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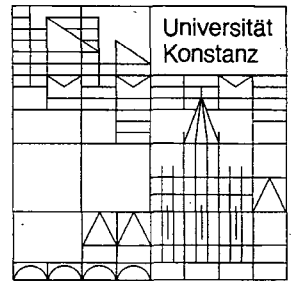
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„Internationalisierung der Wirtschaft“

Diskussionsbeiträge



Juristische
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Fakultät für Wirtschafts-
wissenschaften und Statistik

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**Optimal Representative Taxation,
Information and Tax Reform**

26. OKT. 1993 Walter Hettich
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**OPTIMAL REPRESENTATIVE TAXATION,
INFORMATION AND TAX REFORM**

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Serie II - Nr. 210

August 1993

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Abstract

This paper moves toward the formulation of a normative theory of taxation that incorporates collective choice as an essential element. Such a theory has many interesting parallels to optimal taxation, including large information requirements for political agents. The paper discusses possible solutions to the information problem in a collective choice setting. The answer appears to lie in a decentralized information gathering and policy process rather than in the development of simplified guidelines for improving the decisions of central planners. The paper proposes a framework to examine the gains and losses in expected support from decentralized policy choices affecting taxation, and uses the analysis to discuss the influence of differences in constitutional structure on the adoption of informational strategies and to review the nature of tax reform.

Zusammenfassung

In diesem Papier wird versucht, eine normative Theorie der Besteuerung auf der Theorie der kollektiven Entscheidung aufzubauen. Eine derartige Theorie zeigt eine Reihe von interessanten Parallelen zur Optimalbesteuerung, unter anderem ist der Informationsbedarf für den politischen Entscheidungsträger ebenfalls beträchtlich. Das Papier diskutiert mögliche Lösungen des Informationsproblems in einem "collective choice"-Ansatz. Eine erfolgreiche Lösung dieses Problems dürfte eher in einem dezentralen Prozeß der Informationsbeschaffung und der politischen Entscheidung liegen als in der Suche nach vereinfachten Entscheidungsregeln für eine zentrale Planungsbehörde. Das Papier entwickelt auch einen Rahmen für die Analyse der erwarteten Gewinne und Verluste an politischer Unterstützung, die mit dezentralen steuerpolitischen Entscheidungen verbunden sind. Diese Analyse wird dazu herangezogen, um den Einfluß von Unterschieden in der Verfassungsstruktur auf die gewählten Strategien zur Informationsbeschaffung zu diskutieren und damit das Problem der Steuerreform aus einem anderen Blickwinkel zu beleuchten.

1. Introduction

Optimal taxation (OT) has been the most influential theoretical analysis of taxation in the past two decades. Developed as an extension of welfare economics, OT is normative in character and attempts to design tax systems or policies to be implemented by a planner having no political or economic agenda of his own. Optimal tax plans reflect the two concerns most widely emphasized in normative analysis, efficiency and distribution. Most commonly, they are designed to collect a fixed amount of revenue in a manner that keeps welfare losses to a minimum, while at the same time achieving the distributional goals expressed in a given welfare function.

Although the OT literature contains a rich variety of theoretical results, it has had a limited impact on the design of actual tax policies. Those concerned with the reform of particular tax systems raise two fundamental criticisms. The first concerns the informational requirements of OT policies. Since optimal tax plans take account of the general equilibrium structure of the economy, they tend to be highly complicated and complex. Implementation of optimal commodity taxation, for example, would require very extensive information on economic margins and elasticities. In practice, such knowledge can be acquired only at very high cost. The problem is particularly acute in developing countries, where the necessary information systems are largely absent, but it also exists in more developed nations, where planners face a bewildering array of different goods and market conditions.

Suggestions in the OT literature for dealing with the information problem center around rules of thumb, or simplified guidelines such as tax neutrality. As one writer concerned with the fiscal experience of developing countries has put it:

While not nearly as intellectually satisfying a guide to tax policy as "optimal taxation," neutral taxation is to be preferred as a benchmark until such time as analysts are able to identify optimal departures from neutrality in real world policy settings, and until such time as administrative capacities are equal to the task of operating necessarily complicated optimal tax structures. In both developed and developing countries that time will not likely arrive

before the twenty-first century.¹

A second line of criticism directed at OT theory focusses on the decision-making process. Since tax systems or policies must be adopted in a political setting, one may question whether normative analysis can abstract from the collective choice process that underlies the determination of goals and the adoption and implementation of policy. While writers on OT at times acknowledge the existence of political constraints that may prevent adoption of suggested tax policies or force alterations in their design, they have not as yet dealt with collective choice as an integral part of their framework.²

In the present paper, we pursue two related aims. We first draw attention to recent developments in the theory of probabilistic voting, making it possible to move toward the formulation of a normative theory of taxation that incorporates collective choice as an essential element. Such a theory has many interesting parallels to optimal taxation, including large information requirements. We then focus on possible solutions to the information problem in this different setting. The answer appears to lie in a decentralized information gathering and policy process rather than in the development of simplified guidelines for improving the decisions of central planners. The paper proposes a framework to examine the gains and losses in expected support from decentralized policy choices affecting taxation, and uses the analysis to discuss the influence of differences in constitutional structure on the adoption of informational strategies and to review the nature of tax reform.

