Chapter 2

An Enlarged Role for Tax-benefit Models

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1 Enlargement of the European Union and EUROMOD

My title is a play on words: I am using the word "enlarged" with two different meanings. The first meaning refers to "enlargement" in the sense of the EU. The aim of I-CUE has been to start the process of expanding EUROMOD to cover new Member States, and considerable progress has been made in this direction. Although not the main focus of this chapter, such an extension is important for both scientific and political reasons.

One of the great strengths of the first version of EUROMOD was that, before May 2004, the model covered the entire European Union (EU). It was an EU-wide tax-benefit model. Since then, the EU has moved on, and EUROMOD has to move too. These moves are costly. The fact that tax and social security policy remain the responsibility of Member States means that the model has, for each new member, to add a new and different policy module. But even in the unlikely event of all policy being harmonized across the EU, the addition of a new Member State would require that EUROMOD be enlarged. It is the essence of EUROMOD that it predicts the impact of tax and benefit changes on real people. It is not concerned with "representative households", or with "average production workers". EUROMOD uses data on actual households, with their actual wages and employment. For each new Member State, EUROMOD has to add data from household surveys or administrative sources. This process may become easier now that EU-SILC is established, but there remain costs of assimilation. (EU-SILC, the European Survey of Income and Living Conditions, provides a common framework for the collection of data, covering all Member States, Iceland and Norway. The first priority is the delivery of comparable cross-sectional data.)

The enlargement of EUROMOD achieved by the I-CUE project has led me to speculate about the cost function for the construction of tax-benefit models. Most of us working in this field began by constructing a national model, and we know just how large an investment this represents. Taking this as the standard, can we say anything about the cost of a multi-country model, like EUROMOD, and how that cost changes with the number of countries covered? It seems possible that a 2-country model costs more than two separate national models, the costs of coordination outweighing the benefits from the exchange of good practice. But a 3-country model does not cost 150% of a 2-country model. The average cost curve is declining, as economies of scale begin to operate. The key question is whether the average cost will continue to decline, or whether there comes a point at which there are diseconomies of scale. It does indeed seem likely, on a priori grounds, that the rising coordination costs will begin to outweigh the economies of scale. (There is a parallel here with the old-style theories of the optimum scale of the firm.)

If costs begin to rise with the number of countries covered, then this has evident implications for the funding of research in this area. A hidden cost of enlargement may be that it will cost disproportionately more to continue funding an EU-wide tax-benefit model. This may lead cost-conscious decision-makers to question whether 100% coverage of Member States is necessary. Surely, we can obtain reasonable results for the EU as a whole without covering all 27 countries? We should concentrate on the largest countries. After all, the overall growth rate of EU national income is not materially affected by what happens in Luxembourg or Malta. In the same way, when measuring the risk of poverty, and how it is affected by policy changes, would it not be wiser to concentrate research resources on a model covering the big countries, and not seek to cover the small countries that do not make much difference to the total figures?

In my view, the continued coverage of all Member States by EUROMOD is essential. While aggregate statistics may not be materially affected by any failure to cover Luxembourg or Malta, use of tax-benefit models is particularly focused on minorities, such as those at risk of poverty and social exclusion. The consequence of omitting a country can only be assessed by reference to the number of people in that country who form part of this minority. (The same, I should add, would apply to any failure to cover the non-household population.) For analytical purposes, it may be quite reasonable to take a subgroup of Member States, but for purposes of evaluation one needs 100% coverage.

Put another way, our concerns are not just with the aggregate performance, but also with how far the experience is being shared by all countries. There is a parallel here with the Millennium Development Goals (MDG). As has been stressed by the UN, it is not good enough for, say, the objective on poverty reduction to be satisfied by reductions in China and India. We have to take account of the fact that conditions in Africa have not improved. The MDG targets are in fact set country by country (or region by region). Analogously, the achievement of the EU social goals requires that all Member States show improvement. (The same applies also to GDP growth; we would be concerned if some countries were growing at a much lower rate, even if they were small.) We need therefore to be able to analyse the impact on people in all Member States. EUROMOD cannot be simply a large-country model.

