SPECIAL-INTEREST LOBBYING AND ENDOGENOUS COMMODITY TAXATION

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INTRODUCTION

I am deeply appreciative of the honor of being asked to deliver the Paul Samuelson lecture. Samuelson's *Foundations of Economic Analysis* and *Economics* were the first two books I read in economics, and every piece of my research has been influenced by his teaching. Ramsey's model of optimal commodity taxation figured prominently among the ideas and techniques I learned from him; indeed this has always been one of his favorite topics.

Jagdish Bhagwati, who invited me to give this lecture, has been an almost equally important influence on my thinking. From his writings I learned much of international trade, and understood the importance of politics in economic policy. Therefore I am particularly happy to be able to choose a subject for this lecture that combines all these strands.

The theory of optimal commodity taxation is a major part of modern public economics. The pioneering article of Ramsey [1927] was clarified, extended, and popularized by Samuelson in his famous 1951 "Treasury memorandum," which was later reprinted [1986]. Samuelson [1982] reviewed the history of the problem. The subject received its most important impetus with the landmark work of Diamond and Mirrlees [1971]. This led to numerous extensions and applications, the masterly textbook treatment of Atkinson and Stiglitz [1980], and several surveys of the theory and its applications in Auerbach and Feldstein [1985].

An important general result of this theory is that when the government can vary the tax (or subsidy) rate on all commodities, under very general conditions production efficiency is desirable. For example, in a small open economy the domestic producer prices should be kept equal to, while domestic consumer prices can differ from, world prices.

This work belongs to the normative tradition of economic policy analysis; it assumes that policy maximizes a social welfare function of the Bergson-Samuelson type. In recent years a positive theory of policy-making has developed separately, which models the political process by which policy is made, and examines the policy which emerges as the equilibrium of this process. Different models focus on different aspects of politics, such as voting and lobbying. In the particularly attractive and fruitful model of Grossman and Helpman [1994], organized special interest groups make contributions to induce the government of the day to choose trade taxes (or subsidies). In the resulting equilibrium, the tariff rates are high for those commodities that have high domestic production levels and low elasticities of demand for imports.

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Thus production efficiency is violated. However, in that model tariffs are by assumption taken to be the policy instruments, so one cannot say whether the result would persist even if the government could choose domestic producer and consumer taxes separately, and if the special interest groups could condition their contributions separately on these policies.

I will construct a model of endogenous policy that generalizes the Grossman-Helpman model by introducing this extra dimension of policy. Thus I offer a positive counterpart to the received normative theory of optimal taxation. The results again show a failure of production efficiency. In fact the political equilibrium is in some respects exactly the opposite of the economically optimal policy.

The general point is that special interests gain from manipulating producer prices to the extent that their income responds differently to these prices than does GNP as a whole; they gain from manipulating consumer prices to the extent that their tastes differ from those of the population as a whole. In reality, special interests are distinguished far more often by their sources of income (specific factors) than by their distinctive tastes in consumption. Therefore the forces that cause domestic producer prices to differ from world prices are generally much stronger than those that drive a wedge between domestic consumer prices and world prices.

The results of the model also differ from those of Grossman and Helpman. In their model, all consumers have identical tastes, so no group has a reason to alter consumer prices. But since tariffs are the only instruments available, organized groups use them to a certain extent, as the consumption distortion cost of a small tariff is of the second order. In my model the production and consumption effects can be separated; as a result in the case of identical tastes the political equilibrium has only production subsidies. Of course in reality consumers do differ in their tastes, but these differences do not seem of a kind that would lead to the use of tariffs (consumption taxes and production subsidies at precisely equal rates) in the political equilibrium. Thus the fact that tariffs, and other instruments of trade protection, are often used in reality even though superior policy instruments are available requires separate explanation.

THE MODEL

The structure of the model follows Grossman and Helpman [1994]. There are $(n+1)$ goods. Good 0 is the numeraire. This is a small open economy, and the world prices of goods $j = 1, 2, \ldots n$ are p_j^*, exogenous and constant. The corresponding domestic producer prices will be denoted by p_j and consumer prices by q_j.

The numeraire good 0 is produced using labor alone at constant returns. By choice of units the wage equals 1, and this sector generates no rent. Goods $j = 1, 2, \ldots n$ are produced using labor and a specific factor, with constant returns to scale but diminishing returns to labor alone. The profit in each sector equals the rent going to its specific factor. The profit functions are $\pi_j(p_j)$ yielding the supply functions $y_j(p_j) \equiv \pi_j'(p_j)$ by Hotelling's Lemma.

