



# THE ECONOMIC AND SOCIAL RESEARCH INSTITUTE

INCOME TAX AND SOCIAL  
WELFARE REFORMS:  
MODEL-BASED ESTIMATES OF  
THE EFFECTS ON HOUSEHOLDS \*

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*Section 1: Introduction*

There is no shortage of proposals to reform the income tax and social welfare systems. Reports by the Commission on Taxation (1982), the Commission on Social Welfare (1986), the National Economic and Social Council (1986), and plans put forward by several political parties have produced a range of alternative proposals. While the aggregate costs of these reforms have been costed, to varying degrees of accuracy, very little information is available on the distributional implications i.e., the question of who gains and who loses from the particular reform.

There is a similar dearth of information on who gains and who loses from more limited income tax and social welfare changes, of the type introduced in a typical Budget. At best, the effects are assessed by reference to illustrative calculations for a small number of family types e.g., a married couple with one spouse working, taxed under PAYE. Because of the great diversity of families' circumstances, and the complex ways in which these circumstances affect income tax liabilities and social welfare entitlements, these illustrative calculations can be quite misleading as to the actual effects even on the groups they are intended to represent. They are even less reliable as a guide to the actual effects on the general population, since the relative importance of the different types is not always known.

Partly as a result of these problems, there has been an international trend towards the analysis of the effects of tax and social security reforms on a large representative sample of actual families, instead of a set of hypothetical examples. In this paper we outline the steps we have taken to provide a similar form of analysis for Ireland. We use some preliminary results to illustrate the advantages and potential of our methods, which represent a major step forward in evaluating proposals for policy changes. Until now, it has often been difficult to establish the effects of policy changes even after they have been introduced. Development of the model described and used in this paper will allow us to assess the likely impact of reforms before they are put into place, and will therefore allow the design of policy to be improved.

We begin by setting out in more detail the need for analysis of tax and transfer systems based on representative samples rather than hypothetical examples. In Section 3, we outline the relevant features of the ESRI Survey of Income Distribution, Poverty and Usage of State Services, which provides the detailed information on incomes and family characteristics on which our analysis is based. Section 4 describes how the present or reformed rules of the income tax and social welfare systems are applied on a case by case basis, in order to find the net effects on each family in the sample i.e., the "model" of the tax/transfer system's rules which is applied to the data-base in order to calculate the

effects on each family. Section 5 shows how the model can be used to analyse the effects of incremental policy changes, using the 1988 Budget as an example. Section 6 examines a policy package consisting of an increase in Child Benefit (Children's Allowance) financed by making it taxable: this illustrates the scope of the model to examine the effects of broader policy reforms, including those which involve an interaction between the social welfare and income tax systems. Section 7 sketches possible future developments and applications of the tax-transfer model, while Section 8 draws together the main conclusions.

*Section 2: Analysing Income Tax and Social Welfare Changes:  
The Need for a Representative Sample*

The limitations of the use of hypothetical examples to examine the effects of changes in tax/transfer policies can perhaps best be illustrated in the UK context. There, the DHSS has made a systematic attempt to illustrate the effects of tax and benefit changes on eight different family types (single person with 0/1/2 children, and married couple with 0/1/2/3/4 children). In order to keep this number of "typical" family types to a manageable number, several simplifying assumptions had to be made. The most important of these were

- (a) the family head is the only earner
- (b) there is only one family in the household (i.e., all children are dependents, and there are none of working age, nor are there other relatives or household members)

- (c) the family lives in a council house paying average rent and rates
- (d) personal allowances are the only income tax allowances
- (e) the family has no unearned income

In the actual population, two-earner couples, multiple tax-unit households (e.g., nuclear families with children of working age), owner occupation, special tax allowances, and unearned income are very important. Even family composition itself shows wider diversity. The net result is, as shown by Atkinson and Sutherland (1983) that the "typical" households in the DHSS tables represent only 4 per cent of actual households in the Family Expenditure Survey. Obviously the number of family types could be expanded, but even then, the analysis of a set of hypothetical examples could not answer many of the important questions which arise when considering policy changes, such as the aggregate cost of the change, its impact on the groups actually at the bottom/top of the income distribution, the variation in impact within these groups, and so on.