2. From OT to ORT

Recent developments in the literature on probabilistic voting models provide a basis for explicitly incorporating collective choice into a normative tax theory that may be called optimal

representative taxation (ORT).³ To see how this may be done, let us consider the nature of equilibrium policy outcomes in an ideal representative democracy where political competition is perfect. By a perfectly competitive democratic state we mean one in which free entry into the competition for office forces political parties to continually maximize expected votes.⁴

Assume the electorate is divided into H interest groups of n_h identical voters. Let the probability of voting for the incumbent party (i) by a representative member of group h be a function of the utility differential that results from policy platforms, including the fiscal system, offered by the incumbent and the opposition (o):

$$p_h = f(v_{hi} - v_{ho})$$

where v_h refers to an indirect utility function of the representative individual in group h . The expected vote for the incumbent party, that is for the government, is then

$$EV_i = \sum_h n_h \cdot f(v_{hi} - v_{ho}). \quad (1)$$

The choice of fiscal policies is constrained by a government budget restraint

$$R(t, G) = G. \quad (2)$$

where t is a vector of J tax rates and G is the level of a single public good. It is assumed that the general equilibrium structure of the economy is implicitly incorporated through this budget restraint and via the indirect utility functions.

An optimal platform for the incumbent government requires that t and g be adjusted until the expected vote function (1) is maximized subject to (2). The first order conditions for the choice of tax instrument t_k is of the form:

$$\sum_h n_h \frac{\partial f}{\partial v_{hi}} \frac{\partial v_{hi}}{\partial t_k} - \lambda \frac{\partial R}{\partial t_k} = 0, \quad k = 1, 2, \dots, J, \quad (3)$$

where λ is the Lagrange multiplier associated with the budget restraint and J is the number of tax rates. An analogous condition describes the optimal choice of the level of the public good.

Under appropriate conditions concerning the density functions in (1), and assuming Nash behaviour by political parties in their choice of platforms, equilibrium in the two party zero-sum electoral game will exist and is unique (see for example Coughlin, Mueller and Murrell 1990). Existence depends on the continuity of the expected vote functions (1), a continuity which stems from the probabilistic nature of voting behaviour. Uniqueness of equilibrium policy platforms is assured if the expected vote functions are strictly concave in the policy instruments t and G .

An important feature of the equilibrium described above is that it is consistent with the attainment of Pareto-efficiency. To see that this is so, it suffices to consider the nature of the fiscal system that solves the following problem:

$$\begin{aligned} \max_{\{t, G\}} S &= \sum_h \theta_h v_h \\ \text{subject to (2)} \end{aligned} \quad (4)$$

where $\theta_h = n_h \cdot \partial f / \partial v_h$, which can be thought of as the weight implicitly assigned to group h by the political system, is assumed to be independent of the policy instruments. If we can show that the fiscal system that solves (4) is identical to the fiscal system that solves the first order conditions (3), then we will have shown that the choice of policies that maximizes a (particular) weighted sum of voter utilities also maximizes expected votes in a competitive political system, and hence that the politically optimal fiscal system is consistent with Pareto-efficiency in the allocation of resources.⁵

In fact, it is straightforward to see that the first order conditions for a solution to (4) are

identical to those in (3). Intuitively, the reason for this result is that unless the "political support" function S in (4) is maximized, it would be possible for a party to increase its expected vote by making some voters better off without making any others worse off. Competition in the struggle for office will ensure that no such opportunities remain in equilibrium. Thus it is clear that, under the conditions outlined above, if an equilibrium policy platform exists: (i) it can be characterized by solving the problem in (4), and (ii) the tax system that is part of the equilibrium policy platform will be consistent with efficiency in the social allocation of resources.

It must be noted that even though the support function in (4) is a weighted sum of utilities, it should not be thought of as a social welfare function that is being maximized by a social planner or tax theorist. Rather, the solution to the synthetic optimization problem in (4) should be thought of as a useful way of characterizing the equilibrium choice of policies in a perfectly competitive political system. In general, ORT is concerned with the relationship between political institutions and the normative character of tax policies in a political equilibrium. A similar concern also lies behind the first theorem of welfare economics, which informs us of the relationship between market structure and the normative character (i.e. the Pareto-efficiency) of the corresponding market equilibrium. ORT thus involves a type of investigation quite different from OT, which focuses on the choice of policies by a central planner that are compatible with an exogenously specified norm.

3. ORT and the Information Problem

Incorporation of a competitive political process into the analysis does not resolve the information problem associated with the design of optimal tax policy. As pointed out in the introduction, information requirements are very large. To develop a comprehensive blueprint of the tax system, an OT planner needs knowledge of the social welfare function, as well as data on

preferences, endowments and technology for all participants and sectors in the economy. If we restrict the analysis to commodity taxation, the primary need is for information on demand functions and commodity characteristics. Stern has recently discussed the conceptual problems involved in the generation of such data:

The derivation of the appropriate set of commodity taxes requires information concerning patterns of complements and substitutes that is very difficult to extract from the data. Our attempts to extract it will require specifications of functional forms, which, as we saw, may have a profound effect on the recommendations. As Deaton ... observes: 'In consequence, it is likely that empirically calculated tax rates, based on econometric estimates of parameters, will be determined in structure, not by the measurements actually made, but by arbitrary, untested (and even unconscious) hypotheses chosen by the econometrician for practical convenience' (1987, 51).

One should recognize that similar difficulties would also arise in an ORT context, if someone were instructed to calculate tax rates that maximize expected political support. As in OT, a planning solution to the ORT problem would require information on preferences, endowments and technology, or on appropriate proxies for these characteristics of economic structure.

There is a major difference in information requirements between the two approaches, however, which can be seen by comparing the first order conditions (3) with those for a standard OT problem of choosing t and G to maximize a social welfare function $V(t, G) = V\{v_1(t, G), v_2(t, G), \dots, v_H(t, G)\}$ subject to the government budget restraint (2). For any tax instrument t_k , the solution to the OT problem requires that:

$$\sum_h \frac{\partial V}{\partial v_h} \cdot \frac{\partial v_h}{\partial t_k} - \lambda \cdot \frac{\partial R}{\partial t_k} = 0; \quad k = 1, 2, \dots, J. \quad (5)$$

Thus while an OT planner needs instructions concerning the marginal social worth of each individual, $\partial V / \partial v_h$, a full solution to the problem of maximizing political support requires knowledge of how changes in the welfare of members of various interest groups, caused by the adjustment of

tax rates, affect the probability of voting. In (3) and (4) these factors are represented by the terms θ_b . ORT therefore assumes that political parties can solve problems which have extensive information requirements of a political nature that play no part in OT analysis and that would further increase the costs of reaching a centralized solution to the information problem.

