Designing Tax and Transfer Schemes: Some Basic Principles*

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1 Introduction

This paper provides a review of some of the basic elements and trade-offs involved in designing a direct tax and transfer system. This includes income taxation (and, if applicable, other direct taxes such as National Insurance Contributions, as in the UK, or the Medicare Levy, as in Australia), and benefits paid to eligible individuals (which may be cash transfer and in-kind transfers such as Food Stamps in the US). Thus the term 'direct tax and transfer' system refers to all the elements involved in the transformation between gross income (from earnings, self-employment income, interest, rents and so on) and net income (or 'disposable income'). In other words, it includes all aspects which determine the budget constraint facing individuals.

The first main point to stress is that value judgements are inevitable in the design and evaluation of tax structures: there is no such thing as a value-free 'optimal' structure. These values involve a wide range of considerations associated with the fundamental objectives of the system. All tax systems, and changes to them, involve winners and losers so it is inevitable that distributional judgements dominate debates.

Taxes and transfers affect the behaviour of individuals and families in ways that are not easy to predict, but which impose severe constraints on the ability of governments to achieve their objectives. For example, attempts to redistribute income using progressive taxes are restricted by adverse incentive effects on both low-income and high-income groups. Attempts to help one group of individuals often have unintended consequences on other groups. In short, 'incentives matter' and it is necessary to have some idea of how behaviour is likely to change when the incentive structure changes. A desire for redistribution thus inevitably involves a cost in terms of efficiency or growth, so that a trade-off among various objectives is required, again requiring a value judgements.

A major emphasis of this paper is therefore an attempt to clarify the role of value judgements in designing tax and transfer systems. Section 2 begins by producing what is essentially a taxonomy: it decomposes the various elements into a range of components where value judgements are required and where constraints are imposed on the ability of governments to pursue these aims. This allows the role of wide range of value judgements and the specifically economic components to be separated. The discussion helps to explain why tensions arise in designing tax and transfer schemes: they are caused by conflicting values and from the practical constraints on policy arising

largely from the government's budget constraint. Then Section 3 looks at some simple forms of tax structure in order to illustrate how a range of problems and conflicts can arise from the implied structure of marginal and average tax rates. Brief conclusions are in Section 4.

References are made to the numbered publications listed at the end of this paper as follows: for example, book number 1, chapter number 1 and journal paper number 1 are listed respectively as [B1], [C1] and [J1]. This list of papers relating to taxes and transfers is not exhaustive; for example, it does not include work on behavioural tax microsimulation modelling, or majority voting over taxes, or income dynamics.

2 Elements of the Problem

This section discusses the wide range of aspects of tax design where value judgements are relevant and where constraints are imposed on governments. A framework, or taxonomy, is produced allowing the various aspects to be decomposed.

2.1 Some Initial Considerations

Governments have the basic 'power to tax' as part of their constitution, but the kind of tax and transfer system chosen depends on broad attitudes to a range of aspects relating to the role of the state. These include the following.

1. The tax structure is influenced by views regarding the extent to which governments may intervene in peoples lives. Tax administration involves obtaining private information. It may, for example also involve forcing people to take particular jobs. Attitudes towards these aspects are influenced by views regarding certain basic freedoms or rights. A related issue here is the level of government chosen to carry out necessary administration.

2. The ways in which individual responsibilities are perceived are important. For example, unemployment has variously been judged as a failing of individuals, or alternatively as a 'problem of industry'. This affects the extent to which people are categorised as being 'deserving poor' or 'non-deserving poor'.

3. The nature of a tax and transfer system adopted will depend on a range of paternalistic judgements. For example, some judges may prefer to provide benefits (such as rent assistance, food stamps and so on) which are linked to certain specific goods. Or, the view may be taken that people should make minimum savings for retirement in the form of a special income-related contribution in addition to income taxation.

4. An important factor is the view taken of intra-family intra- and inter-generational transfers versus a state system of support involving compulsory taxation. This has been particularly relevant in the context of aged care and disability care, where there have been substantial changes in attitudes over time. Thus there is a strong preference for tax-financed care (insurance) rather than within-family transfers.

5. A choice must be made regarding those eligible for the receipt of transfers, or payment of taxes. This may involve the choice of a social insurance type of system whereby unemployment and sickness benefits and pensions are available only to those who have a history of tax (or 'national insurance' contributions).[1] Alternatively, eligibility may be related to nationality or residence requirements.

6. A judgement must be made regarding the tax base. This may be some concept of income, consumption, or wealth. The decision here is influenced by views regarding the main aims of the tax system, and often a variety of tax bases are used. In the public finance literature, the 'comprehensive' income concept is often mentioned, but its choice in favour of other bases involves a value judgement. Comprehensive income is of course difficult to measure in practice, and involves the awkward treatment of unrealised capital gains and the coverage of such a tax.

2.2 Alternative Basic Aims

It is very hard to obtain a precise specification of attitudes towards the basic aims of a tax and transfer system. However, most conflict can be traced back to views regarding the desired objectives. The following broad aims may be distinguished.

