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TAX REFORM: SELECTED ISSUES

*Tim Callan, Claire Keane and John R. Walsh**

1. Introduction

The report of the Commission on Taxation (2009) documents an agenda for the reform of taxation at a time when the public finances are under very severe pressure. It would undoubtedly be easier to reform taxation at a time when the overall tax take could be reduced, rather than when gains and losses must balance out in a revenue-neutral fashion. It is still more difficult if reforms have to be introduced at a time when, for macroeconomic reasons, the overall tax take must rise.[1] But even when facing the task of increasing revenues, there are choices to be made between increasing rates on the existing base, and broadening the base, without an increase in rates. As Poterba (2009) stated in this year's Geary Lecture, a touchstone result in public finance is that …*the distortionary cost of a tax system depends not on the level of tax rates but on the square of tax rates.*[2] This makes a strong argument for base-broadening rather than rate increases, which informs much of the report of the Commission on Taxation.

In this paper, we address a selection of issues linked by the theme of base-broadening; and we consider some aspects of the income tax rate structure which were addressed by the Commission. The two areas of base-broadening we consider are:

- Introduction of a tax on residential property (Section 2); and
- Inclusion of child benefit as part of taxable income (Section 3).

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[1] The February 2008 terms of reference for the Commission included keeping "the overall tax burden low" and implementation of a carbon tax on a revenue-neutral basis. The January 2009 Framework document agreed by the social partners included the following: *Additionally, given the urgency of the situation and the role that taxation will have to play in bringing stability back to the public finances, the Government is asking the Commission on Taxation to identify appropriate options to raise tax revenue and to complete its report by September 2009.*
[2] The basic result is due to Harberger (1964). There have been many further refinements and extensions, but Auerbach and Hines (2001) conclude that *Fundamentally, it remains true that departures from marginal cost pricing are associated with excess burden, that the magnitude of excess burden is roughly proportional to the square of any such departure.*

Each of these raises issues requiring close investigation, and we use *SWITCH,* the ESRI tax-benefit model to examine the first-round implications of policy changes in these areas.[3] The main findings are drawn together in the final section.

2. Property Tax

CONTEXT

A recent OECD study on taxes and economic growth (Johansson *et al.*, 2008) summarised the main advantages of property as a base for taxation:

- property is immobile,
- property taxes are hard to evade or avoid,
- property tax revenue can be used to reduce the burden of income taxation, and has fewer behavioural consequences than income taxes,
- property taxes can offset distortions caused by favourable tax treatments of owner occupation which tend to cause overinvestment in housing,
- property is a major component of wealth,
- property is suitable as a local tax base.[4]

The property tax heading includes recurrent taxes on immovable property (paid by both households and businesses), taxes on net wealth (paid by both households and corporations), taxes on gifts and inheritance and taxes on financial and capital transactions. Johansson *et al.* (2008) summarise empirical work, based on a panel regression covering 21 OECD countries over the period 1970 to 2005, suggesting that *…recurrent taxes on immovable property seem to have the least adverse effect on GDP per capita…* They found that within the OECD, recurrent taxes on immovable property accounted for about half of total property taxes, with taxes on transactions accounting for about another quarter.

The balance of taxes within the property tax heading is quite different for Ireland. The Commission on Taxation points to Ireland's heavy reliance on stamp duty and transactions taxes in the taxation of property. This imposes costs on mobility, including mobility between jobs requiring a change of residence. It distorts decisions as to whether to move to a more suitable property for changed needs (larger family, empty nest, or change in health status) or to adapt an existing property. It also means that stamp duties can be particularly sensitive to the state of the economic cycle. Stamp duties had been less than half of the "taxes on property" category in the 1990s, but rose to be over 70 per cent by 2006. However, the end of the housing boom has seen declines in property values and in transactions, which have greatly reduced revenue from this source in the recent past. Ireland has not had an annual tax based on domestic residential property values since the abolition of domestic rates in 1978. Both the Commission on Taxation and the OECD study point to a further advantage of an annual tax on immovable

[3] A third area where they may be scope for base-broadening reform, the tax treatment of pensions, was also considered by the Commission. This is the subject of a separate study (Callan *et al.*, 2009b).
[4] In this paper we examine the potential for a national property tax; we do not attempt to deal with issues of local taxation.

