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1

Interest Groups and the Political Economy of Government Size

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The size of government, both absolutely and as a percentage of gross national product, has in the last decade reached unprecedently high levels in all Western countries (Nutter, 1978). Although in most cases growth in government began long before the Second World War, it is only in recent years that the level of government activity has reached such proportions as to cause widespread concern and discussion in the political arena and in academia. In the economics literature, this concern has led to an increasing interest in positive analysis of the size of government (Borcherding, 1977; Brunner, 1978; Meltzer and Richard, 1978, 1981; Peltzman, 1980; Frey, 1982; Fratianni and Spinelli, 1982). This chapter is a contribution to that analysis.

Public choice is the natural framework in which to investigate the question of government size, and most economists have made use of propositions from this literature, such as the median-voter theorem, when examining this question. Mention is often made of the potential role of interest groups in expanding government. The implicit argument here is that interest groups favour government outlays of a quasi-private good nature and that log-rolling leads to a coalition of interest groups, which introduces a package of quasi-private goods into the public budget in the manner first described by Tullock (1959). Hence, the size of government becomes excessive. However, Breton (1974, pp. 192–3) has noted the possibility that there might be under-investment in government activities. Because interest groups favour targeted tax reductions, log-rolling resulting in 'Christmas-tree tax bills' decorated with numerous loopholes might then be expected to reduce government size, at least over time, by eroding the tax base. Thus it is still an open question whether the existence of effective special-interest groups leads to greater government expenditure.

Given the frequency with which interest groups are mentioned as a possible cause of excessive government spending, it is surprising how little has been

done to develop and test hypotheses regarding the impact of interest groups on the size of governments (but see McCormick and Tollison, 1981). This chapter begins to remedy this deficiency. First, we analyze the fiscal concerns of interest groups as they relate to the size of government. Next, we explore the relationship between interest groups and the political process. Building on the theory developed in these sections, the hypotheses to be tested are then formulated and the results follow; the chapter concludes with brief comments on the findings.

THE FISCAL CONCERNS OF INTEREST GROUPS

The pioneering contribution to the size of government literature might be regarded as Lindahl's famous essay of 1919, for its objective was to determine the level of government output that would arise under a 'just' set of taxes. Ironically, perhaps, Lindahl's answer to the question has had an important influence on the public finance and public choice literature not because of the inherent justness of the outcomes at the Lindahl equilibrium, but due to their efficiency properties and the analogy between the Lindahl equilibrium with public goods and a competitive equilibrium with private goods. At the Lindahl equilibrium, each individual's marginal rate of substitution between public and private goods equals the ratio of (tax) prices paid for these goods, and the outcome is Pareto optimal.

The 'process' by which the equilibrium is reached in Lindahl's essay has been the subject of searching criticism at least as far back as Musgrave's first paper (1939). Much of modern public choice might be regarded as an effort to add realism to Lindahl-type discussions of government output determination, by modelling more explicitly the institutions through which decisions are made. Typically, a particular aspect of the collective decision process is taken up, for example, log-rolling, and the impact of introducing this part of reality into the discussion is examined. As might be expected from such a partial introduction of reality into a complex world, the results vary considerably, depending on precisely which institution is being modelled: the Lindahl equilibrium may not be attained, Pareto optimality may not be attained, no equilibrium may be attained, the government is 'too big', the government is 'too small', and occasionally a set of assumptions is even made under which the Lindahl equilibrium reappears as the outcome of a political process.[1]

A full modelling of all the institutional complexities of modern political systems has yet to be presented, and is not attempted here. Instead, this chapter is in the tradition of the existing literature, in that it examines deviations from the Lindahl equilibrium which are induced by the introduction of but one subset of the institutional factors determining the size of government. In modelling this subset – interest groups in the context of a parliamentary representative system – we abstract from other institutions

factors characteristics that might affect the size of government. We do so, not in the belief that they are irrelevant, but in the hope that they are largely additive, and that a fuller modelling of political reality will leave our partial equilibrium predictions of the impact of interest groups intact.

Given that we have chosen to analyse movements away from the Lindahl equilibrium when examining the influence of interest groups,[2] we must first model the equilibrium which exists before those groups obtain undue influence on government decisions. This case is most easily envisaged by assuming the existence of *latent* interest groups, that is, groups of individuals with identical demands for public goods.[3] We can then analyse the behaviour of an interest group in terms of the decisions of a representative member who has income Y_i and a utility function, $U_i(G,X_i)$, defined over a public good (G) and a private good (X). Assume that the tax price of the public good for the representative member of interest group i is t_i, where the summation of all t_i over interest groups and individuals equals 1. In a Lindahl equilibrium, the tax prices t_i and government spending G are such that all members of society maximize their utility, given their budget constraint, $Y_i = t_iG + X_i$ (Johansen, 1963). The equilibrium is defined by the condition that:

$$\frac{U_{iG}}{U_{iX}} = t_i \tag{1}$$

for all i, where $U_{iG} = \partial U_i/\partial G$.

We now proceed to analyse how government expenditures deviate from this equilibrium,[4] when interest groups can exert separate influence on government policy.

Changes in taxes

It is obvious from equation (1) that a reduction of t_i increases interest group i's preferred quantity of public good, if the public good is a normal good. Thus, an interest group which succeeded in lowering its tax price would favour an increase in the quantity of the public good. Of course, if one tax price falls, others must rise. Those individuals or groups whose tax prices rise will favour reductions in G. Thus, after the change in tax prices, there no longer exists a Lindahl equilibrium. Some groups must consume a quantity of the public good other than their most preferred quantity, given their tax shares.

With conflicting demands for G, the outcome will depend on the aggregation rule for combining individual preferences. It is reasonable to assume, at least for parliamentary systems, that an interest group that can exert sufficient influence to lower the taxes its members pay can also influence the level of government outlays. The plausibility of this assumption is argued below. If true, this assumption implies that interest-group action to reduce the taxes of its members will be combined with the expansion of government, even when all government expenditures go to finance pure public goods.

