Alternative Taxation Policies to the 1998 Budget: A Microsimulation Analysis

Ronan Burke - Senior Sophister
David Brocklebank - Senior Sophister

The 1998 Budget was seen as an opportunity to reduce the increasing gap between rich and poor in Ireland. David Brocklebank and Ronan Burke use microsimulation analysis to test alternative taxation polices to the budget and find evidence to suggest that it was an opportunity spurned, in the above context.

Introduction

This paper sets out a new approach to the analysis of the 1998 budget. Until recently, questions about the impact of tax and welfare changes have been examined using supposedly 'typical' family circumstances as hypothetical examples. This procedure can be highly misleading because of the limited representation of the 'typical' case. Microsimulation modelling offers a solution to these problems. In this paper, we will analyse alternative budget strategies using this technique. Specifically, we will consider the effects of allocating the resources available on budget day towards two alternatives, increasing allowances and increasing bands.

The structure of the analysis will be as follows. In the first section, the economic and political considerations of the 1998 budget are explored. Then we deal with microsimulation analysis and the model which we are employing. Finally, in the last two sections, two specific applications of microsimulation analysis are considered. The first application shows the policy implications of the government adopting an alternative budget strategy of increasing allowances while maintaining tax rates at their pre-1998 budget levels (reform policy 1). The second approach considers the implications of the government adopting a strategy of widening bands but, similarly, maintaining tax rates at their pre-1998 budget levels (reform policy 2).

Background to the 1998 Budget

To analyse any budget without due regard for the economic and political climate prevalent at that time is of limited value. What differentiates the 1998 budget from budgets of recent years is that the Minister for Finance had more money at his disposal. The primary catalyst for this tax revenue buoyancy is the healthy economic environment in which we currently find ourselves. Over the past three years the economy has grown at an average rate of more than 7% a year, a positively East Asian pace. Tax cuts totalling £517m in a full year and £282m in spending increases guaranteed the most generous Budget package since the economic recovery in 1990. The Minister's self stated objectives were:

- Control of public spending;
- Correction of tax inequality;
- Overdue acknowledgement of the elderly.

Our analysis focuses exclusively on the correction of tax inequality. Put simply, the choice confronting the Minister was either to reduce tax rates, widen bands or increase tax allowances. Some believe that the choice of rate reductions may have

been motivated by political considerations. This was the first budget of the new Fianna Fáil/Progressive Democrat administration and many of the tax measures implemented stem from pre-election agreements. The populist's approach would be to reduce rates as workers see themselves better off under such a scenario. Rates apply at the margin and when cut, the gain from every extra pound earned appears to be more tangible.

Microsimulation

As alluded to in the introduction, microsimulation provides a mechanism for analysing the impact of a policy change on a large number of households. Conventional analysis focuses on a small number of 'typical' households, thus limiting the quality of the analysis. For example, reaction to the budget changes in taxation tends to focus on its impact on a one earner married couple with two children, taxed under the PAYE schedule. Less than one family in twenty actually falls into this category, and those that do, differ widely in terms of income, housing tenure and other characteristics relevant to their tax liabilities. Microsimulation models are employed to surmount the limitations of using hypothetical cases to illustrate the impact of tax changes.

Microsimulation involves simulating the impact of tax and benefit changes on a large-scale sample of households, using micro-level data on individual and family incomes and other characteristics. These microsimulation tax benefit models take account of a large scale representative sample of the population. They can also help to identify the overall pattern of gains and losses across income deciles and can help to assess the impact of policy changes on financial incentives to work.

SWITCH (Simulating Welfare and Income Tax Change) is a tax benefit microsimulation model developed by the Economic and Social Research Institute (ESRI) and the Department of Social Welfare. It is based on a 1987 survey of more than 8,500 adults and 4,600 children in 3,300 tax units. The data was updated in 1994 to account for the increase in registered employment, the fall in average family size, the growth in income and the changes in income tax and social welfare policy. The basic unit of analysis in the model is termed the tax unit (i.e. whether a married couple or a single person etc.). A dependent child is defined as a child under 15 years, or over but still in full time education. As we will show, this particular definition has an impact on our analysis.

SWITCH requires the user to input a baseline policy and a reform policy. These two policies are then compared at a tax unit level and summary output is generated indicating the impact of the policy change at a macro-level. This shows the cost of the reform policy, the income distribution effects and the impact of this policy on marginal and average tax rates. In the following analysis, the 1998 budget is used as a baseline and the reform policies are compared against it. The reform policies and their comparison against the current budget will be discussed in due course.