property: this tax base is more stable than one based on transactions. Indeed, Johansson *et al.* (2009) state that …*tax revenue generated from this tax is …. more predictable than for revenues obtained from labour and corporate taxes, partly due to less cyclical fluctuation in property values (e.g. Joumard and Kongsrud, 2003).*

RECOMMENDATIONS OF THE COMMISSION ON TAXATION

OECD (2006) has stated that *Ireland has some of the most generous tax provisions for owner-occupied housing, largely because it is the only OECD country that allows a tax deduction for mortgage interest payments at the same time as not taxing property values, capital gains or imputed rent.* In this context, the Commission on Taxation has recommended the introduction of an annual tax on residential housing units, with liability falling on the owner of the property (whether owner occupier or landlord). There would be exceptions for social housing (including local authority rented housing)[5] and some more limited exceptions such as nursing homes and boarding schools. Stamp duty for purchasers of a principal private residence would be zero-rated; and the tax would replace the €200 charge on second homes recently introduced. Key design features of the Commission's proposal for an annual property tax (APT) include:

- The tax liability be broadly proportionate to the value of the property, calculated as a fixed percentage of the midpoint of the valuation band into which the property falls.[6]
- The owner(s) of the property would be liable for the tax.
- The annual property tax should have regard to ability to pay. In particular, the Commission recommends that there should be a waiver scheme for those on low incomes, a 10 per cent reduction where the principal income earner has …*a substantial and permanent disability*; and a further provision that in some other cases the tax could be …*deferred and recovered when the property is subsequently sold or transferred.*

The link between property tax and ability to pay is a crucial one for the acceptability of such a tax. One of the main objections raised to an annual property tax is that it is "unfair" because it does not take account of the difficulties it would pose for low income individuals. The example often given is of a widow or pensioner living in a house with a value which would make for a large property tax bill and would be difficult or impossible to pay from a low income. The Commission makes a broad recommendation on this issue; we are able to explore what is involved in greater depth, as explained in the next sub-sections.

As regards the implementation of a property tax, the Commission recommended that the main valuation mechanism should be self-assessment, subject to appropriate monitoring and audit mechanisms. To this end, the development of an up-to-date and consistent valuation database is seen as critical, with this database being made available on-line to assist taxpayers in valuing their own property. In our view, self-assessment is a possible option for use as a valuation mechanism, but not the only one. Given that there are fewer transactions than usual in the current housing

[5] In the case of local authority housing, the owner/landlord would be the local authority.

[6] For houses in the highest valuation band, there is no midpoint, and actual market values are used – there is no "capping" of potential property tax liability.

market, and greater uncertainty over house values, it is possible that an alternative might be preferred. Modern methods of valuation, using statistical models explaining house price variation based on the characteristics of the dwelling,[7] and the portability of computing power, mean that the process of valuation can be completed much more quickly than in the past. Experience from the Northern Ireland (Northern Ireland Department of Finance and Personnel, 2009) and elsewhere (McCluskey and Adair, 1997) suggest that development of a valuation database could be achieved within a relatively short time frame. Thus, in our view, the Commission's recommendation of a property tax should not be seen as hinging on the use of self-assessment as a valuation mechanism; there are alternatives which could also be used to implement their design in a relatively short time frame.

ANNUAL PROPERTY TAX: ANALYTIC FRAMEWORK

In order to examine the potential impact of an annual property tax with an income-related full or partial waiver, we need a suitable database. This must contain a nationally representative sample of households, with information on the value of the house or apartment, and detailed information on the incomes and family relationships of those living in the dwelling. The Central Statistics Office Survey on Income and Living Conditions[8] provides such information, and our analysis is based on the data from that survey for the year 2005.[9] We have, however, made a number of adjustments to take account of developments in income and in the housing market since that time. We also need to be able to simulate the rules of the property tax system, and of a waiver scheme related to income and/or other characteristics of the owner of the property. This is provided by an extension of *SWITCH*, the ESRI tax-benefit model, to include options for a tax on owner-occupied property, and for a full or partial waiver of that tax depending on income.

The property tax we analyse is very similar in structure to that recommended by the Commission on Taxation, but there are some differences. Chief among these is the fact that the property tax we analyse does not apply to rental property, but only to owner occupied property. This is because data on house values are only gathered for owner-occupiers in the survey. There are also issues around the appropriate treatment of the rental sector,[10] but we are unable to explore these with the data currently available. However, given the high rate of owner-occupation, and the fact that the Commission excludes both local authority tenants and the social housing sector from the remit of its Annual Property Tax, the analysis here comes close to capturing the main effects of a tax as proposed by the Commission.

