Development and analysis of the interest-group theory of government
by Eric Mathis Engen

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in
Applied Economics
Montana State University
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Abstract:
The public-policy decisions of government, specifically state legislatures, are analyzed from an
economic perspective. The public-interest approach of welfare economics, the studies of traditional
political science, and the emerging interest-group theory of government are discussed in Chapter 2. The
primary objective of this thesis is to further develop the proposed interest-group theory, and empirically
test some of its implications.

A model of the political exchange process is described in Chapter 3, with special emphasis on interest
groups and their demand for legislative output. Hypotheses are developed in regards to several of the
factors that are proposed to influence the level of interest-group pressure from state to state. Also,
supply and demand characteristics for legislative output are outlined. Implications concerning the
political exchange process, within the framework of the interest-group theory, are drawn from these
discussions.

Simultaneous equations that explain legislative output and interest-group pressure are derived in
Chapter 4. Two-stage and three-stage least squares are used to empirically estimate the parameters of
the two equations, using data from states and their legislatures in 1975-1976. Legislative output
appears to be strongly influenced by interest-group pressure which supports the primary hypothesis of
the interest-group theory. Additionally, the legislative production process seems to be responsive to
institutional and political factors that constrain legislative output. Legislative size, majority proportion,
and characteristics of the committee system appear to be significantly influential supply-side variables.
In conjunction with interest group’s role as demanders of legislative output, population characteristics
are empirically tested as explanatory determinants of interest-group pressure. Interest-group pressure
seems to be influenced by such factors as population size and growth, and age and education levels of a
population.
DEVELOPMENT AND ANALYSIS OF THE INTEREST-GROUP
THEORY OF GOVERNMENT

by

Eric Mathis Engen

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APPROVAL

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Eric Mathis Engen

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citation, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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ABSTRACT

The public-policy decisions of government, specifically state legislatures, are analyzed from an economic perspective. The public-interest approach of welfare economics, the studies of traditional political science, and the emerging interest-group theory of government are discussed in Chapter 2. The primary objective of this thesis is to further develop the proposed interest-group theory, and empirically test some of its implications.

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Simultaneous equations that explain legislative output and interest-group pressure are derived in Chapter 4. Two-stage and three-stage least squares are used to empirically estimate the parameters of the two equations, using data from states and their legislatures in 1975-1976. Legislative output appears to be strongly influenced by interest-group pressure which supports the primary hypothesis of the interest-group theory. Additionally, the legislative production process seems to be responsive to institutional and political factors that constrain legislative output. Legislative size, majority proportion, and characteristics of the committee system appear to be significantly influential supply-side variables. In conjunction with interest group's role as demands of legislative output, population characteristics are empirically tested as explanatory determinants of interest-group pressure. Interest-group pressure seems to be influenced by such factors as population size and growth, and age and education levels of a population.
CHAPTER 1

INTRODUCTION

Statement of Problem

The study of government by economists has been largely in response to issues and skepticism arising elsewhere in economics. In regard to today’s society, an economist would be hard pressed to find a field of study in economics that is not influenced in some part by government. The increasingly large public-sector involvement in the economy, with politicians and bureaucrats becoming more and more influential in determining resource allocations, has led political economists to delve into a field previously dominated by political scientists. In order for the economic structures of society to be more fully comprehended, the characteristics of government action need to be understood. Economists, using the analytical tools of their discipline, have begun to study more closely the behavior of public agents and the role of government. An economic theory that is developing as a result of these studies is the interest-group theory of government.

In the interest-group theory, the government becomes a supplier in a market for public-policy decisions. Politicians cater decisions to interest groups when the benefits to the politicians from group support are greater than the political costs. Politicians, the decision-making agents within a government, are not seen as having separate private and public motivations but are assumed to be rational utility maximizers. Politicians, within the process of government, increase their individual utility by making decisions that benefit special interest groups in exchange for political support. While the benefits of government policies tend to focus on organized groups, politicians try to diffuse the costs of
government decisions over a majority of the unorganized populace in an attempt to mini-
mize their lost political support from those bearing the costs. Individuals organize and
participate in interest groups when the expected benefits from favorable government
decisions are greater than the costs of group involvement. This theory implies that the
amount of pressure exerted by interest groups upon the governmental system may influ-
ence government policy.

Thus far, the assumptions and implications of the interest-group theory have not been
fully outlined. Additionally, only a meager amount of empirical analysis has been per-
formed with regard to the interest-group theory. Therefore, additional economic study is
warranted in the area of interest groups and government.

Objectives

The purposes of this thesis are two-fold. First, the emerging interest-group theory is
discussed in a theoretical context. Both demand and supply relationships for government
policy decisions are developed. In association with interest groups' role as policy
demands, arguments are presented that may explain, to some degree, characteristics of
group formation and influence. This theoretical discussion further develops the interest-
group theory and provides a better understanding of its implications. Second, an empirical
model based on the interest-group theory is estimated using econometric methods. This
empirical analysis provides statistical support of the interest-group theory.

Procedures

In Chapter 2, the public-interest approach to government as implied by Pigouvian
welfare economics is briefly examined. The inadequacies of this approach and its relation
to the interest-group theory are discussed. Next, a brief overview of the study of interest
groups and government by political scientists is presented. Finally, the literature relevant
to the assumptions and development of the economic approach to an interest-group theory is reviewed.

A model of the political exchange process based on the interest-group theory is developed and discussed in Chapter 3. Supply and demand relationships are presented in regard to government policy decisions. Variables that are expected to influence interest-group pressure are also explored.

Chapter 4 outlines the implications of the theoretical model in an equation explaining the magnitude of government decisions, and another equation explaining the degree of interest-group pressure. Data for states and state legislatures in 1975-1976 is used to empirically estimate the equations. The two equations are estimated using the simultaneous equation methods of two-stage and three-stage least squares. The results are then presented and interpreted. They provide substantial support for the interest-group theory of government developed in Chapter 3. Chapter 5 contains a brief summary and general conclusions.
CHAPTER 2

INTEREST-GROUPS IN THE POLITICAL PROCESS: A REVIEW

Government from an Economic Perspective: Public-Interest Approach

Traditionally, government has been analyzed in the Pigouvian framework of welfare economics. Government intervention is seen as a positive-sum game, with the benefits exceeding the costs from government's more efficient reallocation of resources. Private markets are thought to frequently be imperfect, with inefficiencies occurring if left alone. The obligation of the government is to correct market failures. Government provides public goods, internalizes externalities, regulates monopolies, redistributes income, etc., in order to create a more efficient (and equitable) society. Governmental action is interpreted as a relatively costless response to public demand for the rectification of inefficiencies in the free market areas of society. Furthermore, the politician is expected to be a statesman who, while aware of public opinion, molds the ideals of his constituency and the nation. A politician's purpose is service to the public and his goal is the development of what is best suited for the public. This public-interest theory of government is oftentimes more assumed and implied than tested.

The public-interest theory of government would seem to dictate that government regulation would tend toward highly concentrated industries in which there are greater chances of collusion and monopoly formation, and industries producing externalities. Evidence does not support these implications. Many industries that are heavily regulated are
not highly concentrated or producers of externalities. Furthermore, case studies of government institutions have shown that governmental action is not costless or as entirely dependable as theory warrants. The structure of markets and the incentives of consumers and producers are usually changed as a result of government intervention, with the results frequently being less efficient than before government regulation. "Government failure" is shown to augment the market failure government presumably set out to correct.

Many economists have begun to question the public-interest approach to government and politicians. The concept of politicians and other public agents having separate motivations—private interests when involved in a private market decision and the public interest when involved in a public policy decision—is an implicit assumption in the public-interest theory. In contrast, according to the assumption of rational economic behavior, based on utility-maximization, an individual considers the benefits and costs of any action with respect to the resultant change in personal utility. The economic approach of the interest-group theory assumes politicians have the same human characteristics as other decision-makers, and are influenced by similar motivations. Of course, some (and perhaps many) individuals who are active in the public sector may receive considerable personal satisfaction by working for what they perceive to be the public interest. However, the perception of what is in the best interest of the public is subject to personal interpretation by public agents.

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1 As Posner (1974, p. 336) states, "Some fifteen years of theoretical and empirical research, conducted mainly by economists, have demonstrated that regulation is not positively correlated with the presence of external economies or diseconomies, or with monopolistic market structures."

2 See Posner (1970) for an example of a government institution not being a costless, efficient operation.

3 Jordan (1972) presents some cases of "government failure," as well as a review of the literature in this area.
Interest Groups and the Political Process: Political Science Perspective

The role and behavior of government and interest groups is usually felt to be the domain of political scientists. Although this thesis holds an economic perspective, political scientists acknowledged group involvement in the political process prior to economists so a survey of their study of interest groups may provide some insight into this area.

Bentley (1908), in his pathbreaking book *The Process of Government*, draws the attention of political scientists from study of the formal branches of government (executive, legislative, judicial) to the nongovernment force of interest groups as an important area of study in American politics. Bentley not only discusses the impact of groups on politics but also develops an outline of the entire American political scene in group terms. Scornful of the concept of an overall public interest, to Bentley, government and policy are the result of the interactions of groups within and outside government.

Bentley's analysis was relatively neglected for decades after its publication. The strongest argument for this oversight among political scientists could have been the belief that interest groups were relatively ineffective in influencing politicians, who were primarily concerned with party politics and power relations within the legislature. However, with the observable success of interest groups (and the relative demise of party influence), political scientists seemed to reevaluate the importance of interest group study.

