terms (Afriat (1977) calls them 'answers without questions'), they are the most widely used measures of the general price level, of inflation, and as the reference for the

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[1] The term 'bias' is routinely used in the index number literature to denote departures in a measured index from some specified conceptual standard. Its use here is not meant to connote any intent, or calculation error.

[2] There is thus a potential substitution bias with either index. Substitution bias in the Irish CPI for the period 1985-2001 has recently been studied by Somerville (2004) and in the aggregate consumption deflator for an earlier period by Irvine and McCarthy (1978).

indexation of social expenditures, pensions, coupons on index-linked financial instruments and for price escalation in regulated industries. Somerville (2004) lists numerous examples where Irish CPI data has been invoked in policy discussions about wage negotiations and during the annual budget-time reviews of the rates of payment under the various social welfare schemes. In early 2006, the public debate surrounding the national pay negotiations focused exclusively around recent twelve-month rates of change in the All-Items CPI, and there have been calls during 2007 for upward revision of the pay deal in the light of a recent surge in the 12-month CPI inflation rate. The Irish variant of Eurostat's HICP, recently registering much lower twelve-month inflation rates than the CPI, is rarely invoked.

The HICP for Ireland covers a subset of CPI components with an aggregate weight totalling 89 per cent of the CPI. The principal exclusion is mortgage interest, along with building materials, motor taxation and some other small items.[3] The treatment of owner-occupied housing in indices of consumer prices, in either a COGI or a COLI framework, has been controversial, and there is no uniformity of practice internationally. An extensive recent survey is Poole *et al.* (2005). Following Diewert (2003), there are four principal approaches, as follows:

(i) The Acquisitions Approach, which covers only net acquisitions by the household sector in the current period, and typically attaches a low single-figure weight to a contemporaneous house price index. This is similar to the approach adopted for other durable goods such as automobiles, and in effect ignores the fact that some goods are durable, and yield a flow of consumption beyond the period of purchase.

(ii) The Payments Approach, of which the Irish CSO's methodology is an example. This attaches a weight, based on household spending patterns in a base period, to the out-of-pocket expenses incurred by owner-occupiers, principally mortgage interest in Ireland.

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[3]The HICPs for all EU countries exclude owner-occupied housing costs altogether and, since the Eurozone HICP is the inflation variable monitored by the European Central Bank, this exclusion raises the issue of whether and how asset price inflation is to be catered for in the target inflation measures used by monetary authorities. The EU's statistical agency, Eurostat, has initiated studies on the issue, and some procedure for incorporating owner-occupied housing costs into a revised HICP methodology is expected to be agreed in due course. Pilot studies are being undertaken in several member-states, and it would appear that some variant of the acquisitions basis is the most likely to be chosen, that is, a weight would be computed and attached to an index of *contemporaneous* house prices.

(iii) The User Cost Approach, which computes end-period value less starting value, plus maintenance costs, depreciation or taxes during the period.

(iv) Finally the Rental Equivalence Approach computes the flow of service to owner-occupiers from data on rental levels in the market. This approach, used amongst others by the US Bureau of Labour Statistics in computing the US CPI, typically attaches a high weight, 20 per cent or more, to housing.

Of the four approaches, Rental Equivalence fits most easily into a true cost-of-living framework, and the US CPI is explicitly designed to be a COLI. Theoretical objections to the Payments Approach used in Ireland are principally that it includes an asset price which does not logically belong in an index measuring consumption prices, and that it includes an interest rate term, reflecting the cost of credit rather than the price of a good or service. On the other hand, the weight attached to the term is often small, and the potential impact on the overall CPI might be felt to be immaterial. We will argue below that this is a misperception, and that there can be circumstances where the Payments Approach, even with a small weight, can perturb the overall CPI by implausibly large amounts.