If this model is to be cast in the normative Diamond-Mirrlees framework, then to ensure production efficiency we need full commodity taxation, which entails taxation of these rents to specific factors, possibly at different rates in different sectors. Since the specific factors are inelastically supplied, such taxes or subsidies are equivalent to sector- or group-specific lump-sum transfers. In my model, with quasilinear utility and an additive social welfare function, there is no cause for such redistributive taxation, and production efficiency holds trivially. I will discuss this in more detail below.

There are $(n + 1)$ groups of income earners *cum* consumers: the group labelled 0 corresponds to those who earn only wage income and those labelled $i = 1, 2, \ldots n$ correspond to the owners of the specific factor in the correspondingly labelled sectors. Consumers in group i have the consumer surplus functions $s^i(q)$ that are additively separable in prices. By Roy's Identity these yield the demand functions $d_j^i(q_j) \equiv -s_j^i(q)$, where the subscript j on the left-hand side is the commodity label, and that on the right-hand side denotes differentiation with respect to q_j.

I am following Grossman and Helpman [1994] in assuming zero cross-effects of prices in demand and supply. Cross-effects in supply would correspond to the use of goods in the production of other goods, and those in demand would correspond to substitutes and complements. Allowing cross-effects is not hard, but they make no difference for the present purpose, so I adhere to the earlier model to simplify the reader's task. However, I generalize Grossman and Helpman by allowing different preferences and demand for members of different groups; they had identical preferences for all consumers. I discuss the consequences of this later.

Suppose there are N_i individuals in group i. Let N be the total population. Then the aggregate demand functions are $D_j(q_j) \equiv -S_j(q)$, where on the right-hand side we have the partial derivatives of the aggregate consumer surplus function $S(q) = \Sigma_i N_i s^i(q)$.

The wedges between the domestic producer and consumer prices (respectively the vectors p and q) and the world price vector p^* are taxes or subsidies as appropriate. There can also be government expenditure on goods and services, G, which is exogenous for our purpose here. The net revenue received by government from these policies, per head of the population, is

$$r(p,q) = \frac{1}{n}\left\{\sum_{j=1}^{n}[(q_j - p_j^*)D_j(q_j) - (p_j - p_j^*)y_j(p_j)] - G\right\}. \tag{1}$$

Note that in the sum, the first term is the revenue from consumer taxes (positive when domestic consumer prices are above the world prices) and the second term is the cost of producer subsidies (positive when domestic producer prices are above the world prices). This revenue is handed back to (if negative, the deficit is collected from) each individual in equal sums $r(p,q)$ each, as per-head grants (resp. taxes). As in the standard theory of commodity taxation, individual- or group-specific lump-sum transfers are not allowed.

Now we can write down the expression for the aggregate gross welfare of individuals in group i (gross before subtracting their contributions to the government which are discussed below):

$$W^i(p,q) = N_i s^i(q) + \pi_i(p_i) + N_i r(p,q), \tag{2}$$

where we can include the group 0 by defining $\pi_0 \equiv 0$. The total welfare for the whole economy is

$$W(p,q) = S(q) + \sum_{j=0}^{n} \pi_j(p_j) + Nr(p,q). \tag{3}$$

If this were a normative model, with p and q chosen to maximize $W(p,q)$, the optimum would have $p = q = p^*$. The entire revenue to finance the provision of the public good would be collected using per-head taxes, and distortionary taxation would be unnecessary. In this model, where all individuals have equal (unitary) marginal utilities of income, and the social welfare function is additive (Benthamite), there are no normative redistribution considerations. This is a deliberate choice to make the political considerations of the positive model stand out.

Since some people can benefit at the expense of others, in a positive setting of politics, there is scope for redistribution. Non-discriminating per-head taxes or subsidies achieve no redistribution, so individuals must try to manipulate the prices. Individuals of each type face an inherent free-rider problem in spending resources for this purpose [Olson, 1965]. I follow Grossman and Helpman [1994] by assuming that an exogenously specified subset L of groups i succeed in overcoming the problem and joining together to lobby the government. I also follow Grossman and Helpman in supposing that each organized group offers a schedule of contributions as functions of policy, and that the government responds with the policy that maximizes its objective. Thus this is a model of common agency as in Bernheim and Whinston [1986]. I extend the Grossman-Helpman model by allowing the government to choose p and q, and the lobbies to make their contribution schedules functions of both of these vectors.