2 A brief (personal) history of tax-benefit models

The second interpretation of my title – and the one that forms the subject of the rest of this chapter – concerns the enlargement of the role for tax-benefit models. How can we ensure that these models are more widely used and appreciated? There is a contrast between the rapid innovation in terms of developing models and their relatively slow adoption. Tax-benefit modelling has not yet really had sufficient impact on policy analysis outside the academic sphere. We need to look at ways of enlarging the role of tax-benefit models and raising their prominence in policy discussion.

To place this in context, I should like to go back in time. The year 1968 has been a lot in the newspapers, at least in Britain. At the time when the Beatles were in India, and students in Paris were ripping up cobblestones, I was more prosaically spending my evenings cycling from the centre of Cambridge to the Institute of Astronomy, a couple of miles outside Cambridge. I used to cycle out there because at that time they had probably the most powerful computer in Britain, an IBM 360. I wanted access to this powerful computer because I had been given some tabulations of income tax data by the Inland Revenue, which I was using to simulate the effect of tax changes and social security changes for the book that I was writing on *Poverty in Britain and the Reform of Social Security* (Atkinson, 1969). I was using tabulated data but even these were stretching the calculating resources. So I cycled out every evening, punched cards, put them in and then came back the next day to collect the results of an overnight run. (Often, of course, I

would discover that I had made a punching error, so it was a slow process.) In this way, I simulated the distributional impact of a basic income and flat tax, and other social security reforms.

In the 40 years since then, much has changed in the field of tax-benefit modelling. First of all, we now have access to micro-data, not just tabulations. Access is in part a technical matter. The bulk of the 1968 storage media, and the special nature of software, did not facilitate information transfer. But access is very much a political matter. The reason why in 1968 we did not have micro-data was not purely technical. The UK Government had in fact released micro-data a few years previously in the form of raw Family Expenditure Survey (FES) questionnaires to Peter Townsend and Brian Abel-Smith. They wrote a very powerful book, one of the classics of British social science, *The Poor of the Poorest* (1965), demonstrating that in post-war Britain there remained poverty, particularly child poverty. This had a major political impact. The political fallout was undoubtedly one of the reasons why the government became unwilling to release micro-data on households. It was not until some 10 years later, around 1978, that Mervyn King, Nick Stern and I were able to secure the release of the FES data for use on the research programme that we ran at University College London and London School of Economics. It was incidentally this research programme that initiated the tax-benefit model, TAXMOD (see Atkinson and Sutherland, 1988), that is the ancestor of the UK part of EUROMOD.

The second important change has been in computer technology. The difference between the IBM 360 and the IBM PC is quite phenomenal. The two dimensions of speed and portability have transformed the role of tax-benefit models. This can have unexpected consequences, as Holly Sutherland and I discovered in 1988. In that year the UK had a major tax-cutting budget; indeed it was the single most important budget of the Conservative government: among other changes the top rate of income tax was cut from 60% to 40%. Holly and I were asked by the Opposition Shadow Cabinet to analyse the tax changes as they were announced in the Budget Speech by the Chancellor of the Exchequer. So we brought a PC to the Shadow Cabinet Room in the House of Commons, and sat typing in the new parameters as the Chancellor was speaking. The tradition is that the details are never pre-announced but the Leader of the Opposition has to respond as soon as the Chancellor stops speaking. Very fortunately there was an interruption in the House of Commons – they had to throw out an MP who was causing

a disruption – of about 20 minutes, the time it took to run our tax-benefit programme showing for a sample of some 6,000 households the effects of the budget being announced. This meant that there could be an immediate response by the Opposition. In particular, a young man was able to issue a press release saying that half of the gains would go to the top 10% and only 10% of the gains would go to the bottom 50%. That young man is, at the time of writing, the Prime Minister of Britain. During the 10 years he was himself Chancellor of the Exchequer, the top rate did not move from 40%.