[7] These are know as "hedonic" pricing models, and are widely used. The permanent tsb/ESRI house price index is based on this approach.

[8] The survey is known as EU SILC, as it is conducted in all EU countries with a view to providing comparable statistics on income and living conditions.

[9] The estimated value of the housing stock is close to the product of the number of dwellings (Department of the Environment) and the standardised average house price (permanent tsb/ESRI series).

[10] It may be appropriate to have some form of property tax for the rental sector, as discussed in Callan *et al.* (2009a) but it should not be assumed that this would have exactly the same form – or the same goals – as a property tax on the owner-occupied sector.

A second difference is that the Commission proposes the use of banded house values, whereas our analysis looks at the use of discrete market values as reported by respondents to the survey. Compared with a discrete value system, the banded system can be seen as involving a higher payment for those with house values in the lower half of the band, and a lower payment for those in the top half of the house value band. The reason for adopting a banded system seems to be a practical one: that the introduction of a system based on discrete values would take longer to set up. Nevertheless, a banded system could be a stepping stone towards a discrete value system and the overall impact of the banded system proposed by the Commission can be expected to be broadly similar to that of the discrete system.

Full details of the methods and assumptions used in the analysis, and more detailed results on the potential impact of an annual property tax on households are available in a companion paper (Callan *et al.*, 2009a). Here we concentrate on three main aspects:

- The relationship between a property tax and ability pay, under different forms of a low income exemption scheme.
- The regional distribution of the revenue raised by a property tax.
- Transitional arrangements affecting those who have paid stamp duty during recent years.

The next three subsections deal with each of these issues in turn.

PROPERTY TAX AND ABILITY TO PAY

We compare three forms of property tax. The first might be termed a simple property tax, with liability related only to the value of the property, and having no extra component related to ability to pay. This case is useful as a benchmark against which to measure the effectiveness of income exemption schemes in limiting the impact on lower income earners – it is not intended as a policy proposal. The other two variants have an income limit below which no property tax is paid (either €12,000 per annum, roughly the level of the State Contributory Pension, or €15,000 per annum), and a "rebate withdrawal rate"[11] which sees property tax liability rise by 20 cent for every euro of income above that limit. The income concept used in both of these variants is income adjusted to take account of the needs of families of different sizes and age compositions. The adjustment is done using an adult equivalence scale, with the first adult in the family counting as 1, and a second or subsequent adult as 0.66, to take account of economies of scale. Children are counted as having needs equivalent to 0.33 of those of the first adult. This is the national equivalence scale used by CSO in monitoring both the "at risk of poverty" measure and the "consistent poverty" target, and close to the scale implicit in the payment rates for social welfare schemes. In all cases, the rate of property tax assumed is 0.4 per cent of property value –

[11] This is equivalent to the marginal relief rate in the income tax code. Those with a full exemption can be thought of as getting a rebate equal to the full value of their property tax liability, with this rebate being reduced by 20 cent for each euro of income above the income exemption limit.

a figure chosen to arrive at a revenue of approximately €1,000 million per annum.[12]

Table 1: Revenue Impact of Alternative Waivers and Rebates for Property Tax

	Income Exemption Limit (Annual Disposable Income Per Adult Equivalent)	Rebate Withdrawal Rate (%)	Revenue €Million Per Annum
Simple property tax	0	n.a.	1,101
Property tax with income exemption limit and marginal relief	€12,000	20	973
Property tax with income exemption limit and marginal relief	€15,000	20	906

Note: A tax rate of 0.4 per cent is applied in all cases.

Table 1 summarises the main results in terms of the overall revenue that could be collected under each of these schemes. A simple property tax with no income exemption limit would raise about €1,100 million per annum. A tax with an income exemption limit of €12,000, and a rebate withdrawal rate of 20 per cent, would raise about €970 million. Extending the income limit further up the scale to €15,000 per annum would see the revenue fall to just over €900 million. Thus, the alternative schemes with income exemption limits would retain between 80 and 90 per cent of the maximum potential revenue.