EQUILIBRIUM IN TRUTHFUL STRATEGIES

The process of lobbying is modelled as a two-stage game. In stage 1, the organized groups $i \in L$ (the principals) choose their contributions schedules $C^i(p,q)$. In stage 2, the government (their common agent) chooses the policies p, q. The welfare of each lobby group $i \in L$ is $W^i(p,q) - C^i(p,q)$. The government's objective function is

$$V(p, q) = \sum_{i \in L} C^i(p, q) + \theta W(p,q). \tag{4}$$

The government cares for its contribution receipts and for social welfare; the latter is motivated by considerations outside the formal model, for example concern for reelection in the case of a democratic government, or the fear of riots or coups in a non-democratic government. The coefficient θ measures the government's tradeoff between social welfare and contributions; larger θ indicates a more benevolent government. (My θ is the same as Grossman and Helpman's parameter a).[1]

This game can have multiple Nash equilibria, but Bernheim and Whinston [1986], followed by Grossman and Helpman [1994], select one in which the lobby groups follow "truthful" strategies, in the sense that their contribution functions C^i are just their gross benefit functions W^i minus a constant. Equilibria in truthful strategies have two desirable properties:

1. They are proof against joint actions by those coalitions of organized groups which are themselves not vulnerable to further defections, and
2. They are efficient in the sense that no feasible Pareto superior outcomes exist for the organized groups and the government. (Of course outcomes are not socially optimal when one takes the welfare of the unorganized groups into consideration.)

I shall begin, as do Grossman and Helpman [1994], by establishing some relationships that hold in any subgame perfect Nash equilibrium of the two-stage game, assuming only that the strategies are differentiable and the equilibrium is interior. The government's first-order conditions for choosing p and q in stage 2 are

$$\nabla V(p, q) = \sum_{i \in L} \nabla C^i(p, q) + \theta \nabla W(p,q) = 0. \tag{5}$$

where ∇ denotes the gradient of the function in question, namely the vector of partial derivatives with respect to (p,q).

Next consider each organized group's strategies in the first stage. Each takes the strategies of all the others as given. So long as the contribution functions $C^i(p,q)$ include a constant term, each group $\ell \in L$ will want to maximize the joint surplus that exists in the bilateral relationship between itself and the government, and then use the constant term to divide the surplus to fulfill the government's participation constraint.

If group ℓ does not contribute, suppose the government responds to the Nash equilibrium strategies of the other groups by choosing the prices (P^ℓ, Q^ℓ). Let (p,q) denote the prices when group ℓ contributes; it can vary these by changing its schedule. The objective of the government when group ℓ contributes is

$$\sum_{i \in L} C^i(p, q) + \theta W(p,q).$$

When group ℓ does not contribute, it is

$$\sum_{i \in L,\, i \neq \ell} C^i(P^\ell, Q^\ell) + \theta W(P^\ell, Q^\ell).$$

The difference is the government's share of the bilateral surplus. Group ℓ gets $W^\ell(p,q) - C^\ell(p,q)$ when it contributes, and $W^\ell(P^\ell,Q^\ell)$ when it does not. The difference is its share. Therefore the bilateral surplus is

$$\sum_{i \in L,\, i \neq \ell} [C^i(p, q) - C^i(P^\ell, Q^\ell)] + [W^\ell(p, q) - W^\ell(P^\ell,Q^\ell) + \theta[W(p, q) - W(P^\ell,Q^\ell)]. \tag{6}$$

If each organized group has available a sufficiently rich space of contribution schedules that it can vary (p,q) in all dimensions in a neighborhood of the equilibrium (local controllability), then the first-order conditions for the group's maximization of the bilateral surplus are

$$\sum_{i\in L,\, i\neq \ell} \nabla C^i(p, q) + \nabla W^\ell(p, q) + \theta \nabla W(p, q) = 0. \tag{7}$$

Local controllability is easily met for most families, including linear, of realistic contribution functions; therefore I will proceed assuming local controllability holds.

