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A THEORY OF COMPETITION BETWEEN POLITICIANS FOR POLITICAL SUPPORT

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Abstract

A model of political-support seeking politicians and support-supplying voters is developed. Politicians and voters are assumed to be rational and fully-informed. Pressure groups are assumed to be passive. Following Downs, political support from an individual voter is specified as a function of the change in utility resulting from the governments income transfer policy. An increase in deadweight costs reduces the equilibrium subsidy. Competition between politicians favors efficient methods of taxation and subsidization. Smaller groups receive a larger per capita subsidy or a smaller per capita tax. If one group's political support is more sensitive to changes in utility induced by the government transfer, then that group will obtain lower taxes or higher subsidies. These results are almost identical to those of Becker's (1983) pressure group model. Our model, however, reconciles the apparent contradiction between models of self-interested politicians and of governments motivated by 'social concerns'.

A THEORY OF COMPETITION BETWEEN POLITICIANS FOR POLITICAL SUPPORT

Jo Swinnen and Harry de Gorter

I. Introduction

In his influential paper on the competition between pressure groups, Becker (1983) assumes passive politicians and "rationally ignorant voters". In this paper, we reproduce Becker's (1983) results but with an entirely different model of the political decision making process. We analyze the interaction between political support–seeking politicians and support–supplying citizens. Pressure groups are assumed to be passive.

Furthermore, we show that support–maximizing politicians choose the equilibrium structure of taxes and subsidies that reduces the pre–policy income gap between groups in society. In recent surveys of the literature, Mueller (1989, p. 457) and Baldwin (1989) find widespread empirical evidence that low skill and low income groups receive more protection. Mueller (1989) argues that this can only be explained by a government that is driven partly by altruism while Baldwin (1989) attributes this to a "social concerns" motive. This paper, however, explains why low income groups receive more protection by using an economic model of rational and self–interested politicians and voters.

Our model is in the tradition of Downs (1957) and Stigler (1971). The political process is characterized by politicians seeking political support from individuals in society. Forthcoming support from each individual is modeled as a function of the change in *utility* resulting from the government policy (Downs, 1957, ch. 4). Deterministic voting models have unstable or multiple equilibria (Mueller, 1989, part II). However, Mueller (1989, ch. 11) shows that concave probabilistic voting or

proportional support functions assures political competition will lead to unique and stable equilibrium outcomes. The notion of political support is to be interpreted as the probability that an individual expresses support for the goverment through votes, popularity polls and the like (Downs, 1957; Brock and Magee, 1975; Coughlin, 1982, 1983; Peltzman, 1976).[1] Unlike Peltzman (1976), we do not model the expenditures of economic resources by pressure groups in lobbying or in expressing political support in general.

Voters increase their political support if they benefit from the policy and reduce their support if the policy lowers their welfare. We assume that this change in support is proportional to the change in utility induced by the transfer. There are two homogeneous groups of individuals in society. We use an income tax and subsidy scheme as the stylized form of government policy. As in Becker (1983), taxes and subsidies (inclusive of dead weight costs) are equated through the budget equation. Competition among politicians for political support determines the equilibrium structure of taxes and subsidies. Similar to Becker (1983), we do not obtain an all or nothing outcome where the "majority" clearly wins and the "minority " clearly loses. Rather, the equilibrium policy depends on several factors such as pre–policy relative incomes, deadweight costs and the number of individuals in each group.

Politicians will not introduce a redistributive policy unless the loss in total political support from those taxed is more than compensated by the increase in political support from those that benefit from the policy. If political support is a concave function of the policy induced welfare change, politicians will introduce a redistributive transfer from the "rich" to the "poor" sectors in the economy. Any transfer can occur as long as the political gains are larger than the political losses for

[1] Becker's (1983) definition of "political pressure" that he attributes to Bently (1908) is in fact very close to that of "political support" in the context of models that assume active and fully–informed politicians and voters. What differs is the assumptions on the behavior of different agents and on the institutions revealing political preferences.

the entrepreneurial politician. This implies that either a minority or a majority of the voters can benefit from the redistributive policy.

Several features of the political equilibrium policy are identical to that of Becker's (1983) pressure group model. An increase in deadweight costs reduces the amount of subsidies. Competition among politicians favors efficient methods of taxation and subsidization, i.e. those that minimize transfer costs. Smaller groups will receive a larger per capita subsidy or a smaller per capita tax. Finally, if one group's political support is more sensitive to changes in utility induced by government policy, then that group will obtain lower taxes or higher subsidies. This last result is the dual of Becker's (1983) proposition that groups which become more efficient at producing political pressure will be able to reduce their taxes or raise their subsidies. The unique aspect of our approach is that all of these results are obtained without having to rely on lobbying, voting costs or costs of organizing pressure groups.