The Irish CPI measure of cost for owner-occupied housing is based on a combination of current *and* historical house price index numbers as well as current mortgage interest costs. The impact of the CSO's treatment of owner-occupied housing costs on the overall monthly CPI reading has recently become quite noticeable, and has been highlighted by White (2005). This paper argues that the measure employed by the CSO is arbitrary, and not widely employed internationally; is not consistent with the interpretation of the Irish CPI as a conventional fixed-weight Laspeyres index of goods and services prices; has materially overstated Irish inflation in recent quarters; imparts a cyclical component (which can be positive or negative) to the CPI which mirrors the interest rate cycle; and finally would continue to generate monthly CPI increases far into the future, even if all constituent prices, including not just goods and services prices but also house prices and interest rates, were to stabilise at current levels.

2. Treatment of Owner-Occupied Housing in the Irish CPI

Table 1 shows the weights for each of the twelve categories of goods and services distinguished in the current (base December 2006) Irish All-Items CPI. Category 4 is broken down into two components, 4a which includes rents paid on the portion of the housing stock rented privately or from local authorities, and 4b, called 'mortgage interest'. This category 4b is the CSO's vehicle for including in the CPI some recognition of the fact that almost 80 per cent of the Irish housing stock is occupied by its owners. The CSO

calculates each month a weighted average interest rate based on returns from the principal mortgage lenders. This is applied to an estimate of the average mortgage debt outstanding, and finally the weight, updated every five years from the Household Budget Survey, of .0666 is applied. Item 4b, Mortgage Interest, rose 48 per cent in the twelve months to January 2007.

Table 1: Base Weights and Index Levels at January 2007, Irish All-Items CPI

		Weight %	12-Month % Change
1.	Food, Non-Alcoholic Beverages	11.74	1.8
2.	Alcoholic Beverages, Tobacco	6.05	5.5
3.	Clothing and Footwear	5.42	-1.5
4a.	Rents, Water, Electricity, Gas, Fuels	9.85	6.8
4b.	Mortgage Interest	6.66	47.9
5.	Furniture, Household Equipment, Maintenance	4.42	-0.9
6.	Health	3.15	3.4
7.	Transport	13.29	1.2
8.	Communications	3.42	-0.2
9.	Recreation, Culture	10.10	2.2
10.	Education	2.04	4.9
11.	Restaurants and Hotels	15.42	4.4
12.	Miscellaneous	8.42	1.6
	Total	100.00	5.2

Source: CSO.

The component corresponding to category 4b which goes into the All-Items CPI is

Item 4b = .0666 x (Mortgage Debt Outstanding) x (Mortgage Interest Rate)   (1)

This treatment can be thought of as defining the average mortgage debt as a 'good', and the interest rate as its price. The average mortgage debt outstanding is measured as a distributed lag on house prices going back 240 months (20 years). The All-Items Irish CPI can thus be expressed as the sum of a contemporaneous fixed-weight Laspeyres goods-and-services index with weight roughly 93.3 per cent and a component which is the product of a weight, a current interest rate term and a distributed lag on historical house prices. Thus

$$Cit_. = .9333\, L_t + .0666 \sum w_{t-i} H_{t-i} R_t, \; i = 0 \; to \; 239, \qquad (2)$$

where

L_t = a fixed-weight (Laspeyres) index of contemporaneous goods and services prices, other than the services of the stock of owner-occupied housing,

w_{t-i} = declining weights reflecting interest component of the annuity formula, assuming a 20-year variable rate mortgage,

H_{t-i} = a national index of house prices for month t-i,

R_t = contemporaneous average of the variable mortgage rate

The index thus has a memory, and the potential to vary even if contemporaneous prices (including house prices and the interest rate) do not. In effect, the quantity term is not fixed, unless house prices have been constant. To this extent, the Irish All-Items CPI is not a conventional 'snapshot' Laspeyres price index as commonly understood. It contains lagged quantity terms. The mortgage debt outstanding is computed as a sum, going back 240 months (20 years), of the historical index of house prices multiplied by the portion of the principal which remains outstanding under the annuity mortgage formula.