Modelling the effects of tax/transfer policy changes on a random sample of actual households allows one to generate results which are representative of the population and allow one to answer these key questions on the cost and distributive impact of a policy changes. It is, of course, important that the reliability of the survey information should be checked against external information, such as numbers of recipients of various social welfare schemes, the distribution of taxable income and so on. These control

totals provide a test of the validity of the survey data, and can be used to correct for the under-representation of certain groups in the population due to differential non-response. This issue is discussed in more detail in the Section 3.2 below.

*Section 3: The ESRI Survey of Income Distribution, Poverty, and Usage of State Services*

*3.1 Sample and Information Collected*

The detailed information needed to allow the analysis of income tax and social welfare changes was collected by the ESRI as part of its project on Income Distribution, Poverty and Usage of State Services. The details of the survey have been set out elsewhere (Callan et al. 1988): here we summarise the main features relevant to the present analysis. The main fieldwork for the survey took place between March and September of 1987. A response was obtained from around 3,300 private households, selected at random from the Electoral Register using the RANSAM programme (Whelan, 1979).

A household questionnaire, which took about 30 minutes to complete, obtained information on household composition, housing tenure and costs, and the usage of health and education services by each household member. Each adult member of the household (aged 15 or over, and not in full-time education) was then interviewed individually, in order to obtain the most accurate and reliable information

possible on all their income sources (both currently and over a 12 month period), and on their current, recent and long-term experience of the labour market. These individual interviews typically lasted from 1 to 1<sup>3</sup>/<sub>4</sub> hours. Where a full individual interview could not be completed, for whatever reason, an abbreviated questionnaire with key information on income and labour force status was obtained. Information was gathered on a total of 8,200 adults.

### *3.2 Response Rate and Re-Weighting*

The responding households represented 64 per cent of the effective sample (i.e. contactable households). While this is somewhat lower than for other ESRI surveys (perhaps due to the sensitivity of the topics, and the longer interview times), it is quite comparable to that achieved in the Central Statistics Office's 1973 and 1980 Household Budget Surveys. These Surveys had response rates of 57 and 56 per cent of the effective sample. The higher figure for the ESRI Survey reflects the fact that the HBS imposes an even greater burden on respondents because of the need to complete a two-week expenditure diary, and must exclude households where even one member fails to complete this diary; the ESRI survey was able to use the abbreviated questionnaires, and some income imputations detailed in Callan et al. (1988) in cases where not all household members completed a full individual interview.

The responding households were "reweighted" using special tabulations supplied by the CSO so that they were fully

representative of the national position as found in the Labour Force Survey of 1986 in terms of the following characteristics: household size, urban/rural location, age and socio-economic group of head of household. Further independent checks then confirmed the representativeness of the sample in terms of the distribution of households with different numbers of members engaged in paid work, or unemployed (see Table 1 of Callan and Nolan, 1988, p. 61). The reweighted numbers of recipients of major social welfare schemes were also found to tie in closely with the administrative statistics (See Table 6.1, Callan et al., 1988, p. 61).

These checks indicate the general reliability of the sample. Further checks on its representativeness in terms of the the income tax base, and of child benefit payments, will be reported in the context of model-based calculations in later sections.

### *3.3 Concepts Used in the Analysis*

The basic unit in the analysis will be referred to as a "tax unit". It corresponds to an individual or married couple, together with dependent children, if any. A dependent child is defined here as aged below 15 or still in full-time education. Thus, the tax unit coincides with the income tax unit in Ireland when child tax allowances were still in force. Many social welfare schemes still operate at approximately this level. Members of the same household who belong to different tax units are, in general, assessed quite



differently by the social welfare and tax codes. Thus, it is the most relevant unit for policy purposes. Approximately two-thirds of households in the sample contain just one tax unit, but 21 per cent contain two tax units and 13 per cent contain three or more. A total of just under 6000 tax units in the Survey represents approximately 1.5m tax units in the country.