This paper is organized as follows. A model of income transfers is developed in Section II. Government action depends on political support from citizens and vice–versa. The equilibrium condition for the optimal tax and subsidy structure is derived. In section III, we analyze the importance of relative endowment incomes on the political equilibrium. Our model resolves the apparent contradiction between "social concerns" and self–interest motives of politicians. Section IV shows the implications of dead weight costs and Section V determines the effect of group size on the equilibrium transfer. Section VI explores the effects of differing support functions between groups, followed by a final section that provides some concluding remarks.

II. The Model

Consider an economy with two sectors: A and B. All individuals in the economy have identical preferences and maximize an indirect utility function $U(y^i)$, where y^i represents individual income and i = A, B. Politicians have a redistributive policy T at their disposal, representing the total size of a potential income transfer from sector B to sector A. Each sector has n_i identical individuals with a pre-policy 'endowment' income $\bar{y}^i$. Therefore, net income $y^i = \bar{y}^i + t^i(T)$, where,

$$t^A(T) = [T - C^A(T)]/n_A \text{ and } t^B(T) = -[T + C^B(T)]/n_B, \qquad [1]$$

with $C^i(T)$ respresenting the deadweight costs associated with the transfer T. We assume that $C^i(0) = 0$, $C^i_T(T) > 0$, $C^i_{TT}(T) > 0$ for $T > 0$ and that $C^i_T(T) < 0$, $C^i_{TT}(T) > 0$ for $T < 0$, where C^i_T and C^i_{TT} represent the first and second order derivative of C^i. This yields the marginal effect of T on the per capita transfer for A and B as,

$$\partial t^A/\partial T = [1 - C^{A'}]/n_A \quad \text{and} \quad \partial t^B/\partial T = -[1 + C^{B'}]/n_B \qquad [2]$$

The political decision making process is modeled as the interaction between rational, fully informed politicians and voters. Politicians provide a transfer T to their constituency in return for political support. We follow Downs' (1957, ch. 4) specification that political support is a function of the change in utility induced by the policy.

Voters increase their political support if they benefit from the policy and reduce support if the policy decreases their welfare. Specifically, individual political support S^i is assumed to be a strictly concave and increasing function of the change

in utility caused by the policy,[2] $v^i(T) = U^i(T) - U^i(0)$.

Therefore,

$$S^i = S[U^i(T) - U^i(0)] = S[v^i(T)] \qquad [3]$$

where all individuals are assumed to have identical support functions. This assumption is not critical for most of our results to follow. However, we delay the discussion on the implications of relaxing this assumption.

Unlike Downs (1957), however, we assume that both politicans and voters have perfect information[3] and that there are no voting costs. We assume that politicians maximize total political support,[4] subject to the government budget constraint.[5] The objective of the government is,

$$\max_T \; n_A \, S(v^A(T)) + n_B \, S(v^B(T)). \qquad [4]$$

The political calculus leads to the following equilibrium condition for the politically optimal income transfer T*:

$$\frac{S_v^A}{S_v^B} = \frac{U_y^B \, (1+C_T^B)}{U_y^A \, (1-C_T^A)} \qquad [5]$$

---

[2] Peltzman (1976) specifies political support as a function of the level of the transfer (p. 215). Hillman (1982) uses the level of utility as the argument in the political support function and de Gorter and Tsur (1991) specify support as a function of the change in income. De Gorter and Tsur (1991) show that the equilibrium transfer is zero under Peltzman's (1976) specification of political support. Perhaps that explains why Peltzman (1976) focuses so much on pressure group activities, organization costs and the like in trying to explain government intervention. The Downsian specification of political support in this paper does not require aspects of pressure group activities in order to explain observed patterns of government intervention.

[3] Assuming symmetric per capita information costs for all individuals and between groups would suffice.

[4] Frey and Lau (1968) discuss alternative rules of the politicians decision–making process. However, we maintain the simplistic assumption of politicians maximizing political support.

[5] Under "perfect political competition", political support maximization is the only way for a politician to stay in government, irrespective of his personal preferences for some policies (Becker, 1958).

where S_v^i, U_y^i, and C_T^i refer to the first order derivatives of S, U and C, respectively. This condition implies that, at the politically optimal transfer, a marginal increase in political support from those who benefit from the policy is equal to the marginal decrease in political support from those who lose. With the political support function strictly concave, the equilibrium condition becomes a weighted sum of positive and negative marginal utilities.