One might object to the above conclusion by noting that most taxes are not defined as a percentage of the cost of the public good, but as percentages of income, sales, property values or some such variable. Thus, a reduction of one group's tax rate *need not* be offset by a rise in another's. We agree, but maintain our assumption that an interest group that is successful in lowering its taxes will want and obtain higher taxes on other groups to finance the higher government expenditures it favours, given its lower tax outlays. Reductions in one source of tax revenue will be accompanied by increases from another. The introduction of new tax loopholes accompanies the closing of old ones.[5] Here it is worth noting that even in the USA, where this assumption is likely to be the weakest, log-rolling-type legislation opening up new loopholes often emerges out of tax-reform efforts that close other loopholes.

Changes in output characteristics

We now examine what happens to the level of government expenditure when the tax shares remain at the levels obtaining at the original Lindahl equilibrium, but an interest group is able to influence the nature of public output. Suppose that the interest group succeeds in changing the characteristics of the basket of public outputs to include a good whose benefits are targeted towards its members. One obvious form of targeted good is a direct cash transfer, allowing the interest group's members to increase their consumption of private goods. This case can be analysed by simply adding the targeted good, Z, to an individual's consumption by private good X_i, and rewriting U_i as $U_i(G,X_i+Z)$. Frequently, however, targeted public outlays are not pure transfers, but are in the form of redistribution in kind, like public housing, subsidized education or medicine, etc. These public expenditures, although having an obvious private-good characteristic for the recipients, also have spillover effects that make them partially of a public-good nature. These joint public and private-good properties of targeted public outlays can be most conveniently captured by assuming that a proportion θ of Z has public-good characteristics, whereas the proportion $(1-\theta)$ is equivalent to a private good. For a given targeted good Z going to interest group i, we can then rewrite U_i as $U_i(G+\theta Z, X_i+(1-\theta)Z)$, and for all other groups j, $U_j = U_j(G+\theta Z, X_j)$. The polar cases of Z being a pure private or public good are captured by θ being equal to zero or one, respectively.

Now let us examine the choice of Z and G. It is natural to assume that there is a constraint on the interest group's choice of Z: the nature of which constraint, imposed within the political system, depends upon the bargain struck between a political party and the interest group (see pp. 18–20 below). Here, we model this constraint by assuming that Z must be less than some maximum level m. Under the foregoing assumptions, the following two results can be obtained by maximizing

$$U_i(G+\theta Z, X_i+(1-\theta)Z)$$

subject to the new budget constraint, $Y_i = t_i(G+Z)+X_i$.

1. Interest group i always favours a level of targeted good Z equal to the maximum level m.[6]
2. The higher the upper bound, m, set on the provision of Z, the greater the amount of total government outlays $(G+Z)$ favoured by interest group i.[7]

Thus, an interest group which succeeds in introducing a quasi-private good into the public budget will favour an increase in the total size of government.

Now consider those individuals who consume Z only as a public good, that is, those with utility functions $U_j(G+\theta Z, X_j)$. One can establish the following two propositions for them.

3. Interest group j always favours imposing a limit of zero on the amount of the good Z targeted to interest group i.[8]
4. More important, given that a positive quantity of Z has been introduced into the basket of public outputs (i.e. $Z=m>0$), interest group j always favours an increase in the total amount of government expenditures $(G+Z)$ over what they would have wanted had $Z=0$.[9]

Proposition (3) is quite intuitive. To see the intuition behind proposition (4), recall that we start from a Lindahl equilibrium in which $U_{jG}/U_{jX}=t_j$. Now suppose that G would fall by just enough, following the provision of m units of Z, so that the new level of total government outlay just equalled the old. Each member of interest group j would then be consuming $(1-\theta)m$ units less of the public good and the same number of units of the private good. If $U_{iG}/U_{jX}=t_j$ at the original level of G, then if total government expenditure does not rise after Z is introduced, $U_{iG}/U_{jX}>t_j$. Members of j will favour giving up some private goods to replace the lost public goods which the introduction of Z into the budget produces.

Thus, we reach the perhaps surprising conclusion that once an interest group has succeeded in introducing a private or quasi-private good into the public budget, *all* members of society will agree that there should be an increase in total government expenditure over what it would have been (at the Lindahl equilibrium) without the new good. Conflict occurs only on whether a (quasi-) private good should be introduced at all, and, once it has been, perhaps over the magnitude of the increase. An interest group always favours the introduction of goods into the public budget, part of whose benefits are targeted directly at its members. The rest of the polity always opposes the provision of such goods.

INTEREST GROUPS IN THE POLITICAL PROCESS

Since the rest of the polity is a majority, in most cases, the question is how do interest groups succeed in winning special tax favours and targeted public outlays for their members?

We envisage a political process in which the government, the executive that is, is formed by the winning majority coalition in parliament. When a single party wins a majority of the seats in parliament in an election, it forms the government itself. When no party secures a majority, a coalition of parties with a majority of seats must come together to form a government. This type of system characterizes most democracies in the world today, the most important exception being the USA.

Interest groups attempt to win favours for their membership by offering to supply a party with votes. An interest group may endorse a party, supply campaign volunteers, or contribute funds to the party's campaign. Each of these translates into votes, which the interest group attempts to 'trade' with a given party in exchange for a promised tax reduction or redirection of public output, should the party succeed in becoming the government, or a part thereof.

Parties are assumed to maximize the number of votes they expect to win by agreeing to supply interest groups with special favours (see Downs, 1957). Alternatively, we might posit a party objective function containing votes and other 'ideological' variables (see Wittmann, 1973; Frey and Schneider, 1975). We prefer, however, to embed the ideological variables into the party's vote function. When the number of interest groups supporting the party is zero, the number of votes given by the vote function is the party's electoral support, based solely on its stance on ideological issues or on the package of pure public goods it proposes. We abstract from issues of competition for votes using ideology by assuming that that competition is independent of the competition for votes supplied by interest groups.