The Survey provided measures of income from employment, self-employment, private pensions, sick pay, social welfare payments, rent, interest and dividends. Here we should note that most income components are measured on the basis of amounts currently received. The exceptions would be income sources which tend to be more variable, where a longer period is used in order to obtain a more reliable estimate of the usual income: rent, interest, dividends, self-employment and farming income. Information was also collected which would allow reliable estimates of employment and social welfare income over a 12 month period, and this variable will later be used as the more appropriate one for a tax/transfer model.

The estimation of farm income is described in Callan et al. 1988. Here it is important to note that the concept of farm income used is family farm income as defined by An Foras Taluntais's National Farm Survey: this can be significantly greater than taxable farm income because of provisions in the tax code for capital allowances and stock relief.

*Section 4: How the Effects of Policy Changes are Calculated*

In this section we describe the current state of the "model" of the income tax and social welfare systems, which is applied to the data on each tax unit in order to calculate the "cash" or "first-round" effects of policy changes. We also indicate some of the advantages of this form of policy analysis.

The model allows one to choose a set of policy parameters, including income tax and PRSI rates, tax bands, personal and other allowances, exemption limits, and the levels of certain social welfare payments. Once these policy parameters are set (for instance, at their status quo values as of 1987), the model takes each family unit in turn, and calculates its social welfare receipts and its income tax liabilities, based on its gross income and other circumstances. This calculation then yields the level of net income for the tax unit, and the marginal income tax rate it faces. We can then repeat the process for some other set of policy parameters (for example, those introduced in the 1988 Budget), and derive the change in net income and the change in the marginal tax rate for each tax unit. The aggregate of the changes in net income represents the net cost or revenue from the change: a "revenue neutral" reform would have a zero net cost. Other summary statistics based on the gains and losses for each tax unit indicate the distributional implications of the policy change under consideration.

Modelling the operation of the tax/transfer system in this way opens up the scope for analysis of considerable richness and variety. Among the major advantages of this method of analysis are:

- (i) Policy changes can be specified in terms of the policy instruments at the government's disposal, e.g., changes in rates of tax or benefit or changes in tax-free allowances;
- (ii) The cash effects of changes on individuals, tax units and households can be calculated. These cash effects can be used to show how prespecified groups are likely to be affected (or to characterise the main differences between those who are likely to gain or lose large or small amounts);
- (iii) The modelling approach allows the analysis of both incremental and more fundamental policy changes;
- (iv) It is easy to compare alternative reforms, as well as any given reform and the status quo.

Concrete illustrations of these advantages are given in the following sections.

*Section 5: Incremental Policy Changes: The 1988 Budget*

The usefulness of the model in analysing the effect of budget-style changes in taxation and social welfare payments can be illustrated by calculating the individual and combined effects of the main changes in 1988.

The main changes in the structure (rather than the administration) of income taxation in the 1988 Budget were a small increase in the personal and PAYE allowances, a more substantial widening of the 35% income tax band, and a small widening of the 48% band; income exemption limits were also raised, as were the ceilings for PRSI and health contributions. The main changes in social welfare payments introduced in the 1988 Budget were a 3% across the board increase, roughly in line with consumer price inflation, and a special higher increase for those on the lowest rates of payment. The personal rate for Unemployment Assistance and Supplementary Welfare Assistance was raised by 11%, while the child dependant allowance was increased by 6%; the allowance for a dependent spouse was simply in line with the general 3% increase. This is the set of changes which we consider here; we do not include, for instance, the introduction of PRSI for the self-employed, which raises issues concerning the stream of future benefits to which contributors will become entitled.

Before analysing the model's estimates of the distributive implications of these measures, it is important to check that

the model's estimate of the aggregate amount distributed is approximately correct. It is often thought that income surveys tend to underestimate total income, and thereby the income tax base. In the case of our survey, however, we have found a substantial overprediction of the reported income tax take for 1987. Identification of the exact factors responsible for this, their relative importance, and what remedial action (if any) is required by each different causal factor will figure high on our agenda for developing the model. Here we can only mention some of the factors which could contribute to this overprediction of revenue, and point out that until it is satisfactorily explained, certain aspects of the model results must be treated with caution.