The SWITCH model has a number of limitations. SWITCH is based on a database of households dating from 1987. Although this data has been updated to 1994 household data, there is an obvious time lag. It could be argued that within this time frame, the structure of the economy has changed. This factor may inhibit the value of the observed results. Another limitation of SWITCH is the fact that it is a static model and does not incorporate behavioural responses into the model. The ESRI has used a simplified version of SWITCH to examine issues related to the impact of tax reform on male and female labour supply within married couples. Third generation models, which apply embedded econometric models estimating behavioural responses, have been developed in the USA and the UK. The ESRI is developing a new model incorporating labour supply responses. However, within the version of SWITCH currently available, labour responses are assumed to be zero.

The following analysis is revenue neutral. This means that the net cost to the

exchequer of implementing the reform policy over the baseline policy (Budget 1998) is nil. If the policies were not revenue neutral, then it would be inappropriate to compare both.

Reform Policy 1: Increasing Personal Allowances

In this section, we will model the alternative policy of increasing personal tax-free allowances instead of cuts in the taxation rates. According to our model it would be possible to increase the personal allowance to £3,715 while maintaining revenue neutrality. This represents an increase of £565 per person per annum.

Table 3.1 Policy Comparisons: Increasing Personal Allowances

Policy	Budget '98	Reform Policy 1
Standard Tax Rate	24%	26%
Higher Tax Rate	46%	48%
Standard Band (Single)	£10,000	£10,000
Personal Tax Free Allowance (Single)	£3,150	£3,715

The above policy change, although small in a macroeconomic context, does have an impact on income distribution. One can immediately deduce from Figure 1 below, that reform policy 1 favours those in middle income deciles more than those on very high incomes. This is because those on middle to upper incomes will not benefit from the budget tax cuts to the same extent as those on higher incomes. In modelling the comparisons between the Budget '98 and reform policy 1, we can clearly observe the income redistribution impact of the policy. This can be shown by reference to the equivalent net income module of SWITCH.

Figure 1: Increasing Personal Allowances: Equivalent Net Income Gain by Income Decile in £ Million per Year

Equivalent net income is net income adjusted for family size and composition, to take into account the fact that, other things being equal, larger families have greater needs than smaller families. It can be thought of as 'income per head' where the first head counts as 1, a second adult as 0.66 and all children as 0.33.

The policy change has no significant impact on those in lower income deciles. This arises because they are in receipt of social welfare benefit and therefore do not fall into the income tax net. It should be noted that those in the lowest income decile will lose marginally in absolute terms. A plausible explanation, given the tax unit specified earlier, is that a young unemployed person living at home may lose certain benefit entitlements as the net tax unit income rises because of the tax change. Therefore, under reform policy 1, that individual may lose marginally because of an anomaly in the benefit system. Interestingly, changes in Budget '98 meant that Family Income Supplement (FIS), an in-work benefit available to those on low incomes, is calculated on a net rather than a gross basis. FIS may act as a cushion, shielding those on low incomes from any change in taxation policy, since their entitlement is calculated on their income after tax. This factor may help to explain why the policy change has no impact up to the fifth decile.

However, as Figure 1 shows, those in the middle to upper income deciles may gain from the policy change while those in the top income decile stand to lose almost £30m. This indicates that the decision in the 1998 Budget to opt for rate cuts rather than an increase in Reform Policy 1 was a redistribution of income from those in the middle to upper deciles to those in the top decile.

It is useful to clarify how different tax units might be affected by the impact of reform policy 1. Table 2 classifies tax units by their tax unit type and the percentage income gained or lost per week due to reform policy 1.

Table 2 indicates that of the 1.6m tax units in the country, 1.4m will gain or lose less than one percent of their net income owing to the policy change. Almost 17 percent of single employed persons will gain between 1-5 percent of their net income while only 3 percent will lose the same amount. Interestingly, 5 percent of single unemployed persons will lose between 1-5 percent of their net benefit. Since the benefit system is held constant and those who are unemployed are not liable for taxation, this result may be surprising. However, this confirms our previous analysis in relation to the income loss of the lowest decile. Our analysis centres upon the income loss for young unemployed persons living at home who lose because the family income rises. This is confirmed in Table 2, by the loss associated with the tax unit type, single unemployed, the tax unit by which all young single unemployed persons living at home are classified.