The above assumptions lead to a vote function for party i in a two-party system of the following form: $V_i = V_i(N_i, N_j)$, where V_i is the number of votes for the ith party, and $N_k, k=i,j$, is the number of interest groups supporting the kth party. In deciding which interest groups and how many to form agreements with, each party must consider the *net* marginal impact on V_i from adding a given interest group. Each interest group can both add and subtract votes from a party's expected total vote. A promise to cut one group's taxes, for example, may imply an increase in the taxes of some existing supporters of a party, driving them to another party.

In striking bargains, a party can be envisaged as ordering potential supporting interest groups from highest net increase in votes to lowest. Because some interest groups naturally lie closer to a party's ideological position than others, more voters may be added, and fewer driven away, after a bargain is concluded with these groups. Similarly, the interests of a

given possible additional interest group could be more complementary to existing supporters than are those of other potential supporters. Thus, the support of this additional group will have a greater net effect than the support of other groups. As the number of interest groups supporting a party increases, however, eventually the party confronts interest groups whose interests are so far removed from the party's position on basic ideological issues and so much in conflict with the interests of groups already supporting the party that no mutually beneficial agreement can be reached. These considerations lead to the following predictions about the vote function, V:

$$V_{iN_i} \geq 0 \text{ and } V_{iN_iN_i} \leq 0$$

with strict inequalities for N_i in some neighbourhood of zero.

The opposing party's agreements with interest groups naturally affects a party's votes. Since individuals are often members of several groups, the support of interest groups for the opposition reduces the votes of a party: $\partial V_i/\partial N_j < 0$. The larger the number of interest groups supporting the opponents, the more those opponents encroach on the natural (in an ideological sense) voters for a party. Thus, the larger the number of interest groups supporting the opposing party, the easier it is for a party to increase (regain) support by adding another interest group:

$$V_{iN_iN_j} > 0$$

The above considerations suggest a competition for interest-group support among parties in which, at least in the early phases, each party is induced to increase the number of interest groups supporting it in response to an increase in the number of interest groups supporting its opponents. Whether this competition would lead to the absorption of all interest groups into the list of supporters of one or the other parties cannot be deduced without making more restrictive assumptions about the nature of the V functions, the form of competition, etc. What seems quite intuitive, however, is that the number of interest groups absorbed into the political process is an increasing function of the number of interest groups existing in the population. To see the intuition behind this assertion, assume that an equilibrium in the competition for interest groups has been reached in which M of the N interest groups in the population have formed (tacit) agreements to supply support to the existing parties ($M \leq N$). Now suppose the total number of interest groups in the population increases. Some of the new interest groups will most certainly be able to make promises of campaign support (that is, of votes) to one or more of the existing parties, upsetting the previous equilibrium. Given the characteristics of the V functions, the support of new or previously unattached interest groups will become more valuable to the other party(ies). A renewed competition will then ensue and will continue until a new equilibrium is attained in which a greater number

of interest groups has struck bargains, exchanging votes for favours with the parties.

Competition for interest groups takes place prior to an election. After the election, one or more of the parties controlling a majority of the seats of parliament forms a government. This party or coalition of parties governs until the next election. During this period the party(ies) in the majority control both the executive and the parliament. In contrast to the United States, where winning coalitions on issues can vary within a session of the parliament (Congress), and thus one coalition can offset by, say, a tax change the gains of an interest group through an expenditure, in a parliamentary system *the* government lasts only so long as the majority control of the parliament does. Thus, in 'paying off' interest groups for their previous support, the winning party(ies) can assure that a combination of taxes and expenditure is effected that does leave its supporting interest groups better off. Given the arguments of the previous section, this coalition is almost certain to favour a level of government expenditure in excess of that which would occur at a Lindahl equilibrium.

The next election brings a new competition for interest groups, most likely some reshuffling of interest-group support among the parties, perhaps a new government. Almost certainly, the set of interest groups represented in the new government will not be identical to those in the previous one. Some of these may have felt the previous level of government expenditure excessive. Thus, one cannot predict that this new set of interest groups represented in parliament favours an increase in expenditure over the previous level. One can predict, again on the basis of the previous section's analysis, a *level* of government outlays in excess of the Lindahl equilibrium. Our theory of interest-group politics predicts excessive *levels* of government expenditure, not necessarily excessive *growth* in the size of government.

By analogy with oligopoly models, one might expect competition for interest groups to be more intense, the greater the number of political parties. The more parties there are, for example, the closer any one interest group is likely to come to the ideological position of a given party, and the more likely it is that an agreement between *a* party and the interest group is reached. Thus, we expect the absorption of interest groups into the political process to be greater, the greater the number of parties in a polity, and thus the influence of interest groups on the size of government to increase with the number of political parties.

A full development of the outcomes of a competition for interest-group support is beyond the intention of this chapter. Our purpose in this section is simply to motivate the empirical work by showing why an absorption of interest groups into the political process can be expected, and why the number of interest groups having an influence on political outcomes can be expected to be positively related to the number of interest groups in a society. Beyond this we have suggested a positive link between the number of political parties and the influence of interest groups. We turn now to the specific models to be tested.

SIZE OF GOVERNMENT EQUATION

In discussing the impact of interest groups on the size of government, it has been conceptually useful to employ the familiar Lindahl equilibrium as a reference point. However, we now confront the difficulty of attempting to estimate the level of government expenditure at the Lindahl equilibrium. The theory tells us that the cost of public output relative to private goods is important, as well as income, and these two variables (or proxies thereof) figure importantly in our equations. Beyond these, we are left with 'tastes' as the key explanatory variable.