The amounts of money received under the tax amnesty suggest that the eventual tax take for 1987 will be significantly above what was originally reported; once this correction is made to the official figures, no further action will be required on this front. We have already noted that the lack of adjustment for capital allowances and stock relief may have led to overprediction of the tax take from farm income: the size of this problem can be identified. Similarly, we can calculate how much of the overprediction is due to employee and self employed incomes, and narrow down the responsible factors. One other factor which may account for some overprediction is that investment income was treated as taxed at the full marginal rate, while in practice some of this income may be taxed only at the standard rate of the Deposit Interest Retention Tax.

Despite the overprediction of the aggregate level of income tax receipts, the model's estimates of the aggregate cost of the 1988 Budget's tax measures is, at about £145m very close to the £150m estimate of the full year cost given in the Minister's Budget Speech. The model underestimates the cost of the social welfare increases, at around £80m as against the Budget estimate of £100m. These estimates of the aggregate cost are however, close enough to the Budget estimates to permit some confidence in the analysis of the way in which these increases were distributed, to which we now turn.

Since the 1988 Budget measures which we are considering did not create any losers, we can examine the pattern of aggregate and percentage gains across the income distribution in the way shown in Table 5.1. We have divided the population of tax units into 10 groups or "deciles", ranked by their net disposable income in 1987, from poorest (bottom decile) to richest (top decile). Each decile contains the same number of tax units: 10 per cent of the total. The income ranking takes account of the different numbers of adults and children in different tax units, by counting 1 for the first adult, 0.7 for each other adult aged 18 or over, and 0.5 for each child in the tax unit. This "equivalence scale" as it is known, is relatively generous to children. The results have also been obtained for a scale less generous to children, and closer to that embodied in the current social welfare rates of payment: 1 for the first adult, 0.66 for each other adult, and 0.33 for each child. The

equivalence scale adjustment can be thought of as a slight generalisation of the idea of using income per person: instead, we use income per "adult equivalent" or "equivalent income".

Table 5.1 Distribution of Gains from Main Income Tax and Social Welfare Measures in 1988 Budget by 1987 Net Equivalent Income Decile (Equivalence Scale 1 for the first adult, 0.7 for other adults, and 0.5 per child)

Decile	% Change	Aggregate Gain (£m p.a.)
Bottom	1.55	4.2
2nd	5.59	22.1
3rd	3.01	17.3
4th	2.46	13.2
5th	1.99	13.8
6th	1.78	14.6
7th	1.32	14.3
8th	1.45	19.2
9th	2.65	39.5
Top	2.68	66.8
Total	2.42	225.2

Separate analysis of the tax changes and the special social welfare increases helps to explain the net pattern shown here. The special Social Welfare increases are concentrated particularly in the second decile; the first decile contains many tax units which are not in receipt of any social welfare payment. The gains from the tax changes, on the other hand,

were found to rise with income, with a particular concentration in the top two deciles: this reflects the fact that top rate taxpayers gain the maximum absolute benefit from widening of the 35% rate band (i.e., the amount of the band increase times the marginal tax rate) and the heavy concentration of top rate taxpayers in the top two deciles.



*Section 6: Structural Reform:  
An Increased, Taxable Child Benefit*

Evidence of the financial difficulties facing low income families with children (both in and out of work) has prompted calls for greater assistance to be directed towards them. However, it is not clear that existing policy instruments (such as child benefit, child dependant payments, and Family Income Supplement) can achieve the desired objectives at an acceptable cost, or without undesirable side-effects on incentives. For this reason, proposals to reform the Child Benefit scheme, by increasing the payment and making it taxable, have periodically been mooted. Most recently, the National Plan, *Building on Reality 1984-1987*, came down in favour of this course of action, while the Commission on Social Welfare reports that it did not reach agreement on this issue (p. 296).