Thus mortgages from 20 years ago have a small weight for two reasons. House prices were much lower twenty years ago, and in addition, very little of the principal will still be outstanding. Each month, a fresh observation, corresponding to today's house price index and with the full loan amount outstanding, is added to the sum, while the oldest observation, corresponding to a much lower house price (national average house price is currently over five times the level of twenty years earlier) and with a tiny portion still outstanding, is deleted. Thus the amount of mortgage debt outstanding will, after a period of house price growth, have strong upward momentum and will impart this to the overall CPI. The CSO acknowledge that this happens even if interest rates do not rise. Eventually though the impact of a once-off jump in house prices peters out, since the weights attaching to the house price term decline fairly quickly, and ultimately to zero after twenty years. The scheme used by CSO at present assigns just under 50 per cent of total weight to the most recent five years, and almost 90 per cent to the most recent ten years.[4] The potential for this formula to add upward momentum to the CPI is offset when mortgage interest rates are declining, but can be significant even at constant interest rates. But if both house prices and mortgage interest rates are rising, as has been the case through 2006 and into 2007, the CSO methodology will add substantially to the overall measure of CPI inflation.

The All-Items CPI rose 5.2 per cent in the twelve months to January 2007. If the single item 4b were excluded from the CPI calculation for the twelve months to January last, the increase would have been 2.7 per cent. That is to say, the category 4b, despite its small weight, has almost doubled the CPI measure over the period. This bias, if bias is the right way to describe it, is additional to the estimates of substitution and other biases commonly reported for fixed-weight CPIs. Bias from these sources of about 1.1 per cent

[4] The author would like to thank CSO for making their detailed unpublished workings available.

was computed in the report of the Boskin Commission on the US CPI (Boskin, 1996) and there have been estimates in the 1 per cent zone in similar studies for other countries. Of course, the bias to the Irish index from the mortgage interest item is likely to be episodic. With house prices flat and interest rates falling, it would be negative, that is, it would reduce the CPI reading below that given by a conventional Laspeyres index. The net impact of the two components could also be small or even zero for long periods, as seems to have happened from 2001 to 2005, as the house price and interest rate components moved in opposite directions. But the recent experience in Ireland shows that, when a bias does emerge, it can be substantial, even with a weight below 7 per cent in the overall CPI. It should be noted that the December 2006 weights revision saw the 4b item rise from 4.6 per cent to 6.7 per cent, so whatever distortion is being created has been magnified by the revision. Figure 1 plots index estimates with and without the mortgage interest item 4b.
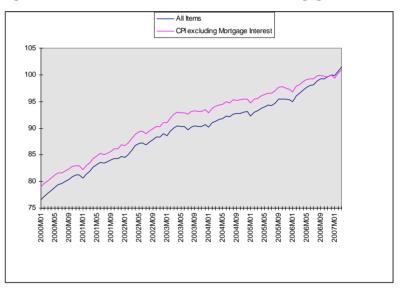
Figure 1: The CPI Since 2000, With and Without Mortgage Interest

The recent acceleration in the All-Items index is clear from the chart. The twelve-month rates of increase in both indices to January each year are shown in the next table.

Table 2: Twelve-Month CPI Inflation, With and Without Mortgage Interest

Twelve Months to	All-Items CPI	CPI ex Mortgages	Mortgage Impact
January 2001	5.2	4.1	+1.1
January 2002	5.0	5.5	-0.5
January 2003	4.7	5.1	-0.4
January 2004	1.8	2.0	-0.2
January 2005	2.3	1.9	+0.4
January 2006	2.9	2.2	+0.7
January 2007	5.2	2.7	+2.5

Note the negative contribution of the mortgage item during the 2001 to 2003 period, when ECB rates were declining, and the sharp upward impact during 2006. The pattern evident in the monthly figures for the early months of 2007, as rates continued to rise, suggests that the impact of the mortgage item in the twelve months to January 2008 will again be substantial, and the All-Items index could exceed the ex-mortgages index by as much as it did during 2007.