In our equation, we shall include several variables gleaned from the public choice/government expenditure literature that do not assume an interest group–party competition–parliamentary system as posited here. We do so not in the pretence that we are testing these alternative models of government against our own, but, as stated above, under the assumption that the impact of these other factors may be additive. We thus make the strong prediction that the effect of interest groups on the size of government will remain as predicted in the presence of additional institutional complexity, and begin to test this additional assumption by adding several of the variables which other studies have posited to be determinants of the size of government.

The basic equation

We seek to explain the relative size of government across countries. No single measure can capture fully the concept of governmental size. We shall therefore employ several alternative dependent variables that measure government size as a percentage of total economic activity. These variables are listed and defined in table 1.1, together with all the other variables used in this study. The data are for 1970, unless otherwise noted.

The traditional discussion of the role of government views government as a provider of public goods. By definition, public goods have significant scale-economy attributes. The price per capita of an army, of a judicial system, of central government should fall as the population of a country increases. Thus, as population increases the relative cost of public goods should decline. As the demand for public goods is likely to be price inelastic, probably infinitely so for variables such as legislative costs, the fraction of total income devoted to government should decline as population increases.

McCormick and Tollison (1981) assume all government activity consists of wealth transfers. They hypothesize that interest groups have more success using government to make these transfers, the less that diligent citizens are policing government, that is, the more citizen free-riding there is. Since free-riding increases with population, they predict a positive correlation between population and government size. The coefficient on population can be used

Table 1.1 *Variables in the size of government equation*

Variable name	*Concept measured*	*Predicted sign of coefficient*	*Variable definition*
1. EXP	Size of government		Total outlays of government as a percentage of GDP
2. TAX	Size of government		Total tax revenue as a percentage of GDP
3. CONS	Size of government		Government final consumption as a percentage of GDP
4. EXPNP	Non-payroll government size		Variable 1 minus public payroll expenditures as a proportion of GDP
5. TAXNP	Non-payroll government size		Variable 2 minus public payroll expenditures as a proportion of GDP
6. MINC	Median income	+	Variable 8 multiplied by variable 13
7. PROG	Tax price/progressivity	−	Average income plus social security tax rate of an average production worker divided by total tax revenue as a proportion of GDP[1]
8. INC	Mean income	+	Per-capita GDP as a percentage of US per-capita GDP
9. POP	Population	−	Population in millions
10. EFRC	Ethnic fractionalization	−	Probability that two randomly selected members of the population will not be from the same ethnolinguistic group
11. NIG	Number of interest groups	+	Count of the number of interest groups listed for each country in a standard reference work
12. PFRC	Political fractionalization	+	Probability that two randomly selected members of parliament will not be from the same party
13. SKEW	Skewness of income distribution	+/−	Total income of the middle quintile of households in the income distribution as a proportion of average household income divided by 5[2]
14. VOTE	Degree of enfranchisement	+	Percentage of adult population voting in a general election
15. PUEM	Size of bureaucracy	+	Public employees as a percentage of total workforce
16. DATE	Start of modernization		Year in which a country began the modernization process

[1] Since, to our knowledge, no information is available on the tax levels of the median voter in the OECD countries, we took the 'average production worker with a wife and two children' as a proxy for the median voter. The figures are for 1974, the earliest data available.
[2] Definitions of income, households, etc. vary a great deal between countries. For most countries, data are based on pre-tax post-transfer income.

Sources: Numbers refer to variable numbers.

1. OECD, 1982a, p. 59.
2. OECD, 1980a, p. 43.
3. OECD, 1982a, p. 58.

4. & 5. Payroll expenditure as a proportion of GDP were constructed by using variable 15 and information on earnings in the public sector relative to those in the private sector (OECD, 1982b, pp. 34–6).

7. OECD, 1980b, p. 123, table 35 and OECD, 1980a, p. 43.
8. Kravis, Heston and Summers, 1978, pp. 232–7, col. (5).
9. United Nations, 1972, pp. 140–4.
10. Taylor and Hudson, 1972, pp. 271–4.
11. *Internationales Verzeichnis der Wirtschaftsverbände*, 1973. All groups listed in this work were included in the data. The groups are industry and trade associations, labour unions, and chambers of commerce.
12. Taylor and Hudson, 1972, p. 48. The data refer to some point in 1963–8.
13. Sawyer, 1976, pp. 14, 23–5.
14. Taylor and Hudson, 1972, pp. 54–6. The data refer to some point in the 1960s.
15. OECD, 1982b, p. 12.
16. Black (1966) has identified periods during which the 'consolidation of modernizing leadership' and 'economic and social transformation' took place. DATE is the average of the beginning years of these two periods.

to test whether total government activity appears more as a public good or a wealth transfer.

In addition to relative cost (as proxied by population), theory leads us to expect a positive relationship between income and public-good demand. Since we seek to explain the relative size of national government expenditure, a positive relationship between income and government in fact implies that the income elasticity of a nation's demand for public goods exceed the income elasticity of its demand for private goods, which is the assumption usually made and is typically referred to as Wagner's law (see, Pryor, 1968, p. 50). Traditionally, empirical studies of government expenditure have employed the mean income of the policy as the explanatory variable for testing Wagner's law, and we do so also, in part, because it is available for more countries than other income measures.

We employ a second, demographic variable besides population to capture the degree of ethnic fractionalization in a country. Ethnic fractionalization might be viewed as a form of tastes variable, but we view it as more related to the transaction costs of reaching collective decisions. The greater the ethnic fractionalization, the greater the difficulty of reaching collective decisions, and the smaller is the expected size of government.

We turn now to those variables that emerge explicitly from the public-choice literature.

Public-choice variables

Our main concern is with the impact of interest groups on the relative size of government. We therefore seek a measure of interest-group strength. The discussion in the previous section indicates that parties trade political favours for votes. The more votes an interest group can promise, the larger the political favour it can demand in exchange. The logical choice of a measure of the ability that an interest group has to influence government expenditure is the number of votes it can promise.