Immediacy is one of the qualities made possible by today's computing technology, and this transforms the potential role of tax-benefit models. It is not just in parliamentary situations. In any situation where people are discussing tax reforms, it is very valuable to be able to have quick feedback. An idea is suggested, but reactions will depend very much on the quantitative implications. What are the revenue costs? What are the implications for different types of family? With high speed models, it is possible for these to be used in the course of such a discussion. Moreover, this has the great merit of forcing people to be precise about the proposal under consideration. One of the lessons from tax-benefit modelling is the importance of writing down the precise details. Such a discipline often reveals latent ambiguities. For example, it is proposed that child benefit is taxed under income tax. Does this mean that it is taxed as the income of the parent, and if so, which one? Does it depend on who receives the child benefit?

A rapid simulation can also reveal unintended consequences. On a number of occasions, certainly in the British context and probably too in other countries, politicians have said "until you ran it through the programme, I had no idea that that could happen". For example, the government can cut taxes but cause some people to be worse off. (This can happen where there are tax reliefs that are worth more than the taxable income.) Policy-makers tend to think in terms of certain household types. These may be reasonably representative of the population as a whole, but fail to pick up special sets of circumstances where the policy may have a quite unintended effect. At the time of the poll tax, another famous moment in British tax history, a Minister said "they did not tell us that could happen".

Given the great potential of tax-benefit simulation, we naively thought in the late 1980s that everyone would start to use this wonderful tool. But in fact there was a very slow rate of adoption. We had, for various reasons, underestimated the barriers:

- First of all, one tends to underestimate the skills required to use the models. It is difficult for people to understand what was going on. This applies not just to non-economists but also to economists working in other fields.
- Secondly, care needs to be used in interpreting the results. Even if you say that it is pure arithmetic, this can be quite hard to grasp. And equally perhaps, on the other hand, the results may be used too enthusiastically without fully appreciating the qualifications.
- Thirdly, at least in the UK context, the public debate about policy options has not advanced. The coverage of things like the annual Budget is very much still in terms of human interest. Four or five families are interviewed on the impact of the Budget on them personally.

I believe that what is needed is to build a community of people who can make effective use of tax-benefit models in the policy arena. This has to involve civil servants, politicians, social partners, NGOs, and journalists. One should not lose sight of the impact of different levels of government; there is increasing interest in local and regional governments in this kind of work. But it probably begins with the academic community, and this is one of the great successes of the EUROMOD project. As this book and the conference it developed from demonstrate, there is a real community.

3 Enlarging the role of tax-benefit modelling in the European Union

I want now to look to the future, first considering how the role of tax-benefit modelling can be enlarged within the EU, and specifically within the Social Inclusion Process. Here too the historical context is important. A decade ago we were not talking about the EU Social Inclusion Process. Ten years ago there was little sign of progress towards a European Social Policy. It was the 2000 Lisbon agenda that led to a step change.

Post-Lisbon, the EU has a set of explicit objectives, symbolized by the structural indicators summarized in Table 2.1. One of the characteristics of the EU that has been rather understated is that, while most national governments do not really state explicitly their objectives, the EU has to be explicit about a lot of things. One feature of this political organization is that it is the mere act of coming together, and forming common policies, that has actually forced us to be much more explicit about our goals. From Table 2.1,

we can see that these goals include growth, employment, environmental sustainability, *and* social inclusion. It is here that tax-benefit models have an immediate point of entry. Number 9 on the list of EU structural indicators demonstrates the policy salience of the numbers that we are discussing.

Table 2.1: EU structural indicators

1	GDP per capita	Growth
2	Labour productivity	Growth
3	Employment rate 15-64	Employment
4	Employment rate of older workers	Employment
5	**Youth educational attainment**	**Social Inclusion**
6	R+D spending % GDP	
7	Comparative price levels	
8	Investment spending % GDP	
9	**At-risk-of-poverty rate after social transfers**	**Social Inclusion**
10	**Long-term Unemployment rate**	**Social Inclusion**
11	**Regional cohesion**	**Social Inclusion**
12	Greenhouse gas emissions	Environmental
13	Energy consumption	Environmental
14	Inland freight volume	Environmental