[1] On national insurance schemes, see [B1], [J3], [J4].

1. The view may be taken that poverty alleviation is the only or main aim of a transfer system. But even within this choice there are further difficult decisions, including the specification of a poverty line and whether this is regarded in relative or absolute terms. Also the measurement of poverty is not straightforward.[2] The most commonly used measure is a 'head-count' measure, but some judges may prefer to allow for the depth of poverty and inequality among those considered to be in poverty. Using the headcount measure the most effective way to reduce poverty, given a certain amount of money to spend, would be to deal first with those nearest to the poverty line. Even among those whose main concern is poverty alleviation, there can be substantial disagreement. For example, in the 19th century, poverty was seen by many people as the only legitimate concern, but the poverty line was set at a low level (consistent with a subsistence theory of wages), with emphasis on avoiding adverse incentive effects. However, with a Rawlsian-type of maxi-min approach (in the context of a social contract), arising from extreme aversion to inequality, the objective is to raise the minimum level as high as possible, without any regard to the wider effects on the rest of the income distribution.

2. Concern may be with redistribution more broadly defined. Again, the measurement of inequality is far from straightforward, involving complex value judgements. For example, popular measures such as the Gini and Atkinson inequality measures are based on very different value judgements. The Gini is based on pairwise comparisons among individuals and involves judgements regarding 'fairness', while the Atkinson measure is linked to an additive Paretian welfare or evaluation function satisfying the 'principle of transfers' and involves 'wastefulness' of inequality. The principle of transfers is the value judgement according to which a transfer from a richer to a poorer person, without changing their ranks, is considered an improvement. In practice these measures do not necessarily rank distributions in the same way.[3] If redistribution as a major aim is combined with a desire to provide a social insurance type of scheme, with sickness, unemployment and pensions based purely on membership of a labour market category, the

[2] On poverty measurement, see [C3], [J13], [J27].

[3] On inequality measurement, see [B2], [C4], [J2], [J6], [J12], [J19]. On measuring tax progressivity, see [C2], [J23], [J24], [J25].

compulsory risk-pooling with heterogeneous individuals produces some redistribution which is very hard to isolate from more systematic forms. Yet attitudes towards systematic redistribution through the tax system and the redistribution arising from risk pooling may differ substantially.

3. Some judges attach priority to other objectives, such as shifting some people into work, or increasing the labour supply of those working few hours. Alternatively, they may wish to encourage things like savings, or investment in education, or may wish to avoid migration of high income-earners. Also judges may have differing attitudes towards marriage and families.

2.3 Constraints on Policy Choices

Of primary importance in considering tax and transfer structures is the government budget constraint. This means that it is not possible to set taxes and benefits independently in view of the fact that the tax revenue must be sufficient to finance the transfer payments, in addition to any non-transfer expenditure required. A tax change which is not 'revenue neutral' really involves two policies: if extra revenue is required, this has to be obtained from other sources in ways which may damage the objectives of the tax/transfer policy change.

Although the government has the power to tax, there are severe constraints on its ability to raise revenue and to control the number of those claiming benefits. Governments can set only the values of tax and benefit rates and thresholds. The total tax revenue and benefit expenditure levels depend on a wide range of considerations. These aspects give rise to what are generally referred to as adverse incentive and moral hazard problems.

The following features are relevant.

1. A tax and transfer system inevitably involves a reduction in labour supply, leading to lower revenue and more benefit recipients. In the low-income ranges, there is a reduced incentive to participate in the labour market, and in the higher-income range, there is an incentive to reduce working hours. Similarly, transfer systems affect retirement incentives, as well as those affecting saving for retirement. There are usually adverse incentive effects on non-target groups: for example,

an attempt to shifting some people into work or induce others to work longer hours may reduce the incentives of higher-income recipients, whose tax rates are increased by the need to raise additional tax revenue.[4]

2. Incentive effects apply to many areas other than simply the supply of working hours or effort. Tax structures can affect the choice between employment and self employment, educational choices, the incentive to shift from income to capital gains, and risk-taking. The attempt governments to increase retirement incomes, for example through a compulsory superannuation contribution scheme, may reduce other forms of private savings. Other incentive effects include family and household formation, fertility decisions and of course internal and international migration.

3. The incentive and moral hazard effect imposes severe constraints on the ability to redistribute income or alleviate poverty. There is indeed some limit to the revenue which can be raised by any tax structure. This may itself depend not only on the method of raising revenue but on non-transfer expenditure. For example, labour supply may be affected by tax-financed expenditure on education and health, or infrastructure projects. Constraints also include basic perceptions of taxable capacity, the willingness to impose conditions on benefit recipients or impose structures to obtain private information, the ability and willingness to monitor the behaviour of benefit recipients, a tolerance of 'waste' (in terms of administration costs, or transfers that are higher than 'necessary' or otherwise not well-targeted). Unfortunately, relatively little is known about the orders of magnitude of these effects.