The divergences in inflation rates as measured by the HICPs of the Eurozone member-countries (which exclude housing altogether) have been extensively studied. Ireland's 'excess' inflation relative to the Eurozone (see Honohan and Lane (2003) has been notable, and a feedback loop through informal indexation to an upward-biased CPI is a possible explanatory factor.

3. Projecting the Future Path of the CPI

The CSO methodology in regard to the treatment of mortgage interest (category 4b) is to include in the Consumer Price Index an item which is the product of a distributed lag on house prices, the declining weights reflecting the annuity mortgage process, multiplied by a contemporaneous interest rate term. Before considering the issues raised by this approach, it is interesting to consider what would happen to the Irish index, with current (December 2006) weights, if all prices of goods and services, as well as house prices and the mortgage interest rate, were to be frozen at the current level. Conceding the CSO's point that the CPI is not intended as a cost-of-living index, it is fair to ask to what degree it behaves like a conventional Laspeyres price index, which is a (monthly) snapshot of goods and services prices with no internal dynamics. The conventional Laspeyres index is a straightforward product of fixed weights and (possibly) varying, but contemporaneous, prices. If prices are unvarying, a Laspeyres index should be constant, since the only other component is the fixed weights. But even with fixed prices, the Irish CPI would, given the history of house prices, continue to rise, and at a significant rate, for many years into the future.

Table 3: Future Path of the CPI with Constant Prices and Interest Rates

January of	Level of Item 4b	Level of All-Items CPI
2007	100.0	100.00
2008	110.2	100.67
2009	119.1	101.27
2010	126.8	101.78
2011	133.3	102.21
2012	138.7	102.57
2013	143.2	102.87
2014	146.7	103.10
2015	149.5	103.29
2016	151.7	103.44
2017	153.4	103.55
2027	157.4	103.82

The ultimate increase can easily be calculated. First fix the interest rate at today's figure. If the January 2007 house price is set at the current level for twenty years and the CSO's distributed-lag weights applied, the result is that the sub-index corresponding to 4b eventually rises by 57.4 per cent. Applying the 4b weight in the overall CPI brings the All-Items index up from 100 to 103.82 after twenty years, at which point it increases no further. Thus on average over the twenty years, the CPI rises by roughly 0.2 per cent per annum for no apparent reason: neither goods-and-services prices, house prices, nor the interest rate, have moved.

Moreover this effect is heavily front-loaded. The precise pattern depends on the actual history of house prices, but on the prevailing Irish data, will add 0.67 per cent in the first year, declining to about 0.2 per cent after eight years and dwindling away to very small amounts as the twenty-year horizon is approached. This is of course a reflection of the house price boom over the last decade.

Over the full 20-year period, the overall CPI rises 3.8 per cent, even though no price of a good or service has risen, and neither have house prices or interest rates. The magnitudes of the low 20-year-old house price numbers (weighted by the small amounts still outstanding under the annuity formula) which are being dropped from the calculation eventually catch up with the higher (and constant, by assumption) current numbers being added, and the process peters out. But in the early years, the CPI is biased upwards by more than half of a percentage point. The effect falls below one-tenth of a percentage point per annum only after eleven years. It should be noted that the Irish CSO re-bases the CPI every five years, so in reality the weights would not be unaltered for a twenty-year period. But they will be unaltered for the five years up to December 2011, and the main action is concentrated in this period.[5]

Over the twelve months of 2007, if there is no change to any price of a good or service, no change to house prices, and no change to mortgage interest rates, the All-Items Irish CPI will rise by about 0.67 per cent on these calculations. A conventional Laspeyres index would, of course, show no increase at all in these circumstances, nor would the Eurostat HICP for Ireland, which is a conventional Laspeyres index.

There is an additional problem. The current trend in interest rates is upwards, and the European Central Bank has been imposing quarter-point increases at three-month intervals. Should the ECB base rate increase by 1 per cent in the twelve months to January 2008, as appears likely at time of writing, this factor would raise the typical mortgage rate from about 4.50 per cent to about 5.50 per cent, and would add 1.48 points to the CPI, other things equal.