In the subgame perfect Nash equilibrium of the whole two-stage game, the government's and the groups' first-order conditions, (5) and (7) must hold simultaneously for the same (p,q). Combining the two, we have

$$\nabla W^\ell(p, q) = \nabla C^\ell(p, q). \tag{8}$$

In words, at the equilibrium point, each group's marginal contributions for changing prices must equal the marginal benefits, or the contribution schedules must be *locally* truthful. This is a *necessary* condition for any interior subgame perfect Nash equilibrium in differentiable strategies, while the assumption of *global* truthfulness is a *sufficient* condition to select from the potential multiplicity of equilibria.[2]

Next we combine the government's first-order condition (5) and the lobby groups' local truthfulness conditions (8) to write

$$\sum_{i\in L} \nabla W^i(p, q) + \theta \nabla W(p, q) = 0. \tag{9}$$

These are just the first-order conditions for (p,q) to maximize

$$\sum_{i\in L} W^i(p, q) + \theta W(p, q)\,. \tag{10}$$

This maximand is the sum of the organized groups' net welfare $(W^i - C^i)$, and the government's objective, $\sum_{i\in L} C^i + \theta W$. In other words, in the equilibrium the available instruments are used in an efficient manner for the active players in the game. This is to be expected in a model with no information or commitment problems; indeed, any other outcome would have been counterintuitive. Of course the outcome is not optimal for the society as a whole when some groups are unorganized and their welfare is not included in the above joint objective.

Another way to look at the equilibrium concept is to recognize that, in the expression for the bilateral surplus (6) between group ℓ and the government, the only terms the group can affect by its action are

$$W^\ell(p, q) + \sum_{i\in L,\, i\neq \ell} C^i(p, q) + \theta W(p, q)\,.$$

When all the other groups are following truthful strategies, this reduces, within a constant, to the joint objective (10) above. In other words, each group acts as if it internalizes the effect of its actions on all the active players. This has an exact parallel in the Clark-Groves mechanisms for demand revelation in the theory of public goods. Indeed, one can regard the prices as public goods and the lobbies as expressing their willingness to pay for choosing the levels of these public goods.

RESULTS AND INTERPRETATION

Examine the separate components of the vector first-order conditions (9) for the maximization of joint objective (10). With respect to p_k, we get

$$\sum_{i\in L}\delta_{ik}\pi'_k(p_k) - \alpha_L[y_k(p_k) + (p_k - p_k^*)y'_k(p_k)] + \theta[\pi'_k(p_k) - y_k(p_k) - (p_k - p_k^*)y'_k(p_k)] = 0.$$

With respect to q_k, we have

$$-\sum_{i\in L} N_i d_k^i(q_k) + \alpha_L[D_k(q_k) + (q_k - p_k^*)D'_k(q_k)] + \theta[S_k(q_k) + D_k(q_k) + (q_k - p_k^*)D'_k(q_k)] = 0.$$

Here, as in Grossman-Helpman, I have defined

$$\delta_{ik} = \begin{cases} 1 & \text{if } i = k \\ 0 & \text{if } i \neq k \end{cases}. \tag{11}$$

Using the standard Hotelling and Roy properties, the first-order conditions simplify to

$$p_k - p_k^* = [(I_k - \alpha_L)/(\theta + \alpha_L)][y_k(p_k)]/[y'_k(p_k)], \tag{12}$$

and

$$q_k - p_k^* = [1/(\theta + \alpha_L)][1/(D_k'(q_k)][\sum_{\ell\in L} N_\ell d_k^\ell(q_k) - \alpha_L D_k(q_k)], \tag{13}$$

where, as in Grossman-Helpman,

$$I_k = \sum_{i\in L} \delta_{ik} = \begin{cases} 1 & \text{if } k \in L \\ 0 & \text{if } k * L \end{cases}, \tag{14}$$

and

$$\alpha_L = (\sum_{i\in L} N_i)/N \tag{15}$$

is the total proportion of the population that belongs to some organized lobbying group.

These are natural extensions of the equilibrium tariff formula Grossman and Helpman [1994] Proposition 2, applied separately for the consumer and producer prices. Grossman and Helpman express the the tariffs in *ad valorem* form and interpret the right-hand side as an elasticity. The result can then be seen as belonging to the family of Ramsey pricing formulas, as is natural since a (weighted) welfare function is being maximized subject to a budget constraint.[3]