4. In considering the important role of incentive effects, it must of course be recognised that many individuals may be at 'corner solutions', an essential characteristic of which is that small changes (to say a person's net wage) are not sufficient to induce a movement away from the corner. Indeed, the highly nonlinear budget constraints which arise from income taxes with progressive rate structures and income thresholds, and means-testing with benefit abatement rates, give rise to

[4] On taxes and labour supply under alternative tax and transfer systems, see [B2], [J9], [J21], [J27], [J28], [J33].

a wide range of potential labour supply responses at different ranges of the constraint. At certain corners, individuals may display 'sticky' behaviour in the face of net wage changes (resulting from tax changes), while in other ranges a very small net wage change can induce a large discrete change in labour supply.[5]

The existence of such constraints implies that the attempt to achieve some stated aim in devising an 'ideal' tax structure must be formulated as a constrained optimisation problem. That is, some evaluation function, which attaches weights to certain objectives such as equity and efficiency (appropriately defined), is maximised subject at least to a government budget constraint. This formed the starting point of the modern theory of 'optimal taxation'.[6] In this way tax policy is seen as a branch of welfare economics.

The discussion is typically in the context of the design of a tax and transfer system. However, in practice decisions relate to policy changes or reforms to an existing system, inherited from the past. Individuals will have made plans on the basis of an existing system, so any changes which may be regarded by judges as a movement towards a 'better' system will involve unanticipated gains or losses for many people. Furthermore, administrative structures may be in place which are difficult to change in the short run. The nature of the losses and gains, along with the administrative costs of change, will generally impose further constraints on policy reforms. It is clearly important to have detailed information on the characteristics of those individuals who may experience significant losses from a reform. These considerations may be said to impose a bias towards the status quo. The emphasis of the literature on optimal taxation has been predominantly on fundamental design features, rather than with 'optimal tax *reform*'.[7]

In the optimal tax literature, the major constraint considered is the government's budget constraint, influenced by the kind of incentive effects mentioned above. This ignores potentially very important administrative costs. For example, means-testing usually imposes high administrative costs, and gives rise to complexities and unanticipated ambiguities in the interpretation of regulations. The modern public economics literature, with its emphasis on 'second best' welfare economics, has undoubtedly ne-

[5] These aspects are discussed in [C2], [J26], [28] and particularly [J32] and [J36].

[6] For introductions to and discussion of optimal tax analyses, see [B2], [J9], [J19].

[7] However, my paper presented at the February 2009 Treasury/VUW Tax Conference proposes and illustrates a method of examining reforms using a microsimulation model.

glected the extremely important and wide range of problems associated with the administration of tax structures, particularly where a range of agencies is involved.

2.4 Conceptual Choices: What, When, Who?

Mention was made above to the difficulties of defining and measuring concepts such as poverty and inequality. But even before such problems can be tackled, it is first necessary to make a number of fundamental conceptual choices. These can be described briefly as the 'what, when and who' of the study, as follows.

1. The choice of what to measure concerns the concept that is often called the 'welfare metric'. This may be consumption, some income measure, or a broader measure such as utility (or 'money metric utility') which allows for the benefits of leisure time.[8] A distinction can be made between approaches that are 'welfarist', in that policies are judged in terms of things that are thought to matter directly to the individuals concerned, and those which are 'non-welfarist'. The latter includes, for example, concern for an income-based measure of poverty or a specified number of working hours.

2. A choice must be made regarding the appropriate time period of measurement: should income or consumption be measured in weekly or annual terms, or over a longer time period?[9] The chosen time period may differ depending on whether the concern is primarily about poverty or inequality. For poverty, a short period may be chosen, whereas for inequality, a judge may be more concerned with longer time periods. In the latter case, transitory variations are not considered important, and here a distinction between consumption and income also becomes less important. The pattern of systematic and transitory variations in income or consumption over time become important, particularly with a progressive rate structure in which more variable incomes pay higher amounts of tax than steady income streams having the same total. In examining redistribution it is not easy to separate intra-generational and inter-generational income transfers, since many transfers may involve income shifting over periods of the life cycle as well

[8] On the use of money metric utility in an optimal tax context, see [J19].

[9] On lifetime inequality and taxation in a life-cycle framework, see [C1], [C5], [C6], [J14], [J17], [J18], [J22], [J24], [J30].

as transfers between individuals. The redistribution arising from risk pooling in an insurance scheme may be viewed quite differently from more systematic forms of redistribution, and much of the apparent redistribution among individuals is effectively shifting income between stages of the life-cycle.

