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# **Non-Cash benefits in Ireland: Distributional Implications**

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## **Section 1. Introduction**

This report aggregates information from the three prior national reports on valuing the provision of education, the benefit of owning your own home (imputed rent) and access to the country's health system. Studies of income distribution and inequality are based, for the most part, on cash incomes. Cash incomes, however, are only a partial measure of the resources that generate economic welfare. Non-cash incomes from different sources are substantial in aggregate terms, and vary widely across the population in a given country. Furthermore, the issue of non-cash income can be particularly important when undertaking comparisons between countries as the extent and nature of goods and services provided free or at subsidised rates can differ greatly from one country to another.

We, therefore, go on to place a value on:

- imputed rent arising from owner-occupied housing
- benefits arising from free health services; and
- benefits arising from state-provided or subsidised education.

We do so firstly by following the standard approaches used under the AIMAP project. In order to do this we must examine the issues that arise when attempting to value such benefits and the manner in which we should do so.

## **Section 2. Conceptual and measurement issues**

How exactly should we go about valuing these non-cash benefits? Standard practice in the analysis of the distributional impact of publicly provided services is based on two key assumptions (see, for example, Jones (2006), Marical et al. (2006) and Smeeding et al. (1993)):

1. The analysis of incidence is conducted on a static basis, and excludes externalities<sup>1</sup>
2. The value of the transfer to the beneficiary is assumed to be equal to the average cost of producing the relevant service .

Each of these assumptions has been questioned in the literature. For example, Smeeding et al (1993) note that the average cost of provision may overstate the value of the non-cash benefit, as recipients might, if they had the corresponding cash

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<sup>1</sup> Put another way, it is assumed that the only recipients of the relevant service benefit from it (though this may improve the household's position)– and that provision of the service does not create any benefits or losses to the non-recipients (e.g., through tax financing – so it is assumed that the taxes financing the transfers are already in place).

amount instead, prefer to spend some of it on other goods and services. O'Higgins (1981) provides an illustration of a further difficulty with the "cost per capita" method. If, for example, education benefits were measured on the basis of the cost of provision, then a rise in the wages of teachers would lead to a higher estimate of the value of the service to the individual. But under these circumstances, the "output" of the service could be unchanged, so that there would be no real gain to the beneficiary, despite the rise in the benefit as measured by the "cost per capita" approach. A further consideration, somewhat countering the first, is that economies of scale may mean that services purchased "in bulk" by the state are less costly than what individuals could purchase in the market – in which case the value could be greater than under the cost of provision approach. Despite such criticisms, the attribution of benefit based on cost of provision has remained very common in this literature. There are, however, even more fundamental criticisms of the standard approach to which we now turn, and with which we try to deal in our empirical work.

### **2.1: Health Care.**

In the case of public health care subsidies the imputation of non-cash income is often based on a risk-related insurance approach. Each individual is assumed to receive a benefit from the state determined by the average spending on his/her age-sex group,<sup>2</sup> irrespective of what use was actually made of public health services. This approach (used by Saunders et al (1994), Donaldson et al (2002), Bonte et al (2003), Garfinkel et al (2004)) can be seen as an estimate of an actuarially fair insurance premium. These benefits are then added to cash incomes to provide a broader measure of resources and we will make use of this method in our analysis here. An insurance based approach is seen as preferable to one based on the actual use of services, under which the greatest benefit would be attributed to those who make greatest use of health services. An "actual use" approach would imply that the individuals who are most often and most severely ill, and in need of health services, could have "total resources" many times greater than their cash incomes. The implication, when basing studies of distribution on such a measure would be that many very ill individuals would be ranked as higher in the distribution of "total resources" than their healthy counterparts. While this makes sense in terms of tracking the use of resources, it is not

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<sup>2</sup> Adjustments may also be made with respect to the socio-economic group of the individual, or taking into account particular institutional features of the public health system and its interaction with private sector provision of health services and insurance.

appropriate in terms of measuring welfare: it would not be reasonable to describe a person as ‘better off’ because they were sick and in need of medical treatment which they received for free. Studies of income and resource distribution aim to rank individuals in terms of welfare, and already take account of the needs of households of different sizes and compositions by means of adult equivalence scales. When health resources are taken into account, corresponding needs in terms of health must also be brought into the analysis. We extend our analysis in appendix one to include a value for the medical card (a means tested benefit allowing free access to GP’s, various other medical services and free prescriptions) and is thus aimed at the bottom end of the income distribution.