The feasibility of planning in the face of large information requirements is a classic question in the history of economics. The context in which the traditional debate was carried out concerned the choice between centralized planning and the use of markets. Among the most influential ideas in the debate were those advanced by Hayek (1945), who argued strongly that only decentralized markets could solve the immense task of processing the information necessary to reach efficient economic outcomes.

The historical debate points in a rather different direction from the OT literature, where simplified central planning rules have been proposed as primary solutions to the information problem.⁶ It suggests that a more effective approach may be to decentralize policy making into separate, semi-independent areas within a hierarchical policy making structure, while at the same time creating an institutional framework within government that mobilizes special interests to provide valuable information as part of their attempts to influence policy outcomes. (One may note that the most commonly used OT formulation subsumes a segmentation or decentralization of policy by separating taxation from expenditures, although authors do not generally justify this assumption by making reference to the information question.)

The study of policy making in modern societies indicates that decentralization of policy areas is a common feature of democratic government. While the apparent lack of coordination that may result is often decried by economic analysts, this lack may well represent part of a rational response to information problems associated with complex policy choices.

Decentralization is a well-known aspect of budgetary policy in many countries. In the United States and Canada, for example, decisions on taxation and expenditures are taken separately at the political level, and implemented by separate administrative bodies, while special procedures, such as annual budget resolutions or cabinet directives, are used to maintain broad overall coordination. As far as taxation is concerned, further segmentation of policy making and administrative organization tends to occur in accordance with particular fiscal instruments or major tax bases. To fully understand the nature of ORT, it is necessary to define and examine the losses and gains associated with such segmentation, and to relate them to the provision and processing of economic and political information necessary for effective policy.

4. Decentralization, Information and Co-ordination.

A major purpose behind decentralization of decision making is to economize on information collection and processing costs and to permit specialization in the knowledge required for the choice of particular tax instruments.⁷ Decentralization for this purpose also leads to the problem of co-ordinating decision makers. In this section we consider decentralization as a method of coping with the planning problem outlined in (4), or equivalently in (3), and we investigate the associated co-ordination problem. We proceed by defining two polar tax systems: one chosen in a world where information is costless - equivalent to a complete solution of the planning problem - and a tax system where co-ordination among decision makers is so costly that no co-ordination among them is attempted. We argue that the ORT system, the standard of reference for a competitive representative democracy, lies between these two solutions. In the following section we relate the degree of co-ordination between decision makers that it may be possible to achieve in equilibrium to the basic character of political institutions.

Our discussion of tax policy making and equilibrium tax systems does not allow for the principal-agent problems that often arise when the policy process disperses decision making power. We assume that all decision makers have the same basic objective in mind, and leave the study of the interaction between decentralization of tax policy making and principal-agent problems for future research.

We begin with three simplifications of the model of equilibrium policy choices in (4). First, given the lack of knowledge concerning the influence of public expenditures on individual preferences and on the magnitude of private taxable activities, it seems reasonable to suppose at the outset that the level of G cannot be chosen with a view to influencing the level of taxable activities. We therefore assume that tax bases, however defined, are independent of the level of public services G . Second, we assume that it is possible to distinguish short-run, mainly distributional, impacts of changes in tax policy from longer run effects that involve substantial induced changes in private behavior. Together these two simplifying assumptions suggest that the support function S in (4) can be written as:

$$S = S(t, B(t), G) \quad (6)$$

where $t = (t_1, t_2, \dots, t_j)$ is a vector of tax rates and $B = B\{B_1(t), B_2(t), \dots, B(t_j)\}$ is a vector of the corresponding tax bases, and where the possibility that each tax rate may affect a large number of tax bases is explicitly acknowledged.⁸ Third, we assume for purposes of the following discussion that the definition, though not the level, of each tax base is exogenous.⁹

We shall introduce the problem of co-ordinating tax policy into our framework by thinking of each tax base as being under the control of a separate group of decision makers who can determine the tax rate levied on that base. The problem of coordinating decision makers so that the general equilibrium effects of separate choices concerning tax rates are taken into account will be

of central concern in what follows.

In view of the simplifying assumptions just introduced, the planning problem in (4) can be restated as:

$$\max_t S(t, B(t), G) \quad (7)$$

subject to

$$\sum_j t_j \cdot B_j = G. \quad (8)$$

The first order condition for instrument t_k is:

$$-\left\{ \frac{\partial S}{\partial t_k} \Big|_B + \frac{\partial S}{\partial B_k} \cdot \frac{\partial B_k}{\partial t_k} + C \right\} = \lambda_k = \lambda \cdot \{ B_k(1 + \epsilon_k) + D \} \quad (9)$$

where

$$C = \sum_{j \neq k} \frac{\partial S}{\partial B_j} \cdot \frac{\partial B_j}{\partial t_k}, \quad (10)$$

and

$$D = \sum_{j \neq k} t_j \cdot \frac{\partial B_j}{\partial t_k}, \quad (11)$$

and where λ is the Lagrange multiplier associated with the government budget restraint, $\epsilon_k = \partial B_k / \partial t_k \cdot t_k / B_k$ is the elasticity of base B_k with respect to tax rate t_k , and λ_k represents the gain in support from raising rate t_k and spending the resulting revenue on public services. An analogous condition holds for the other tax rates and for the level of public services. The C and D terms in (10) and (11) represent the interdependencies between the choice of rate t_k and the choice of other rates

that occur because of the interrelatedness of economic and political activities.¹⁰ These terms can be expected to be smaller in the short-run than over longer horizons because tax elasticities tend to grow with time.