I will now interpret (12) and (13) in somewhat greater detail. The left-hand side of (12) is the production distortion, or the (specific) subsidy that is given to the producers of good k. From the right-hand side we see that the subsidy is positive if group k is organized ($I_k = 1$) and negative if it is not ($I_k = 0$). Thus the unorganized producers are taxed as all the organized groups contribute to bring this about. In fact the formula combines the consequences of the non-cooperative choices of all the organized groups, and therefore conceals some conflicts of interests among them. These can be brought out by more explicit calculations in an example with quadratic profit and surplus functions (linear supply and demand functions) and linear contribution schedules. I omit the details to save space, and merely state the findings. Each organized group's contribution function contains incentives at the margin for the government to give it a subsidy and also to tax the producers of all other goods. This is not in order to be able to buy the other goods cheaper (there are no intermediate inputs), but merely to get a larger per-head distribution of revenue. This effect will generally be strengthened if we allow cross-price effects in the profit functions, because unless there is predominantly joint production, the producers of one good will generally use other goods as inputs and therefore benefit more directly by driving down the domestic producer prices of those goods.[4]

When producers of k are organized and therefore $p_k > p_k^*$, we see from equation (12) that, other things equal, the producer subsidy is larger when

1. α_L is smaller, so there is a larger unorganized proportion of the population who can be exploited,
2. θ is smaller, so the government is more willing to cater to special interests,
3. $y_k(p_k) = \pi_k'(p_k)$ is larger, because the rent added at the margin by an increase in p_k is larger, and
4. $y_k'(p_k)$ is smaller, because with a less elastic supply, the price wedge can be increased without causing substantially greater dead-weight loss.[5]

All these are similar to the results in Grossman and Helpman, except that instead of $y_k'(p_k)$ on the right-hand side of (12) in the denominator, they have the slope of the import demand function, $-D_k'(p_k) + y_k'(p_k)$ in my notation. By restricting the policy instruments to tariffs on imports, they force the domestic producer and consumer prices to move in step, and therefore the dead-weight loss on both sides matters. In my model, the more general set of policy instruments de-links the two prices and thereby also de-links the dead-weight losses.

Now turn to the first-order conditions (13) for the consumer prices q_k. In some respects this is similar to the formula for the production distortion: the roles of θ, α_L, and the slope of the demand function are similar. But the quantities consumed appear in a different way and this distinction conveys an important intuition about the motives for lobbying to create a price distortion. Everyone consumes all goods, and therefore in one sense they all have an interest in reducing the domestic consumer prices of all goods. But that also leads to a reduction in the per capita revenue distribution (or an increase in the per capita tax charge), and all the organized groups recognize this effect as it appears in the expression (2) for their welfare. Therefore in

equilibrium the overall incentive to manipulate the consumer price of any good depends on whether the organized interests consume the good in greater amounts than the average for the population as a whole. That is just what equation (13) shows. The first part of the third square bracket on the right-hand side is the aggregate demand for good k coming from all organized groups; the second part is the aggregate demand of the whole economy for this good, pro-rated for the fraction α_L of the population that belongs to organized groups. Only when the organized groups have a larger demand for k than their population-weighted share of economy-wide demand do they stand to gain by lowering q_k below p_k^* (recall that $D_k'(p_k) < 0$).

In particular, if all individuals have identical surplus and demand functions (as was assumed by Grossman and Helpman), then equation (13) becomes $q_k = p_k^*$ for all k. We can understand this by examining the dependence of the welfare of group i in equation (2) and the social welfare in equation (3) on consumer prices. Let $s(q)$ denote the consumer surplus of any one individual, same for all i. Then

$$W^i(p,q) = N_i s(q) + \pi_i(p_i) + N_i r(p,q),$$

and

$$W(p,q) = Ns(q) + \Sigma_j \pi_j(p_j) + Nr(p,q).$$

Therefore the effects of q on W^i and W are proportional, so every group's incentive to change q away from p^* is the same as that of society as a whole, and we know that the latter is zero. For every group, the consumer surplus gain from a lower q_k for any k exactly offsets the revenue loss, and they all share in the dead-weight burden. Then no one offers any contributions to the government to attempt to make consumer prices deviate from world prices.

By contrast, the producer prices p affects W^i and W very differently. An individual who owns the specific factor for one particular sector k clearly stands to benefit from an increase in the producer price p_k, and because of the revenue effect, from a decrease in all other producer prices. Therefore the group and social incentives remain very different with respect to the producer prices.

In reality, differences among individuals or groups are generally more marked in matters of their productive endowments and capabilities than in matters of their tastes; this is why international comparative advantage is generally better explained by relative productivity differences than by demand differences. Thus we should generally expect production efficiency to be violated in political equilibria when commodity taxes are the available instruments. I will discuss the question of superior instruments shortly.