There are severe difficulties in trying to construct an appropriate weight for each interest group. What determines the terms of the bargain is the *net* number of votes an interest group can provide. This number depends on which party the interest group supports, what other interest groups support that party when the bargain is struck, and the constellation of interest-group support across other parties. A method for distilling the net marginal impact of an interest group across a wide variety of countries is not readily apparent.

It should be noted that the most obvious choices of measures of strength of an interest group are not satisfactory. For example, strength is not a function of the number of members in any simple way. An industry trade association may have relatively few members, but exert a large impact through substantial financial contributions to a party. Citizens' groups of similar size may vary greatly in their impacts, depending on the intensity of the members' concerns.

For the foregoing reasons and due to the non-availability of suitable alternative data, we have chosen to use the absolute number of interest groups formally operating in a country as the measure of interest-group strength. In doing so, we make the implicit assumption that the expected impact of a single interest group is the same across countries.

The second variable that emerges out of our discussion of political competition and the size of government is the number of political parties. As with interest groups, there are different ways to weigh parties when counting them. We use as our measure political fractionalization, the probability that two randomly selected members of parliament do not belong to the same party.

The most frequently used public-choice model in studies of local government expenditure is the median-voter model (see Bergstrom and Goodman, 1973; Borcherding and Deacon, 1972; Deacon, 1978; Pommerehne, 1978). To apply this model to explain total government expenditure at the national level, one needs to make several rather heroic assumptions.[10] Nevertheless, keeping in mind that our objective is to ensure that our tests of the effects of interest groups are not biased by the omission of relevant variables, we shall include proxies for the key variables contained in this model.

The median-voter literature forces two basic modifications to the list of variables so far compiled. It replaces mean income with the income of the median voter, and adds the median voter's tax price. Ideally, the tax-price variable should measure the cost to the median voter of one unit of the public good (Bergstrom and Goodman, 1973, p. 293). Thus, the tax price should take into account both the relative price of public goods and the tax share of the median voter. As we do not have information on relative price, our tax-price variable captures only the tax-share aspect of tax price. Our variable is an estimate of the progressivity of the tax structure and is used on the assumption that, *ceteris paribus*, the more progressive the tax structure, the lower the relative tax price of the median voter, and the higher the expected relative size of government expenditures.

Two additional studies have appeared that rely on the median-voter theorem and explicitly seek to explain the size or growth in size of government. Both assume that all government activity involves only redistribution and that the amount of redistribution is related to the skewness of the distribution of income. Meltzer and Richard (1981) use the median-voter theorem to argue that more redistribution takes place (and thus more governmental activity) the lower the income of the median voter, relative to average income. Peltzman predicts the reverse sign and claims empirical support for his hypothesis. Thus, we include a measure of the relative income of the median voter. Our intention, however, is not to conduct a test of these rival theories, but rather to ensure that our results on interest-group influence are not biased by omitting relevant variables.

An important element of Meltzer and Richard's account of the growth in government is the extension of the voting franchise to increasing numbers of voters, whose income falls below the mean. We test for this enfranchisement

effect directly, by including as a separate explanatory variable the percentage of the adult population which votes. Our supposition here, based on considerable empirical support (see Frey, 1971; Verba and Nie, 1972; Tollison and Willett, 1973; and references therein) is that lower-income groups tend to be disproportionately excluded from voting *de facto*, if not *de jure*. Thus, higher percentages of voters in a population means higher percentages of low-income voters relative to high-income voters, and should lead to greater redistribution and government size.

Following Niskanen (1971), many economists have argued that the strength of the bureaucracy is important in determining the size of the government. As a crude measure of bureaucratic strength, we have chosen the proportion of government workers in the workforce. Of course, greater numbers of government workers are associated with larger government size, purely because government payrolls are one element of government expenditure. To avoid embodying this tautological effect in the regressions when the strength of bureaucracy was included as an independent variable, the dependent variables were redefined by netting out the size of the government payrolls.[11]

Before presenting the results, two points must be emphasized. First, some of the variables we have constructed are very imperfect measures of the concepts they are supposed to represent. Such imperfections are inherent in cross-national research. Second, the variables discussed in this section are viewed as complements, not substitutes, to interest-group strength in explaining government size. Our purpose in including these additional variables is not to test their underlying theories *against* the interest-group hypothesis, but *along* with it. Thus, we have decided that, even though some concepts are measured highly imperfectly, it is better to include the relevant variables in the tests rather than omit them. By including these variables, we can ensure that any positive results we find for interest groups are not spuriously derived due to the omission of some relevant variable.

THE RESULTS

Ordinary least squares estimates

The hypothesis put forward pertain to developed countries in which interest groups have the potential for influencing government decisions. A natural choice of sample meeting this criterion is the OECD countries. Although data for these countries are more plentiful than for most others, even for these, observations on all countries are not available for each variable. We thus confront a trade-off between number of observations and number of variables in any equation. Rather than arbitrarily select a given subset of variables and subsample of countries, we have chosen to present a spectrum of results running from maximum number of observations and fewest explanatory

variables to fewest observations and maximum number of variables. The reader is thus free to make his own trade-off.

The first three equations in table 1.2 provide the benchmark for measuring the influence of interest groups and the other public-choice variables on the relative size of government. Population has a negative coefficient in each equation, consistent with the hypothesis that total government output has, on average, public-good characteristics.[12] Both income and ethnic fractionalization have the predicted signs in all three equations, although only income is statistically significant in each.

The fit is improved considerably by the inclusion of our two public-choice variables, number of interest groups and political fractionalization. The former is significant at the 99 per cent level in all three equations, political fractionalization is significant at the 5 per cent level (one tail test) in one equation. The performance of both population and ethnic fractionalization is noticeably improved by the addition of the number of interest groups and political fractionalization. The performance of mean income is worsened.