What is more, it is this part of the EU scorecard that gives rise to concern. Despite the general gloom about the Lisbon Agenda, in fact, in terms of the growth rate, the gap with the US has been narrowed, partly because the US has not been growing quite so fast, but also the European growth rates for a number of years in this decade have picked up. Ten years ago, US GDP per capita was 160% of that in EU-27; in 2008 it was 150%. There has been a quite large rise in the EU employment rate. A student of mine, Dirk-Jan Omtzigt, has just written a thesis about early retirement and shown that the previous trend towards early retirement reversed in virtually all Member States around the mid 1990s. Overall, there has been a 5 percentage point increase in the employment rate (for all workers) over the last 10 years. If you want to raise employment, which is the stated objective, then Europe has made substantial progress over the last years.

But where the EU does not seem to have made substantial progress concerns the risk of poverty. The proportion of EU-15 citizens living in households below 60% of the national median was, according to the Eurostat estimates, 16% in 1996 and 16% ten years later. There had been no progress.

Now these estimates are a blend of EU-SILC and results from the earlier European Community Household Panel, and the join is not easy to make. Suppose therefore that one looks at the national studies of relative poverty for two of the largest Member States. Broadly there is some improvement in the UK: from a high level, there has been some reduction in the poverty rates there. But there has been a worsening in Germany, alongside the rise in income inequality (these are the estimates from the Socio-Economic Panel made by DIW – see Grabka and Frick, 2008). In broad terms, we lost on Germany what we gained on the UK. So this is one structural indicator where no progress has been made.

This leads naturally to the analysis of policy alternatives. Such analysis is often conducted in aggregate terms. One diagram that has much currency in European debate is that showing for different countries the risk of poverty rate against social spending as a proportion of GDP. Typically the diagrams show that countries which spend more have lower poverty rates. From this, some policy-makers draw the conclusion that spending more is an answer. As far as policy is concerned, I believe that they are right. However, I do not believe that the aggregate diagram tells us anything about the trade-off. If it did, then the conclusion would be rather pessimistic. The line linking poverty to spending does indeed slope down, but the slope is not very steep. The typical diagram for EU countries has a slope of one for one. So if you want to reduce the 16% overall EU poverty rate to 10%, which is not an unreasonable target, then the apparent cost is 6% of national income. That seems prohibitively expensive.

The aggregate cross-country analysis is the wrong way to do it. The right way is to study each country and examine at the micro-level the relationship between particular fiscal instruments (taxes and spending) and the incidence of poverty among individual households. You need a tax-benefit model. And for European policy-making, you need a tax-benefit model that covers all Member States. Such models allow you to work back from the target to the most effective way by which it can be achieved.

Another way of putting this is to say that we need to integrate micro-level policy-making more closely with macro-economic policy-making. Tax-benefit modelling should be relevant not only to social policy experts but also to macro-economists. But how can this be brought about? I believe that the time is ripe. There is at present a groundswell of dissatisfaction stemming from the fact that improved economic performance (up to 2007) has not been translated into an apparent improvement in individual living

standards. As noted above, the EU has narrowed the gap with the US, but people are not basically feeling better off.