For later use, we shall assume that all the terms on the left side of (9) are negative. The intuition here is that an increase in the k th rate will cause a loss in support for three reasons: (i) the impact effect on support of a small increase in the k th rate, the first term on the left side of (9), will be negative; (ii) there will be a further loss of support because of the direct, negative effect of the k th rate on the size of the k th base, hence the second term on the left side of (9) is also assumed to be negative; and (iii) the cross effects of t_k on other bases B_j will, on balance, lead to yet further losses in support, represented by $C < 0$. We shall also assume that each of these three terms is decreasing (algebraically) with t_k .

We shall also assume that all of the terms on the right side of (9) are positive: (i) as usual we assume that increasing the level of public services generates additional support, hence $\lambda > 0$; (ii) it is reasonable to expect that as the k th rate increases, revenue from the k th base does as well so that $B_k(1 + \epsilon_k) > 0$; and (iii) we assume that on balance the substitutions away from the k th taxable activity as t_k increases lead to additional revenues, represented by $D > 0$. Again we shall also assume that these three terms are declining with the k th rate.

A full solution to the set of first order conditions of which (9) is a part is equivalent to a full solution to the problem in (4). Such a solution is feasible only if information and co-ordination costs, especially those that arise in connection with the interaction terms C and D , are negligible. Such a solution is represented in Figure 1 by t_k^* .

[Figure 1 here]

In the figure, which is a partial equilibrium representation of the solution to the complete set of first

order equations, the line MS graphs the change in the left side of the first order condition (9) as the k th rate changes. The left side of (9) represents the loss in support from raising the k th rate, and in the figure this loss is shown as increasing (in absolute value) with t_k in accordance with the assumptions made above. The change in the right side of (9) as t_k changes is represented by the line labelled λ_k . As previously noted, the right side of (9) can be interpreted as the increase in support from spending the extra revenue that results from a small increase in t_k . In the figure, and also in accordance with the assumptions made above, this increase in support is assumed to be declining with t_k .

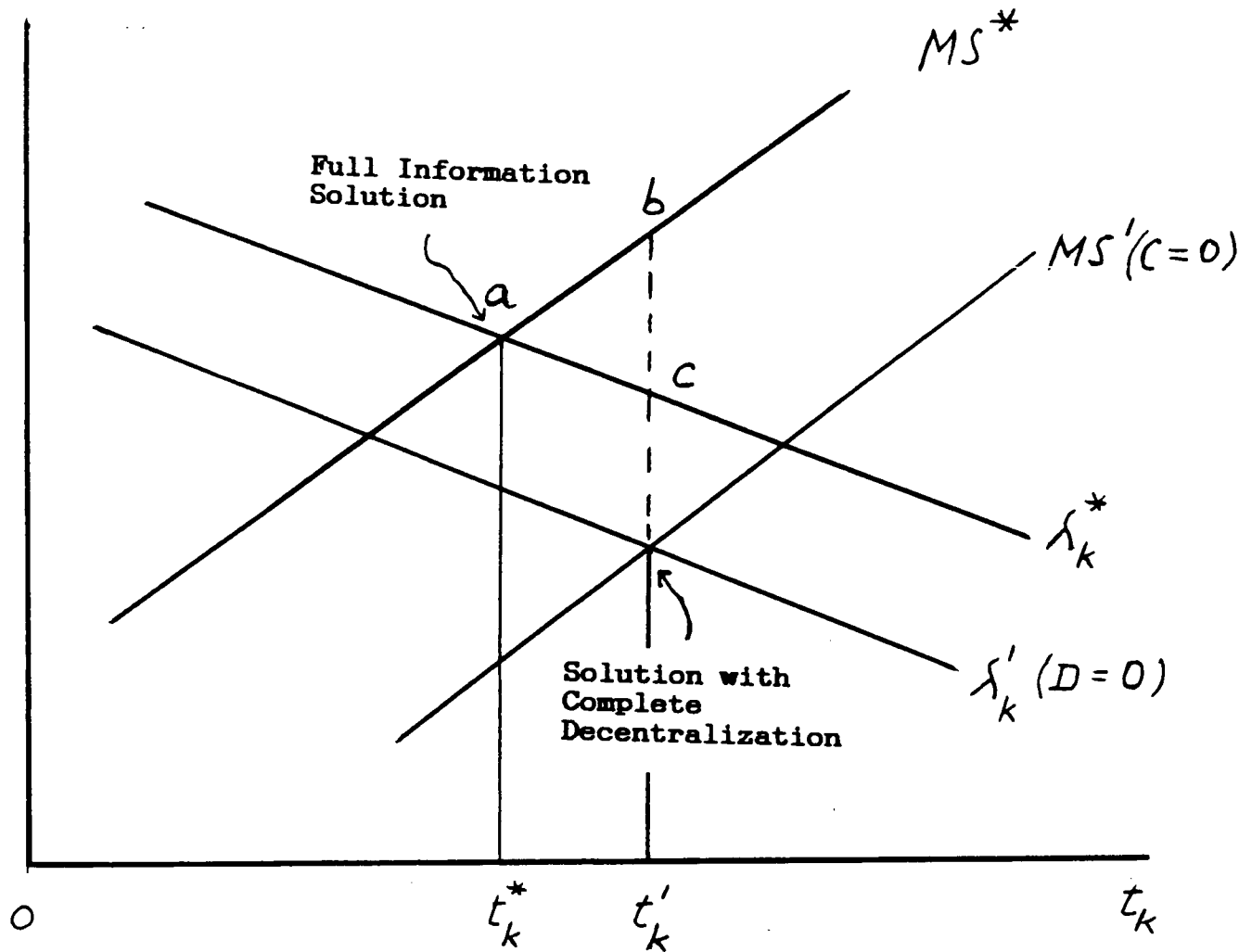
At the other extreme to a world of costless information is a choice for t_k that reflects completely uncoordinated decentralization of decision making; that is, a situation where each instrument is assigned to a separate group of decision makers with the additional instruction that no co-ordination between decision makers to take the interaction terms in (9) into account is to be attempted. This is a world where the costs of acquiring information about C and D are prohibitive, or where co-ordination costs are so high that using any information about C and D does not increase net support. In that case, t_k is set according to (9) after setting C and D to zero. Each decision maker thus takes into account only the distributional and incentive effects associated with his or her own instrument and ignores the implications for support that follows from the effects of his decision on the tax bases assigned to other decision makers. The resulting tax rate is shown in Figure 1 by t_k' , where the line MS', representing the left side of (9) with C set equal to zero, intersects the line λ_k' which represents the right side of (9) with D equal to zero.