3. A decision must be made regarding the basic unit of analysis. This may be the individual, the household or some other concept.[10] In selecting a unit, regard must also be made to the treatment of income and consumption sharing within families and households. This involves the choice of adult-equivalence scales, where (without further direct evidence) an assumption is usually made of equal-sharing, so that each person is given, say, income per adult equivalent. The choice of scales also cannot avoid value judgements. Sometimes concern may be with a subset of individuals, such as children. It is also possible to select the 'equivalent adult' as the unit of analysis. Indeed the choice of individuals or equivalent adults as units arises from quite different value judgements. With the latter, the income concept and the unit of analysis are treated consistently, ensuring that each individual's contribution to inequality and poverty depends on the demographic structure of the household to which they belong. An adult in a one-person household for example will 'count for one', whereas the same adult in a multi-adult household, will count for 'less than one'. This approach also satisfies the basic equity principle, associated with the principle of transfers, such that a transfer of income from a poorer to a relatively richer household, which leaves the position of the richer household unchanged, causes inequality to rise. The fulfilment of this principle enables Lorenz curve analyses to be conducted from the resulting distribution. Using the individual as the basic unit of analysis assigns to each of the individuals in a household the total household income per adult equivalent person. Every individual effectively 'counts for one', irrespective of the demographic nature of the household to which they belong. This approach consequently has the property of anonymity, in that inequality and poverty measures remain unchanged when one individual in the population is replaced by another individual who has the same living standard but belongs to a different demographically structured household. The individual unit of analysis

[10] On the income concept and equivalence scales, see [J32], [J36].

does not in general satisfy the principle of transfers.

2.5 Measurement and Modelling Problems

Having made decisions regarding basic aims and concepts, many problems remain regarding the evaluation of policies. There is much room for disagreement over likely orders of magnitude involved, even among those judges with similar value judgements. Some of these problems are listed here.

1. Many economic variables are not easily measured. For example, given the role of durable goods, consumption over a specified period cannot be directly measured, unlike expenditure. The extent to which income or consumption is actually shared in households is seldom known, and some goods are 'public' within households but 'private' between households. Also income, and particularly wealth and unrealised capital gains, are notoriously difficult to measure. These measurement problems are increased when a longer period is considered relevant, given the short time-frame used by most surveys.[11]

2. Despite the importance attached to the incentive effects of taxes, modelling these responses presents huge challenges. The various potential responses (concerning savings, labour supply, the form of income, employment status, education, household formation, fertility and so on) all present their own modelling, data and estimation difficulties. Furthermore, some highly innovative tax reforms may be so far from previous experience that the prediction of responses is particularly awkward. In addition the degree to which individuals fully take up benefits to which they are formally entitled is not known.[12] The availability of data, and their limitations, play an important role in understanding these responses. Progress in modelling and estimation of these incentive effects requires access to individual data in the form of Confidentialised Unit Record Files (or CURFs).

3. Responses to administrative changes, for example involving the severity to which various rules are interpreted by tax and benefit officers, are also extremely difficult to predict but may be important. Also, rules may be interpreted in different ways

[11] On longer-term income measures, see [J1], [J7], [J8].
[12] For a treatment of benefit take-up in a simple model, see [J29].

in different administrative offices. Any ambiguity in the framing of rules can thus lead to inconsistencies.

4. In view of the measurement problems, reliance must inevitably be placed on assumptions and guesses about orders of magnitude, and these can be expected to differ even among those judges with similar value judgements. In particular, views about tax incidence are important, but difficult to quantify precisely, with the consequence that tax shifting is typically neglected in policy design.

3 Some Simplified Comparisons

It may be thought that, given explicit statements regarding the aims and incentive effects of taxes and transfers, it would be possible in principle to derive an 'optimal' structure, using the methods of constrained maximisation. However, even for extremely simple specifications of the economic environment in simple economic models, and fully specified value judgements, this problem is largely intractable and very few clear results can be derived. Numerical methods of solution can be used, but the results are unable to provide clear practical policy guidance given the simplicity of the models. However, they have helped to emphasise the role of incentive effects and the resulting constraints on income redistribution, and may even have influenced the widespread flattening of rate structures through reductions in top marginal rates.

The present section therefore takes an indirect approach. That is, examples are discussed which start from the specification of the precise form of a tax and transfer system and then go on to examine how that structure performs with respect to a range of criteria. A number of important features are demonstrated in this section using simple diagrams.[13]

In practice there are of course many types of transfer payment or benefit, some of which have overlapping qualifying conditions, and some benefits are taxable while others are not. They are often administered by different agencies, which can lead to unintended consequences for overall tax rates and can produce jumps and discontinuities in the relationship between net (after tax and transfer) and gross (pre tax and

[13] On alternative tax and transfer systems, see [B2]. On comparisons with no labour supply responses, see [J2], [J3], [J4], [J5], [J6]. For treatments allowing for labour supply responses to taxes, see [J9], [J26], [J28], [J33].

transfer) income. However, to highlight basic tensions it is useful to consider simplified forms of tax structure The present section examines some of these tensions within a simple framework where only individuals are relevant (the existence of families and households are ignored) and it is assumed that all individuals have no non-income differences which matter (that is, they have no special needs relating to individual characteristics). All difficulties relating to the income concept are also ignored in a single-period framework.