Truman (1951), following the work of Bentley, argues that groups are the basis for society and the institutions of government. Not only are groups essential for individual goals but they are also an integral part in the operation of government. In the "disturbance" theory presented by Truman, interest groups develop from two interrelated societal processes. First, he sees the increasing complexity of society as a catalyst to group formation. Increased diversity requires more interests to be represented. Additionally, Truman feels that since technological gains make communication and transportation more readily avail-
able, group formation is facilitated. Second, and the key to Truman’s theory, individuals are stimulated to organize because they undergo a disturbance that alters their equilibrium relationship with other groups and institutions in society. The goal of group formation is to ultimately stabilize these relationships so that a new equilibrium may be attained. The role of government is to act as a mediator among the various interests and groups of society. The product of group activity is governmental decisions. Truman cites two aids in keeping the process in a “healthy” equilibrium. Since individuals belong to many groups, the overlapping of group memberships will inhibit extensive group conflict. Also, Truman believes there exists a commitment by members of a society to abide by accepted rules of the process. If a group does “break the rules” then a potential group will become active to counterbalance the offending group.

Truman’s disturbance theory is contradicted, however, by empirical evidence that some groups increased their membership during times of economic prosperity and social tranquility but their memberships decline during disturbance periods such as economic downturns. These observed instances of group deterioration during times of disturbance weaken the explanatory power of the disturbance theory. Also, Truman does not discuss explicitly the means which a group uses to prompt governmental decisions. Groups influence government, according to Truman, yet the specifics of their behavior in the governmental process are not discussed.

Schattschneider (1935, 1960) proposes that groups possess a profound upper-class bias and that their participation in the American political process has distorted the public interest. The “upper-class bias” approach, also supported by Wolff (1965), tends to take a critical view of interest group behavior. These political scientists feel that not only will

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*Salisbury (1969, pp. 8-9) reveals membership figures for farm and labor organizations which contradict Truman’s disturbance theory.*
small groups tend to dominate the political process but that select groups, especially upper-
class and pro-business, achieve the highest levels of influence in the government. However,
the proliferation of middle-class groups, and consumer and labor oriented groups is a pro-
found contradiction to the upper-class bias proposal.

Lowi (1969) proceeds with criticism of interest groups in yet another direction. He
believes that, over time, the government has lost its basic sense of legitimacy and authority.
Government has expanded its role and impact on society while simultaneously abdicating
to private interest groups its power of controlling public policy. Lowi, like Schattschneider
and Wolff, is concerned with the degradation of the public interest by the private interest
of groups. Like other political scientists that use the concept of public interest, failure to
explicitly define the public interest leaves many of the criticisms of interest groups unsub-
stantiated. In the works of Schattschneider, Wolff, and Lowi, their analysis leans more
toward a level of ideology. They seem to tend more towards discourse on the relative
“goods” and “bads” of group involvement in the government process. Bentley and Tru-
man have worked more toward developing a testable theory and provide a basis for many
of the developments that followed.

Some political scientists propose a “capture” theory in their analysis of the role of
interest groups in the governmental process. They contend that a governmental institution
tends to become dominated, or captured, by the industry it is supposed to regulate. The
original public-interest purpose of the institution is then thwarted as it is used by the
industry for its own benefit. The usefulness of this theory is diminished by its failure to
recognize numerous exceptions. The capture theory cannot explain why regulated indus-
tries would be the only influential interest groups. Evidence shows the existence of many
consumer and labor oriented groups, and that the interests promoted by the government

5 See Bayes (1982) for a discussion of ideologies and interest groups.
are often those expressed by these groups. Furthermore, no explanation is given as to how an industry procures the creation of an institution that is initially beneficial to their interests, and thus does not need to be captured; or the case of institutions that tend to become more antagonistic towards the industry it regulates. These events appear to be a contradiction of the capture theory. Also, no mention is made of the situation where a single agency regulates many industries with conflicting interests. Examples of a lone agency regulating several or more competing groups within a particular market further weakens the capture theory. The capture theory fails to also address the issue of why some interest groups are effectively involved in the political system while others are not.

Salisbury (1979), in a significant effort in the area of interest-group study, worked to develop an “exchange” theory of group formation. Salisbury’s proposal evolved primarily as a rebuttal to Truman’s disturbance theory. He proposes that the principal incentives for the organization of an interest group are material gains, and purposive or ideological rewards. He observes that purposive oriented groups may be less costly to organize—rhetoric is “cheap”—but solely ideological groups tend to be unstable. Ideologically based groups are inclined to attract splinter groups and often have trouble keeping members’ interest. Conversely, material benefit groups, though relatively more costly to establish, tend to be more stable and able to offer reasonable incentives to members. Salisbury’s analysis unfortunately does not extend to a discussion of interest groups’ role in government process and how they procure benefits.

Some political scientists provide valuable insight into the area of interest groups’ involvement in the political process. Recent study, however, seems to revolve primarily around case studies of individual interest groups rather than the further development of an

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6 See Posner (1974, pp. 341-343) for a critique of the capture theory and references to relevant literature.
interest-group theory. In general, a satisfactory or complete theory of group formation and involvement in the political process does not seem to emerge from the field of political science. Therefore, in light of many economists' dissatisfaction with the public-interest approach to government, the opportunity has been presented to offer an alternative theory of interest group and government behavior in the political process.

**Government from an Economic Perspective: Interest-Group Approach**

The economic view of an interest-group theory of government has evolved, to a large degree, as part of the public choice field and many of the assumptions of relevance here can be found in the literature of public choice. Significant contributions to the public choice literature which bear on this study will be discussed first.

**Early Development in Public Choice**

Downs (1957), in his book *An Economic Theory of Democracy*, attempts to account for party and voter actions, and his work is often recognized as a starting point in the development of an economic theory of government. Downs relies upon the basic axioms of economic theory, and hypothesizes that every citizen rationally attempts to maximize his utility, including that portion arising from government activity. According to accepted economic theory, an individual maximizes his utility in the private market because the individual is human, not because the situation is private. Likewise, individuals in a public market will be directed by their individual motivations and the fact that they are in a public situation does not change their behavioral goals.

Downs' second major hypothesis is that parties act in a manner in order to maximize the votes its members receive. The primary motivation of politicians is to obtain or retain...

7 See Wilson (1981) for a recent example of interest group case studies.
the benefits associated with holding public office. Therefore, they derive policies in order to gain or maintain a political position rather than seeking a political office in order to carry out preconceived policies. Both of these hypotheses contradict the traditionally accepted public-interest ideals for the role and behavior of a democratic government and its citizens, and begin to establish the fundamentals for the economic theory of government that are presented in this thesis.

Buchanan and Tullock (1962), the authors of *The Calculus of Consent*, are also early pioneers in the application of economic theory to individuals in the political arena. They expect an individual to explore the possibilities of collective action when a utility-enhancing opportunity is perceived. Personal utility may be increased by eliminating costs or securing benefits through government activity that cannot be brought about by purely private actions. As Buchanan and Tullock explain (1962, p. 13):

Collective action is viewed as the action of individuals when they choose to accomplish purposes collectively rather than individually, and the government is seen as nothing more than the set of processes, the machine, which allows such collective action to take place.

Like Downs, they propose that individual motivation is the same for an individual in a public or private market setting. The concept of a public interest is severely discounted by the fact that in order to describe what the public interest is, some individual must explicitly include his own value judgements. The public interest is only what any individual says it is.

Buchanan and Tullock address numerous issues and provide a foundation for much of the public choice literature which has followed, but their specific analysis of pressure groups and government is of particular interest to this thesis. In explaining the increasing importance of pressure groups over the last half century, they observe that (1962, p. 286): “... interest group activity, measured in terms of organizational costs, is a direct function of the ‘profits’ expected from the political process by functional groups.” Buchanan and Tullock view the expansion in the importance of the public sector relative to the private
sector as having increasingly differential and discriminatory impacts on separate and identifiable groups in the population. They observe, as a result, increased investment and activity by organizations aimed at securing differential benefits through the political system. There is, however, an inverse to this relationship between government expansion and the number of interest groups. While the profitability of organizing interest groups is a direct function of the size or scope of government, both the size and composition of governmental action are dependent on the influence of special interest groups. What Buchanan and Tullock label a "spiral effect" comes into play. Success by just one particular interest group will increase total collective action. Other interests, observing the success of the first group, will now see it as profitable to invest resources to influence the political process. The special interest group has thus become an important part of the political process according to Buchanan and Tullock.

Another forerunner in the application of economic theory in the realm of politics is Olson (1965). In the book *The Logic of Collective Action*, his theory of groups provides a basis for many of the characteristics of behavior by interest groups that have become important in the economic theory of the government process. Olson initially addresses the organizational problem of "free riders" which may thwart group efforts to procure collective goods. Since the potential benefits arising from collective goods are realized by numerous individuals, the incentive is for each individual to attempt to enjoy the benefits while not shouldering his portion of the costs. All individuals will have the same incentive, so the predictable result is inability to organize and implement a functional interest group. A group must find some means to overcome the free rider problem in order to become viable. Olson hypothesizes that the size of a group will have a direct effect on the manner in which a group mobilizes. Smaller groups may overcome the free rider problem simply because each individual will realize a larger portion of the total benefits than his possibly unequal portion of the costs. In fact, there could be group members better off even if they
had to bear the full burden of the costs as opposed to the situation of the collective good not being produced at all. Additionally, monitoring is less costly and peer pressure more applicable in a relatively smaller group. Consequently, small organized groups are often able to exploit large unorganized groups of the population. Larger groups must offer special incentives to induce active membership if they are going to be effective. Olson contends that a large organization must either have the authority or capacity to be coercive, or have a source of positive inducement, such as some noncollective benefit, that they can offer an individual. Olson argues, as a consequence, that larger interest groups are often “by-products” of organizations initially formed for an alternative reason. In addition, he points out that most organized groups, especially by-product groups, tend to be economically based. This observation is consistent with the subsequent developments in the theory of economic regulation which provides the basis for the interest-group theory of government.