## **2.2: Imputed Rent.**

Housing represents a substantial element of household’s wealth, and households that own their own accommodation have an income advantage over those that have to pay rent. As part of our investigation of aspects of non-cash income, therefore, we seek to adjust income measures to take into account the “imputed rent” enjoyed by owner-occupiers. One method used for such adjustment is the ‘before housing costs’ and ‘after housing costs’ measures of income, as used in the UK’s official analyses of poverty and income distribution (*Households Below Average Income*) and by Fahy et al. (2004). Expenditure on rent and mortgages is deducted from household income, doing away with the need to estimate the “imputed income” derived from owning your own house mortgage free or receiving rent subsidies. While this method has the merit of simplicity, and can be used to identify some of the key features, it fails to take account of the fact that households vary in the strength of their preferences for housing, so that a post-housing costs measure is also an imperfect measure of welfare. Census data show high rates of home ownership in Ireland. As a result, the issue of imputed rent from owner occupation is particularly important in an Irish context. Within the Living in Ireland Survey sample almost 85% of people in the sample are living in owner-occupied accommodation (whether owned outright or owned with a mortgage).

Frick and Grabka (2003) identify three methods for calculating imputed rent

- The capital market approach
- The market rent approach
- The opportunity cost approach

Frick and Grabka assess the three approaches, and conclude that the opportunity cost method offers significant advantages. In the Irish context, the dominance of owner occupation as a mode of tenure and the size of the sample (3,463 households) means that there are just 114 (unweighted) cases of private sector rented households on which the opportunity cost method depends to establish relationships between indicator variables and market rents. This would be a rather shaky basis on which to construct empirical estimates. By contrast, information on the capital value of the house is gained for more than 80% of the sample. In these circumstances it seems prudent to apply the capital market approach. Therefore, analysis here is based on the capital market approach. We use an imputed rent of 3% of the homeowner's net equity in the property, following the procedures of Frick and Grabka. The fact that owner occupation is the predominant mode of tenure means that analysing just owner-occupiers will capture about 90 per cent of the total impact of imputed rent across all tenures.

### **2.3: Education.**

The Irish educational system is organised into three levels:

- Primary schooling operates on an eight-year cycle, typically from age 5 to age 12. Primary schooling is compulsory.
- Second level schooling is compulsory for three years (the “Junior Cycle” or lower secondary), with a “Senior Cycle” (upper secondary) typically taking a further three years.
- Third level education includes university primary degree courses (of 3 or 4 years duration), diploma courses of shorter duration, and postgraduate qualifications

We attribute a value to each student that corresponds to the level of education they are attending. We use the OECD Education at a Glance figures in our analyses. These are rather similar to the estimates from national sources for primary and second level; but quite different at third level, where the spend per student is estimated by OECD to be similar to that for second level students, if expenditure on R&D is excluded, and no more than twice (rather than three times) the primary level if R&D expenditures are included. Again, the issue regarding need arises in the context of education, we will seek to address this in appendix one.

### 3. Distributional Impact of Non-cash Benefits

This section focuses on the impact these non-cash benefits have on the income distribution across quintiles and the impact they have on various inequality and poverty measures. Table one shows the proportion of income the non-cash benefits make up by quintile. We see that the non-cash benefits are more concentrated in the bottom end of the income distribution.

**Table 1. Non-cash incomes as a proportion of monetary income per quintile**

Quintile	IR	Education	Health	All
1 (bottom)	15%	34%	37%	82%
2	10%	24%	20%	53%
3	9%	13%	14%	36%
4	10%	9%	10%	28%
5 (top)	8%	4%	6%	18%
Total	9%	12%	12%	33%

Table two shows the effect these non-cash benefits have on poverty and inequality. The first column shows the value based on equivalised disposable income. We then go on to include the income from imputed rent, education, health and the three combined.

**Table 2. Values of inequality and poverty indices**

Index	Baseline <i>disposable income</i>	Baseline + IR	Baseline + Education	Baseline + Health	Baseline All	Fall In Index
Gini	0.302	0.293	0.273	0.264	0.236	22%
Atkinson 0.5	0.074	0.070	0.061	0.056	0.046	38%
Atkinson 1.5	0.247	0.219	0.219	0.158	0.130	47%
FGT0	0.219	0.194	0.168	0.148	0.103	53%
FGT1	0.053	0.046	0.044	0.030	0.020	62%
FGT2	0.019	0.016	0.016	0.009	0.006	68%

Table 3 shows the percentage fall in each of the indices due to the inclusion of each of the non-cash benefits individually and the last column shows the aggregate impact of all three.

**Table 3. Proportional reductions in inequality and poverty indices**

<b>Index</b>	<b>IR</b>	<b>Education</b>	<b>Health</b>	<b>All</b>
Gini	3%	10%	13%	22%
Atkinson 0.5	6%	17%	24%	38%
Atkinson 1.5	12%	11%	36%	48%
FGT0	11%	23%	32%	53%
FGT1	13%	16%	43%	62%
FGT2	15%	14%	52%	67%