3.1 The Rate Structure

A full description of any tax and transfer structure is provided by the way in which marginal and average effective tax rates vary over the range of relevant incomes. A progressive structure is one for which there is an increasing average rate over all incomes: this does not require marginal rate progression (an increasing marginal rate). Importantly, the degree of progressivity and the redistribution generated by a tax structure depends on the pre-tax and transfer income distribution as well as the tax structure: for example a system may have very high marginal rates but very few taxpayers in the relevant income ranges.

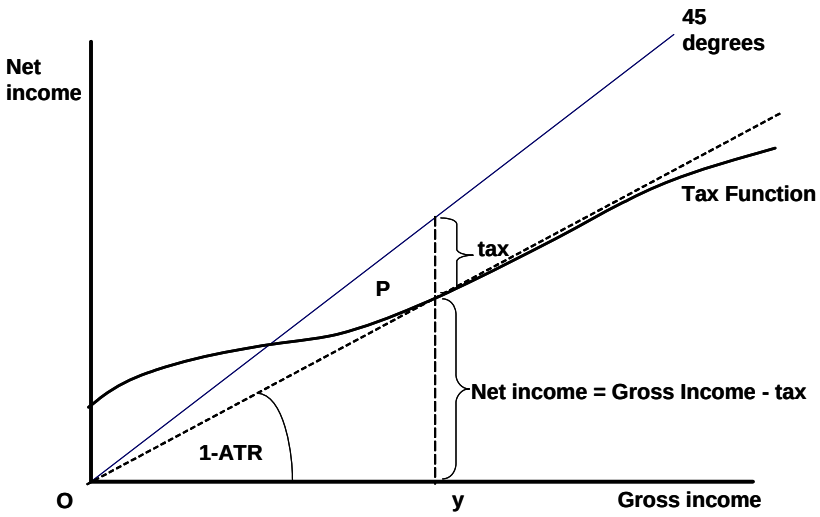

Figure 1: A Tax Function

Figure 1 shows a general tax function in terms of the relationship between net and

gross income, z and y respectively: the term 'tax function' is used although it refers to the combined effect on net income of taxes and transfers. The 45 degree line represents the absence of a tax or transfer. If the tax paid (which may of course be negative since it includes transfers) is represented by $T(y)$, then $z = y - T(y)$ and the average tax rate at any point is given by $ATR = T(y)/y$. Hence $1 - T(y)/y = (y - T(y))/y = z/y$ and the slope of a line from the origin to a point on the schedule, at say P in Figure 1, is a measure of $1 - ATR$. The marginal tax rate is given by $MTR = dT(y)/dy$ and so the slope of the tax function at the point is equal to $1 - MTR$.[14]

An indication of the potential redistribution arising from a tax structure is provided by the average rate schedule while incentives are reflected in the marginal rate schedule. However, this summary is only a partial description, in view of the point made earlier that any overall measure of progressivity or redistribution depends crucially on the pre-tax income distribution.

3.2 The Basic Income–Flat Tax

The simplest possible type of tax structure is represented by a straight line in this type of diagram. Suppose there is a proportional income tax applied to all (non-transfer) income; this is shown in Figure 2. In addition each individual receives an unconditional transfer payment, or basic income, b. This shifts the tax schedule to the line BC. This simple structure goes under a variety of names, depending partly on how the administration of the scheme is described, but the clearest description is of a 'basic income–flat tax', or BI–FT.

The marginal tax rate, t, is constant along the whole of the range BC, but the average tax rate is initially negative until the break-even level of income, y_B, is reached. The two rates are illustrated in Figure 3.

This kind of tax structure is clearly capable of being highly redistributive despite the constant marginal tax rate. The existence of a basic income makes it possible for some individuals to decide not to participate in paid employment (if they otherwise face a very low wage rate). The argument sometimes made that a basic income is unfair because the rich as well as the poor receive the same transfer payment carries no weight, particularly if a 'relative' view of inequality is taken, because what matters

[14] On measuring tax progressivity, see [B2], [J23], [J24], [J25].

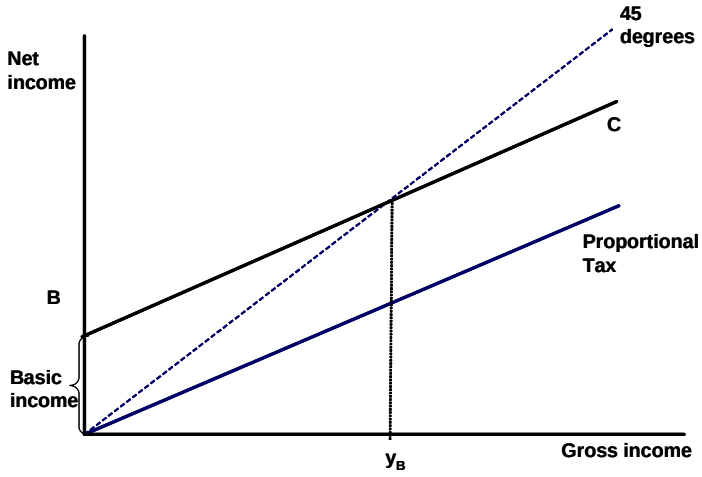

Figure 2: The Basic Income and Flat Tax (BI–FT)