The Theory of Economic Regulation

The interest-group theory of government was initially stated in the context of economic regulation because it was designed to explain the pattern of regulatory intervention in the economy. Stigler (1971), a leader in the development of a theory of economic regulation, proposes as a central thesis to his work that regulation is likely to be acquired by an industry and in such cases it is designed and operated primarily for the industry’s benefit. Stigler’s theory of economic regulation is basically a modification of the political scientist’s capture theory. The power of the government to forcibly coerce is utilized by an industry to increase its profitability. The potential uses of government power—direct subsidies, market entry control, legislation affecting complementary and substitute goods, price fixing—by economic producers creates an outline for Stigler of the demand for regulation.
In Stigler's model there are many bidders in a political auction but only one is successful. The winning group must compensate the political agent(s) who conferred the favorable regulation with votes and resources.

Stigler also analyzes the characteristics of using the political process that limit the size of the dominant group. Use of the political process requires the incurrence of information costs. If the prospective per capita gains are small, as they tend to be in a large group, an individual may perceive the costs of becoming informed to be greater than the benefits. Additionally, the costs of overcoming free riders will rise as group size increases. These diseconomies of scale usually limit the size of effective interest groups according to Stigler. He uses these costs of organizing an interest group as the constraining variables for his outline of the supply of regulation.

Subsequent work by Peltzman (1976) generalizes the Stigler model. He begins with the presumptions that what is at stake in the regulatory process is a transfer of wealth, and that political representatives who act as passive suppliers seek to maximize the vote majority in their favor. Peltzman develops an equilibrium model in which the politician equates the marginal costs and benefits of granting regulatory legislation. Political opposition increases at an increasing rate as regulation expands, thus creating increasing marginal costs in the supplying of regulation. The marginal benefits from regulation realized by an interest group are decreasing in the amount of regulation, so there are diminishing returns to politicians in the form of political support due to the diminishing returns of group benefits. Since a politician pays heed to his marginal position, he supplies less regulation than what an interest group would consider a benefit-maximizing amount, even if a group's members get all the benefits the regulatory action produces. This is in contrast to Stigler's assumption that politicians consider the wishes of one winning group. Peltzman shows that, in general, a politician never acts as a perfect broker for one group so, for instance, a particu-
lar law may be expected to benefit more than one interest group. Peltzman also generalizes his model enough to include the situation in which consumer groups are successful in the regulatory process.

The largest contribution by the theory of regulation to an interest-group theory of government is in the demand-side analysis of the governmental process. Government is seen as a process from which beneficial policies can be obtained by interest groups, and favored groups must compensate the appropriate politicians in return for the benefits bestowed. However, the theory of regulation does not consider the institutional constraints involved in analysis of the supply-side of the governmental process. These constraints and the costs they impose are necessary to develop a more complete theory of interest-group involvement in the political process.

The Legislature as a Firm

Crain (1979), using standard economic analysis of a firm, approaches the supply-side of legislative productivity by investigating the production process of state legislatures. Measuring the rate of output, or productivity, of a legislative firm as the average number of bills passed per day by a legislative assembly, Crain argues that different levels and combinations of institutional and political factors will affect the costs of production. Both intuitive arguments and empirical tests are made concerning the relevant variables and their respective impact on the costs of generating collective decisions.

The various political factors that Crain deems relevant in explaining the costs of legislative decision-making will only be discussed briefly at this point since many of his arguments are incorporated in the model presented later. Crain argues that in an institution that observes majority-rule voting procedures, the production of legislation by the party which obtains a majority position should be easier to achieve. The reduction in transaction costs among similar party members is cited as the primary reason for increased legislation
enacted with a larger proportion of a majority. However, this increasing output will probably diminish beyond some level.

The period of operation for the legislative firm is established as the length of a legislative session. In light of Crain's measure of the rate of output, session length has two opposing effects on costs to the legislative firms. Crain argues that an increased session length may have positive returns in productivity rates as the "start-up" costs of initial organizational activity decline in a per-unit sense with longer sessions. Conversely, Crain determines that the legislative structure is conducive to shirking in production because of the lack of effective monitoring of legislator behavior. Legislative productivity rates may decrease in regards to increased session lengths. To sum, Crain decides that the net impact must be examined empirically, since no relationship is determinated on a priori grounds. The frequency of legislative sessions is examined in the same framework as the length of session with the nature of the relationship being left to empirical results.

The degree of bicameralism is said to affect legislative production costs in two ways. First, the degree of similarity between the bases of representation in the two legislative assemblies will increase as the level of bicameralism, defined as the ratio of senate size to house size, increases. Decision-making costs will consequently be decreased, increasing the legislature's rate of productivity. Second, by altering the relative extent of labor specialization within each respective house of the legislature, an increase in the level of bicameralism will increase the net returns to productivity from labor specialization. Overall, Crain decides that an increase in the level of bicameralism will increase legislative productivity rates.

Finally, the size of legislatures is discussed, with Crain deciding that the number of legislators in a legislative firm has two opposing effects on production costs. First, an increase in group size will increase decision-making costs, consequently raising costs of production. Second, there are potential gains from labor specialization which could reduce
production costs. Crain concludes that the net effect of the size of a legislature on the costs of enacting legislation is not predictable.

Crain empirically estimates the supply function by regressing the average number of bills passed per session day on the institutional and political factors just discussed, along with the average agenda size which he assumes to be a measure of demand for legislation. He estimates separate equations for upper and lower houses of state legislatures in 1973, with the results being statistically robust. All the estimated coefficients, excluding the coefficient associated with legislative size, are significant at the .10 level or better in both equations.

Average agenda size exhibits a positive relationship with the average number of bills passed; however, Crain does not explain why agenda is a measure of demand. The logarithmic transformation of the variable for majority proportion is also positively related to average output as hypothesized. The estimated coefficient for the length of session is negative which suggests that legislator shirking dominates the decline in per-unit start-up costs associated with a larger production period. The positive sign on the estimated coefficient for the frequency of session dummy variable implies that rates of productivity are higher in legislatures that meet biennially. Crain concludes that this result indicates the prevailing influence of legislator shirking over reduced per-unit start-up costs in determining productivity rates. The exponential transformation of the ratio of the upper house to lower house, which represents the level of bicameralism, displays a positive relationship with the average output rate, concurring with Crain's hypothesis. The statistical insignificance of the estimated coefficient for legislative size is explained within the context of the theoretical discussion. Crain remarks that the empirical finding suggests the increased decision-making costs associated with larger groups of legislators may be offset by the increase in labor specialization possibilities.
Crain's work is critical to the development of the interest-group theory of government presented in this thesis. Significant insight can be gained by acknowledging that the legislative process holds many similarities to the production process in firm activities.

**Further Development**

This thesis will hopefully bring together all the relevant factors presented by the literature up to this date. A more generalized and encompassing model and theory will be developed to explain the supply and demand relationships in the legislative process. Because of interest group's predominance in the demand for legislative activity, analysis will also focus on the organization and formation of these groups. The theoretical model along with the empirical evidence of this thesis will hopefully provide an improved understanding of an interest-group theory of government.

Specifically, the magnitude of state legislative activity will be examined in light of characteristics of legislative institutions and constituencies as they vary from state to state, used to construct supply and demand relationships for legislative output. Interest groups are designated as the primary demanders of legislative output with variations in the size of this output attributed to varied degrees of group pressure. A function is presented such that interest-group pressure is a determinant of the magnitude of legislative output.

Most studies done by economists have centered on pecuniary reallocations resulting from government regulation and intervention in the private market economy. A good proportion of the legislation enacted does result in a transfer of pecuniary wealth. A few studies have shown that government intervention based on solely ideological grounds sometimes have economic ramifications as well.\(^8\) However, this thesis will attempt to generalize the existing theory such that a rationalization for all legislation that is passed can be made.

\(^8\) See Horowitz (1976) for an example of ideological legislation having an economic impact.
An individual's utility can be altered by ways other than pecuniary adjustments. Government intervention that restricts or permits certain societal behavior, for example, will positively affect some individuals while negatively affecting others. A transfer of pecuniary wealth does not have to be explicitly or implicitly included in legislative activity for different groups in a society to experience shifts in their utility. This approach will hopefully serve to include ideological arguments, as well as economic arguments, in explaining government intervention.\(^9\) Even a group that claims to be a public interest group is imposing their perception of what the public interest is, on legislators. Some people will certainly disagree with the "ideals" of these groups so they are adversely affected by legislation that is passed on behalf of these supposed public-interest groups. This thesis will attempt to deal with the range of possible transfers of utility resulting from government intervention, especially those initiated by legislative activity.

The supply relationship for state legislative output will be outlined such that the legislature behaves much like a firm in standard economic theory by reacting to the array of costs it must face in its production operation. Variations in legislative output will be explained by the costs imposed by certain institutional and political constraints. The function explaining legislative output is extended to include the supply factors proposed by Crain, along with additional variables concerning the legislative committee system.

Hypotheses concerned with the formation of interest groups will also be presented in conjunction with their role in the demand for legislative output. An interest-group function is proposed that will allow arguments concerning some of the factors that influence the formation of interest groups to be discussed. In general, this thesis will attempt to refine and test the economic approach to the interest-group theory, as the theory has only recently been proposed and many of its implications have not been fully delineated. The

\(^9\) Kau and Rubin (1979) discover that "self-interested" lobbies, as well as "ideological" lobbies, are influential in affecting the voting of congressmen.
following chapter will present theoretical arguments concerned with the interest-group theory in the form of a political exchange model.
CHAPTER 3

DEVELOPMENT OF A POLITICAL EXCHANGE MODEL

The Political Exchange Process

The political exchange process is characterized by the interaction between the citizenry of a society and their elected government representatives. The outcome of this process is governmental action. The range of public policy solutions can be interpreted as the result to be expected when individuals attempt to carry on the business of personal utility maximization in as rational a manner as possible. Individual preferences are transmitted through collective action, although individuals must anticipate some costs to be associated with collective activity. These costs include the costs of organizing and maintaining an active and effective group. One or more of the costs of collective action prohibit many members of a society from participation. Therefore, some citizens will be organized as collective groups while others will remain as unorganized individuals. Individuals that successfully mobilize as a collective group may be able to secure benefits from public policy decisions, although adverse costs would also be imposed on some portion of the unorganized populace. Benefits from public policies, benefits that are usually not attainable at comparable costs to the group in the private market, provide the incentives for individuals to act cooperatively.