III. Endowment Incomes and the Equilibrium Transfer

Consider the scenario whereby pre-policy incomes between groups are identical. This results in $T^* = 0$. This outcome is illustrated in figure 1. With identical endowment incomes ($\check{y}_A = \check{y}_B$), the marginal utility of income is identical for both groups: $U_y^A = U_y^B$. With $v^i = 0$, the right hand side of [5] will therefore equal one for $T = 0$. $T = 0$ implies that $v^i = 0$ for both groups. Figure 1 illustrates that the ratio of marginal political supports equals unity: $S_v^A(1) = S_v^B(1)$. Consequently, $T^* = 0$ and the optimal policy for the government is not to transfer any income between groups.

Consider an exogenous change in the relative per capita incomes between groups, i.e., $U^A > 0$ and $U^B < 0$ as shown in figure 1. This will induce a political reaction to *partially* offset this gap in endowment incomes. The politician can increase total political support by introducing a transfer from the high income sector A to group B whose relative income has fallen. This reaction by politicians is a result of the different marginal welfare effects for the same transfer between higher and lower income individuals. For a given level of T, the marginal increase in a 'poor' individual's welfare will be larger and, hence, their marginal change in political support $S_v^B(2)$ will be greater than $S_v^A(2)$ for group A (as illustrated in figure 1). Politicians will 'exploit' this difference in forthcoming political support to obtain an increase in total political support. Therefore,

Proposition 1: *A group that experiences a decline in income will have its taxes reduced or its subsidies raised.*

To show this more formally, consider equilibrium condition [5] again. Define $r(T) = S_v^A/S_v^B$ and $l(T) = [U_y^B\ (1 + C_T^B)]/[U_y^A\ (1 - C_T^A)]$. It follows that $r' < 0$ and $l' > 0$ where r' and l' represent the first order derivatives of r and l. With $\bar{y}^A < \bar{y}^B$, $l(T) < 1$ for $T = 0$. The ratio of marginal support levels depends only on the level of T: $r(0) = 1$. With l increasing in T and r decreasing in T, it follows that [5] holds for a positive transfer level, i.e. that $r(T^*) = l(T^*)$ for $T^* > 0$. Furthermore,

Corollary: *The change in taxes or subsidies is determined not by changes in the absolute level of income, but by a change in income relative to that of the other group.*

The induced government transfer, however, does not lead to an egalitarian income distribution. From the previous argument, it follows that with $T^* > 0$, it must be the case that $r(T^*) = l(T^*) < 1$, which in turn implies that $y^A(T^*)\ [= \breve{y}^A + t_A(T^*)] < y^B(T^*)\ [= \breve{y}^B + t_B(T^*)]$. Hence, politicians only partially offset the increase in the income gap.

This representation of the political system is driven by a support function that has both a liberal and a conservative tendency. The *liberal* feature of the political system is reflected in the politically induced government transfer that reduces income inequality in the economy. To understand the *conservative* tendency, let us compare the politically optimal transfer T^* with the transfer level $\tilde{T}$ that would be optimal for a national planner who maximizes a weighted social welfare function. In case of an additive social welfare function, this yields the following problem for the national planner,

$$\max_{T} \; n_A w_A U^A(T) + n_B w_B U^B(T) , \qquad [6]$$

where w_A and w_B represent the welfare weights of individuals in group A and B, respectively. The condition that determines $\tilde{T}$ becomes,

$$\frac{w_A}{w_B} = \frac{U_y^B (1+C_T^B)}{U_y^A (1-C_T^A)} . \qquad [7]$$

Comparing [7] with [5] yields that the national planner and the support maximizing politician will choose the same optimal transfer level ($T^* = \tilde{T}$) only in the case where the ratio of the welfare weights w^i is identical to the ratio of the marginal support levels S_v^i. One can depict S_v^i as the political weight of individual i in the objective function of the politician. An important difference between this political weight and the welfare weight is that, while w^i is fixed, the political weights in our model of support maximizing politicians are endogenous (as in de Gorter and Tsur, 1991). Recall that at T = 0, $S_v^A = S_v^B$ and, hence, the political weights are equal. With S_v^A decreasing and S_v^B increasing in T, the political weight of the taxed person increases while the weight of the subsidized person decreases with an increase in the level of the transfer. This represents the conservative tendency of the political system. The political weight increases for those who get taxed.[6] This characteristic of the political support function is very similar to Corden's (1974, p. 107) conservative social welfare function in which "any significant absolute reductions in real incomes of any significant section of the community should be avoided".