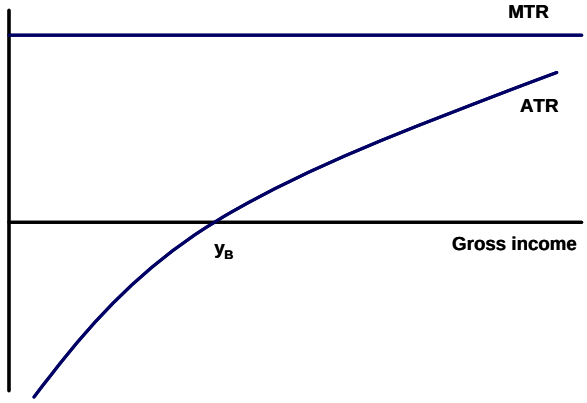

Figure 3: Marginal and Average Tax Rates with BI–FT

is the profile of the average tax rate generated by the combined effect of the tax and transfer system.

It is not possible to select values of b and t independently. This is because of the existence of the government budget constraint, whereby income tax revenue must be sufficient to pay for the transfer payments made to each person. It can be seen that the tax rate must be equal to the ratio of the basic income to arithmetic mean income, bearing in mind that mean income is also affected by the tax parameters through incentive effects. Thus for a basic income of, say, one half of average income, it is necessary to have a constant marginal tax rate of 50 per cent, and if the basic income is a proportion, 0.3, of average income, the tax rate must be 0.30. These comparison also do not take into account any non-transfer government expenditure which much be financed via the tax structure.

The BI–FT clearly has many advantages of simplicity, but the question arises of whether it is actually consistent with any particular set of value judgements and properties of the population. Early studies in the 'optimal tax' tradition, based on the (constrained) maximisation of an evaluation function defined in terms of individuals' utilities (viewed as functions of leisure and net income), and which involved a trade-off between equity and efficiency, did indeed produce a tax structure that is approximately linear. The 'welfarist' objective clearly tolerates the existence of non-workers and is concerned with inequality rather than an income-based poverty measure. However, further analysis has shown that the result is not robust when some assumptions, for example concerning the basic distribution of wage rates in the population and the type and degree of inequality aversion of the judge, are relaxed.

Those people who regard poverty alleviation as the main objective of a transfer system are critical of the BI–FT because, if b is set at the agreed poverty line, the unconditional basic income pays many individuals amounts which are regarded as 'excessive'. This is illustrated in Figure 4, where the shaded area represents a degree of 'target inefficiency'. That is, if the objective is to prevent people falling below b, these transfers need not be paid and the tax rate can be much lower.[15] It would be possible to make the minimum income (obtained by those who do not work) higher, by eliminating the target inefficiency.

[15] On target efficiency comparisons, see [J11].

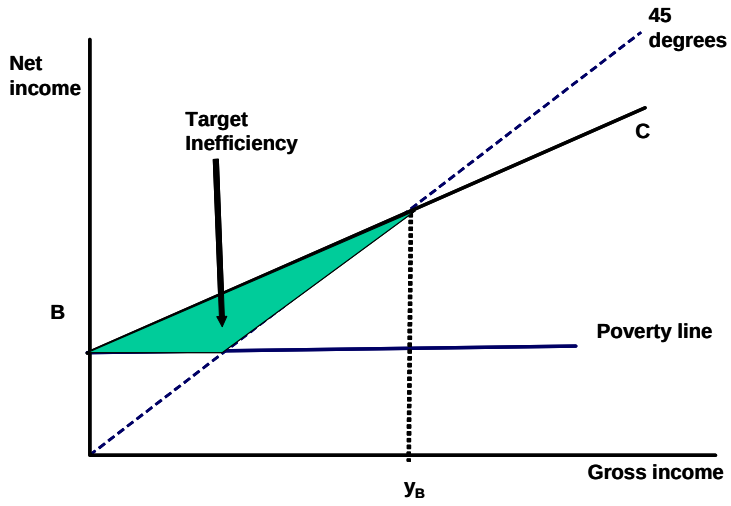

Figure 4: Target Inefficiency of Transfers

3.3 Means-Tested Benefits

A tax structure which deals only with poverty alleviation (that is, has a 'non-welfarist' objective) is shown in Figure 5, and this is referred to as a minimum income guarantee. This requires an income tax structure with a tax-free threshold, along with means-testing of the transfer payment.[16] The tax-free threshold must have a particular relationship with the guaranteed minimum income and the income tax rate, if discontinuities in the tax schedule, ABC, are to be avoided. The implied tax rates are shown in Figure 6, where the means-testing implies that all those below the threshold income of y_T face a marginal rate of 1. The marginal tax rate above y_T can be lower than in the BI–FT having the basic income equal to the guaranteed minimum. However, the existence of a marginal tax rate of 1 over a large range of income generates a strong work disincentive: this is the 'poverty trap' referred to so often in the context of means-tested schemes. Those in favour of the minimum income guarantee argue that it achieves a higher minimum income than otherwise and it is better to have a very high marginal rate applied to as small a number of people as possible, as this enables the marginal rate facing middle- and higher-income people to be correspondingly lower.