The primary function of government officials becomes, in this model, the catering of government decisions to the demands of collective-action groups. Members of a governing body politicians behave as such in order to increase their own utility. Politicians are willing to undertake government activity that benefits collective groups in order to enhance
their political position. It is assumed that politicians derive utility, for whatever reasons, from holding a public office, and therefore want to increase their chances of retaining their position. In exchange for preferential decisions, politicians expect a collective group to support them in their effort to maintain their political position, whether elected or appointed. Members of the groups invest private resources in the political process in hopes of acquiring some increase in their net personal utility that results from government decisions and actions. A general hypothesis is evolved that proposes that the government acts as a supplier in providing public policy decisions that are favorable to collective groups.

**Politicians and the Supply of Legislation**

This thesis focuses on the legislative body and the components that comprise its operation. Legislators, like other politicians, desire to increase the net utility that is derived from holding a political office. In order to maintain this source of utility a legislator must remain in office and so will be concerned with his probability of being re-elected.

Legislators enact legislation that is beneficial to some groups in exchange for political support in the form of votes and other resources. However, the passage of legislation catering to collective groups will impose some political costs on the acting legislators also. In general, any change in public policy will have some degree of an adverse effect on a certain portion of the population. Politicians face varying probabilities, depending on the issue, of losing some of the political support that is presently theirs, and/or instigating some portion of the population to actively oppose their re-election.

Transactions within the political exchange process are not as simple as many transactions within the private market. In the private market, money and goods often exchange

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1. Posner (1974, pp. 346-347) proposes that some groups may be able to make threats of violence or disorder in order to sway politicians to cater to their legislative demands. This "coercive" method may place the politician in a position where his/her utility-maximizing decision is the avoidance of the costs from ignoring such a group, and thus will be receptive to their legislative demands.
at the time of agreement and both parties are fully aware of the quantity and value of the resources exchanged. The use of contracts facilitates private market transaction that take place over time or distance. In the public exchange market, uncertainty is more prevalent in regards to what the benefits to both legislators and groups will actually be. Legislators, in order to maximize the support gained from the passage of legislation, will attempt to concentrate the benefits of legislation on well-organized groups—special interest groups. Legislators can expect relatively higher returns from a group that has some power of monitoring and enforcing the political activities of its members—the beneficiaries of the legislation. Well-organized interest groups will be more likely to insure a larger percentage of membership support, so politicians have incentives to favor these types of organizations as opposed to an aggregation of individuals that are not bonded by a political organization. A legislator will also tend to favor interest groups within his geographically defined constituency since the members of these groups comprise the voter base from which a legislator draws his support. However, if groups outside of a legislator's constituency can offer resources such as labor or monetary contributions, then a legislator may be willing to cater to their demands as well.

Simultaneously, legislators, in order to minimize their political losses, want to disperse the costs of legislation over a large, or politically unorganized, segment of the population. The costs to an individual may be so negligible as to not be recognized, and therefore, the legislation will not arouse opposition. Furthermore, if the costs to an individual of becoming informed on an issue and becoming politically active to oppose it are greater than the expected benefits of such action, a person may willingly bear the costs of some legislation. In these cases, legislators will have successfully dispersed the costs of interest group favoring legislation. However, if the costs to some portion of individuals is great enough such that they discontinue their support of, or directly oppose, a politician then legislators must weigh the magnitude of these costs against the benefits of increased sup-
port from the favored interest group. Furthermore, a politician will attempt to direct the
costs of legislation onto voters outside of his constituency. Since votes are the basis for a
politician's re-election, a politician will not want to antagonize the citizens that make up
his voter base. Citizens and groups outside of a legislator's district can infuse resources into
the campaigns of opponent politicians, so non-constituency costs can also become a factor
in a politician's calculations.

An important point in analyzing the behavior of politicians is the difference in incen­
tive structures that influence public policy decisions as opposed to those affecting private
market decisions. In the proprietary setting of private market transactions, an individual
generally must face the full economic consequences of his actions. The nonproprietary
setting for politicians in making legislative decisions allows legislators to avoid the full
economic consequences of the politics they enact, and only take account of the political
costs and political benefits pertinent to their personal utility. This suggests that politicians
have little or no incentive to consider what an efficient decision may be when deliberating
on public issues. Thus, the possibility exists for decisions to be made that result in a wel­
fare loss to society. The private ownership of resources in the private market generally
leads towards resources being distributed to their highest-value use. Since politicians do not
own the resources that are redistributed as a result of their decisions, they do not have to
consider the use-value of these resources. Politicians' concern with legislation is over its
effects on their re-election possibilities. Politicians exhibit the same utility-maximizing
goals in both the private market setting and the public market setting. However, their
behavior and its results may be dissimilar due to the different structure and incentives of
the two markets.²

The legislature, as a supplier of legislation, will operate under constraints like those in
any other production process which impose costs on producers in manufacturing their

output. The basis for this analysis of legislative constraints is that different characteristics of the legislative institution will alter the costs in providing legislation. Crain (1979) proposes, discusses, and tests several institutional constraints and their effects on the variation in legislative productivity in his work concerning the supply-side of the legislative firm. These constraints are used in this model also. The dependent variable Crain uses in his model measures a legislature’s rate of output, while the model tested here will use the total output of a state legislature as its dependent variable. Still, many of the arguments Crain presents hold for this model. This model will further develop some of the arguments for these factors in light of the different dependent variable used, as well as include a discussion of the committee system’s role in the passage of legislation. Committees, effectively used, can reduce the costs of enacting legislation and make a legislature more efficient. However, ineffective use of committees may preclude the capture of some of these gains.

**Interest Groups, the Costs of Collective Action, and the Demand for Legislation**

Individuals will enter into collective action when they see it as a means of receiving some net benefits that cannot be obtained at as low a cost individually, or through the private market. Various costs must be overcome for a group to become politically active, however.

The initial costs of organizing, or “start-up” costs, include the costs of informing other individuals on relevant issues in order to entice their participation in collective action, as well as the cost of instituting a fundamental framework of an organization. Variations across a population of individual and group organizational costs is the reason why some individuals are able to form groups while others are not, and why some groups are able to participate in the

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political exchange process while others are not. Some individuals possess a higher degree of personal interest in political activities and are more informed on the benefits and costs of public issues and the workings of the political process. Also, some individuals possess better organizational skills and are more readily able to form groups. Although groups tend to form and lobby in public policy areas that promise substantial returns to collective costs, some groups have relatively lower organizational costs, thus expediting interest group formation in areas that promise lower returns. Individuals and groups with much higher costs may not organize no matter what the potential is for public policy benefits.

Since these start-up costs are borne only initially, once a group has successfully organized they are in a position to lobby for legislation in many areas beyond their original scope, thereby enhancing their chances of gaining legislation. Some groups that have already formed for some other reason—examples that are economic in nature are corporations, labor unions, trade associations, and agricultural cooperatives—enjoy a comparative advantage since they have already overcome their organizational costs. Therefore, they need only bear the cost of expressing their demands in order to secure a favorable position in the political exchange process. Once any group has overcome the initial costs of organizing, the costs of maintaining an effective lobby and group solidarity comprise the majority of its expenses.

Lobby expenses are supported by membership dues, individuals devotion of labor to an organization, and other such infusions of resources by group members. The primary impediment to covering these expenses and maintaining an effective lobby is the incentive for members to free ride. Since the potential benefits being lobbied for are often collective, an individual will be motivated to forego his portion of the costs while enjoying a portion of the benefits. Concurrently, other individuals have the same rationale to free ride and

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avoid the costs of participation, thereby rendering an interest group inoperable. Thus, an interest group faces monitoring and enforcement costs in order to overcome the problem of free riders. In addition to monitoring to discourage free riding, a group must also be able to effectively insure membership support of the proper politicians. In situations where the benefits of legislation are selective to a particular group, free riding is easier to control. A group can simply exclude a nonparticipating individual from the selective benefits enjoyed by the group.

In smaller groups monitoring is usually less costly, with peer pressure often being an effective deterrent to free riding. In larger groups where the cost of monitoring is higher, special incentives may be offered to induce active participation. In addition, larger groups often have the authority or capacity to be coercive. The size of an interest group also affects the success of a group in ways other than monitoring costs. The initial organization costs for a large group tend to be greater than for a smaller group, as are free riding costs. However, if a large group is able to organize and overcome free rider problems it is likely to have considerable political influence due to its ability to offer more votes and resources to politicians. In a public policy area that promises large per member gains, large groups may be more able to generate incentives that are strong enough to overcome their higher costs. Small groups generally have lower costs and may enter in areas where large groups are unable to organize. Thus, we find both small and large groups that are active in the political exchange process.

The Political Exchange Process Revisited

A relatively safe assumption to make concerning the political exchange process is that the information set held by both politicians and interest groups is very imperfect. A high
degree of uncertainty is implicit in the knowledge of what the costs and benefits to both parties in the exchange will be. In the private market exchange process, both parties usually have a measure of value such as price as a basis to evaluate transaction decisions. In the political exchange process, highly recognizable measures of the value of legislation to an interest group or the value of political support to a legislator do not exist. Interest groups must try to estimate the probability that they will be successful in lobbying for favorable legislation, as well as the magnitude of the ultimate benefits from the legislation. The observed instances of interest group deterioration and dissolution could be an indication of these groups' miscalculations of the potential benefits of legislation relative to the costs of obtaining it.

Politicians face uncertainty as to the effect of interest group support on their re-election possibilities, including the potential for lost political support stemming from the negative effects of legislation. A politician being voted from office may be an indication of his failure to back the most powerful groups and their demands. A politician's miscalculation of the costs to individuals from adverse legislation perceivably could have another important consequence, as explained below.