Table 2: Increasing Personal Allowances: % Gain/Loss of Income by Number of Tax Units Classed by Tax Unit Type (In Thousands)				
Status	<-1%	<1%	<5%	Total Tax Units
Single Employed	15.9	375.8	78.2	469.9
Single Unemployed	8.6	152.3	2.0	162.9
Single Earner with Chl.	0.9	18.3	0.1	19.3
Single Non-earner with Chl.	0.0	28.8	1.0	29.8
Single Retired	0.0	183.6	5.2	188.8
Single Earner Couple w/o	1.6	49.7	17.2	68.5

|				
Chl.				
Single Earner Couple with Chl.	4.0	218.2	21.4	243.6
Dual Earner Couple w/o Chl.	1.8	26.1	4.3	32.2
Dual Earner Couple with Chl.	4.9	80.3	5.0	90.3
Dual Earner Couple(1 person assisting relative)	0.5	40.8	6.5	47.8
Unemployed Couple w/o Chl.	0.0	9.9	0.0	9.9
Unemployed Couple with Chl.	0.0	81.6	0.0	81.6
Head of tax unit retired	0.4	82	1.7	84.1
Others	1.4	83.8	5.9	91.2
All	40.0	1431.3	148.6	1619.9

Reform Policy 2: Widening Bands

In this section, we model the impact of channelling revenue buoyancy into widening bands. In the following analysis, the baseline policy is the '98 budget and the reform policy is the '98 budget with tax rates at pre-budget levels but with a wider standard band. The model indicates that with revenue neutrality the Minister could have increased the standard tax band by £2,715 over and above the increases in Budget '98.

Table 3: Policy Comparisons: Widening Bands		
Policy	**Budget '98**	**Reform Policy 2**
Standard Tax Rate	24%	26%
Higher Tax Rate	46%	48%
Personal Tax Free Allowance (Single)	£3,150	£3,150
Standard Band (Single)	£10,000	£12,715

The income distribution effects of such a policy are presented in Figure 3. They indicate that widening the bands would result in a gain to those in the highest income decile at the expense of those in the other upper deciles. As expected, the lower income deciles would be unaffected by this alternative policy, holding all other variables constant. This arises because their income does not exceed £10,000.

Figure 3: Widening Bands: Equivalent Net Income Gain/Loss by Income Decile In £ Million per Year
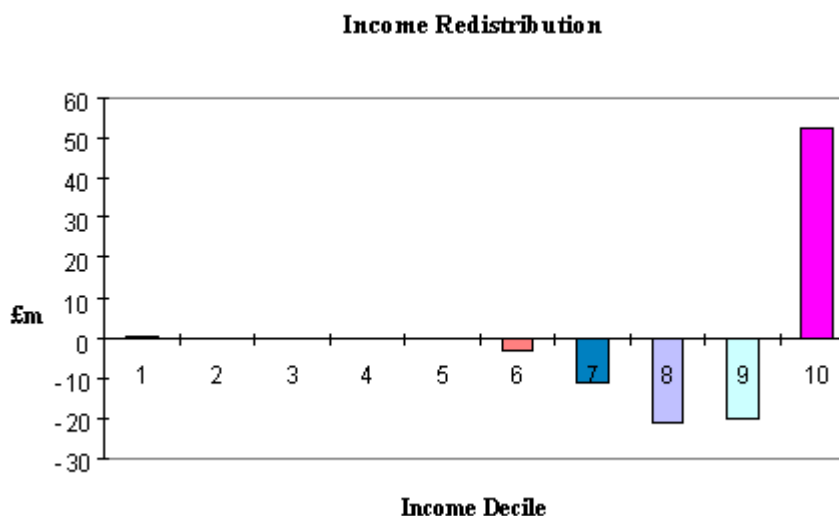
It is again useful to observe how different tax units might be affected by the impact of reform policy 2. Table 3 classifies tax units by their tax unit type and the percentage income gained or lost per week due to reform policy 2.

Table 4 indicates that of the 1.6m tax units in the country, 58% will gain or lose less than one percent of their net income, owing to the policy change. Almost 45% of single employed persons will gain between 1-5% of their net income while only 10% will lose the same amount. Only 0.35% of tax units lose more than £10 per week, while 3.8% of tax units gain more than this amount per week. Overall, Table 4 shows that status (as defined in the table) is less important than income in analysing the impact of an increase in the bands. It is for this reason that comparing gains\losses due to the policy change classified by tax units is less meaningful than the previous comparison with income distribution.

Table 4: Widening Bands: % Gain/Loss by Number of Tax Units Classed by Tax Unit Type (in Thousands)

Status	< -10%	< -5%	< -1%	<1%	<5%	<10%	>10%	Total Tax Units
Single Employed	2.4	1.0	206.8	160.3	51.4	48.1	0.0	469.9
Single Unemployed	0.0	0.0	1.9	160.4	0.3	0.2	0.2	163
Single Earner with chl.	0.0	0.7	4.1	8.3	1.6	4.6	0.0	19.2