For 21 countries, we were able to measure median income and skewness of the income distribution. When median income is introduced, its coefficient is positive in all three equations and significant in two. In those three equations, and the following five, we tried mean income and median income as alternatives, and median income performed better, in terms of *t*-values, all eight times. This suggests perhaps that there may be some weak, superior predictive power in the median-voter theorem, even at this level of aggregation.

Both the Meltzer–Richard and Peltzman theories posit a relationship between the pre-transfer skewness of the income distribution and government size. Our skewness measure is post-transfer, and thus our results are biased away from the negative coefficient the Meltzer–Richard theory predicts and toward the positive coefficient Peltzman expects. The consistently negative coefficient on this variable, in spite of this bias, might be regarded as some support for the Meltzer–Richard hypothesis. The statistical performance of this variable remained weak in the remaining equations also, and it is omitted to save a degree of freedom.

The performance of the other variables in equations 7–9 is similar to that in equations 4–6, but with lower *t*-values, as can be expected, given the addition of a variable which performs poorly. The number of interest groups remains significant in all three equations, however.

To add VOTE, the percentage of the population which votes, another three countries must be dropped from the sample. Equations 10–12 present the results with the VOTE variable included. Its coefficient is positive as predicted, large and significant in all three equations. Its inclusion increases $\bar{R}^2$ visibly, and generally increases the *t*-statistics on the other variables. For the first time, the intercept is not significantly different from zero, as one's intuition suggests it should be. Equations 10–12 are clearly the best specifications of the government-size equation in the table.

Table 1.2 *Regression results using ordinary least squares (t-statistics in parentheses)*

	Dependent variable	Number of observations	$\bar{R}^2$	Intercept	POP	EFRC	PROG	INC	MINC	NIG	PFRC	SKEW	VOTE	PUEM
1.	EXP	24	0.24	18.4	−0.045	−0.117		0.29						
				(3.30)	(−1.35)	(−1.55)		(3.04)						
2.	TAX	24	0.42	15.5	−0.055	−0.106		0.30						
				(3.66)	(−2.17)	(−1.85)		(4.22)						
3.	CONS	24	0.11	8.03	−0.003	−0.019		0.11						
				(2.96)	(−0.21)	(−0.52)		(2.35)						
4.	EXP	24	0.51	24.2	−0.137	−0.161		0.06		0.006	0.109			
				(5.03)	(−3.29)	(−2.50)		(0.59)		(3.44)	(1.70)			
5.	TAX	24	0.67	20.6	−0.136	−0.149		0.14		0.005	0.065			
				(5.92)	(−4.55)	(3.21)		(1.83)		(4.03)	(1.40)			
6.	CONS	24	0.32	10.8	−0.051	−0.050		0.07		0.003	0.008			
				(4.19)	(−2.30)	(−1.47)		(1.18)		(2.76)	(−0.25)			
7.	EXP	21	0.55	29.0	−0.144	−0.201	−6.52		0.0001	0.006	0.101	−0.003		
				(2.16)	(−3.42)	(−3.02)	(−1.40)		(0.67)	(3.31)	(1.45)	(−0.02)		
8.	TAX	21	0.69	32.1	−0.141	−0.174	−4.80		0.0002	0.005	0.077	−0.137		
				(3.27)	(−4.61)	(−3.60)	(−1.41)		(2.11)	(3.75)	(1.51)	(−0.97)		
9.	CONS	21	0.47	16.9	−0.054	−0.061	1.09		0.0002	0.002	−0.006	−0.120		
				(2.61)	(−2.65)	(−1.90)	(0.49)		(2.36)	(2.45)	(−0.17)	(−1.28)		
10.	EXP	18	0.70	3.44	−0.124	−0.107	−2.89		0.0001	0.005	0.122		0.258	
				(0.267)	(−3.61)	(−1.67)	(−0.84)		(1.23)	(3.48)	(1.04)		(3.02)	
11.	TAX	18	0.82	−2.94	−0.109	−0.072	−0.225		0.0002	0.004	0.135		0.224	
				(−0.34)	(−4.79)	(−1.70)	(−0.10)		(3.17)	(3.96)	(1.73)		(3.94)	
12.	CONS	18	0.54	−4.70	−0.033	−0.387	3.97		0.0001	0.002	0.019		0.119	
				(−0.65)	(−1.72)	(−0.01)	(2.07)		(2.58)	(1.75)	(0.29)		(2.49)	
13.	EXPNP	14	0.93	−20.1	−0.181	−0.231	−14.1		0.0003	0.009	0.304		0.182	0.017
				(−3.01)	(−7.24)	(−6.99)	(−6.36)		(2.00)	(8.98)	(4.13)		(2.75)	(0.04)
14.	TAXNP	14	0.64	−14.0	−0.147	−0.210	−7.53		0.0000	0.007	0.361		0.013	0.057
				(−1.01)	(−2.95)	(−3.19)	(−1.69)		(0.00)	(3.83)	(2.46)		(0.10)	(0.80)

The last two equations in table 1.2 include the public employment variable. Given the scant number of degrees of freedom, and the crudeness of the test, the insignificance of this variable should not be interpreted as strong evidence against the bureaucratic-influence theory of government size. Our main concern is to ensure that this variable does not detract from the explanatory power of the interest-group and political-party variables. It does not and, if anything, the performance of the interest-group variable is enhanced. This improvement could be due to the change in the dependent variable used. The new dependent variable is government expenditure exclusive of personnel costs. This is exactly the part of expenditure that interest groups would be most eager to influence. Thus, the results in the last two lines of table 1.2 are reassuring, in that the interest-group variable performs well in explaining these two new dependent variables.