Politicians, attempting to minimize the lost political support from legislation favoring an interest group and negatively affecting other citizens of the populace, will tend toward issues where the costs seem to be diffused and possibly overlooked. Nonetheless, legislators are not always successful in completely dispersing the costs of legislation. With imperfect information, legislators are not assured of accurately assessing the costs of all legislative activity. A legislator's miscalculation of the costs can result in individuals negatively affected by a legislative decision actually being given sufficient incentives to organize and become a viable, political group. Even if politicians are adept at dispersing the costs of separate legislative bills, the costs of successively more and more legislation will begin to
total. With increasing amounts of legislative activity, incentives for previously unorganized individuals to organize should develop. As legislation that negatively affects a person mounts, he may ultimately react by seeking to organize other unorganized individuals who are facing similar losses, or at least join others’ efforts to form such an organization. This new group then becomes an active participant in the political market. Legislation favoring a certain set of interest groups increases the incentives of unorganized citizens to form new interest groups, thereby increasing the demands on a legislature.\textsuperscript{6}

A new interest group might be able to secure an amendment to the legislation that originally caused it to organize, thus reducing their losses. However, this would harm the organized group which initially benefited from that legislation. Politicians therefore have strong incentives to avoid such action if they can. Instead they would prefer to compensate the new group with some other form of favorable legislation which harms some, as yet, unorganized group, thus minimizing the political cost generated as they provide benefits to the new group. Of course, the previously unorganized individuals harmed by the new legislation then have stronger incentives to organize. Still more interest groups could be formed and the demand for interest group favoring legislation rises again.

This argument may seem to suggest the existence of a disequilibrium process. On the contrary, it is intended to suggest an adjustment process toward an equilibrium condition such as Peltzman (1976) presents. Peltzman contends that within the wealth-transferring regulatory process (1976: p. 222): “... the total wealth to be distributed is limited ... one group’s wealth can be increased only by decreasing the other’s.” As more groups are favored by legislation, concurrently more individuals are detrimentally affected by this legislative activity. Thus, it should be harder for interest groups to receive legislative benefits as the magnitude of legislative activity gets increasingly large. The benefits to interest groups should decrease as the costs of organizing become greater for new groups and less

\textsuperscript{6} See Benson (1983, p. 7) for an example of this sequence of events.
promising areas of public policy must be lobbied. Also, the political costs to legislators, as Peltzman demonstrates, increase as legislative activity expands. An increasing number of individuals will be affected by more and more costs and their political opposition to these legislative activities will increase. Additionally, Peltzman assumes that the benefits to politicians from increasing political support are subject to diminishing returns. Once a secure majority of votes is achieved in a politician's favor, additional votes will provide diminishing returns. From these conditions, Peltzman concludes, in the context of his analysis of a wealth-transfer in the form of tax legislation (1976: p. 217): "... the marginal political return from a transfer must equal the marginal political cost of the associated tax ..." This condition implies an equilibrium. This equilibrium point is reached when politicians no longer have any incentive to pass additional legislation because personal political gains can no longer be made from the exchange process. Since the political process is characterized by slow adjustment and imperfect information, this equilibrium is not likely to be instantaneous. In the case of the United States, the occurrence of interest group activity is not nearly as prevalent as in other countries so there is little reason to believe that we are at an equilibrium yet.7 In this model it is the nature of the exchange process and its adjustment that are stressed, not its eventual equilibrium condition.

A Model of the Political Exchange Process

I intend to develop a model to explain (1) the level of interest-group pressure, and (2) the level of legislative output that arises from this pressure. Specifically, this model will be applied to U.S. state legislatures and their differences across the states (in 1975-1976). Variables that influence the degree of interest-group pressure from state to state will be proposed initially. Subsequently, the demands exerted by interest groups will be incorporated in an explanation of the variation of legislative output from state to state. Additional-

ally, the institutional constraints faced by legislature in catering to these demands will further develop the explanation of legislative output.

**Interest-Group Pressure**

Many factors contribute to interest group success in the political exchange process. Those groups that can apply the most pressure by the effective use of votes and resources are going to be the most successful. Interest-group pressure is dependent on the size of the membership base of groups which determines the number of votes than can be raised for or against a politician. Organizational help in a politician’s re-election campaign is also drawn from group memberships. Monetary campaign contributions are a function of the number of members and the resources each member is willing to invest in group budgets. Aggregate interest-group pressure will also be determined by the entrepreneurial skills of group participants. Of course, the aggregate pressure of interest groups is also a function of the number of active interest groups. Thus, many factors constitute interest group pressure, and the degree it is exerted upon a legislature.

A model that attempts to explain the variation in interest-group pressure from state to state should select variables that reflect the diversity of interests, and the costs and incentives for individuals within a given state to organize. Diversity of interests are indicative of the number of potential interest groups—greater diversity implies the possibility of more groups. Differential costs and incentives of being involved in the political process, are reasons why some of those potential groups organize effectively while others are unorganized.

**Population Size and Growth.**

Certainly the size of a population should indicate the potential for interest-group pressure. Not only is size relevant to the absolute number of individuals that may organize, but also should mirror the level of diversity within the state. As the number of citizens
becomes larger, assuming that individuals possess differently utility functions, the variety of interests, as well as cost and incentive differentials, should also increase. The size of a population should reflect to some extent the degree of divergent preferences which would tend to influence aggregate interest-group pressure, as well as the number of potential group members.

The percentage change in a population's size should also infer a measure of diversity for a state. A growing population is an indication of changes in the structure of a state and should reflect changing preferences and interests within a state's citizenry. Rapidly growing states are expected to respond by forming more interest groups. Thus, population growth should help explain variations in interest group pressure from state to state. 

Additional Population Characteristics

The incentives and costs to individuals, and the chances of their participation in an interest group are influenced by a variety of factors—income, age, education, geography, race, sex, etc. Individuals that incur relatively lower costs, or have greater incentives of becoming politically active are more likely to become participants in interest group politics. This thesis will examine three characteristics in particular—income, age, and education—in order to discuss and test their influence on the extent of interest-group pressure. These characteristics are not meant to represent a particular interest that may form into a unique group. The purpose for choosing these characteristics is that they should give an indication of certain individuals tendencies to join any group. These characteristics represent different incentives and costs of participating in an interest group, and thus should have some effect on the magnitude of interest-group pressure.

Stigler (1976) uses population size and growth as measures of the divergent preferences or interest groups within a state, in his study of the sizes of legislatures.
Income. An individual's income can have two opposing effects that influence the decision to participate in an interest group. As personal income rises, the opportunity costs of becoming involved in interest-group politics also may be increasing. If time devoted to interest group activities detracts from time spent earning a relatively high wage, the individual is less likely to join an interest group. A state with higher per capita incomes could have less interest-group pressure on its legislature if this substitution effect is dominant. However, membership in an interest group may not detract from a person's opportunity to earn a wage in the private market. An argument that has been made is that participation in the political process is an income-elastic consumption good. This income effect implies that as incomes rise, more participation in interest groups should be observed. The monetary costs of joining an interest group are a much smaller percentage of high incomes than those same costs are for low-income individuals. Since the relative costs of joining an interest group are lower for high-income individuals, these individuals are more inclined to participate in an interest group, given such activities are income elastic. Increased group membership suggests increased interest-group pressure upon a legislature, and interest-group pressure may be even greater when high-income individuals comprise a group, in light of the added monetary resources they can contribute. If the income effect dominates, then states with higher per capita incomes could show greater degrees of interest-group pressure.9

Age. Although an individual's costs and incentives to join an interest group are surely different at different ages, retirement age is hypothesized to be especially significant. After retirement an individual's opportunity costs of devoting time to group activities decrease considerably. This reduced cost should induce some retired individuals to become members of interest groups, which increases the degree of pressure upon a legislature. Many of these

9 The argument for the effects of constituency incomes is inspired by McCormick and Tollison (1981, p. 32), although they use the idea in a different manner.
retired people who do join interest groups have developed their entrepreneurial skills in private industry prior to their retirement. Thus, the interest groups these individuals join may become more effective and increase the amount of pressure exerted on a legislature. Therefore, a state with a higher percentage of individuals that are retired should display more interest-group pressure.

Education. An individual's level of education can also determine some of the incentives and costs associated with interest group formation. A significant portion of an interest group's organizational costs are associated with the costs of informing people on a relevant public policy issue and the potential collective benefits, and inducing their participation in the group's activities. Individuals who have attained higher levels of education are generally more informed on public issues. They also are more likely to be exposed to information and experiences involving the workings of the political system. These individuals may be more acquainted with issues that could provide benefits to them, and the procedures for obtaining them. Thus, we can hypothesize that the information costs for a college-educated individual, for example, is less than individuals with less educational experience. Also, educational training oftentimes develops the skills necessary for an interest group to be successful in the political process. Organization, management, and research skills of group members developed in the educational process can facilitate the operations of an interest group. The costs of forming and operating an interest group can be lowered by individuals with college-level educations. A result of these lowered costs for individuals and interest groups could be more interest-group pressure on the legislature. Thus, states that have a larger percentage of its citizens with college-level educations are expected to reveal more interest-group pressure.
Incentives from Previous Legislation

As previously discussed, when legislation is passed, the negative effects of this legislation will increase the incentives for some previously unorganized individuals to participate in an interest group in order to recoup some of their losses. When the magnitude of legislation enacted previously is large, legislators are more likely to misjudge the costs of some legislative bills and some people will be adversely affected enough for them to join an interest group. Also, as the costs from more and more legislation mount, some people will have increased incentives to join an interest group. As more people join and form interest groups, interest-group pressure on the legislature will increase. Therefore, when we observe the number of legislative bills enacted in previous legislative sessions to be large, we expect interest-group pressure at the present time to be greater.

Legislative Output

The model of political exchange presented here characterizes the legislative output as a function of the demands exerted by aggregated interest-group pressure, and political and institutional constraints that affect the costs of supplying legislative output. Legislative output is based upon the concept of a transfer mandated through legislation. A transfer can refer to pecuniary transfers, or transfers that stir up emotions or motivations, and change the nonpecuniary utility of individuals. Legislative output can be thought of as issues or public policies that a legislature determines or produces that result in some kind of effect on individuals of a populace.