[5] Index re-basing produces chain-linked indices and can introduce other biases, see Oulton (2007).

Added to the impact of house price history, the All-Items CPI seems set to rise by at least 2 per cent more over 2007 than the CPI excluding mortgage interest. Thus in the short term, the interest rate oscillations are adding more than the 'memory' effect, but it is reasonable to expect that, in the absence of a long-run secular trend in interest rates, they will reverse within a year or two. The 'memory' effect, though smaller, is more persistent (a twenty-year distributed lag), and would need a protracted house price bust to reverse itself.

There is an asymmetry in the treatment of house prices and interest rates in the CSO's deployment of the Payments Approach: house price impacts are damped very heavily, but current interest rates enter with a bang. It should be clear that if house prices doubled in the next month, there would be a tiny impact on next month's index. While the contemporaneous weight under the annuity formula is the largest, it accounts for only $1/85$th. of the total of the 240 weights. Thus if house prices doubled, the CPI impact in month 1 would be under one-tenth of a percentage point. It would take twenty years for the full impact to emerge. The immediate impact of just a quarter-point increase in the current interest rate would be about four times greater. The Payments Approach does eventually take the full increase on board, but does so very slowly, in contrast to the Acquisitions Approach, which (with no role for interest rates) transmits the full house price change contemporaneously.

If the mortgage rate were to increase from 4.5 per cent to 4.75 per cent, the 4b sub-index goes up immediately by 5.56 per cent and the overall CPI by 0.36 per cent, all other things equal. The same would happen on the way down, of course, so the CSO methodology imparts a cyclical component, related to ECB policy, to the Irish Consumer Price Index. Should there prove to be a long-term cycle in ECB interest rates, the cyclical pattern will be transmitted to the All-Items CPI. If ECB base rates cycle between say 2 per cent and 5 per cent (the lowest recorded to date has been 2 per cent, the highest 4.75 per cent, versus current June 2007 rate of 4 per cent), retail mortgage rates would oscillate between about 3 per cent and about 6 per cent, and the All-Items CPI would put on 6.67 per cent in total during the upswing years due to this factor alone, and lose it all again through the downswing. Some evidence of this kind of pattern (compounded with the upward momentum from house price history) is clear from the final column in Table 2.

Any Laspeyres index is likely to contain an upward bias for various well-known reasons: the Irish CPI is biased upward *compared to a conventional Laspeyres index*, given the recent history of house prices. The bias is substantial. In addition, the swings in interest rates contribute a cyclical component, currently upwards. The combination of the two is creating an impression of a rapid recent inflation in consumer prices, some of which is due to a real

underlying up-tick in goods and services prices, but most of it is due to a methodology for dealing with the costs of owner-occupancy which is not widely used internationally. The methodology is bound to produce this type of pattern given a recent house price boom, even if that boom is over, and given a cyclical upswing in interest rates, even if that upswing is likely to reverse itself in due course.

4. Discussion and Options for Index Revision

If the use of the Payments Approach made only a small difference as compared to alternatives, and bearing in mind that there are numerous other unavoidable sources of approximation in compiling a monthly price index, the choice of methodology for dealing with owner-occupied housing would be a minor matter. The principal practical problem created by the Irish CSO's use of the Payments Approach derives from two sources. The first, as is clear from the recent history of the index, is that it makes a considerable difference, despite the apparently small weight. The second is that the Irish CPI is routinely treated *as if* it were a cost of living index, and is invariably referred to in these terms in the media coverage of the monthly data release, notwithstanding the CSO's insistence that it is not designed to measure the cost of living. As a result CPI readings are regularly invoked (at least when they are trending upwards) by those seeking increases in wages and in transfer payments.