Since the scale of the interest-group variable will not be known to most readers, it will be useful to give more information to facilitate interpretation of coefficient estimates. This information is best conveyed through elasticity estimates. Thus, in equation 10, for example, the elasticity at the sample mean of the interest-group variable is 0.18. (The equivalent statistic for equation 11 is 0.15 and for equation 12, 0.12.) This indicates that, *ceteris paribus*, in a country which is at the sample mean (government expenditure 35 per cent of GDP), a 10 per cent increase in numbers of interest groups will lead to an extra 0.7 per cent of GDP flowing through the government sector.

Simultaneous equation estimates

Objections to the foregoing results could arise from the possibility of two-way causation and therefore simultaneous equations bias. It has been hypothesized that increases in the size of government spur the formation of interest groups (Eckstein, 1963, p. 413). Although Murrell (1983) has shown that there is some doubt that this hypothesis is correct, our intention is not to debate its veracity, but to show that our results hold, even if it is correct. Thus, we seek exogeneous variables which can be used in two-stage least squares estimates of the equations explaining government size.

In a study examining the factors affecting the number of interest groups in a country, Murrell (1983) has found population and 'the beginning year of modern economic development' to be the most important variables. The use of the latter variable has sound theoretical underpinnings in the work of Olson (1982). Given that population is already included in the equations predicting government expenditure, the 'beginning year of development' variable (DATE – see table 1.1) was used as an exogeneous variable when deriving two-stage least squares estimates of the equations explaining government size (see table 1.3). These estimates are completely consistent with those of table 1.2. There is some slight reduction in the *t*-statistics for the interest-group variable, but nevertheless of eleven statistics, five are

Table 1.3 *Regression results using two-stage least squares (t-statistics in parentheses)*

Dependent variable	*Number of observations*	R^2	*Intercept*	*POP*	*EFRC*	*PROG*	*INC*	*MINC*	*NIG*	*PFRC*	*SKEW*	*VOTE*	*PUEM*
EXP	24	0.47	26.4	−0.172	−0.182		0.001		0.008	0.120			
			(4.67)	(−2.81)	(−2.54)		(0.10)		(2.59)	(1.76)			
TAX	24	0.61	22.8	−0.174	−0.171		0.009		0.007	0.076			
			(5.39)	(−3.70)	(−3.19)		(0.93)		(3.10)	(1.49)			
CONS	24	0.31	10.5	−0.047	−0.048		0.007		0.002	−0.010			
			(3.62)	(−1.48)	(−1.30)		(1.11)		(1.45)	(−0.28)			
EXP	21	0.54	29.7	−0.136	−0.208	−6.60		0.000	0.007	0.104	−0.003		
			(2.16)	(−2.68)	(−2.94)	(−1.41)		(0.47)	(2.23)	(1.47)	(−0.01)		
TAX	21	0.67	33.5	−0.162	−0.186	−4.95		0.002	0.006	0.081	−0.137		
			(3.24)	(−3.73)	(−3.52)	(−1.41)		(1.53)	(2.75)	(1.53)	(−0.93)		
CONS	21	0.47	16.8	−0.052	−0.060	1.10		0.002	0.002	−0.006	−0.120		
			(2.56)	(−1.89)	(−1.78)	(0.49)		(2.14)	(1.43)	(−0.18)	(−1.29)		
EXP	18	0.69	3.61	−0.130	−0.112	−2.93		0.001	0.006	0.130		0.257	
			(0.28)	(−2.99)	(−1.65)	(−0.852)		(0.95)	(2.43)	(1.06)		(2.99)	
TAX	18	0.81	−2.5	−0.125	−0.086	−0.34		0.0002	0.005	0.155		0.221	
			(−0.28)	(−4.11)	(−1.81)	(−0.144)		(2.18)	(3.10)	(1.81)		(3.68)	
CONS	18	0.54	−4.75	−0.031	0.001	4.00		0.001	0.001	0.016		0.120	
			(−0.66)	(−1.27)	(0.37)	(2.08)		(2.30)	(1.03)	(0.24)		(2.49)	
EXPNP	14	0.93	−21.0	−0.182	−0.231	−14.1		0.002	0.009	0.305		0.182	0.018
			(3.01)	(−6.90)	(−6.92)	(−6.22)		(2.00)	(8.46)	(4.11)		(2.75)	(0.05)
TAXNP	14	0.64	−13.7	−0.139	−0.204	−7.13		0.000	0.007	0.353		0.015	0.542
			(−0.98)	(−2.67)	(−3.06)	(−1.57)		(0.11)	(3.40)	(2.39)		(0.12)	(0.76)

sign per cent level, three at the 95 per cent level, and two at tvel.

SUMMARY AND CONCLUSIONS

Thattempt to develop and test the hypothesis that interest groize of government. The theoretical results show that the forms between parties and interest groups leads to an increase in The sign of the expected effect on government size is indher an interest group influences its own tax rate or the dirxpenditure. The empirical results support the theory in thainterest groups is positively related to the relative size of relationship is robust with respect to substantial changes in ition of the sample of countries and the explanatory variation.

portant explanatory variables other than the number of inted to be population and the percentage of the population voently negative relationship between relative government size is noteworthy, since several recent public-choice theories of have assumed that the *only* government output is rerever, the negative relationship, implying that an increase ins to a less than proportionate increase in the size of gothat government expenditure exhibits a most basic public-go-

f the population voting, which probably is closely related tof voters with incomes below the median, consistently has a ificant impact on the size of government. The Meltzer–R that greater participation by low-income voters leads to m and greater government size is strongly supported.

perform less consistently and/or with lower statistical si most of these variables are included to account for dvernment size unrelated to the interest-group hypothesis, thoes not reflect on that hypothesis. The one exception to this the consistent, but somewhat weak positive contribution onalization variable. We argue that the number of political pmber of interest groups have complementary, positive ir of government. But the effect of the number of political py dependent on many economic and political factors in as identification of these factors is necessary to isolate the inable on government size. However, such a task is beyond thchapter.

of aggregation, the number of observations and the rough nome concepts, our results must be regarded as tentative. Bults do indicate promising approaches to further research.