Interest-Group Pressure

In this model, interest groups are considered the primary demanders of legislative output. Characteristics of interest-group pressure and the demands these groups place on a legislature for favorable decisions have been discussed at length already. However, the
institutional and political factors that determine supply constraints faced by legislators still need further elaboration.

The Sizes of Legislatures

The apportionment of a state legislature is established by the state constitution and is subject to amendment, although legislative sizes are remarkably similar and stable. The number of decision-makers in a legislature has two opposing effects on the costs of enacting legislation. As a legislature becomes larger, the costs of arranging a decision increase. The transaction costs of achieving a majority will increase as the number of participants increases since the absolute size of a majority required to pass a bill will be larger. The costs in reaching a decision imply that an increase in the size of a legislature may reduce the output of legislative decisions. However, since quorum rules are not usually observed for voting on most legislative bills, the size of a majority in a less-than-full legislature will not be as large, nor transaction costs as high, as for the complete legislature. An increase in a legislature’s size does not necessarily increase its costs in decision-making. Moreover, an increase in the size of a legislature increases the opportunities for potential gains from labor specialization. Increased legislative size increases the possibilities for more efficient assignments of labor that should reduce the costs of legislative decisions. These reduced costs through specialization could increase the output of a legislature. The reliance on the committee system demonstrates that specialization does occur within legislatures. Thus, an

10 Stigler (1976, pp. 19-21) points out the similarity and stability of state legislative sizes. He further proposes that the sizes of legislatures are dependent on interest group demands for representation. However, in this model, interest group demands are for legislative output and legislative sizes are treated exogenously in light of the relative invariance within a state.

11 McCormick and Tollison (1981, pp. 32-34) propose in their interest group model that it becomes more expensive for interest groups to lobby in large legislatures. If interest groups are less successful in their lobbying efforts then a large legislature may produce less output.
increase in the size of a legislature could have a positive effect on the magnitude of legisla-

tive output.\textsuperscript{12}

The Length of Legislative Sessions

A state's constitution establishes the period within which the legislature must operate. However, session length may be amended, sometimes at the recommendation of the legis-
lature. The data used for this study applies to 1975-1976, and at that time the trend for
many states was for session lengths to be extended as compared to previous years. This
increase could be due to a need for an increased period of operation in order to produce
enough output to satisfy the demands placed on the legislative body. However, as Crain
explains, legislators are often compensated according to the number of days served, not
by units of output. Legislators have incentives to encourage longer sessions even though
this extended period of operation may not be required to produce the appropriate output.
Crain states (1979, p. 610):

The nature of the organizational structure of legislative enterprises then is especi-
ally conducive to shirking and free-riding in legislative production, while facili-
tating 'moonlighting' or extralegislative employment because of the general lack
of owner incentives or internal mechanisms to meter closely the input behavior
of legislators.

If the period of a legislative session is restricting in its length, then an increase in this
period could result in lower costs for the legislature in producing output. The fixed costs
of organizing a particular legislative session would be spread over a longer production
period, thus increasing the actual time spent on producing legislation. This increase in the
time spent assembling legislative output may allow the legislature to overcome some of the
transaction costs of making decisions on various legislative bills, as well as allow the legis-
lature to consider additional bills. As a result, the legislature might be able to agree on the
passage of more bills. Thus, the lengthening of restrictive legislative sessions should reduce

\textsuperscript{12} See Crain (1979, p. 616).
the costs of making legislative decisions and the magnitude of legislative output would become larger. However, when the length of a session is not a constraining factor, an increase in the session length will not affect legislative output. If the length of session is already long enough to provide time for handling all relevant demands, additional legislation will not be enacted as the legislators are provided with more production time. Some of the extended period may be used for alternative employment of the legislator's time. Legislators may benefit from the increased session length, but the costs of enacting legislation will not change. Thereby, an increase in the length of a session might have no effect on the output of a legislature.\textsuperscript{13}

The Frequency of Legislative Sessions

Whether a legislative assembly meets annually or biennially has an effect on legislative output similar to the length of session. If a legislature meets annually its production time is generally longer than those meeting biennially. Therefore, potential gains in production can be realized since there is an increase amount of time to overcome decision-making costs. Thus, we might expect legislatures that meet annually to produce more legislative output within a two-year session than those that meet biennially. However, if the period of operation is sufficient in one year to cater to all necessary demands, an expansion to annual meetings will have no effect on legislative output.

The Benefits of a Majority

The proportion of the total legislature that belongs to a majority party is an imperfect measure of the proportion of legislators that are lobbied by, and/or supported by the same interest groups, and should thus have similar concerns when deciding on their voting pattern. Since majority-rule voting procedures are observed in U.S. legislatures, a party, or group of legislators with similar concerns that controls a majority of the seats in a legisla-

\textsuperscript{13}Ibid, (pp. 609-611).
ture will enjoy the benefits associated with this factor. Legislators with similar concerns are more likely to reach an agreement on an issue, and thus, legislative decisions should be easier to achieve because of these reduced transaction costs. With less conflict of interest among a majority proportion of the legislature, more demands for legislation should be met.

One reason for the reduced costs of reaching a decision may be the increased possibilities of logrolling. Legislators are expected to be more likely to generate vote-trading opportunities within their own party than with opposition party members, since a majority should be able to reach an agreement with fewer costs. However, at some point after a majority is attained, adding to the majority does not add as substantially to the benefits of lower decision costs as did the initial achievement. An increasingly larger majority is more effective than a smaller majority, but not proportionally more effective. Thus, the returns to legislative output from an increased majority proportion should increase, but at a decreasing rate.14

Bicameralism

Since legislation must pass in both houses of a state legislature in order to be enacted, differences in the structure between the two legislative assemblies has potential effects on the amount of output produced by the legislature as a whole. In the following arguments, bicameralism will refer to the senate-to-house ratio. An implicit assumption made here that will effect the interpretation of the derived implications, is that the senate size is less than or equal to the house size, which is consistent with observations of U.S. legislatures. Thus, when bicameralism is said to increase, the senate and house size are relatively closer in size, and when bicameralism is said to decrease, their respective sizes are more disparate.

14 Ibid, (pp. 608-609).
The level of bicameralism affects the production costs of enacting legislative decisions in two similar ways. The following arguments are based on retaining a given population size and a given size of the legislature (senators plus representatives) when changes in the level of bicameralism are made. First, since the senate and the house both represent the same state population, by having dissimilar sizes between the two legislative assemblies, legislators in the smaller senate represent a larger constituency per legislator than those in the larger house. A reasonable expectation of a larger legislator constituency is that it would encompass more interests, or be more diverse. Senators must contend with a higher degree of diversity in interest group demands within his constituency. The larger, more heterogeneous constituencies of the senators is contrasted with the smaller and relatively more homogeneous constituencies of the representatives. The disparity between the constituency bases of legislators in the two legislative assemblies may reduce the compatibility of senate and house decisions. The differences in the respective constituency bases of the house and senate can raise the decision costs for the two bodies in coming to an agreement on enacting a bill. These higher decision costs could preclude some bills from being enacted, and the number of legislative decisions enacted will be relatively smaller. A decrease in the level of bicameralism could result in fewer bills enacted. Conversely, as the level of bicameralism increases and the senate and house become closer in size, these decision costs would be expected to decrease as the constituency bases of the two assemblies become more similar. The lower decision costs resulting from a greater senate-to-house ratio will have a positive effect on the output of the legislature. However, as the sizes of the two legislative bodies become more similar, the disparity in their constituency bases which reflects the degree of decision making costs will decrease at a decreasing rate.\footnote{This argument of diminishing positive returns for increasing levels of bicameralism contradicts Crain’s (1979, pp. 613-614) argument of increasing returns at an increasing rate. See Appendix A for a mathematical presentation of the diminishing positive returns to legislative output as the sizes of the legislative assemblies become more similar.} Therefore,
the returns to legislative output from increasing the level of bicameralism, will be increasing at a decreasing rate.

The second effect of changing the level of bicameralism revolves around the concept of labor specialization. All legislators must consider roughly the same agenda since both assemblies must pass a bill before it can be enacted. Legislators in the smaller senate will have a larger work load per legislator than legislators in the larger house. A shift towards a higher level of bicameralism, under the conditions of a given total legislative size, will increase the size of the smaller senate while decreasing the size of the larger house. Therefore, the work load per senator will decrease, and conversely the work load per house member will increase. A senator will be able to become more specialized because of his decreased work load, while a representative has become less specialized due to his increased work load. An important, and reasonable, assumption to make at this point is one of diminishing returns to labor specialization. Under the conditions of diminishing returns to specialization, the gains to legislative output of decreasing the per-senator work load and increasing their specialization are greater than the loss in output due to decreased legislator specialization in the larger house. If a legislature operated under the conditions of constant returns to specialization, the gains would be equally offset by the losses from changing the level of bicameralism. Therefore, if the specialization of labor within a legislature is subject to diminishing returns, an increase in the level of bicameralism will have a net effect of increasing the output of a legislature. Although the net gains will be positive for increasing the similarity between legislative assembly sizes, these returns will be decreasing marginally as the two assemblies become closer to being the same size. Relying on the assumption of diminishing returns to specialization, the rate of change in output will become less disparate as the senate and house size approach equality, thus reducing the rate of net gain in
legislative output. To sum, an increase in the level of bicameralism should have positive returns in legislative output, but at a decreasing rate.\(^{16}\)

**The Committee System**

Much of the work of the state legislatures is conducted by committees and some economies can be captured by effective use of the committee system. By splitting the legislature into smaller groups and allowing these groups to make decisions concerning the enactment of legislative bills, the output of a legislature could increase, provided that the legislature as a whole generally accepts a committee's decision. The transaction costs of reaching a decision are reduced since the number of decision-makers involved is relatively smaller as compared to the entire legislature. Additionally, decisions should be reached more quickly so there is a possibility of more legislative demands being reviewed and some proportion of these demands being met. Thus, both the reduced transaction costs and increased review of proposed legislation resulting from use of the committee system can result in an increase in legislative output.\(^{17}\)

Within the committee system, legislators can focus their efforts in relatively few areas of legislative production. If all decisions were made by the entire legislature, each legislator would have to be knowledgeable in all areas of legislative demand. By use of the committee system, legislators can specialize. Legislators should be better qualified to respond to legislative demands within their area of specialty. Specialized committee members should have a better perception of legislative demands than legislators that must respond to all legislative demands. The division of labor into committees will allow legislator specialization.