The twelve-month changes in the index rose substantially during the national pay talks in early 2006, and a further up-tick in the index through late 2006 and early 2007 has already stimulated demands for a revision of the agreement. While there is virtually no automatic indexation to the CPI (or to any other index) in the Irish public finance arrangements, given the highly centralised system of pay negotiation in the public sector and the tendency to take cognisance of the CPI in decisions on rates of transfer payments, the potential impetus to public spending growth is clear. Almost two-thirds of Irish gross current public spending consists of transfer payments or public service pay and pensions. The total of the two will be about €35 billion in 2007, so over- or under-indexation involves substantial amounts.

In their May 2003 methodology note, the CSO observe that the Payments Approach is used in three countries, Australia, Ireland and the United Kingdom. As it happens, the Australian Bureau of Statistics abandoned the Payments Approach following a CPI review in 1997, and they moved to an acquisitions basis (Woolford, 2005). The position in OECD countries is shown in the table.

Table 4: OECD Countries' CPI Treatment of Owner-Occupied Housing, 2002

Method	No. of Countries	List of Countries
Rental Equivalent	13	Mexico, USA, Japan, Korea, Czech Republic, Denmark, Germany, Hungary, Netherlands, Norway, Slovakia, Switzerland, Turkey
User Cost	5	Canada, Finland, Iceland, Sweden, United Kingdom
Net Acquisitions	2	Australia, New Zealand
Payments	2	Ireland, United Kingdom
Excluded Entirely	9	Belgium, France, Greece, Italy, Luxembourg, Poland, Portugal, Spain, Eurozone (HICP)

The United Kingdom, in its Retail Price Index, appears to be the only other OECD country still producing an index using the Payments Approach. It also produces an index using a User Cost method, and of course all EU (not just Eurozone) countries produce national versions of the HICP, which excludes owner-occupied housing altogether. Interestingly the UK, like Ireland, has recently had a house price boom and is in the upswing of the interest rate cycle. The most recent (May 2007) 12-month reading for its RPI is 4.3 per cent, well ahead of the UK variant of the HICP, which was at 2.5 per cent, the same pattern observable in Ireland.

The CSO's implementation of the Payments Approach in compiling the monthly CPI is not at issue: the method used by the Office of National Statistics in the United Kingdom for the RPI is similar, as was the pre-1997 Australian procedure. If the logic of treating debt outstanding as a good and the interest rate as its price is accepted, then the Irish CSO's calculations successfully implement this procedure. The problem is conceptual: the Payments Approach introduces a cuckoo into the CPI nest, which, while a small cuckoo, behaves disruptively *after* a house price boom, and *during* periods of interest rate volatility, precisely the conditions which currently obtain in Ireland. If house prices always rose at the inflation rate of goods and services, and interest rates were stable, the Payments Approach, as is clear with a little manipulation of Equation (2), would not impact the CPI at all. Indeed, over very long periods (say a decade and upwards), one would expect the Payments Approach to equate to the other approaches, since interest rate cycles should wash out, rent/value ratios will tend to revert to the mean and exceptional house price booms tend to be followed by house price busts according to Kelly (2007). The problem is that the CPI comes out every month, and is intended to

give a reliable short-run read on what is happening to goods and services prices.

Following the adoption of explicit inflation targets by central banks around the world over the last decade, there has been extensive professional discussion of price index construction, and in particular of the alternatives in dealing with owner-occupied housing costs. The verdicts on the Payments Approach have been uniformly negative, and this extended quote from Goodhart (2001) is representative:

The second main approach is the payments approach, measuring actual cash outflows, on down payments, mortgage repayments and mortgage interest, or some subset of the above. This approach always, however, includes mortgage interest payments. This, though common, is analytically unsound. First, the procedure is not carried out consistently across purchases. Other goods bought on the basis of credit, e.g., credit card credit, are usually not treated as more expensive on that account (though they have been in New Zealand). Second, the treatment of interest flows is not consistent across persons. If a borrower is worse off in some sense when interest rates rise, then equivalently a lender owning an interest bearing asset is better off; why measure one and not the other? If I sell an interest earning asset, say a money market mutual fund holding, to buy a house, why am I treated differently to someone who borrows on a (variable rate) mortgage? Third, should not the question of the price of any purchase be assessed separately from the issue of how that might be financed? Imports, inventories and all business purchases tend to be purchased in part on credit. Should we regard imports as more expensive, when the cost of trade credit rises? Money, moreover, is fungible. As we know from calculation of mortgage equity withdrawal, the loan may be secured on the house but used to pay for furniture. When interest rates rise, is the furniture thereby more expensive? Moreover, the actual cash out-payments totally ignore changes in the on going value of the house whether by depreciation, or capital loss/gain, which will often dwarf the cash flow.

Diewert (2002) writes: "I agree with Goodhart in being critical of this approach. My main objection to the approach is that it ignores the opportunity costs of holding the equity in the owner-occupied dwelling and it ignores depreciation".

Most people have mortgages outstanding which are small relative to the price of their homes: the value of the housing stock is somewhere between four and five times the level of residential mortgage debt outstanding. Why should income recipients be compensated for an increase in the cost of credit, ignoring the fact that there are two sides to the household sector's balance sheet? The impact of interest rate changes on household income (not that this

is what the CPI is supposed to measure) would be more than halved when the banks' liabilities to the household sector are factored in. Where pay increases are formally or informally linked to a CPI, the impact of interest rate tightening will be offset where the CPI includes an interest rate term. If the European Central Bank were to use an index similar to the Irish CPI, it is arguable that interest rate changes would have to be larger, to offset the wage-indexation effect. Not surprisingly, central banks object to the inclusion of interest rate terms in the target price index used in setting interest rates, and the UK's monetary policy target has excluded an interest component from its inception, employing initially RPI-X, the Retail Price Index with mortgages excluded, and more recently the UK version of the HICP, which also excludes them.

The likelihood is that the European HICP revision will, if agreement can be reached at all, opt for an Acquisitions Approach but the question remains as to what should be done with the Irish CPI, which is the most familiar of all Irish price indices to the general public, and features widely in formal and informal indexation contracts and agreements. Some Irish sector regulators use the CPI to reference the price-caps which they administer, and also to compute current valuations of the regulated asset base of the firms they regulate. Some bond-issuers specify the CPI in indexation formulae. At minimum, the Irish HICP would be an improvement for these purposes.

A better reform, and one which could be undertaken without formally shifting from a COGI to a COLI framework, would be to attempt an implementation of the Rental Equivalence approach, which is already deployed by the Irish CSO in the national accounts and is the methodology stipulated in the United Nations 1993 SNA (System of National Accounts). The necessary private rental index already exists, although it is acknowledged that producing a suitable monthly (and quality-adjusted) rental index would be significant extra work-load in the construction of a revised CPI. The flow of services from the housing stock is the item which belongs in an index of the cost of consumption, and the Rental Equivalence approach, the most popular in OECD countries, seeks to price this item directly through a rental index. A paper addressing the problems involved in implementing the rental equivalence approach in Spain is Arevalo and Ruiz-Castillo (2004).

Statisticians tend to be more partial to the COGI than to the COLI approach, which is more popular with economists, see Triplett (2001). The weaknesses of the Payments Approach however have nothing to do with this debate. The Payments Approach yields an index which introduces arbitrary distortions not present with alternative COGI methodologies for incorporating owner-occupied housing.

But since the CPI continues to be treated by the public and the media as a cost of living index, notwithstanding the CSO's reasonable insistence that it is not, perhaps it is time to consider replacing it with an index which measures what everyone seems to think it measures. The CSO has already made some moves in this direction through the introduction of new goods for old, and in the regular introduction of new outlets, measures which should diminish the bias in a COGI relative to a COLI. In the meantime, the Irish variant of the HICP is a more reliable indicator of underlying goods-and-services inflation, although it doubtless remains prone to the upward biases common to any Laspeyres-type index.

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