McCashin (1988) documents the chequered history of proposals of this type. The full cost and distributional implications of the National Plan proposal to integrate all forms of child income support into a single child benefit payment were not explored, and the proposal was not implemented. The Commission on Social Welfare's failure to reach agreement on this issue may reflect fundamental disagreements on values or objectives: but it could, on the other hand, be largely due to differences of opinion as to the actual effects of such a measure. Here we explore the cost and distributional implications of an increase in Child Benefit which is financed by making the benefit taxable: our results could

help to resolve disagreements which arise from differing views on the likely effects of such a measure, rather than more fundamental disagreements concerning values and objectives.

The first, and critical, result derived from our analysis is the level of increase of Child Benefit which is consistent with a zero net cost to the Exchequer. The preliminary answer derived from our model is that an increase of around 40%, or £1.50 per week for each of the first 5 children, and around £2 per week for 6th and subsequent children, would be "revenue neutral". That is, the 40% increase in gross expenditure on child benefit would be offset by an equivalent increase in income tax revenue.

It is important to note the preliminary nature of this answer, before proceeding to illustrate the distributional analysis which is based on this premise. We have already seen that the model appears to overpredict existing income tax revenue. Its prediction of expenditure on child benefit is much closer to the actual figure: £227m as against £215m. The overprediction of the tax base may lead to an upward bias in the estimate of the tax revenue from taxing child benefit. However, it is not certain that such a bias exists, since the previous section has shown that the estimates of the cost of Budget changes in tax rates and bands were quite accurate. Further work along the lines indicated in that section will be necessary to ensure that the model's predictions in this area are reliable. In the interim, we report the results

without further adjustment, but warning against placing too heavy a burden on these preliminary figures: our main concern is to illustrate the value of the method, and our evaluation of the particular reform must be considered a provisional one.

Table 6.1 shows the distribution of the percentage gains and losses under an increased, taxable Child Benefit.

Table 6.1 Distribution of Gains and Losses (% of Net Income) for Increased, Taxable Child Benefit

Gain(+) or Loss(-) % of Net Income	Revenue Neutral Reform	Standard Rate Taxpayers Compensated
	% of Tax Units	
< - 5%	0.0	0.0
-3% to -5%	0.3	0.2
-1% to -3%	2.6	1.8
0 to -1%	20.0	7.1
No Change	66.1	79.9
0 to +1%	0.5	0.2
+1% to +3%	4.1	3.5
+3% to +5%	3.7	3.5
> +5%	2.6	3.7
	<u>100.0</u>	<u>100.0</u>

The most striking feature of the balance of gains and losses under the revenue neutral reform is the large number of tax units which would experience small losses, as against a smaller number which would experience larger gains (about 10% gaining

more than 1%). This picture reflects the fact that the increase in Child Benefit of £1.50 per week is just below what is required to compensate standard rate taxpayers for making the benefit taxable; they lose around 20 pence per child per week. A policy change which involved such a large number of losers might well be deemed either undesirable, or impossible to implement. The cost of raising Child Benefit by the full amount necessary to compensate standard rate taxpayers for making the benefit taxable is estimated by the model at between £15 and £20 million pounds. The distribution of gains and losses (second column of table) then shows a more even balance between gainers and losers, with the gainers experiencing rather larger percentage changes in net income.

We now turn to the question of where the gainers and losers from the original, revenue neutral reform are located in the income distribution. Table 6.2 reports the aggregate (or mean) percentage gain or loss for each decile of the equivalent income distribution, and the aggregate gain or loss (in £m per year) for each group. The percentage change column shows a progressive pattern in the net income changes: gains for the bottom half of the distribution, and losses for the top half. The percentage and aggregate gains are largest for the bottom three deciles. The aggregate gain and aggregate loss columns show that there are no losers in the bottom decile and very few in the second; while there are no gainers in the top two deciles, and very few in the deciles just below that. An alternative equivalence scale, which makes a less generous allowance for the needs of children,

and is closer to that embodied in the present structure of social welfare payments yields a similar pattern of results. The main differences are that there are no losers in the second decile, and very few in the third, while the aggregate gain peaks at the third rather than the second decile.