This point highlights a particular tension in tax policy design. The strong adverse

[16] On comparisons between means-testing and universal systems in optimal tax frameworks, see [J10], [J13], [J15].

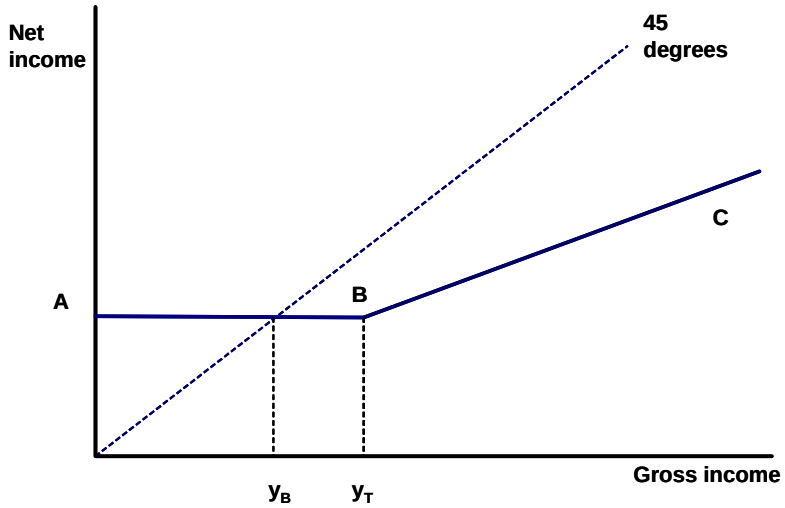

Figure 5: A Minimum Income Guarantee

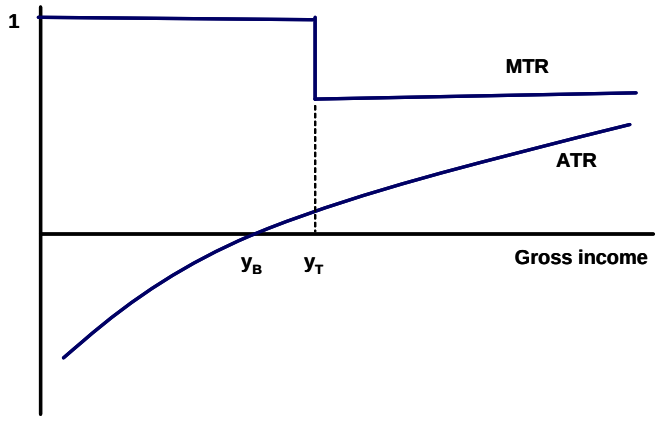

Figure 6: Marginal and Average Tax Rates with MIG

incentives created by the minimum income guarantee may be mitigated to some extent by reducing the marginal tax rate applied to benefit recipients. This is achieved by reducing the benefit abatement, or taper, rate applied to the means-tested transfer payment below 100 per cent. The result is shown in Figure 7 as a modified minimum income guarantee, where it is assumed that the tax and transfer parameters are such that the two linear segments of the relationship between net and gross income meet at the single point, B.

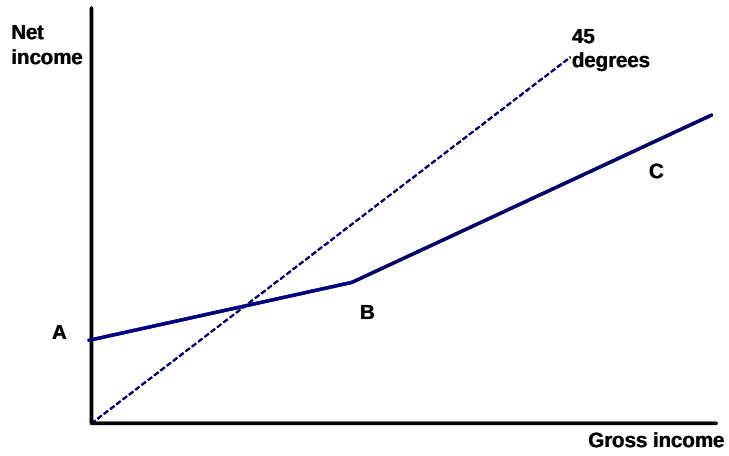

Figure 7: A Modified Minimum Income Guarantee

This reduces the marginal tax rate facing benefit recipients, but it does not unequivocally lead to an overall increase in labour supply. This is because the reduced means testing means that more people receive benefits: hence an additional group of 'medium income-earners' face an increase in their effective marginal tax rate. Hence the attempt to improve the labour supply incentives of one group of people cannot avoid reducing the incentives facing another group. The reduced means testing is also likely to require a change in the marginal rate for those who only pay income tax, in view of the government's budget constraint. It is therefore not possible to say, a priori, which direction the rate is likely to move and what the overall direction of change in labour supply will be.[17]