How would the distributional impact of a property tax be affected by these different approaches? Table 2 summarises the impacts at different income levels, dividing the population into 10 equal sized groups from those with lowest to those with highest income ("deciles"). The income criterion used takes account of differences in family size and age composition in the manner described earlier (i.e., uses income per adult equivalent). A simple property tax with no income-related relief would see losses of between 1 and 2 per cent for those in the bottom 30 per cent of the income distribution. An income exemption limit of €12,000 per annum would eliminate losses for the bottom 10 per cent, limit them to 0.3 per cent for the next decile, and reduce them from almost 2 per cent to 1 per cent for the third decile. A higher income limit of €15,000 per annum could eliminate losses for the 20 per cent of households with lowest incomes, and limit losses to 0.2 per cent for the third decile.

Taken together, Tables 1 and 2 indicate that an income exemption limit, along with a gradual withdrawal of the full rebate, could be used to relate property tax liability to ability to pay, limiting the impact on those on the lowest incomes. At the same time, the property tax could raise between 80

[12] The total revenue is a product of the rate and the value of the owner-occupied housing stock. The rate required to generate €1,000 million depends on the value of the housing stock; the conservative assumption adopted on the path of house prices means that the rate required to generate this revenue may be less than 0.4 per cent. The Commission looked at rates of 0.25 and 0.30 per cent.

and 90 per cent of the maximum revenue. In part, this reflects the fact that those with low incomes tend also to have lower valued property on average. The existence of a low income rebate or full waiver would, of course, imply an increase in the effective marginal tax rate on income of those benefiting from a rebate. However, it seems that the proportion affected in this way would be not dissimilar to those in Great Britain and in Northern Ireland.

Table 2: Distributional Impact of a Property Tax With and Without Income Exemptions

Decile	Adjusted Net Income Per Week		% Change in Income for Income Group		
	More Than	*Less Than*	*Simple Property Tax*	*Income Exemption Limit of €12,000*	*Income Exemption Limit of €15,000*
Lowest		204	-1.0	0	0
2	204	263	-1.4	-0.3	0
3	263	325	-1.9	-1.0	-0.2
4	325	396	-1.2	-1.1	-1.0
5	396	449	-1.0	-1.0	-1.0
6	449	519	-1.3	-1.2	-1.2
7	519	605	-1.3	-1.2	-1.2
8	605	711	-1.6	-1.5	-1.5
9	711	889	-1.2	-1.2	-1.2
Highest	889		-1.1	-1.1	-1.1
Total			-1.3	-1.1	-1.0

Note: Each decile contains 10 per cent of all households, from those with lowest incomes up to those with the highest incomes. A property tax rate of 0.4 per cent of owner-occupied property is assumed throughout. Where an income exemption limit applies, the rebate withdrawal rate is 20 per cent.

REGIONAL DISTRIBUTION OF PROPERTY TAX

What about the regional distribution of revenue from property tax? A combination of factors led to the former Residential Property Tax raising close to three-quarters of its revenue from the Dublin area. How would a property tax of the type examined here compare? Table 3 shows how the share of revenue raised under a property tax (with a rate of 0.4 per cent and an income cut off of €12,000) varies across regions, and, for comparison, the shares of the regions in population and in disposable income.[13]

Dublin accounts for a higher share of the yield from property tax than its share in the population of households. However, Dublin also has a higher share of disposable income, indicating a higher than average income. Given the progressivity of the income tax code, the share of Dublin in the gross income would be higher than 44 per cent, and its share in the revenue from income tax would be higher again. Thus, while Dublin's share in the property tax is above its share in the population, it is not so far above its share in income or income tax – and a long way below the share it contributed in the narrower Residential Property tax.

[13] As the property tax revenue must come from *SWITCH* simulations, disposable income is also simulated in this framework.

Table 3: Regional Shares of Population, Income and Property Tax

Region	Households	Disposable Income	Property Tax Revenue
	%	%	%
Border	9	7	6
Midland	5	4	3
West	8	6	6
Dublin	36	44	52
Mid-East	9	9	10
Mid-West	7	7	5
South-East	10	7	6
South-West	16	14	12
Total	100	100	100