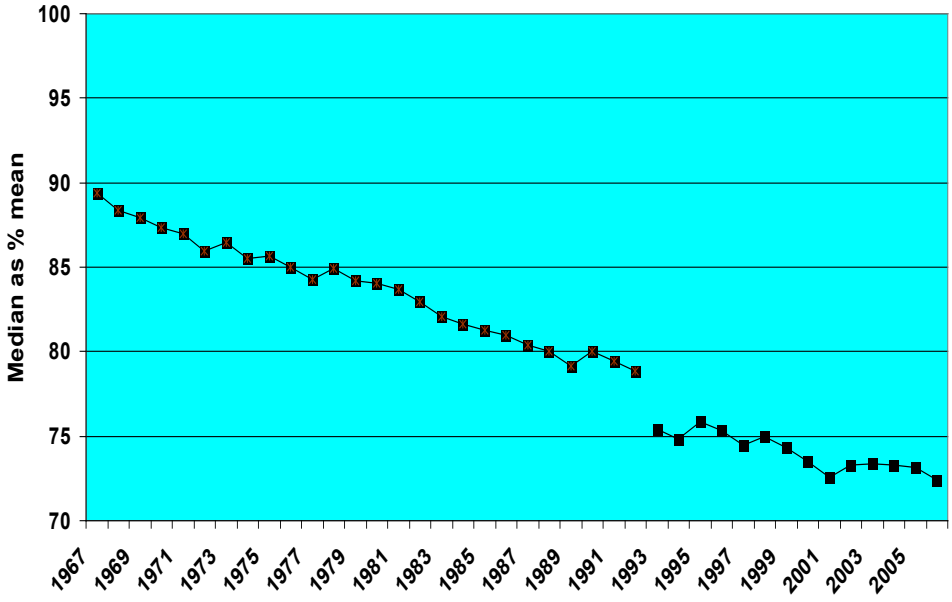
We have therefore to investigate the macro-micro linkage. There are two main reasons why aggregate growth is not being translated into improved living standards. The first is the difference between gross national income and the total disposable income of households; the second is the way in which the total income of households is distributed. Considering the first of these, we can see that it is quite possible for gross national income to be growing but for household disposable income to be stagnating. (In both cases, I am referring to amounts at constant prices, although we should note that changes in relative prices are an element that needs to enter the story.) There are substantial sums that form part of national income but which do not enter the disposable income of households. These include the retained profits of the company sector, the net income of non-profit institutions serving households (NPISH), and taxes and other receipts by government. In the opposite direction, there are important elements of household disposable income that have no counterpart in the national accounts, such as transfers received from the government and the NPISH sector (for example, private pensions), and interest paid by the government on the national debt.

In part, the difference between national income and household income is the result of statistical conventions. Where companies retain profits, this may generate capital gains. But conventionally household income is defined to exclude net accrued capital gains. Similarly, the money going into private pension funds, and the implied rise in the value of future pensions is not reflected in the measure of household income. In part, however, there are sources of divergence that cannot be explained away. Where the government is running a budget surplus, there is a net withdrawal from the household sector: the government is raising more in taxes than it is returning in government spending. And even where the government budget is balanced, households may not value the services of government output (such as education or police protection) at an amount equal to their cost.

The second part of the story concerns the distribution of aggregate income. The mean income of households may be rising, but this may not be experienced by the majority of citizens. This is illustrated in Figure 2.1, which comes from the US Census Bureau. In most income distributions, the median is less than the mean. In the US in 1967 the median was 90% of the mean. But since 1967 there has been a dramatic fall in the ratio of median to mean household income. I use the word "dramatic" to highlight both the

extent of the fall and the long duration. Nor is the US alone. Grabka and Frick (2008) show that in West Germany the median fell from 91% of the mean in 1992 to 86% in 2006.

Figure 2.1: Median household gross income as % mean gross household income 1967-2006



Source: US Census Bureau, 2007, Table A.1

My purpose in highlighting these two departures (household income from national income, and median from mean) is to suggest one way of attracting the attention of macro-economists to tax-benefit modelling. If they wish to address the malaise of the electorate, then they need to supplement the standard national income measures. At the very least, they need to consider the median and not just the mean. That sounds to me a quite reasonable thing to do in a democratic country. It does not sound as threatening as using a Gini coefficient or some other distributional index. Looking at the median is just taking a different central indicator. But this in turn means they have to examine distributional data and the impact of policy on the distribution of income. Micro-analysis of policy has to move up the agenda and the next question is what the effect of policy reform is going to be, requiring the capacity to make policy simulations. So that is my Machiavellian suggestion as to how to raise the salience of tax-benefit modelling.

4 Enlarging the role of tax-benefit modelling globally

EUROMOD can play an enlarged role in another sense. The experience of constructing a multi-country tax-benefit model can be taken outside the European context. It can be applied to countries in the course of development; it can be applied at a global level to public policy issues with a world compass.