\(^{16}\)See Crain (1979, pp. 614-615). Also Appendix B shows that the returns to output are diminishing if labor specialization is diminishing. Also see McCormick and Tollison (1981, pp. 34-42) for their argument that individual interest groups are more successful when the legislative assemblies are closer in size.

\(^{17}\)See Benson (1981, p. 69).
which makes a legislature more efficient. Increased legislative efficiency could lead to more legislative output.18

In state legislatures that allow individual legislators to choose their committee assignments, a legislator may obtain committee positions where he can most directly benefit the interest groups within his constituency (or others that contribute to his support). Since constituencies are diverse, legislators representing different interest groups will desire different assignments. Each legislator wishes to choose his own committee assignment and will allow other legislators to do the same as long as he is granted the privilege. The “high-demand” committee system besides allowing legislators to serve on committees where they may obtain benefits for the interest groups they represent, also facilitates logrolling. A legislator will be willing to trade his votes on issues that are relatively unimportant to his constituency in exchange for votes relevant to the special interests he represents. Thus, through the “high-demand” committee system, decisions that cater to the special interest of the various members of a legislature should be easier to attain. This may lead, in turn, to more legislative demands being accommodated and greater output being achieved. An increased use of the committee system, such as increasing the number of committees, may be expected to have positive returns in legislative output.19

When used effectively, the committee system can be an asset to the legislative production process.20 Legislatures want to form effective committee systems in order to produce legislation more efficiently. In general, state legislatures have a large number of committees. The adequacy of resources available to a committee is an important constraint in deter-

18 Ibid, (p. 71).
20 See Rosenthal (1973, pp. 252-254) for certain criterion for committee effectiveness.
mining committee effectiveness. As the number of committees becomes larger, the resources of a legislature would be divided up among more committees. Given that a legislature has a finite set of resources, the smaller amount of resources allocated per committee can make the committee system less effective. The initial positive gains to a legislature from breaking off into committees will start to decrease as the number of committees becomes too large. Thus, an increase in the number of committees relative to a given legislative size may eventually decrease the positive returns to output that the committee system allows.

With many committee systems, the tendency is for individual legislators to hold too many committee assignments. The fewer number of committee assignments per legislator, the more specialization of labor within a legislature. A legislature will capture fewer gains from labor specialization if legislators have a large number of assignments. Also, for a given number of legislators and committees, as the number of committee assignments per legislator becomes greater, the size of committees will tend to become larger. As committee sizes become larger, the decision costs within these committees will rise, and thus, the net benefits to a legislature from the committee system will fall further. The legislature will lose some of the benefits of both reduced decision costs and gains from labor specialization by increasing the number of committee assignments per legislator. A predictable result would be that an increasing number of committee assignments per legislator will decrease the output of a legislature.

**Summary of Theoretical Implications**

The arguments presented concerning variables that influence the variation in interest-group pressure provide several implications. The net effect of some of these variables can-

\[21 \text{Ibid, (pp. 255-257).}
\]
\[22 \text{Ibid, (p. 255).}
\]
not be determined from a prior theory. These implications can be summarized as:

1. Larger populations sizes will contain more potential group members and should reflect some of the diverse interests, diverse costs, and diverse incentives which may cause more individuals to form and join interest groups, and result in a positive effect on aggregate interest-group pressure.

2. A growing population should respond to the increasing diversity among its citizenry by exhibiting higher degrees of interest-group pressure.

3. Higher incomes for individuals will negatively affect aggregate interest-group pressure if the substitution effect dominates. If the income effect is dominant, then higher incomes should have a positive effect on interest-group pressure. No a priori judgement can be made as to which effect will dominate.

4. Populations with a larger percentage of their citizenry retired should show a greater degree of interest-group pressure because of the lower opportunity costs of group participation for retired individuals.

5. Populations with a larger percentage of their citizenry possessing a college-level education should exhibit a greater degree of interest-group pressure.

6. States that have legislatures that previously passed a relatively large amount of legislation may be expected to presently show a large degree of interest-group pressure.

The arguments presented concerning factors that influence the variation in legislative output provide several additional implications. Again, no a priori theory can determine the actual effect of some variables. Both the demand and supply factors can be summarized as:

1. A greater demand for legislative output resulting from a larger amount of interest-group pressure should increase legislative output.

2. A large legislative size may involve high transaction costs, and thus, an increase in the number of legislative decision-makers may decrease the output of a legislature. How-
ever, with quorum rules not observed, and gains from labor specialization, a larger legislature should be able to produce more output.

3. If the period of operation is a constraining factor, an increase in the length of session could potentially increase the legislative output produced. If the length of session is already sufficient to cater to all relevant demands, an increase in the length of session will have no effect on legislative output.

4. Legislatures that meet annually would be expected to produce more legislation than those only meeting biennially. However, if all necessary demands can be met in a biennial session, an increase in the production period to an annual session will not show an increase in legislative output.

5. An increase in the proportion of a majority will have a positive, yet marginally decreasing, effect on legislative output.

6. An increase in the level of bicameralism (the senate-to-house ratio) should increase the output of a legislature as a whole. These returns should be declining marginally, especially if legislator labor specialization is subject to diminishing returns.

7. An increased number of committees relative to the size of a legislature can have positive returns to legislative output because of reduced decision costs and increased labor specialization. However, if sufficiently large, an increase in the number of committees will have a negative effect on legislation produced.

8. As the number of committee assignments per legislator increases, the gains from labor specialization are diminished, committee sizes tend to become larger, and the effectiveness of a committee system declines, with the result being a decrease in legislative output.

These implications comprise a summary of the variables that affect the workings of the political exchange model presented in this study. These factors are used to derive two
equations; one explaining interest group pressure, and the other, legislative output; that are empirically estimated in the following chapter.
CHAPTER 4

ECONOMETRIC ANALYSIS AND RESULTS

Interest-Group Pressure and Legislative Output

The relationship between interest-group pressure and legislative output is the main concern of this interest-group model. These are the primary variables of interest to this study, so a discussion of each will be presented before detailing the rest of the empirical model.

As previously stated, many factors influence the composition of interest-group pressure. The size of group memberships; the magnitude of resources available to groups; the entrepreneurial skills of group participants; the number of interest groups; all contribute to the degree of pressure exerted on a legislature. In this study, the number of organizations in a state, represented by registered lobbyists, is the empirical measure used to proxy the magnitude of interest-group pressure. This is an incomplete measure of interest-group pressure, since different groups present varying ranges of pressure on legislatures. Unfortunately, all groups are weighted equally by this measure. Nonetheless, this proxy for interest-group pressure appears to be the best that available data allow.¹

The volume of legislative output is empirically proxied by the number of legislative bills that are enacted in a regular session. Legislatures have the capacity to combine decisions on separate issues into a single bill, resulting in this measure being an understatement of the actual magnitude of legislative decisions. However, the combining of separate

¹ State laws do vary in regard to who has to register as a lobbyist. A dummy system was tried to classify states according to the characteristics of these laws, however, they made no difference in explaining the number of registered organizations.
decisions into a single bill is not a highly exercised practice for state legislatures during the time period (1975-1976) this study reviews.

Another problem with the number of bills passed measure as a proxy for legislative output is that some bills must be passed every year in order to stay in effect, while others are passed once and for all. The effect of bills that are passed once and for all is not fully captured in this measure of legislative output. This measure only reflects the once-and-for-all bills passed in 1975 and 1976, and unfortunately similar types of bills passed in previous years are not accounted for. The effect of legislative decision-making on a populace can be felt for an extended period after the actual passage of a bill. Thus, the amount of transfers resulting from legislative output in a certain year will be understated since the effect of some previously enacted bills are not considered in this measure.

Bills passed also have different impacts. Some result in large transfers and others in small transfers. This measure weights each of these different outcomes equally. Unfortunately, other measures of legislative output seem even less desirable. State budget, for example, reflects only transfers which take place through regulation and other mechanisms that are initiated by legislation.\(^2\) At least the bills passed measure gives a weight to each legislative action. It is unfortunate that each weight is equal, but no better scheme appears feasible.