Single Non-earner with chl.	0.0	0.0	2.0	27.0	0.7	0.1	0.0	29.8
Single retired	0.0	0.0	15.4	169.8	1.5	2.1	0.0	188.9
Single Earner couple w/o chl.	0.8	7.7	27.2	26.8	1.0	1.5	3.5	68.5
Single Earner couple with chl.	1.5	34.4	79.1	84.5	7.4	12.7	21.0	243.6
Dual Earner couple w/o chl.	0.0	6.0	7.1	2.4	2.5	4.8	9.3	32.2
Dual Earner couple with chl.	1.1	15.2	18.5	8.1	4.7	17.5	25.1	90.3
Dual Earner couple(1 person assisting relative)	0.0	2.0	9.8	31.9	0.3	2.4	1.5	47.8
Unemployed couple w/o chl.	0.0	0.0	0.7	9.2	0.0	0.0	0.0	9.9
Unemployed couple with chl.	0.0	0.0	0.1	81.5	0.0	0.0	0.0	81.6
Head of tax unit retired	0.0	4.8	5.5	71.5	0.2	0.1	2.0	84.1
Others	0.0	0.0	5.4	85.3	0.1	0.4	0.0	91.2
All	5.7	74.8	383.7	927.1	71.7	94.3	62.6	1619.9

We have seen that increasing personal allowances results in gains for the middle to upper income deciles at the expense of the highest decile. Increasing bands reverses this outcome because those in the highest decile gain while those in the middle to upper deciles lose. This is shown in Figure 4.

Figure 4: Income Distribution Comparison between Increased Personal Allowance And Widening the Standard Band
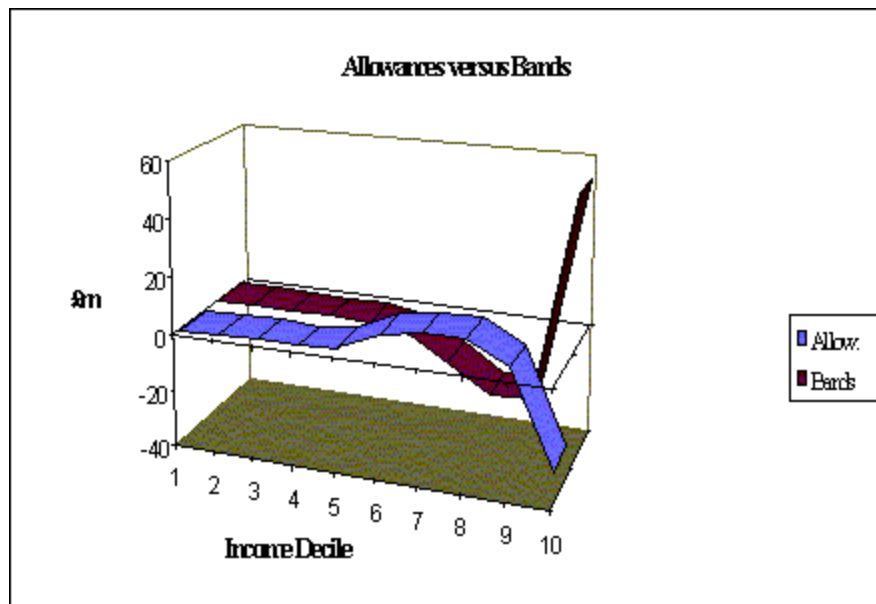
Conclusions

As mentioned in the introduction, the purpose of this analysis was to examine the income distribution effect of using alternative budget strategies, increasing personal allowances and widening the standard taxation band. Under reform policy 1, increasing allowances, both the middle and upper income earners will gain at the expense of the top decile. However, the reverse is true under reform policy 2, increasing bands. While both these options were available to the Minister for Finance, he chose neither. Instead, he opted to substantially reduce the standard and higher rates of taxation, while making only minor adjustments to personal allowances and standard bands. While these policies had some impact on low income earners, we believe that the diversity of measures introduced has diluted the focus of the amount available. We feel that the scope for increasing the well-being of lower earners and for introducing fundamental reform to tackle the problems faced by them has been limited by Budget 1998. Using the alternative budget strategy, increasing allowances would have a positive effect on middle income earners. Perhaps this policy should have been employed, if the government believes that the best and fairest route to tax reform is to maximise benefits to lower income earners. Our analysis concurs with that of the ESRI who indicate that increasing personal allowances is the most redistributive taxation reform for low to medium earners. This position was further endorsed by the Working Group on the Integration of Taxation and Social Welfare Systems and, more recently by the National Economic and Social Council, which stated that the superiority of increased personal allowances should be a principle guiding income tax reduction in the coming years. This analysis is by no means complete. The issues of labour supply and incentives have been omitted. Further work on the topic is required, before any definitive conclusions may be reached.

This publication includes results based on SWITCH, the ESRI tax-benefit model, described in Simulating Welfare and Income Tax Change, by T. Callan et al., Dublin: ESRI, 1996. No responsibility for these results is accepted by the ESRI or by the authors of the model software.

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