Of course there are preference differences that generate political activity and affect policy outcomes. Groups such as opera lovers are able to organize and obtain subsidies for their consumption. More importantly, where local public goods can be subsidized by a central government, for example through matching grants or tax-deductible bonds, the localities act as lobby groups to obtain such subsidies.

COMMENTS AND EXTENSIONS

Second-Order Conditions

The above analysis is based only on the first-order conditions for the maximization of objective function (10), but as in the normative theory of taxation, second-order conditions can be problematic. In general, second-order derivatives of objective function (10) involve second-order derivatives of the demand and supply functions, and no useful economic interpretation of the second-order conditions is available. In an example where demand and supply functions are linear, we can say more. Writing Z for the left-hand side of objective function (10), we can write the conditions as

$$\partial^2 Z/\partial p_k^{\,2} \equiv (I_k - 2\alpha_L - \theta)\, y_k' < 0,$$

and

$$\partial^2 Z/\partial q_k^{\,2} \equiv (\theta + \alpha_L)\, D_k' < 0,$$

where $y_k' > 0$ and $D_k' < 0$ are now constants. The conditions for all the consumer prices and for the producer prices in unorganized sectors ($I_k = 0$) hold automatically, but those for producer prices of organized sectors ($I_k = 1$) require $\theta > 1 - 2\alpha_L$. If the organized proportion of the population is small, or if we want to be sure the conditions hold regardless of this proportion, then we need $\theta > 1$. In other words, the government should value social welfare sufficiently highly.

The intuition is that the profit functions, which enter into the organized groups' welfare, are convex in producer prices, and therefore the marginal incentive to lobby for a further increase in price rises as the price rises. This effect is counterbalanced by the fact that the revenue decreases at an increasing rate, which affects the general welfare. If the government does not value the latter sufficiently highly, it will push the producer prices of the organized sectors to the upper limit of feasibility.

Even without failure of the second-order conditions there can be corner solutions. Grossman and Helpman [1994] discuss this in their Footnote 9, and those remarks apply to this model as well.

Modelling Choices

Here I comment on two specific assumptions of the model, one innocuous and the other less so.

To keep the notation simple, I assumed that the definition of a group simultaneously encompassed particular preferences as well as particular ownership of specific factors of production. I could have introduced preference differences in other ways and obtained results that are natural analogues of those above. But, only those groups that have distinctive tastes and can organize to lobby the government can achieve consumption subsidies.

Perhaps more drastically, the very definition of a group in the model is somewhat arbitrary. Nothing prevents an individual from being a group all on his or her own; the model works perfectly well even if $N_i = 1$ for some or even all i. In fact, a group could be split into two or more separate groups, and the equilibrium would not change; the smaller groups' contribution schedules would be simply proportionally scaled down. What is ultimately crucial is the separation of individuals into those who are able to lobby and those who are not, and that is exogenous. The Grossman-Helpman model of course shares this feature. While useful analysis can be performed and interesting results obtained in this way, endogenization of the lobbying decision is an important item for future research.

Group-Specific Transfers

In the Nash equilibrium of the lobbying game, the available instruments are used as if to maximize the combined objective of all the active players. In the Grossman-Helpman model, tariffs were the only instruments considered, and they were used even though the consumption tax component of the package that constitutes a tariff was not desired for its own sake. In my model the set of available instruments was enlarged by de-linking the production subsidy and consumption tax components of tariffs; only the former was used in the case of identical preferences. However, production subsidies violate production efficiency. One should think that if the model is further enlarged to include an even richer set of instruments, namely taxes or subsidies on the rents to sector-specific factors, they will be used instead of production subsidies, and production efficiency will be restored. Of course there are informational reasons why such targeted lump-sum transfers are often infeasible in reality [Hammond, 1979], but in the context of this model they deserve consideration.

Unfortunately, such policies are hard to model in the common-agency framework used here. Since the sector-specific factors are inelastically supplied, taxes or subsidies are equivalent to group-specific lump-sum transfers. Each organized group is willing to pay contributions of almost a dollar to have its transfer receipt increased by a dollar. Unorganized groups get a smaller weight than the organized groups in the government's objective. The government is willing to tax them to the utmost limit and give the sums to the organized groups. Next, an escalation game can occur among the organized groups. Starting from any candidate equilibrium where some group is offering less than a dollar of contribution for a dollar of transfer, any other organized group stands to benefit by offering a somewhat larger contribution which will induce the government to switch its favors. But if all groups are offering all their receipts as contributions, there is a broad zone of indifference.