[6] Our specification of the support function is in contrast to that of a support function having the level of income or utility as an argument (see Hillman, 1982). In the case where political support is a function of the level of income or utility, there is no conservative side to the political system. As long as the income of individuals in group A, $y^A(T) = \breve{y}^A + t_A(T)$, is less than $y^B(T)$, the political weight of A is larger than the political weight of B, under a political system determined by such a support function. Consequently, without dead weight costs, a model with support a function of the level of income ultimately leads to an egalitarian income distribution.

Political self–interest induces redistribution from the rich to the poor in our model. This fundamental result is important because it provides a unique explanation for empirical phenomena of redistribution to lower income groups which is inducing some writers to distinguish "self–interest" models from "social concerns" models. For example, Baldwin (1989, p. 131) argues that "an analytical framework including both economic self-interest and concern for the welfare of others as motivating forces for political action is needed for understanding policy formation". He concludes that the "pure economic self-interest approach" can explain only part of government trade policies, and that one needs a "social concerns approach" to explain observations such as the well documented fact that declining, low-wage and low-skill industries often obtain relatively higher levels of protection. A similar conclusion is reached by Mueller (1989, p. 457):

> *"Although the self–interest model does not explain all redistribution activity of government, it certainly explains some. The best model of redistribution is one that combines elements of both the normative and positive public choice theories of redistribution (Rodgers, 1974) ...The patterns that we have observed ... might be explained as a modest amount of rich–to–poor redistribution for altruistic or impartial insurance motives and an indeterminant amount of selfishly motivated redistribution with no clear directional impact."*

However, the protection of declining and low income sectors and a redistribution to poorer groups is generated by our model of political support maximizing behavior by politicians. De Gorter and Tsur (1991) provide interesting evidence of governments trying to subsidize farmers to compensate for what T.W. Schultz (1953) calls the "farm problem" in industrial countries and tax farmers in developing countries to overcome what T.W. Schultz (1953) calls the "food problem" in those countries. Gardner (1987) argues that relative income between the urban and rural sectors is a primary motivating force behind United States agricultural policy. Gardner's (1987) conceptual framework, however, relies heavily on Becker's (1983) pressure group model and does not include a formulation for how differential endowment incomes affects agricultural policy.

IV. Deadweight Costs and Redistribution

Deadweight costs reduce the level of the equilibrium transfer. The intuition is rather straightforward. For the beneficiaries of the policy, positive deadweight costs reduce the net transfer for a given total transfer T. For those who lose from the policy, deadweight costs increase the per capita tax for a given T. The decrease in the net transfer reduces the increase in political support from the beneficiaries of T. On the other hand, the increase in per capita tax increases the reduction in political support from the losers of the policy. It will therefore no longer be optimal for the politician to implement this level of transfer. Both effects will induce a reduction in the equilibrium transfer. Therefore we can conclude,

Proposition 2: *An increase in dead weight costs reduces the equilibrium transfer.*

An important corollary[7] follows from this,

Corollary: *Competition among politicians favors 'efficient' methods of taxation and subsidization, i.e. those that minimize dead weight costs.*

To show this, let T and T′ represent two transfer policies with $C^i(T) < C^i(T')$ for all T. It follows that $v^i(T) > v^i(T')$ and, consequently $S^i(T) > S^i(T')$, for all individuals. Given the government's objective, T will always be chosen over T′. Efficient methods of taxation and subsidization lead to a smaller reduction in support from taxation and a larger gain in support from subsidization and will therefore yield a higher total amount of support.

[7] This corollary is identical with Becker's (1983) proposition 4. Becker's (1983) corollary to his proposition 2 is about policies that raise and lower efficiency.

V. Group Size and the Level of Transfer

Equation [5] determines the equilibrium transfer T^* for given levels of the exogenous variables, such as endowment incomes and group sizes. In this way [5] defines T^* as an implicit function of these exogenous variables. We can therefore formally derive the impact of group sizes on T^*. The first result is that, if $T^* = 0$ for given group sizes, a change in the size of the groups will not affect the condition that the transfer is zero.

Both positive and negative per capita transfers increase with a decrease in the size of the group. Let us assume for the discussion here that $T^* > 0$. As the number of individuals in group A decreases relative to that of group B, there are fewer people to subsidize and group A becomes less important in terms of votes. On the other hand, there are more people in B to tax but the B group now has more voters. The combined impact is determined by the differential impact due to the concavity of both functions.