TRANSITIONAL RELIEF

The Commission recommends that, as a transitional arrangement, all those who have paid stamp duty should be exempt from property tax for a period of seven years from the year in which they paid stamp duty. This is to reflect the fact that …*many home owners paid considerable amounts of stamp duty*… particularly from 2000 up to 2008. In our view a transitional arrangement of this type is essential in making the transition from a system based on payment of taxes at the time of purchase to a system based on an annual tax. It may be, however, that a more refined system is needed. For example, the amount of stamp duty paid depends in part on the point of the house price cycle at which the purchase took place. A recent purchaser of a house may have paid much less in both stamp duty (and purchase price) than the buyer of a similar house at the peak of the cycle in late 2006/early 2007; but the system proposed by the Commission would give greater relief to the later purchaser. Similarly, the amount of stamp duty paid depends on the rates and rules of stamp duty in force at the time. Again, purchasers in recent years have benefited from a lowering of rates and the shift to a banded system, whereas earlier purchasers paid stamp duty at higher rates. Thus, in order to make the outcomes more equitable, a system may need to be devised which takes greater account of actual stamp duty paid, while discounting for the passage of time, possibly treating the stamp duty as a "prepayment" of property tax. In this event, the relief would use a formula which mimics the annual property tax which would have been payable if that tax had been introduced at the time of the house purchase.

3. Taxable Child Benefit

Child benefit is currently paid in respect of all children under 16 years of age, and those aged 16 or 17 years in full time education.[14] Currently child benefit is not included in the definition of income for taxation purposes. The Commission advised that Child Benefit should be included in taxable income,[15] but that this suggestion should be compared to the alternatives (such as means testing). The *Report of the Special Group on Public Service Numbers and Expenditure Programmes* also suggests either making Child Benefit taxable, making it a means-tested benefit or reducing rates to arrive at a 20 per cent cut in expenditure. The Report advises that savings of over €500 million could be achieved by creating a standard rate of €136 a month. Currently, if a family has three or more children they receive a rate of €166 for the first two children and a higher rate of €203 for the third or subsequent children. The rationale for this approach was that larger families were found to be at greater risk of poverty, so that a policy offering greater support to larger families could help to reduce poverty risk in a targeted way.[16]

There is extensive research on the structure of child income support which can be used to inform this choice. An increased, taxable child benefit was analysed by Callan (1991). Nolan (1993) reviewed the multiple objectives of child income support and proposed a reduction in child dependant additions, along with an increased, taxable child benefit. Callan *et al.* (2006) reviewed both taxable child benefit and a form of means-tested payment labelled "Child Benefit Supplement", designed to replace the child additions payable with social welfare payments, and, at least partially, the Family Income Supplement Scheme[17] Policy over the 1990s and the early years of this decade did not follow any of these paths. Instead, child benefit was increased without making it taxable. The options now being considered, in the face of the fiscal crisis, are:

- A cut in payment rates. This could maintain the current higher rate for large families, or, as proposed by The Report of the Special Group on Public Service Numbers and Expenditure Programmes, move to a standardised payment rate.
- Move to means-testing of the payment.
- Include child benefit in taxable income, so that those on the lowest incomes would be protected, and those on the highest incomes would see the greatest reduction in "net" child benefit payments.

A means test on Child Benefit would involve a new "benefit withdrawal rate" which acts to increase effective marginal tax rates. Thus it could lead to a disimprovement in the balance between income in work and income out of work, and would certainly lead to higher marginal tax rates facing some of those in work. Making the payment taxable would also lead to some impact on marginal tax rates, as some of those with children would move to a

[14] A half-rate payment is made in respect of 18 year olds at present, but Budget 2009 indicated that this would cease from January 2010.

[15] "Taxation of child benefit" is sometimes taken to mean that the payment would itself be reduced. The "inclusion of child benefit in taxable income" or "making child benefit taxable" are more precise descriptions of the policy change envisaged. Child benefit is usually paid to the mother, and the amount paid in this way would be unchanged.

[16] Akerlof (1978) shows how "tagging" based on income-related characteristics can provide a better outcome than directly relating payments to income.

[17] Initially known as "child dependant additions" and currently known as "qualified child increases".