Table 6.2 Distribution of Gains and Losses from an Increased, Taxable Child Benefit by 1987 Net Equivalent Income Decile (Equivalence Scale 1 for the first adult, 0.7 for other adults, and 0.5 per child)

Decile	% Change	Aggregate Gain (£m p.a.)	Aggregate Loss (£m p.a.)
Bottom	3.18	4.9	0.0
2nd	1.30	10.1	0.5
3rd	0.72	7.2	1.4
4th	0.20	2.9	1.3
5th	0.12	2.7	1.7
6th	-0.01	1.2	1.6
7th	-0.10	0.7	2.5
8th	-0.18	0.1	3.9
9th	-0.23	0.0	5.5
Top	-0.21	0.0	7.6

Blackwell (1988) has pointed out that "the taxing of Child Benefit would bring more low income families into the tax net and into the region of the poverty trap.... This effect would be magnified, especially for the larger families, if the trade-off for the taxing of Child Benefit were to be an

increase in rates of Child Benefit". While a full examination of the complex of factors discussed by Blackwell is outside the scope of this paper, we can examine the changes in marginal income tax rates implied by the reform under discussion here. This gives some idea of the magnitude of the problem identified by Blackwell.

Table 6.3 Changes in Marginal Income Tax Rates  
Arising From Increased, Taxable Child Benefit

Change (in Percentage Points)	% of Tax Units	Number of Tax Units ( '000s)
-25	0.5	7
0	98.0	1,502
10	0.2	4
13	0.3	5
35	0.4	6
60	0.6	10

Table 6.3 shows the number and percentage of tax units who face unchanged or changed marginal tax rates after the reform. While the vast bulk of taxpayers face unchanged rates, around half a percent of tax units are shifted upwards between the 35 and 48 or 48 and 58 per cent tax rates. Another half a per cent of tax units move from being exempt from tax to paying at the standard rate, having moved through the marginal relief area. A further 1 per cent of tax units are affected by moving in or out of the marginal relief area, where a 60% marginal rate applies. Just under

half of these move from this 60% into the standard rate area, while the remainder move from being exempt from income tax to the marginal relief area.

The marginal rate on incomes just above the exemption limit may account for the small number of losers in the lower income groups. The aggregate amount of "tax clawback" from this group is, however, fairly small. It would be possible therefore, to design a policy change which did not worsen the position of this group, or even improved it, at relatively low cost. If a policy change of this type was being contemplated, it should also take into account the interaction with the Family Income Supplement scheme, to ensure that income support objectives are achieved without worsening the effective marginal tax and benefit withdrawal rates facing low income families headed by someone in work.

An obvious, but important point is that the cash effects of a revenue neutral reform must make losers of some people. Breaking the constraint of revenue neutrality within the personal tax/social welfare area will also typically involve indirect costs (such as deferred taxation to service borrowing, or effects via the impact on the corporate sector) which must be taken into account in assessing the overall impact. If, however, a prior decision has been taken which allows a net gain for the personal sector, the model allows for the examination of policies which allocate that net gain in different ways. Thus, the model suggests that if £20m were available to spend on the Child Benefit scheme, it would

be possible to finance *either* an increase for all recipients of Child Benefit of around 9 per cent, *or* an increase of over 50 per cent for those not paying income tax, combined with net reductions of between 14 and 35 per cent for higher rate taxpayers, and leaving standard rate taxpayers unaffected.

### *Section 7: Future Developments*

In the previous two sections we have illustrated the advantages of modelling the rules of the income tax and social welfare systems, under the status quo and particular reforms, and applying these to predict the effects of reforms on a sample of households and individuals. Such calculations are usually referred to as 'cash gain' or 'first-round' effects. A further advantage of the modelling approach is that it can go beyond this, in attempting to take into account individuals' and households' behavioural responses to policy changes. Calculations which ignore such responses tend to overestimate welfare losses and underestimate gains, relative to 'second round' estimates allowing for behavioural reactions. Cash gain calculations may therefore have a bias in favour of the status quo (see King 1983 for an illustration of the possible extent of this bias). The issues concerning behavioural responses can also be seen as part of the wider questions of tax incidence.