At T^* as determined in [5], $t_A^* = [T^* - C^A(T^*)]/n_A$ and $t_B^* = -[T^* + C^B(T^*)]/n_B$. For the sake of simplicity, assume for now that dead weight costs are zero. The impact of an increase in the number of individuals in group A, holding the size of group B constant, is determined by,

$$\frac{\partial t_A^*}{\partial n_A} = \frac{1}{n_A}\left(\frac{\partial T^*}{\partial n_A} - t_A^*\right), \qquad [8]$$

where

$$\frac{\partial T^*}{\partial n_A} = t_A^*\left(\frac{z_A}{z_A + z_B}\right) \qquad [9]$$

and where $z_A = -[S_v^A U_{yy}^A + S_{vv}^A (U_y^A)^2]/n_A > 0$ and $z_B = -[S_v^B U_{yy}^B + S_{vv}^B (U_y^B)^2]/n_B > 0$.

The term between brackets in [9] is therefore positive and is less than one. Consequently, $\partial T^*/\partial n_A > 0$ for $T^* > 0$. Combining [8] and [9] yields,

$$\frac{\partial t_A^*}{\partial n_A} = -\frac{t_A^*}{n_A}\left(\frac{z_B}{z_A + z_B}\right) \qquad [10]$$

which is negative for $T^* > 0$. Similarly, the effect of a change in the size of group A on the per capita tax on G is given by,

$$\frac{\partial t_B^*}{\partial n_A} = \frac{t_B^*}{n_A}\left(\frac{z_A}{z_A + z_B}\right) \qquad [11]$$

which is also negative for $T^* > 0$.

We cannot unambiguously determine the effect of a change in group size if the source of the change is due to sectoral migration. In such a scenario, $dn_A = -dn_B$ and $d(n_A + n_B) = 0$. The per capita transfer for example increases with migration from group B to group A. The impact on per capita transfer in group A is given by,

$$\frac{\partial t_A^*}{\partial n_A} = \frac{t_B^* - t_A^*}{n_A}\left(\frac{z_B}{z_A + z_B}\right), \qquad [12]$$

which is larger (in absolute value) than that in [10]. The impact on the equilibrium total transfer T^* is ambiguous,

$$\frac{\partial T^*}{\partial n_A} = \frac{z_A t_A^* + z_B t_B^*}{z_A + z_B}. \qquad [13]$$

The sign of [13] depends on the relative concavity of the utility and support functions, and on the level of initial group sizes. For example, with groups of identical size ($n_A = n_B$), and with both the utility function and the support function

having constant second order derivatives, the total transfer is unaffected by a change in group numbers ($\partial T^*/\partial n_A = 0$) iff,

$$\frac{S_v^A - S_v^B}{S_{vv}} = \frac{(U_y^B)^2 - (U_y^A)^2}{U_{yy}} \qquad [14]$$

Nevertheless, we can derive the following result on per capita transfers independent of whether there is sectoral migration or not,

Proposition 3: *Smaller groups will receive larger per capita subsidies or smaller per capita taxes.*

This result is identical to that obtained by Becker (1983). We generate this important result from an entirely different representation of the political system that does not include pressure group activities.

VI. The Effects of Different Support Functions

Let us consider the implications of having different individual support functions across groups. We maintain the assumption that it is the change in utility resulting from the transfer that affects political support from an individual. The assumption of identical support functions is necessary only to obtain our earlier result that $T^* = 0$ for the case of identical endowment incomes between groups. Otherwise, identical support functions are not a necessary condition to obtain any of our other results.

To show this, we shall now augment our model in order to analyze the potential implications of differing support functions. Consider a reformulated support function of the form $\tilde{S}^i(T) = \theta^i S(T)$, where θ^i represents a parameter that

reflects a different shape of the support function between group A and B. For example, one can postulate a situation of asymmetric information whereby one group is more aware of the effects of T on utility than the other group. An alternative rationale for the parameter θ^i is that politicians perceive political support forthcoming from each group to differ even when the transfer has identical effects on the utility of each group.