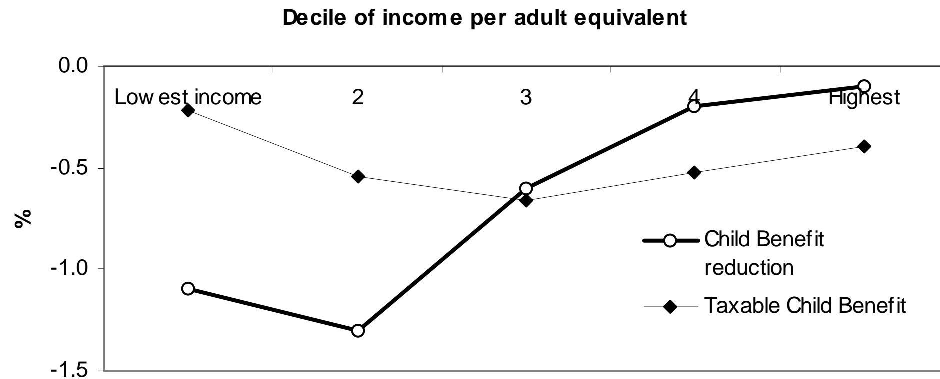
higher tax rate, or into the tax net – but the net impact on incentives would be lower. The least impact on financial work incentives would arise from the "rate-cutting" option, which would reduce income in work and in unemployment by the same amount, leaving the gap between the two unchanged.

What of the distributive effects of the alternatives? Here we focus on the taxable child benefit and rate cut options. The impact of the means-testing option depends crucially on the level of income at which withdrawal of benefit would begin, and on the rate of benefit withdrawal. There is no indication in official documents of how these parameters would be set.

Using the ESRI tax benefit model, *SWITCH*, it is possible to examine the overall impact of reducing Child Benefit rates or, alternatively, including Child Benefit in taxable income. *SWITCH* is based on a large scale, nationally representative sample of households and allows analysis to be carried out at tax unit level. Along with providing an estimate of savings that can be made for the exchequer it also allows us to examine the numbers affected by the policy change, the effects across the income distribution and the effect on poverty risk. Our survey-based estimate indicates a saving of about €450 million can be made by reducing the Child Benefit rate to €136 per month. This represents about 88 per cent of the impact as estimated by the Special Group; but a key advantage of the microsimulation approach is that we can identify how this impact differs across the income distribution. The inclusion of Child Benefit in taxable income could result in an increase in tax revenue in the region of €370 million per year. The Commission proposed a a tax credit to offset the additional tax payable in respect of child benefit for those in the lower half of the income scale. It is not clear how this would be structured, but a tax credit which was only available to those in the lower half of the income distribution would have to be withdrawn gradually – making it more like a means-tested system. For both of these reasons, we do not attempt to simulate this here, and keep taxable child benefit, means-testing and rate-cutting as distinct options. The introduction of such a tax credit would reduce the Exchequer's tax revenue but would lessen the negative impact on the income of those in lower income deciles.

Reducing Child Benefit rates affects a larger number of tax units in the middle of the income distribution compared to the higher and lower end of the income distribution. As expected, making child benefit taxable affects a relatively small number of tax units in the bottom two income deciles as lower income deciles have a smaller tax liability due to low income levels. Figure 1 shows the average percentage loss in disposable income by income decile under the two approaches. Reducing the Child Benefit rates to a standard €140 per month results in an average loss in disposable income of 1 per cent for the lowest income quintile compared to a loss of 0.2 per cent for the highest income quintile. Making Child Benefit taxable results in a fall of disposable income of 0.2 percent for the lowest income decile compared to a 0.4 per cent reduction for the highest earners. A reduction in the Child Benefit rates, therefore, has a larger negative impact on disposable income for those on lower incomes compared to making Child Benefit taxable. It also results in a smaller loss for the upper income deciles compared to the inclusion of Child Benefit in taxable income.

Figure 1: Percentage Change in Disposable Income for Alternative Child Benefit Policy Changes: Making Child Benefit Taxable Versus Reduction in Child Benefit Payment Rates



Finally, we can examine the impact on child poverty rates of the two alternatives compared to the current 2009 budget. We focus on one of the key measures used by the EU Commission, the "at risk of poverty" measure, based on an income poverty line at 60 per cent of median income per adult equivalent. Reducing the rate of Child Benefit to €136 is associated with an increase of 1.2 percentage points in the head count version of the "at risk of poverty" measure for children. The inclusion of Child Benefit in taxable income would lead to a smaller increase of 0.6 percentage points. When a "poverty gap" measure is used, taking account of the depth as well as the extent of income poverty, the taxation option leads to a 3 per cent increase whereas the reduction to a new standard payment leads to a 17 per cent increase.