## Appendix One

Does the “insurance-based” approach used to value health services adequately manage to overcome the critique that health needs should also be taken into account? We argue, following Radner (1997), that it does not. The insurance based approach, when linked to age, means that benefits vary sharply according to age group. Again, this is because health status and health service usage are closely linked to age. While there is some “smoothing” compared to the actual use approach, the fundamental point remains. Radner points out the inconsistency between income and needs when it comes to attributing non-cash resources to individuals. For example, the inclusion of Medicare in the income of the aged can result in an upward bias of their economic status. As certain non-cash incomes (e.g. healthcare, education subsidies) may be concentrated in certain subgroups of a population it may distort the economic status of such groups. He also discusses how the choice of equivalence scale may need to differ when non-cash income is included in the definition of resources, as needs associated with the non-cash income may differ. He modifies the equivalence scales to take account of increased need and concludes that the failure to adjust the equivalence scale to take account of additional needs tends to overestimate the economic status of the aged. An alternative to the previous approach used for the valuation of health services is to focus on those elements of health system that do genuinely affect the distribution of resources and welfare. Chief among these is the medical card system (latterly supplemented by the GP Visit card, though this was introduced well after the year 2000 analysed here).<sup>3</sup> The medical card entitles the holder to free GP services, prescription medicines, in-patient hospital services, out-patient services, dental, optical and aural services, maternity and infant care services as well as some personal and social care services. People aged 70 or over are automatically entitled to a medical card. Otherwise a means-test is carried out and those within the financial guidelines can receive a medical card. Those whose income falls above the guideline amount but for whom the cost of medical care would cause ‘undue hardship’ can also be entitled to a medical card. We focus on the 35 per cent of the population who

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<sup>3</sup> It should be noted that, given the association between low income and ill-health, the health need of the medical card population is itself greater than that of the population not entitled to a medical card. We do not attempt to adjust for this difference, but results from Nolan and Nolan (2xxx) indicate that the extent of the difference is far less than the age gradient in health need. Thus our results can be characterised as substantially free of health need differences, as compared with the insurance-based approach where health need differences substantially shape the results.

receive a medical card and use the cost per capita basis to attribute a value to them. This is done by taking the total spent per capita in 2000 by the government on the medical card scheme (reducing the amount spent on drugs and medicines in line with that allowable under the Drugs Payment Scheme which is open to all non medical cardholders).

Parallel arguments can be applied in the case of education. If non-cash incomes are assigned on the basis of cost of provision in respect of each pupil or student in first-, second- and third-level education, then the relative position of families with children appears to improve. But the adult equivalence scales generally used do not take into account children's need for education. This is eminently reasonable, given that in most industrial economies, education is both compulsory and free, at least up to the mid-teens. How then should equivalence scales be adjusted to take into account children's need for education? One approach would be that for the years in which education is compulsory and free, children have a need for education which is equal to that provided by the free system. On this basis, state subsidies for the compulsory education years would not be seen as improving the relative welfare of students or their families. But state subsidies to post-compulsory education (in upper second level and third level) would affect relative welfare.

Regarding imputed rent, Ireland has witnessed a prolonged boom in the housing market; therefore we provide the results of a higher imputed rent value of 5 per cent.

### **Distributional Impact of Adjusted Non-cash Benefits**

Table one shows the monetary, equivalised value of each of the adjusted non-cash benefits by quintile. We see the medical card is focussed at the lower end of the income distribution as expected. Imputed rent rises with the income distribution, likely due to the fact that more affluent people own homes of a higher value. Non-compulsory education varies across the income distribution being highest in the second and fourth quintile and being smallest in the bottom quintile.

**Table 1: Non-Cash Income Values per Quintile**

Quintile	Equivalised Disposable Income Pre-Transfers €	Medical Card €	Imputed Rent @ 3% €	Non Compulsory Education €	Total Transfers €
1	121.80	14.51	21.17	4.77	40.45
2	198.50	8.00	24.12	9.04	41.16
3	275.47	4.43	27.74	6.67	38.84
4	363.93	1.72	36.52	7.55	45.79
5	584.38	0.62	46.73	5.27	52.62
	309.07	5.84	31.27	6.67	43.78

In table 2 we focus on the percentage change in disposable income. We see the gain from the non-cash benefits falling as we move up the income distribution. The percentage income gains are largest for the bottom quintile and fall as we move up the income distribution.

**Table 2: Increase in Income due to Adjusted Non-Cash Incomes per Quintile.**

Quintile	Equivalised Disposable Income Share	Equivalised Income Share Post-Transfers	% Change in Equivalised Disposable Income
1	7.8%	9.0%	33.2%
2	12.9%	13.5%	20.7%
3	17.9%	17.9%	14.1%
4	23.6%	23.3%	12.6%
5	37.8%	36.4%	9.0%
Total	100.0%	100.0%	14.2%

Finally, table 3 shows the effect the adjusted non-cash benefits have on the various inequality and poverty measures.

**Table 3: Impact of Adjusted Non-cash Benefits on Indices of Inequality and Poverty.**

Inequality and poverty indices	Value of the Index		
	Pre transfers	Post Transfers	Change
Gini	0.302	0.276	-8.6%
Atkinson 0.5	0.074	0.061	-16.9%
Atkinson 1.5	0.247	0.173	-30.0%
FGT0	0.219	0.163	-25.5%
FGT1	0.053	0.032	-39.6%
FGT2	0.019	0.010	-47.1%

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