The new equilibrium condition for this augmented model becomes,

$$\frac{\theta^A S_v^A}{\theta^B S_v^B} = \frac{U_y^B (1+C_T^B)}{U_y^A (1-C_T^A)} . \qquad [15]$$

Comparing [15] with condition [5] indicates that, with differential political support functions ($\theta^A \neq \theta^B$), the relative endogenous political weights shift toward the group with the more sensitive support function, *ceteris paribus*. This yields the following result,

Proposition 4: *A group that becomes more sensitive to changes in utility due to transfers will be more able to reduce its tax or raise its subsidy.*

One can determine the condition whereby transfers still occur from the high income group to the low income group with differing support functions. Denote the LHS of [15] as m(T) and the RHS of [15] as s(T). Take the case first of identical support functions, $\theta^A = \theta^B$. Then at T = 0 for $\check{y}^A = \check{y}^B$, s(T) = s(0) = m(T) = m(0) = 1. Therefore, T* = 0.

In the case of $\theta^A > \theta^B$, $S_v^A(0) = S_v^B(0)$ at T* = 0 and so m(0) necessarily is greater than 1. For $\check{y}^A = \check{y}^B$, s(0) = 1. This implies T* ≠ 0. In fact, with m(T) increasing as T decreases, s(T) increases such that T* > 0. If there is a difference in both the support

functions and endowment incomes, then there exists a minimum gap in per capita endowment incomes that will still generate transfers from the high income group. The size of this gap required to maintain proposition 1 depends on how and the extent to which the support functions differ and on the dead weight costs associated with the transfer.

Now, it is possible for transfers to occur from the low income group to the high income group with differing support functions. For some level of endowment income difference between A and B ($\Delta\bar{y} = \bar{y}^A - \bar{y}^B > 0$), it holds that $T^* = 0$. With $\Delta\bar{\theta} = \bar{\theta}^A - \bar{\theta}^B > 0$, condition [15] holds, given $\Delta\bar{\theta}$ and $\Delta\bar{y}$. Thus, for a given $\bar{\theta}^A$ and $\bar{\theta}^B$, it must hold for some range for $\Delta\check{y}$ that $0 < \Delta\check{y} < \Delta\bar{\check{y}}$ such that $T^* > 0$; i.e., despite endowment income differences, T^* is still positive such that high income groups receive a transfer.

It should be noted that institutional factors that generate differing political support functions in our model may be the same factors that generate differing 'influence functions' in Becker's (1983) model of pressure group activities. Let us consider asymmetric information as the source of the difference in the support functions (following Downs 1957, ch. 5). This asymmetry in information between groups can be a result of the use of indirect methods of taxation and direct methods of subsidization (or vice-versa). Under such conditions, our model of support-maximizing politicians is entirely consistent while lobbying does not have to play a role in the determination of the political outcome.

However, one can construct a scenario in the other extreme whereby asymmetric information is a direct result of lobbying activities by pressure groups, i.e. asymetric information is endogenous as in Becker (1983). In this case, the parameter θ^i is a function of organization costs and other factors that pressure group models like that of Olson (1965) emphasize as being important in determining outcomes in the political process. Hence, the political support model presented thus far in this paper would have to be augmented to include the effects of pressure

group activities on political support and hence on the optimal transfer T*.

There are many real world situations whereby factors that generate differing support functions in our model also affect Becker's (1983) 'influence function' such that the same factors affect the political outcome. That is to say, there can be significant commonality between our model and that of Becker's (1983) such that it may be impossible to distinguish between them in explaining political outcomes. Let us take the example of geographic representation in a democracy such as the United States as an illustration. Each state has two representatives (Senators), independent of the number of citizens and industries or groups. Kansas has a small population with many in wheat farming. One would expect wheat farmers to obtain more subsidies than even other farm groups who are in more populous states where the competition for the attention of their Senator is more intense.

The effects of geographic representation can be incorporated in our model by a slightly different specification of the support function. Consider the following simplistic situation: two regions A and B, each having n_R representatives, with n_A and n_B individuals, respectively. We assume that both regions have a homogeneous population and that the only difference between the regions is the endowment income of their individuals. The objective of the government is now,

$$\max_x \; n_R S^A(T) + n_R S^B(T) \qquad [16]$$

This yields the following optimality condition for T*,

$$\frac{S_v^A}{S_v^B} = -\frac{U_x^B}{U_x^A} \qquad [17]$$

with

$$\frac{n_A S_v^A}{n_B S_v^B} >, < \frac{S_v^A}{S_v^B} \text{ for } n_A >, < n_B, \qquad [18]$$

It follows that the ratio of aggregate political support has shifted towards the region with the smallest number of people under this system of geographic representation.