In our view, the inclusion of Child Benefit in taxable income provides a better structure for child income support. It allows for the possibility of effecting reductions in aggregate Child Benefit expenditure while affording protection to those on the lowest incomes. It has been indicated that there are serious technical difficulties in implementing such a change within a year. If it would take longer to implement such a policy, this should still be the medium term goal. In current circumstances, one could envisage, for example, a commitment to move to this structure, with temporary cuts in Child Benefit payment rates to be restored when Child Benefit is made taxable.

4. Conclusions

This paper has looked at two main areas for broadening of the tax base: an annual tax on property and Child Benefit.

Key findings from our analysis include the following:

- A property tax could raise substantial revenue, even when account is taken of an income exemption limit and marginal relief which ensure that there are few losses, if any, among those on the lowest incomes (the lowest 20 to 30 per cent of the income distribution).
- The share of property tax payable by those resident in the Dublin region would be similar to their share of income tax.

- We compared the inclusion of child benefit in the income tax base and a cut in child benefit rates to achieve the same net reduction in exchequer cost. This showed that the inclusion of Child Benefit in taxable income allows for the possibility of effecting reductions in aggregate Child Benefit expenditure while affording protection to those on the lowest incomes.

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APPENDIX: SIMULATING WELFARE AND INCOME TAX CHANGES (*SWITCH*)

When considering the potential impact of tax changes, calculations are often undertaken for just a small number of illustrative families. This approach has severe limitations. For example, less than one family in 20 falls into the category of "one-earner couple with 2 children" which attracts so much attention at budget time. Furthermore families within this category differ in terms of income, housing tenure, and other characteristics that affect their tax-benefit position. More fundamentally, analysis of hypothetical families - no matter how well chosen - simply cannot give an overall picture of the impact of a policy change on incomes and work incentives. For this reason, in many countries policy changes are assessed using tax-benefit models which are based on large-scale nationally representative samples of households. This ensures that the models represent as fully as possible the great diversity of household circumstances relevant to tax and social welfare. Several countries including the UK and the US have models which are maintained and used by official departments or agencies, as well as models developed and used in the academic sector (e.g., the Institute for Fiscal Studies, the Tax Policy Center in Washington and the Microsimulation Unit at the University of Essex). In Ireland, the ESRI has developed a microsimulation model of the Irish tax and benefit systems, *SWITCH* (*S*imulating *W*elfare and *I*ncome *T*ax *CH*anges).

The current *SWITCH* database uses data from the EU's Survey on Income and Living Conditions (EU SILC) for the year 2005. The survey contains detailed information on more than 6,000 households including about 15,000 individuals. These data include detailed information on household size and composition, labour market participation, incomes from work and occupational pensions, and from receipts of social welfare payments. The *SWITCH* database is adjusted from year to year to allow for key changes in incomes and population structure as forecast for the next budgetary year. Changes in social welfare rates, income tax rates, bands and allowances, and the structure of employee PRSI are taken into account within the model. Using these data the model has been developed to simulate the rules of the welfare and tax systems so as to allow it to predict the tax liabilities and welfare entitlements of respondents under the existing tax/welfare rules and under alternative reforms.

The capabilities of the model include:

- Estimation of the net budgetary cost of packages of tax and welfare changes. Alternative reform packages with the same budgetary cost can therefore be constructed.
- Estimation of the pattern of gains and losses from a policy change. The numbers of families gaining and losing and the size of their gains and losses can be estimated, and the distribution of gains and losses across family types and income levels can be explored.
- Estimation of the impact of policy changes on effective marginal tax rates.

The model has now been extended to allow for the modelling of various property tax options. This required the use of data contained in the survey on house values, and the establishment of a set of rules for modelling property tax liability. Full details can be found in Callan *et al.* (2009a). While the permanent tsb/ESRI House Price Index has fallen just under 25 per cent from its peak in early 2007, we allow for a greater fall in order to arrive at a somewhat conservative estimate of potential revenue from a property tax. The discount factor applied to the values reported by respondents in 2005 is one-third, implying an even greater fall from the peak values in late 2006/early 2007. This assumption is not a forecast, and it differs somewhat from the assumption used by the Commission itself in its analysis. However, as the revenue potential depends not only on the value of the housing stock, but on the product of this value and the rate applied, this does not affect the relevance of the analysis of the distributional impact under alternative waiver schemes.