In the tax/transfer area, labour supply responses are perhaps of the most obvious importance, and efforts have been made to incorporate such elements into a micro-data based model of the



tax/transfer system. As discussed in Atkinson and Sutherland (1988) specification of such behavioural elements in a way which is both satisfactory from a theoretical point of view and suitable for incorporation in a tax/benefit simulation model is a complex undertaking. Only limited progress has so far been achieved in this area internationally and the estimation of responses on Irish data involves a great deal more than simple replication of work done elsewhere. Simply modelling the rules of the Irish income tax and social security systems, as they are currently and as they would be under various proposed reforms, represents a considerable improvement on the analysis currently possible here, and has therefore been our immediate goal.

Our plans for the incorporation of behavioural responses are outlined in Callan and Nolan (1987). While developing a programme of labour supply research along the lines indicated there, we can provide some indication of the effects of policy changes on incentives, such as marginal tax rates. Further sensitivity analysis, where particular behavioural responses are assumed, will also be possible. The question of behavioural responses can be seen as part of the wider issues concerning tax incidence.

At present the income tax side of the model is more highly developed than the social welfare side. In the next phase of development, entitlements to means-tested benefits will be calculated on the basis of the appropriate means test and qualification conditions (e.g, unemployment, illness, old-age

etc.). This will allow consideration of quite general reforms of the social welfare system, and of issues related to the non-take-up of means-tested benefits. Within the next year we intend to develop the model so that it can cope with major reforms, such as the Phase 1 proposals of the Commission on Taxation, negative income tax schemes, and other ways of integrating social welfare and taxation. In the longer term, we also aim to produce a version of the model which could be used by policy makers and other interested parties in order to improve the quality of policy design. In the UK, the Institute for Fiscal Studies' model (Davis, Dilnot, Stark and Webb 1987) and the LSE's TAXMOD would be the best known and most highly developed public use models of this type.

#### *Section 8: Conclusions*

There has, up to now, been a distinct shortage of information on the pattern of gains and losses arising from actual or proposed to the Irish income tax and social welfare systems. There are severe difficulties in relying on calculations for hypothetical "typical" families to identify the overall picture of gains and losses. A more accurate and reliable picture can be obtained by applying the rules of the existing and reformed tax/transfer systems on a case-by-case basis, to establish the income tax liabilities and social welfare entitlements of a nationally representative sample of actual families; this is what a "tax/transfer model" does. The

model described in this paper is designed to use the data gathered for a nationally representative sample of households in the ESRI Survey of Income Distribution, Poverty and Usage of State Services. It allows the cost, revenue and distributional implications of a broad range of policy changes to be explored in much greater depth than has been possible heretofore.

Two examples of the type of reform which can be analysed by the model were given. The first was the set of incremental policy changes embodied in the 1988 Budget, including special social welfare increases for those on the lowest rates, and income tax reductions. The second was a policy package consisting of an increase in Child Benefit financed by making the benefit taxable; the analysis of this reform illustrated the advantages of the model in estimating the net costs of proposals which involve an interaction between the income tax and social welfare systems. Some indications of the effects on marginal tax rates were also given. The results are preliminary at this stage, but serve to illustrate the potential of this form of analysis.

Future developments will include an analysis of the cash or "first-round" effects of more wide-ranging reforms, such as the phase 1 proposals of the Commission on Taxation; estimation and incorporation of behavioural responses, particularly labour supply responses, to policy changes; and the production of a "public-use" version of the model, so that policy-makers and other interested parties can assess

possible policy changes independently. The extent of this ambitious programme for the future should not obscure, however, the major steps which have already been taken towards putting the evaluation of Irish tax and welfare policy changes on a firmer footing.

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