It can be seen from Figure 1 that complete decentralization leads to a net loss of support equal to the triangle abc.¹¹ This net loss can be decomposed into the difference between the loss in support from raising the k th rate from t_k^* to t_k' equal to area $t_k^*abt_k'$, and a gain from spending the

FIGURE 1

**Decentralization and Tax Policy in
Political Equilibrium**

Marginal
Gain or
Loss in
Support



extra revenue, area $t_k^* \Delta t_k^*$. Note that even though t_k^* is chosen assuming $D = 0$, the full increase in support from using the revenue generated still occurs.

Neither t_k^* nor t_k' is politically or economically efficient. The first solution presupposes that information is costless while the second would be optimal only if there are no benefits to co-ordination across decision makers. The best feasible solution involves trading off the benefits from decentralizing decision making, including the gains in support that follow from being able to economize on the costs of acquiring and processing information, with the costs of doing so. These costs include the loss in support that occurs because of the added difficulties associated with co-ordinating semi-autonomous decision makers. The politically optimal rate on base k thus lies somewhere between the two rates shown in Figure 1. The replication of the optimal political program by the problem in (4) suggests that this intermediate rate will also be Pareto-efficient.

Characterization of the tax system and tax policy process that correspond to this optimal rate, and investigation of the relationship between this ORT system and the equilibrium system that results under various institutional arrangements remains to be accomplished. In the next section we consider the possibility that particular aspects of political systems, including rent seeking by special interest groups, may lower the costs of information and co-ordination, and may thereby lead to improvements in the equilibrium tax system.

5. Tax Policy in Congressional and Parliamentary Political Systems

In order to investigate possible links between institutions and the costs of information and co-ordination, it is useful to compare tax policy making in the congressional system of the United States with that in the parliamentary system of Canada.¹²

The tax policy process in the congressional system, as described for example by Breton

(1991) and Pechman (1987, chp.3), is one in which the executive as well as legislators from both the House and Senate are directly involved in lengthy negotiations on tax proposals that are well known to all participants. The negotiations required to fashion the compromises that are finally passed into law often centre on the work of standing tax committees in both branches of Congress that have the power to initiate and to block tax legislation. The possibility of exerting meaningful influence at several points in the process such as in the tax writing committees draws representations by lobbyists on behalf of various special interest groups. The large number of legislators and interest groups involved and the intensity of the resulting negotiations makes the process of passing tax legislation, in Pechman's words "a gruelling experience, demanding physical stamina as well as analytical and political acumen" (p. 62).

The policy process in the Canadian parliamentary system, described by Breton (1991) and in Hartle (1982), differs radically from that in the United States. The most important phase of the tax policy process occurs within the federal bureaucracy, especially the Department of Finance, and is usually conducted in secret.¹³ Ministers heading other departments and even the Prime Minister normally exercise only minor influence. The secrecy of the tax policy process and especially the fact that most tax legislation is fashioned behind the closed doors of a non-partisan bureau makes it difficult for ordinary members of parliament and representatives of interest groups to exert a direct influence on tax legislation as it is being drawn up. Influence may of course be exerted indirectly in the normal course of political debate. But on the whole, the tax policy process in the Canadian parliamentary system seems substantially more impervious to representations by legislators and lobbyists than that in the congressional system.

While the representation of special interests is more muted and indirect in the parliamentary system, control over the revenue implications of tax legislation is much more direct. The doctrines

of cabinet solidarity and budget secrecy, as well as the strong support for the Minister of Finance traditionally accorded by the Prime Minister give this Minister substantial control over the expenditure and tax policy processes. All tax policy proposals must pass through the hands of the Minister of Finance and his or her senior officials. The Minister can ask for changes in the proposals put forward by specific branches of the Department of Finance if the aggregate revenue implications of proposed legislation are inconsistent with overall expenditure targets. Moreover, and most importantly, the Minister can ask for changes in particular aspects of the tax code without rejecting a package of reforms as a whole, so that the cost of co-ordinating amendments to proposals put forward by officials is substantially lower. In the U.S. system, the President can also reject specific tax reform proposals, but only by vetoing the entire package. As Breton (1991, 34) point out, this is a crude instrument compared to the power of the Minister of Finance, and can be used only sparingly because of the difficulties it creates for the President in the future when the support of members of Congress on other matters is required.

Translated into the present framework, the preceding sketch of policy processes suggests that the **costs of information** about the nature of the interaction terms labelled C in equation (9) are smaller in the U.S. congressional system, while the **costs of co-ordination** required to take the interaction terms in D into account are lower in the Canadian parliamentary system. In the U.S., interest groups have a greater incentive to supply information to the executive and to legislators on the consequences for political support of proposed tax changes, including information about the terms in C. In the parliamentary system, the costs of co-ordinating the aggregate revenue implications of tax proposals, including the interaction effects represented by D, appear to be lower. So too would be the co-ordination costs of taking into account the indirect implications for support of tax proposals, **if the Minister knew them**. But in the parliamentary system, the role of special interests

in the tax policy process is muted, in comparison to the U.S. system, and hence less information is supplied in the normal course of events.