In a more general model with strictly concave utility and welfare functions, Dixit, Grossman, and Helpman [1996] do indeed find that if group-specific lump-sum transfers are available, they are used instead of production subsidies, and production efficiency is restored. However, the competition among organized groups for such transfers becomes so severe as to land them all in a prisoners' dilemma where they all fare no better than they would if they were unorganized. Therefore such groups may agree

ex ante to renounce the use of group-specific transfers. In that case we are back in the domain of this model, with production subsidies and ineffcient aggregate production.

CONCLUDING REMARKS

I have argued that the political game of lobbying for commodity taxation is more often driven by differences of interest across groups in their role as earners of sector-specific rent than by their differences in tastes as consumers. Therefore in the equilibrium the taxes or subsidies apply primarily to producers rather than to consumers.

The presumption toward the emergence of production subsidies in the political equilibrium creates some concerns of a normative nature as well ones of a positive nature.

On the normative side, the pattern of commodity taxation runs directly counter to that of the Diamond-Mirrlees optimum, where distortions on the production side should be avoided and production efficiency should be preserved. This dramatic difference between policies that are economically efficient and those that prevail in a political equilibrium is nothing new. Such differences are often observed in practice, especially in the context of trade policy, and there are numerous theoretical attempts to explain them. But the result does reinforce a general concern about the relevance of normative economic models for predicting or understanding tax policies in the real world.

The model allows domestic producer and consumer prices to be de-linked, and in the equilibrium they are indeed deployed based on separate forces and at different rates. Thus the model does not explain import tariffs, which are just equal-rate combinations of consumption taxes and production subsidies, as a necessary consequence of the political process. Grossman and Helpman [1994] had imposed the link by assumption, namely by restricting the available policies to tariffs. The observed use of tariffs (or other restrictions on international trade) in political reality even though more general and less distortionary instruments are available requires different explanations.

The model makes many special assumptions, mostly inherited from the Grossman-Helpman model (quasilinear preferences, the order of moves in the game between the lobby groups and the government, etc) that restrict it much more than the state-of-the-art in the normative theory of optimal taxation. Therefore this model should be regarded as only an initial exploration for a positive theory of commodity taxation. However, I believe that the intuition for the main result, namely that the distinctions that define special interests arise primarily from the differences in their specific sources of income, and less from the differences in their tastes for consumption, is likely to survive such generalization. Of course, much more work is needed before such theory can hope to attain the generality, rigor and elegance that the normative theory of commodity taxation now takes for granted as a result of the long line of research which began with Ramsey [1927], which Samuelson did so much to extend and popularize, and which reached its peak with Diamond and Mirrlees [1971].

I believe that the intuition has even greater validity: an organized special interest group's incentive to manipulate any economic variable is governed by the difference between that variable's effect on this group and on the average across all groups. Therefore similar models and results should be available for many situations in which special interest groups try to influence policy outcomes. Not only trade but also foreign direct investment, not only nationwide taxes but also fiscal federalism, and particularly the relations between sovereign nations in the European Union and the central policy-making bureaucracy, seem amenable to such analysis. I hope it can serve as a "workhorse" model for these problems.

NOTES

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1. The government may care only for its contribution receipts, but be subject to a constraint that the social welfare not fall below a level W_0 say. The above formulation is equivalent if we interpret Θ as the Lagrange multiplier on this constraint. Then a large θ signifies that the constraint bites harder. The government's objective is written using the groups' welfare gross of their contributions, but that could easily be converted to net by redefining θ [Grossman and Helpman, 1994, Footnote 5].
2. This argument closely follows Grossman and Helpman [1994, 839-40], but brings out the role of local controllability.
3. As is usual in the theory of optimal taxation, the formulas define p and q only implicitly because these prices appear on the right hand sides of the equations, too. In special examples such as one where the demand and supply functions and the contributions schedules are all linear, the prices can be calculated explicitly.
4. Grossman and Helpman [1994, 849] consider a case in which one of the goods is specialized as an intermediate good, but the idea is more generally valid.
5. We can regard (3) as capturing the strength of demand for protection, and (2) and (4) as capturing the government's willingness to supply protection.

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