In particular, the substantial contribution of the public-choice variables to explaining government size indicates a potentially high pay-off from developing this line of research. Especially intriguing would be further investigation of the effects of two variables we found to be consistently significant: voter participation and number of interest groups.

The theory underlying both voter and interest-group influence points to redistributive activities. The voter-participation variable is related to rich-to-poor redistribution and posits a direct responsiveness of government outcomes to voter preferences through the operation of the median-voter theorem. In contrast, the interest-group variable is included on the presumption that voter preferences are transmitted indirectly via interest groups and interparty competition, and makes no predictions about the direction in which redistribution flows. However, since the largest single category of interest groups in most countries is, by far, industry trade associations,[13] one might posit poor-to-rich redistribution as the most likely consequence of interest-group influence. Thus, the possibility exists that the influence of the two variables on the distribution of income might be largely offsetting, while their influence on the size of government is cumulative. Disaggregating the effects of these and other public-choice variables is a promising avenue for future research.

NOTES

1 With respect to the last, see Bowen (1943) and Bergstrom (1979). Other results in the literature are surveyed by Mueller (1979).

2 The most obvious alternative-solution concept to use as a benchmark is the government output favoured by the median voter. But to apply the median-voter model to this question, we must assume taxes are fixed and government output has a single dimension. Neither of these assumptions seems plausible when analysing interest-group behaviour, which is assumed to affect government outcomes either by changing taxes or adding private goods (dimensions) to public output.

3 An interest group can be regarded as a club, whose members have common characteristics. If the population is large enough, individuals will sort themselves into common interest clubs whose members have homogeneous demands for public goods (Pauly, 1967, 1970; McGuire, 1972, 1974). We can thus assume that interest groups make their collective decisions via the unanimity rule and analyse the behaviour of interest groups in terms of a representative member.

4 Our benchmark Lindahl equilibrium is assumed to be the one corresponding to the pre-tax, pre-expenditure distribution of wealth.

5 For a similar analysis, see Buchanan and Pauly (1970).

6 Treat $m \geq Z$ as an additional constraint and maximize the following expression (*i* subscripts omitted):

$$U(G+\theta Z, X+(1-\theta)Z)) + \lambda(Y - t(G+Z) - X) + \psi(m-Z) \qquad (1')$$

Taking partial derivatives of equation (1') with respect to G and X we obtain, as before:

$$U_G/U_X = t \tag{2'}$$

Taking partial derivatives of equation (1') with respect to Z we obtain:

$$\theta U_G + (1-\theta)U_X - \lambda t - \eta = 0 \tag{3'}$$

Substituting from equations (2') and (3') and rearranging, we have:

$$(1-\theta)U_G[(1/t) - 1] = \eta \tag{4'}$$

and by the Kuhn–Tucker theorem:

$$(\eta > 0) \rightarrow (Z = m) \tag{5'}$$

In this proof, we have ignored the constraints $G \geq 0$ and $X_i \geq 0$. If these constraints were introduced, the results would show that $Z < m$ is possible, if m were larger than the initial levels of either public or private spending. Such a case seems of no interest.

7 From the previous note we can rewrite U as:

$$U(G + \theta m,\ X + (1-\theta)m) \tag{6'}$$

Taking the total differential of equation (2') and substituting from equation (6') we obtain:

$$U_{GG}(dG + \theta dm) + U_{GX}(dX + (1-\theta)dm) = tU_{XG}(dG + \theta dm) + tU_{XX}(dX + (1-\theta)dm) \tag{7'}$$

Using the total differential of the budget constraint to remove dX and some algebra, one obtains:

$$\frac{dG}{dm} = -1 + (1+\theta)\left[\frac{U_{GG} - U_{GX}(t+1) + tU_{XX}}{U_{GG} - 2tU_{GX} + t^2U_{XX}}\right] \tag{8'}$$

The numerator of the factor in brackets can be shown to be negative if G and X are both normal goods. The denominator is negative by the second-order conditions. Thus, $dG/dm > -1$, implying:

$$d(G+m)/dm > 0 \tag{9'}$$

8 Proceeding as in note 6 except that η is now the multiplier attached to the constraint $Z \geq 0$, we obtain as the analogue to (3'):

$$(\theta - 1)U_G = -\eta \tag{10'}$$

so that, again, using the Kuhn–Tucker theorem:

$$(\eta > 0) \rightarrow (Z = 0) \tag{11'}$$

9 Proceeding as in note 7, using $U(G + \theta m, X)$ we obtain:

$$\frac{dG}{dm} = -1 + (1+\theta)\left[\frac{U_{GG} - tU_{XG}}{U_{GG} - 2tU_{GX} + t^2U_{XX}}\right] \tag{12'}$$

as the analogue expression to equation (8'). Since the denominator is negative, from the second-order conditions, and $(U_{GG} - tU_{XG})$ is negative if X is a normal good, equation (12') implies $dG/dM > -1$, and equation (9') again holds.

10 See note 2. For a lengthy critique of the median-voter literature as applied to explaining levels of local government expenditures, see Romer and Rosenthal (1979).

11 This was only possible for two of the dependent variables. Final consumption expenditure is only a part of total government expenditure and there exist no data showing how many public employees are connected solely with this part.

12 McCormick and Tollison (1981, ch. 3) find that population size is positively related to regulation activities at the state level, and that it is consistent with their hypothesis that large population size leads to less vigilant citizen policing of government and thus more wealth transfer activities by government. The two results need not be contradictory. Some government activities of a particularly redistributive nature may grow larger as population increases, whereas those with public-good characteristics become relatively smaller. Our results indicate that the latter tendency dominates for total government output at the national level.

13 Interesting in this connection is Fratianni and Spinelli's (1982) observation that special government programmes catering to business interest groups are becoming increasingly important in Italy.

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