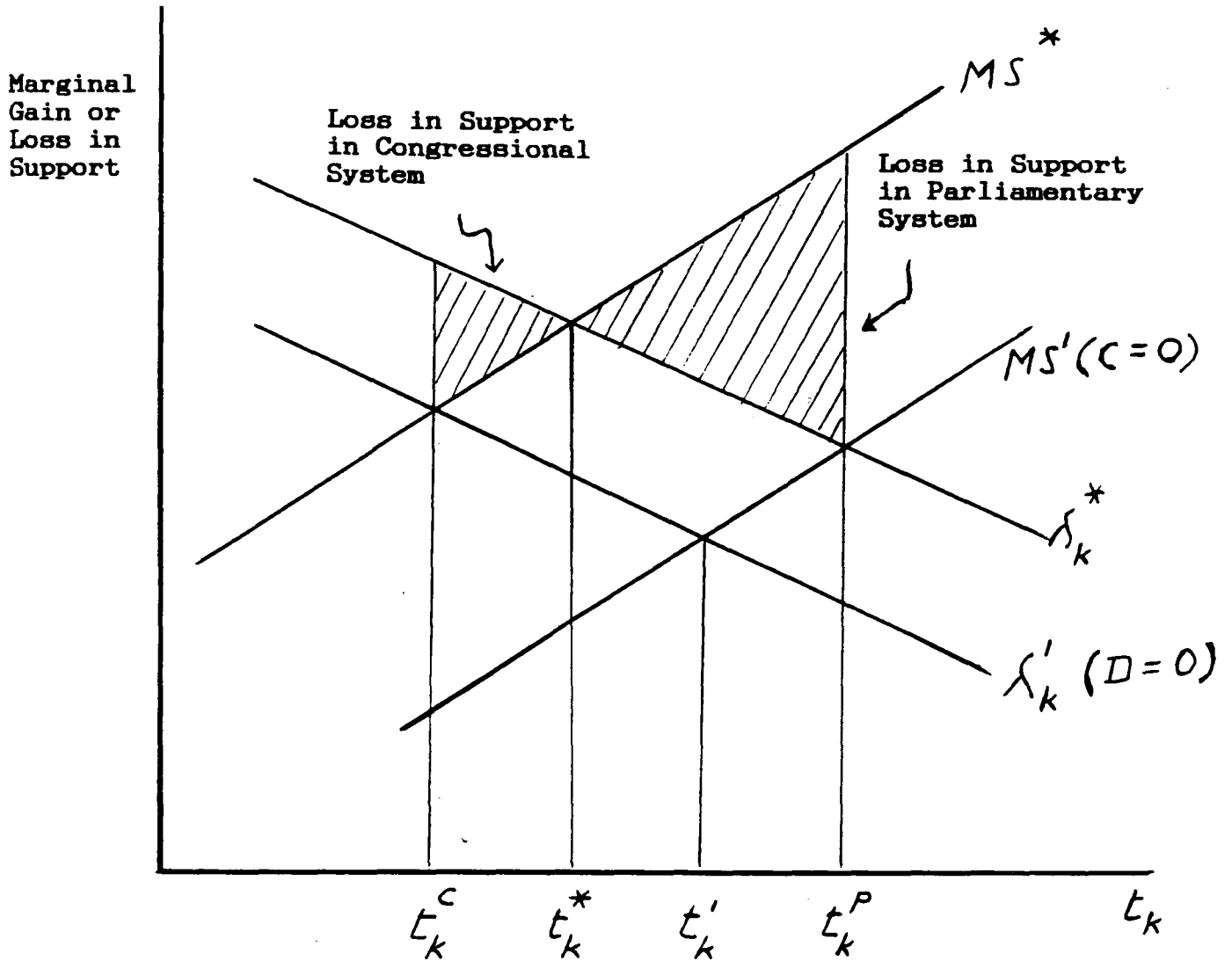
For convenience we shall let $C < 0$ and $D = 0$ characterize the congressional system, and we shall let $C = 0$ and $D > 0$ characterize the parliamentary system. (Recall that $C < 0$ means that the indirect effects on support of increasing the k th tax rate, via induced changes in other bases, on balance operate so as to increase opposition to any increase in the k th rate. Assuming $D > 0$ implies that the indirect effects on total revenues of increasing the k th rate, via induced changes in other bases, on balance add to total revenues). The resulting outcome for the k th tax rate in the congressional system is shown in Figure 2 as t_k^c and that for the parliamentary system is shown as t_k^p . It can be seen from the figure that there is a tendency for the congressional system to be too small relative to the full information, support-maximizing rate, while the opposite result holds for the parliamentary system. The intuition here is simply that interest group politics in the congressional system supplies information about opposition to tax proposals more cheaply than in a parliamentary system, while the costs of co-ordinating proposals to realize the full revenue implications of a tax proposal are relatively lower in the parliamentary system. The relative size of tax rates then follows from our assumptions about the signs of C and D . It appears, therefore, that the basic nature of political institutions substantially shapes tax policy outcomes, and, given our assumptions about the signs of C and D , that the congressional system has a tendency to produce lower equilibrium tax rates than the parliamentary system.

[Figure 2 here]

It is interesting to note that both outcomes t_k^c and t_k^p may be inferior to one chosen without any attempt to take either C or D into account, such as t_k^* . Using information about just one of these interaction terms may lead to an outcome worse than if decision making is completely decentralized.