However, this prediction about the political influence of farmers in Kansas in a political system with geographic representation is also consistent with Becker's (1983) model. The *efficiency* of producing political pressure is now greater in Kansas than elsewhere. Wheat farmers will obtain higher subsidies for the same level of pressure. Therefore, alternative institutions and differing systems of representation can be 'reduced' to shifts in the endogenously determined political weights in our model. That does not mean that our model is unique to handle such phenomena, given the observational equivalence between our model and that of Becker's (1983) model.

VII. Concluding Remarks

We develop a model of the interaction between active, rational and fully informed politicians and voters (with pressure groups assumed to be passive). We find that an increase in deadweight costs reduces the amount of subsidies. Competition among politicians favors efficient methods of taxation and subsidization, i.e. those that minimize transfer costs. Smaller groups will receive a larger per capita subsidy or a smaller per capita tax. Finally, if one group's political support is more sensitive to changes in utility induced by government policy, then that group will obtain lower taxes or higher subsidies. These results are almost identical to those of Becker's (1983) pressure group model (with passive politicians and 'rationally ignorant' voters).

Political support is specified as a concave function of the change in utility induced by the income transfer. This specification is identical to that originally proposed by Downs (1957) although he did not explore the mathematical properties of this particular model. Instead, Downs (1957) relaxed the assumptions of perfect certainty and symmetric information costs in order to explain several important observed patterns of government intervention like why small groups get subsidized more.

Several authors have expanded upon Downs' original concept of political support by specifying support as a function of the level of the transfer (eg, Peltzman, 1976). However, this particular specification by itself results in a zero transfer unless one specifies lobbying, organization costs and the like as Peltzman (1976) and others have done. The uniqueness of our results is that one does not require a model of pressure group activities to explain the fundamental axioms of political decision making. However, we have shown that our model is not necessarily unique from the pressure group model (using geographic representation as an example). Under specific circumstances, there is observational equivalence between the two competing models.

There is, however, one important characteristic of our model in that it reconciles the apparent contradiction between models of self–interested politicians and of governments motivated by 'social concerns'.[8] We show that support–maximizing politicians also choose the equilibrium structure of taxes and subsidies that reduces the pre–policy income gap between groups in society. This explains why low income groups receive more protection and thereby addresses squarely Mueller's (1989) and Baldwin's (1989) dichotomy of self–interested and altruistic governments.

[8] Mueller's (1989) and Baldwin's (1989) characterization of these conflicting motives of governments can be viewed as a "Dr. Jekyll and Mr. Hyde" approach to political economy.