Some judges in recent years have attached importance to the desire to induce individuals to work for a specified minimum number of hours per week, using a substantial

[17] For a microsimulation study of the effect of reducing taper, or benefit abatement, rates see [J31].

increase in a transfer payment at that hours level. This is achieved using a form of 'in-work payment', where there is a discontinuity (in the form of a sudden upward shift) in the net income available to individuals. But the gross income level at which this arises varies among individuals because it is related to an work hours level, rather than an income threshold. Notwithstanding the problems of monitoring hours levels and dealing with the variability in the time worked by casual workers during each week, such a scheme may indeed succeed in raising the labour supply of some groups of lower-wage individuals. But it inevitably reduces the labour supply of higher-income earners above the threshold, for which the effective marginal tax rate is higher than otherwise. This form of non-welfarist objective is thus highly likely to conflict with other aims of a tax and transfer system.[18]

4 Conclusion

This paper has considered the range of issues which need to be considered in thinking about the design of a tax and transfer structure. It was shown that a large number of value judgements are involved. These judgements involve not only the basic aims of a tax system, but a wide range of component elements. Many of these views are mutually inconsistent. Also, it has been seen that considerable information is needed about individuals' behaviour, in terms of their responses to taxes. These responses cover a surprisingly wide range of activities. In the absence of reliable empirical evidence, planners often have quite different perceptions about the orders of magnitude involved.

In principle it is possible to construct very simple models to formulate the problem of devising an 'optimal' structure as a constrained optimisation problem, the major constraint being the government's budget constraint. Although explicit solutions to this problem cannot be obtained, numerical solutions can be generated, given assumptions regarding parameter values. However, while such an approach can be useful in highlighting general features and interdependencies, it cannot yield practical tax policy advice in view of the simplicity of the economic structure of the models (particularly the extent of population heterogeneity). Furthermore, the resulting structures are not robust with respect to variations in the assumptions regarding objectives, preferences

[18] For an analysis of labour supply complications and a 'welfarist' evaluation of a form of in-work payment scheme with an hours threshold, see [J39].

and wage rate distributions.

In practice it is therefore necessary to start by specifying particular structures and examining their implications for a range of measures. By examining very simple structures, the paper illustrated the difficulties of balancing different basic objectives, particularly concerning redistribution. A desire to be generous to those individuals who face very low wage rates (or are unable to work for various reasons) inevitably means that the number of benefit recipients increases. The tax required to raise revenue also has adverse incentive effects on other individuals. Benefits and tax rates cannot be increased without limit. Means-testing of benefits may be introduced in order to restrict the number of eligible recipients, avoid providing benefits to middle- and high-income groups, and avoid a high tax rate being imposed on those groups. But it damages the incentives facing the poor, and creates the familiar 'poverty trap'. However, an attempt to reduce the severity of means-testing by reducing taper or benefit abatement rates must inevitably raise the marginal tax rate facing those 'middle income' individuals who become eligible. A careful 'balancing act' is therefore needed.

The question naturally arises of what kind of advice can be offered by economists who wish to contribute to debates on tax reforms. Regarding different value judgements, the important point is one made long ago in a book by the famous economist Lionel Robbins,[19] that economists in their professional capacity should investigate the implications of adopting clearly stated value judgements, rather than attempting to impose their own values.

There is of course a need to continue to develop methods of modelling the incentive effects of different tax structures, in ways which accommodate the considerable heterogeneity which exists among individuals. Here economists have an obvious absolute and comparative advantage. However, progress in this area is conditional on access to individual-level data as well as modelling and econometric advances.

In considering the types of model which would be of value for economists to develop, it is always worth bearing in mind that all models have their limitations. It is not possible to construct a single model capable of handling all types of personal tax problem and all kinds of potential responses to taxes. Sometimes, depending on the context, smaller and more restrictive models can be useful in highlighting important interdependencies. In other contexts, larger models are needed. In practical policy

[19] This is: *An Essay on The Nature and Significance of Economic Science* (1932) London: Macmillan.

design, it is argued that a valuable role can be played by behavioural microsimulation models, while at the same time being aware of their limitations. One substantial advantage is that such models can be used to examine the potential effects of proposed policy changes, and can highlight the precise nature of the distribution of gains and losses. They can thus be used to contribute to practical policy debates regarding reforms, rather than concentrating on 'ideal' structures which suppose that policy makers have not inherited an existing system and administrative stucture.

In reporting results of analyses of the potential effects of tax policy changes, there is clearly a need to provide a wide range of summary measures, bearing in mind the various criteria used by different judges to evaluate policies. In fact a valuable role can be played by negative results here: that is, it may be far from obvious until numerical values are produced that certain objectives are mutually inconsistent. By considering a wide range of detailed and summary results from policy simulations, it is possible to articulate views about value judgements as well as appreciating the role of incentives. In this way economists can provide the kind of information which allows readers to form their own conclusions, and can thereby contribute towards 'rational policy debate' rather than the exchange of prejudices.

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