FIGURE 2

Tax Policy Process in Parliamentary and Congressional Government



We should expect, and we do observe, efforts in both political systems to take the interaction terms on both sides of equation (9) into account. In the congressional system, attempts to replicate the direct authority exercised by a Minister of Finance are ongoing and include the Congressional Budget and Impoundment Control Act of 1974 and Gramm-Rudman-Hollings Act of 1985 (McCubbins 1991). In the parliamentary system, the Minister of Finance regularly meets with representatives of various interest groups while the relatively powerless standing committees of the House of Commons hold extensive meetings to hear the views of special interests, the results of which are communicated to the government through party caucus meetings and in various official reports. Whether these procedures in congressional and parliamentary systems are the best possible means for acquiring information and co-ordinating tax policy that are consistent with the basic character of the respective political systems remains an open question.

6. Tax Reform

An ORT plan represents an equilibrium platform designed for an existing economic structure, with given economic data and political institutions. Any exogenous shock affecting the main parameters of the system will force a support-maximizing government or party to adjust its tax policy. We shall employ the term "tax reform" to refer to such responses, as well as to other more comprehensive changes in tax laws that may be needed to reestablish overall policy coordination. This differs from more common usage, which relates reform to the implementation of plans devised by experts on the basis of given normative criteria.

One can distinguish between two types of reform that correspond to two different outside influences. First, we may observe shocks of a limited nature that affect primarily a particular tax instrument or base. Adjustment will be restricted to that instrument, and effects on other areas (the

C and D terms in equation (9)) will be ignored. Changes of this nature may conform to what in practice is sometimes called "technical" reform.

Shocks of a broader nature will have an impact on several tax instruments at the same time. Here the need for coordination is greater. Responses may include joint adjustment of two or more policy areas, such as the coordinated change of related provisions in the individual and the corporate income taxes. Interdependence between the affected areas will be recognized to some extent, although the full value of the C and D terms in (9) will not be taken into account in the determination of policy.

As a number of adjustments of a partial nature are made over time in response to different shocks, coordination problems will become more severe. The C and D terms will acquire more importance, both because of the build-up of maladjustments and because elasticities are generally larger in the long-run than in the short-run. As a result, a need for coordinating reforms will arise in order to rebalance the overall tax system. In this context, the C and D terms become crucial to the nature of reform, even though it may have been optimal to disregard them partially or completely for more limited responses and over shorter time horizons.

The view of tax change suggested by this analysis implies that reform will be an integral and regular part of public policy, with frequency and scope being affected by outside forces as well as by existing political institutions. The authors have shown elsewhere (Winer and Hettich 1991) that tax reform happens more often in the parliamentary system of Canada, where transaction costs are lower, than in the congressional system of the United States, where tax policy is subject to much more extensive political negotiation. One would expect this to be true particularly for reforms aiming to reestablish coordination, since transaction costs play an especially significant role in this case.¹⁴

7. Political Market Failure and the Policy Process

The introduction of collective choice alters the focus of tax analysis. Optimal values for policy instruments are the equilibrium outcome of a political process, not the result of a planner's optimization carried out in accordance with exogenously chosen norms. In ORT, the assumption of perfect political competition is crucial since such competition provides the driving force behind the generation of optimal policies.

The change in emphasis leads to new questions for analysis. It becomes essential to ask what happens to policy choices when political competition is weak and political markets "fail". Thus, the challenge to the researcher is to find a link between the functioning of political markets and the operation of particular policy processes. In what follows, we make some suggestions on how such a link may operate in tax policy.

While imperfect or weak political competition must ultimately refer to a lack of free entry into the political marketplace, modelling the consequences of this lack of entry is not straightforward. One possible consequence is that the government may not be under sufficient pressure to resist the demands of certain special interest groups, and may give in to their demands without taking into account the broader implications of doing so. Such a case has recently been characterized by Rodrik (1992) as subordinate government.

To investigate such a situation in the present framework, assume there are just two tax bases, domestic production B_d and imports B_x , and assume that the incumbent party is partly subordinate to the interests of domestic producers who seek protection against foreign competition but who are not strong enough to dictate actual tariff and other tax rates. Following Rodrik, we model this type of government as one that acts as a Stackelberg follower of domestic producers who (as a group) are the leader in the policy process that results in the setting of tax rates. This is the exact opposite of

the situation in problem (4) where tax policy is set by the government after taking the effects of taxation on private behavior fully into account.

By a Stackelberg follower of domestic producers, we mean that the government sets tax rates while taking the behavior of domestic producers, as represented by B_j^* , as given where

$$B_j^* = \underset{B_j}{\operatorname{argmax}} \quad v_j(B_j, t_j(B_j), t_k(B_j), G(B_j)) \quad (12)$$

is the level of activity chosen by domestic producers taking into account the reaction of the government to their 'demands'.¹⁵

In order to compare results with those given previously, we continue to assume that the government seeks to maximize expected support, so that the problem for the government now is:

$$\max_{\{t, G\}} S(t_j, t_k, B_j, B_k, G) \quad (13)$$

subject to

$$B_j = B_j^*, \quad (14a)$$

and

$$t_j \cdot B_j + t_k \cdot B_k = G. \quad (14b)$$

Since (13) is subject to the additional constraint (14a), the maximum value of S cannot attain that of the support function in problem (4).