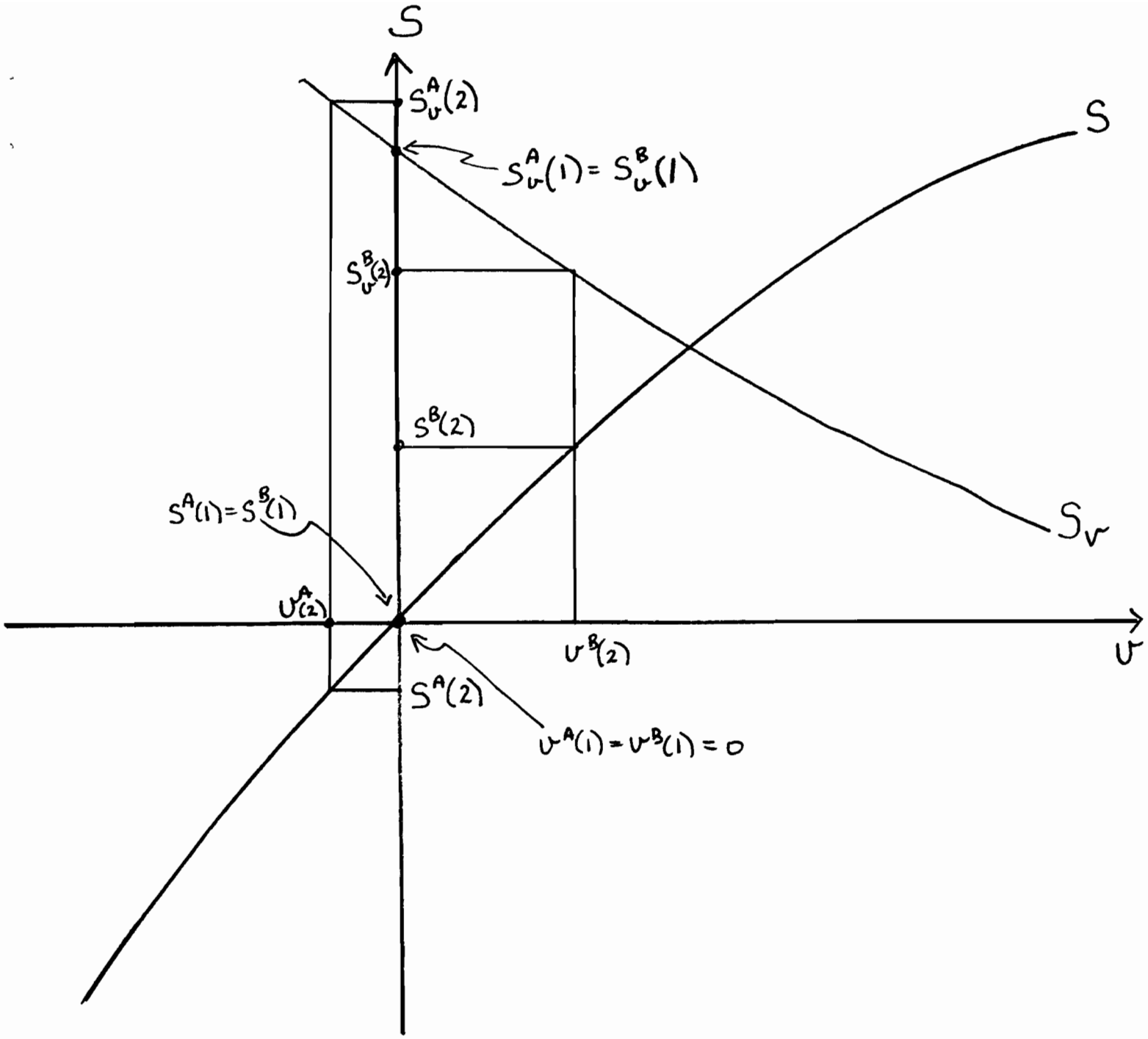

FIGURE 1

REFERENCES

Baldwin, R.E. "The Political Economy of Trade Policies", *Journal of Economic Perspectives* 3(1989):119–135.

Becker, G. "Competition and Democracy", *Journal of Law and Economics* *1*(1958):105–109.

_____ "A Theory of Competition among Pressure Groups for Political Influence", *Quarterly Journal of Economics* 89(1983):371–400.

_____ "Public Policies, Pressure Groups, and Dead Weight Costs", *Journal of Public Economics* 28(1985):329–347.

Bentley, A.F. *The Process of Government*, Chicago: University of Chicago Press, 1908.

Brock, W.A. and S.P. Magee. "The Economics of Pork–Barrel Politics", Report 7511, Center for Mathematical Studies in Business and Economics, University of Chicago, 1975.

Corden, W.M. *Trade Policy and Economic Welfare*, Oxford: Clarendon Press, 1974.

Coughlin, P.J. "Pareto Optimality of Policy Proposals with Probabilistic Voting", *Public Choice* 39(1982):427–33.

_____ "Davis–Hinich Conditions and Median Outcomes in Probabilistic Voting Models" *Journal of Economic Theory* 34(1983)1–12.

de Gorter, H. and Y. Tsur. "Explaining Price Policy Bias in Agriculture: The Calculus of Support Maximizing Politicians", *American Journal of Agricultural Economics 74* (1991):1244–1254 .

Downs, A. *An Economic Theory of Democracy*, New York: Harper and Row, 1957.

Frey, B.S. and L.J. Lau. "Towards a Mathematical Model of Government Behaviour", *Zeitschrift fur Nationalokonomie* 28(1968):355–80.

Gardner, B.L. "Causes of U.S. Farm Commodity Programs", *Journal of Political Economy* 95(1987):290–310.

Hillman, A.L. "Declining Industries and Political–Support Protectionist Motives", *American Economic Review* 72(1982):1180–1187.

Mueller, D.C. *Public Choice*, Cambridge: Cambridge University Press, 1979.

Olson, M. The Logic of Collective Action: *Public Goods and the Theory of Groups*, Cambridge: Harvard University Press, 1965.

Peltzman, S. "Towards a More General Theory of Regulation", *Journal of Law and Economics* 19(1976):211–40.

Rodgers, J.D. "Explaining Income Redistribution," in H.M. Hochman and G. E. Peterson, eds., Redistribution through Public Choice, New York, Columbia University Press, 1974, pp. 165–205.

Schultz, Theodore W., *The Economic Organization of Agriculture.* New York, McGraw Hill, 1953.

Stigler, G.J. "The Theory of Economic Regulation", *Bell Journal of Economics and Management Science* 2(1971):3–21.

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