The social situation of the EU is undoubtedly very different from that of developing countries, but the EU experience is not without relevance (see Atkinson and Marlier, 2008). In the specific case of tax-benefit models such as EUROMOD, it is true that they have been mainly constructed for developed countries, but the techniques can be applied to developing countries, as the EUROMOD team has demonstrated. The South African tax-benefit model, SAMOD, started from the framework provided by EUROMOD. This model allows the simulation of the effect that different policy reforms would have both on national revenue and expenditure and on individual household budgets, and thus the impact on poverty and inequality.[1] A similar approach is being adopted for certain Latin American countries. At UNU-WIDER, a series of models have been built for African countries, including Uganda.[2] These innovations reflect the swing back to interest in issues of fiscal policy and social policy. The capacity to carry out tax-benefit simulations will become of growing importance as anti-poverty programmes are increasingly funded by domestic fiscal sources.

There is similarly a need to be able to analyse global taxes. In the past few years, I have been involved in two groups studying the prospects for global taxes to finance development, the need for such financing being brought home by the shortfall with respect to the sums believed to be needed to secure the Millennium Development Goals. These led, among other things, to the tax on airline tickets introduced by Presidents Chirac and Lula. One of the issues that struck me in all this discussion was that nobody ever asked who was going to pay these taxes. Questions as to the incidence and the distributional effects of these taxes were never raised. For example, if we assume that the airline ticket tax is fully passed on to consumers, what is the distributional impact? Which countries bear most of the burden? Who within these countries is worse off? Can we follow the input-output effects of this tax? These are all questions that go beyond EUROMOD's capacity

1 See Wilkinson (2009).

2 http://models.wider.unu.edu/africa_web/

in its present form, but illustrate that fiscal issues of this kind are highly relevant to current global policy-making.

These questions enlarge the scope analytically as well as geographically. We need to consider in an integrated way the whole range of policy challenges. Take the debate about policy regarding climate change, which seems to me to be very naturally linked to distributional issues. I was at a recent conference organized by the Anglo-German Foundation, where there were papers on carbon taxes and papers about future social policy design. These two projects needed to be married. There was a wide agreement that we have to take measures on climate change that involve reduction in current standards of living. But there seemed to be little discussion of whose standard of living. This is in part an intertemporal issue. Is the cost to be borne now or in future decades? Here we need models of a different type from EUROMOD. But it also concerns the distribution between those alive at one date. Within the population covered by EUROMOD, there are many different generations, from those of my mother in law, born in 1915, to my own generation born some 30 years later, to my children born in the 1970s, to my grandchildren born in the 21st century. Different forms of energy taxes, and different forms of compensation, have different implications for these generations. Here tax-benefit models of the EUROMOD type, with additional indirect tax elements, can illuminate this global policy issue.

5 Summary of main points

An important strength of the first EUROMOD is that it covered (at the time) all Member States. Even if the costs of model construction rise with Enlargement, this should remain the ambition; it should not become just a large-Member State model.

- Looking back to 1968 allows one to see the extent of progress in tax-benefit modelling; this progress reflects the transformations brought about by access to household micro-data and by powerful, portable computers.
- But much remains to be done to enlarge the use made of tax-benefit modelling in policy-making; to do this one has to build a community of "supporters".

- The need for tax-benefit modelling in EU policy-making is highlighted by the failure to reduce the risk of poverty. The EU Structural Indicators for growth and employment both show progress, but the EU risk of poverty rate remains stubbornly at 16%.
- Anti-poverty policy cannot be designed at an aggregate level; what is needed is an analysis at the level of individual policy instruments and their impact on individual households. A tax-benefit model allows one to work back from the objective to the policy measures that would lead to its achievement.
- We need to integrate tax-benefit models into the mainstream of economic policy-making. I have suggested that an opening is provided by the current concern that macro-economic performance is not leading to perceived improvements in living standards. A focus on median household incomes would force policy-makers to consider the micro-level indicators.
- The role of tax-benefit modelling can be extended geographically and to address new issues. Model construction methods have lessons for developing countries, and models are necessary to understand global policy-making in such key areas as climate change and the financing of development.

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