The first order condition for tax rate t_k is:

$$-\left\{ \frac{\partial S}{\partial t_k} \Big|_B + \frac{\partial S}{\partial B_k} \cdot \frac{\partial B_k}{\partial t_k} + C' \right\} = \lambda'_k = \lambda \cdot \{ B_k(1 + \epsilon_k) + D' \} \quad (15)$$

where

$$C' = \frac{\partial S}{\partial B_j} \cdot \frac{\partial B_j}{\partial t_k} = 0 \quad \text{since } B_j = B_j^*, \quad (16)$$

and

$$D' = t_j \cdot \frac{\partial B_j}{\partial t_k} = 0 \quad \text{since } B_j = B_j^*. \quad (17)$$

The first order condition for rate t_j is:

$$-\left\{ \frac{\partial S}{\partial t_j} \Big|_B + C'' \right\} = \lambda''_k = \lambda \cdot \{ B_j + D'' \} \quad (18)$$

where

$$C'' = \frac{\partial S}{\partial B_k} \cdot \frac{\partial B_k}{\partial t_j}, \quad (19)$$

and

$$D'' = t_k \cdot \frac{\partial B_k}{\partial t_j}. \quad (20)$$

Since equations (15), (16) and (17) imply that the interaction effects C' and D' will be ignored in the setting of t_k , we have the same solution as that represented by t_k^* in Figure 1. So it can be said that, in our framework, subordinate governments will tend to choose tax rates on activity not controlled by powerful special interests as if the costs of information and co-ordination in the setting of these rates are prohibitive. Alternatively, we can say that these rates will be set as if

complete decentralization was the most desirable policy process.

From (18) it can be seen that a subordinate government will set the rate on the protected domestic market t_j at a level that does not take into account the direct incentive effects of taxation (including the effect of t_j on B_j). Thus a subordinate government chooses an inefficient policy both because it ignores incentive effects concerning the activity of special interests and because it will tend to rely on decentralized decision making to an extent not justified solely on the basis of information and co-ordination costs.

While more detailed research is needed on the factors that determine political competition, and on their effects on the policy process, the analysis is useful in suggesting a direction for future work. There is a parallel between the more traditional study of economic markets and the examination of political processes in ORT. In both cases, identification of market failure can serve as a first step in the development of policy recommendations leading to greater efficiency.

8. Conclusion

Recent advances in the theory of probabilistic voting provide the foundation for developing a normative theory of taxation that includes collective choice as an integral part. Such a theory has many interesting parallels to optimal taxation. However, there are also significant differences.

While the information requirements of OT are extensive, those of representative taxation are even larger, since knowledge of political margins must be added to relevant data of an economic nature. We argue in this paper that decentralization of policy making is the best solution to the information problem. Such decentralization has two impacts. On the one hand, it leads to choices based on a more restricted consideration of policy effects. On the other hand, it makes possible reliance on political institutions that motivate interest groups to provide relevant economic and

political information as a by-product of rent-seeking behavior.

The paper puts its main focus on analyzing the limits placed by decentralization on information use in tax policy and examines the implications of such limits for policy making under two different constitutional regimes, as well as for the nature of tax reform. The theoretical analysis largely abstracts from the effects of decentralization on the principal agent problem, which may be aggravated, thus imposing additional costs on the process. It remains for future work to take this aspect of political decision making more fully into consideration.

The addition of collective choice gives a different thrust to normative analysis, directing attention away from the preparation of optimal tax plans to the study of political competition and the possible effects of political market failure on the policy process. A new welfare economics may become possible that combines the analysis of institutions with the examination of economic incentive effects pioneered by optimal taxation. Much work remains, however, until the examination of information problems, collective choice and the formal analysis of fiscal effects all become parts of a cohesive normative theory of taxation.

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Endnotes

1. The quote is from Gillis (1989, 515). Bird also draws attention to the "chasm" that exists between optimal tax theorists and practitioners (1991, 38). Harberger (1990) suggests simplified policy rules based on packages of complementary or substitute goods. For a review of the issues concerning uniformity versus selectivity in commodity taxation, see Stern (1990).
2. The best-known example where the political environment is acknowledged without being integrated into the analysis is found in the Meade Report (1978, 44). Ahmad and Stern (1991, 69) and Stern (1990, 105) also make reference to the possible influence of interest groups once optimal tax provisions have been established.
3. For the theory of probabilistic voting models, see for example Enelow and Hinich (1984) and Coughlin (1992).
4. Maximization of expected plurality could also be used as the party's objective without altering the argument. Maximization of plurality or votes seems a reasonable objective to impute to political parties that are uncertain about who their opposition will be in the next election.
5. The general idea here is to use an artificial planning problem that has a solution with well known properties as a means of studying the characters of an equilibrium. The trick is to find such a problem having a solution that replicates the equilibrium in question.
6. For an interesting review of this debate, see Simon (1981, chp. 2).
7. A decentralized tax policy process can also be described as a piecemeal policy process. An interesting, early discussion of the advantages of piecemeal policy making in the tax field is provided by Bird (1970, 455-457). Bird also remarks on the obvious connection between piecemeal policy making and Lindblom's (1969) argument for incrementalism in policy making.
8. Each tax rate could also be thought of as a set of closely related tax instruments.
9. In a completely general model, the formation of tax bases would be endogenous. Use would be made of the near-decomposability (in the sense of Simon 1981, chp.7) of the economy and political system into semi-independent segments to group taxable activities into bases that are largely independent, so as to economize on the need for co-ordination in tax policy making. Decentralization of economic policy-making along these lines has also been advocated by Tinbergen (1954) among others. See Hettich and Winer (1988) for further discussion of the sorting of activities into tax bases.
10. Interdependencies that arise because of political structure are not clearly represented in equation (7) however.
11. It should be recalled that the triangle is a partial equilibrium representation of the loss in support.
12. Breton (1991) provides an interesting comparison of the structure of decision making in parliamentary and congressional systems, as well as a review of literature on this topic.

13. Occasionally a 'White Paper' may be issued that sets out a proposed reform for general discussion, but this is an infrequent occurrence.
14. Maslove (1989) has observed cycles of tax reform in the Canadian parliamentary system. A complementary view of tax reform is found in van Velthoven and van Winden (1991).
15. The term 'argmax' refers to the value of B_j that maximizes the welfare of domestic producers v_j .