A summary of important dependent variable statistics is presented in Table 1. These statistics may assist in providing an understanding of these dependent variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of bills enacted</td>
<td>879.0</td>
<td>520.9</td>
<td>237</td>
<td>2767</td>
</tr>
<tr>
<td>(legislative output)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of organizations</td>
<td>208.4</td>
<td>148.5</td>
<td>33</td>
<td>779</td>
</tr>
<tr>
<td>(interest groups)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^2\) Also see Smith (1976) for a discussion of the stringency of regulation, and the consequences associated with regulation evasion.
The Structural Equations for the Political Exchange Model

From the theoretical implications of the model explained in the previous chapter, the structural form of the equation explaining legislative output can be written as:

$$\begin{align*}
\text{LEG}_i &= \alpha_0 + \alpha_1 \text{IG}_i + \alpha_2 \text{SIZE}_i + \alpha_3 \text{SES}_i + \alpha_4 \text{AB}_i + \alpha_5 \log\text{MAJ}_i + \alpha_6 \log\text{RATIO}_i + \\
&\quad + \alpha_7 \text{COM}_i + \alpha_8 \text{CA}_i + \epsilon_i \\
\text{LEG}_i &= \text{the number of bills enacted during the regular legislative sessions in 1975-1976 in state } i \\
\text{IG}_i &= \text{the number of organizations represented by registered lobbyists in 1975 in state } i; (\alpha_1 > 0) \\
\text{SIZE}_i &= \text{the number of legislators (house and senate chambers combined) during the legislative sessions in 1975-1976 in state } i; (\alpha_2 > 0) \\
\text{SES} &= \text{the length of the regular session (days) for the legislative assemblies in 1975-1976 in state } i; (\alpha_3 > 0) \\
\text{AB}_i &= \text{a dummy variable that represents whether the legislature in state } i \text{ meets every year (AB } = 0 \text{) or every other year (AB } = 1\text{); (} \alpha_4 < 0 \text{)} \\
\text{MAJ}_i &= \text{the number of legislators who are members of the majority party divided by the total number of legislators is defined as the majority proportion (averaged across the two chambers) during the legislative sessions in 1975-1976 in state } i; (\alpha_5 > 0) \\
\text{RATIO}_i &= \text{the level of bicameralism during the legislative sessions in 1975-1976 in state } i; \text{ defined as the size of the senate divided by the size of the house; (} \alpha_6 > 0 \text{)} \\
\text{COM}_i &= \text{the total number of standing committees divided by the total number of legislators during the legislative sessions in 1975-1976 in state } i; (\alpha_7 < 0) \\
\text{CA}_i &= \text{the average number of committee assignments per legislator during the legislative sessions in 1975-1976 in state } i; (\alpha_8 < 0)
\end{align*}$$
The structural form of the equation explaining interest-group pressure can be written as:

\[ \text{IG}_i = \beta_0 + \beta_1 \text{POP}_i + \beta_2 \text{PGR}_i + \beta_3 \text{PCI}_i + \beta_4 \text{RET}_i + \beta_5 \text{EDU}_i + \beta_6 \text{PLEG}_i + u_i \]  \[2\]

**IG** = the number of organizations represented by registered lobbyists in 1975 in state i

**POP** = the (voting-age) population (in thousands) in 1975 in state i; \((\beta_1 > 0)\)

**PGR** = the (voting-age) population growth, defined as the percentage change in (voting-age) population from 1960-1974, in state i; \((\beta_2 > 0)\)

**PCI** = the per capita income in 1975 in state i; \((\beta_3 < 0)\)

**RET** = the percentage of the (voting-age) population over 65 in 1975 in state i; \((\beta_4 > 0)\)

**EDU** = the percentage of the (voting-age) population that has completed four years or more of college in 1970 in state i; \((\beta_5 > 0)\)

**PLEG** = the number of bills enacted during the regular legislative sessions in 1973-1974 in state i; \((\beta_6 > 0)\)

**u** = a stochastic disturbance term

### Empirical Estimation of the Political Exchange Model

If the disturbance terms of the two equations are assumed to be correlated (and previous legislation is exogeneous), then it is inappropriate to estimate Equation [1], which explains legislative output, by ordinary least squares because of the simultaneous-equations bias induced by the endogeneous variable, IG, which is used as an explanatory variable. This explanatory endogeneous variable is stochastic and correlated with the disturbance term, violating the assumptions of the classical linear regression model, and thus, the ordinary least squares estimator is biased and inconsistent.
The two equation system has two endogeneous variables, LEG and IG, and thirteen predetermined variables. There are six predetermined variables in the system not in Equation [1], hence, the model satisfies the identification conditions that are necessary for estimating the parameters of Equation [1] by the single-equation estimation technique of two-stage least squares. The two-stage least squares estimator takes account of the distinction between explanatory endogeneous variables and included exogeneous variables, and thus, the two-stage least squares estimator is consistent and asymptotically unbiased. Equation [2], which explains interest-group pressure, is also overidentified, and its parameters can be estimated by the use of two-stage least squares. Since this equation has no endogeneous explanatory variables, the parameter estimates will be the same as for ordinary least squares.

The two-stage least squares estimator does not take into account the possible correlation between the stochastic disturbance terms of the two equations. Therefore, the system of equations estimation technique of three-stage least squares is also used to estimate the parameters of Equations [1] and [2]. Three-stage least squares is an application of generalized least squares to the two-stage least square estimates of the two structural equations. The variance-covariance matrix of the estimated two-stage least squares residuals for the two equations is used to weight the variables. The three-stage least squares estimator is consistent and asymptotically unbiased, as is the two-stage least squares estimator; yet, the three-stage least squares estimator is asymptotically more efficient than the two-stage least squares estimator. However, if the disturbances are uncorrelated between the two equations, then the three-stage least squares estimator will reduce to the two-stage least squares estimator. Furthermore, since this system has a recursive structure (previous legislation is exogeneous), if the disturbances are uncorrelated then ordinary least squares is an appropriate estimator.3

3 For a presentation of two-stage and three-stage least squares see Kmenta (1971).
The parameters in Equation [1] are estimated for the combined legislative assemblies. The characteristics of the two assemblies of a state's legislature are combined since legislation must pass in both bodies in order to be enacted. The legislative data is for the sessions in 1975-1976, and the data concerning the number of interest groups, and population characteristics are for 1975. In Hawaii and Utah lobbyists are not required by state law to register, so figures on the number of interest groups are not available, and thus, observations for Hawaii and Utah are excluded. Michigan is dropped because data on the average number of committee assignments per legislator is not available from my data source. Nebraska is dropped because data on party proportions is not available, which precludes the calculation of the majority variable. Additionally, Nebraska has a unicameral legislature, thus preventing the calculation of a senate-to-house ratio which proxies the level of bicameralism.

The regression results using two-stage and three-stage least squares techniques (the estimated residuals of the two equations are correlated) are presented for Equations [1] and [2] in Table 2. The two-stage least squares coefficient estimates, and an interpretation of the results, for Equation [1] will be discussed first.

In Equation [1], which explains legislative output (LEG), the estimated coefficient for interest group pressure (IG) is positive and significant at the .01 level. This variable indicates the demand for legislative output, and the observed relationship supports the hypothesis that state legislatures respond to interest-group pressure.

The variable for the size of a legislature (SIZE) is represented by the sum of the number of representatives and the number of senators. The estimated coefficient for the size of a legislature is positive and significant at the .05 level. This positive relationship with

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Table 2. Estimated Coefficients for Equations [1] and [2]: Legislative Output and Interest-Group Pressure.

<table>
<thead>
<tr>
<th>Dependent</th>
<th>Two-Stage Least Squares</th>
<th>Three-Stage Least Squares</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LEG</td>
<td>IG</td>
</tr>
<tr>
<td>IG</td>
<td>1.93</td>
<td>2.01</td>
</tr>
<tr>
<td></td>
<td>(3.4)</td>
<td>(3.6)</td>
</tr>
<tr>
<td>SIZE</td>
<td>4.39</td>
<td>3.87</td>
</tr>
<tr>
<td></td>
<td>(2.3)</td>
<td>(2.2)</td>
</tr>
<tr>
<td>SES</td>
<td>.80</td>
<td>.67</td>
</tr>
<tr>
<td></td>
<td>(.96)</td>
<td>(.85)</td>
</tr>
<tr>
<td>AB</td>
<td>-280.6</td>
<td>-242.7</td>
</tr>
<tr>
<td></td>
<td>(-1.8)</td>
<td>(-1.7)</td>
</tr>
<tr>
<td>logMAJ</td>
<td>1744.1</td>
<td>1501.2</td>
</tr>
<tr>
<td></td>
<td>(5.2)</td>
<td>(4.7)</td>
</tr>
<tr>
<td>logRATIO</td>
<td>203.5</td>
<td>325.4</td>
</tr>
<tr>
<td></td>
<td>(.80)</td>
<td>(1.4)</td>
</tr>
<tr>
<td>COM</td>
<td>1789.7</td>
<td>1071.9</td>
</tr>
<tr>
<td></td>
<td>(1.8)</td>
<td>(1.1)</td>
</tr>
<tr>
<td>CA</td>
<td>-207.3</td>
<td>-165.0</td>
</tr>
<tr>
<td></td>
<td>(-2.5)</td>
<td>(-2.1)</td>
</tr>
<tr>
<td>POP</td>
<td>.022</td>
<td>.020</td>
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<tr>
<td></td>
<td>(3.6)</td>
<td>(3.5)</td>
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<td>2.14</td>
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<td>(2.9)</td>
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<td>(.70)</td>
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<td>(4.1)</td>
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R² = .42    R² = .55    R² = .39    R² = .53
SEE = 390.9  SEE = 98.3  SEE = 401.2  SEE = 101.2

n = 46; asymptotic t-values are listed in parenthesis; SEE = standard error of the estimate.
legislative output implies that the gains from potential legislator specialization dominate the increased decision costs.

The estimated coefficient for the number of days spent by the legislative assemblies in regular session (SES) is not significantly different from zero. Within the context of the theoretical discussion, this result indicates that the production period for state legislatures is not a constraining factor in the production of legislative output. All the necessary legislative demands seem to be met within the allowed lengths of sessions. An increase in the number of days legislatures are allowed to convene does not increase the output of the legislature. As Crain (1979) points out, oftentimes the majority of bills that are enacted in a session are approved within a small portion of the entire time allotted for legislative production. Legislators may focus their efforts on the passage of bills relevant to their political interests during a short period of time, and then devote the remainder of a session to extralegislative endeavors. An implication of this result is that the trend for states to increase the amount of time legislators spend in session may not be warranted.

The estimated coefficient for the dummy variable (AB) representing the frequency that a legislature meets (0 = annual, 1 = biennial) is negative. This result suggests that legislatures which only meet biennially produce less legislation than those meeting annually. The estimated coefficient is significantly different from zero at the .10 level. Thus, the hypothesis that more legislation is passed in annual sessions is supported.

The estimated coefficient for the logarithmic transformation of the majority proportion (MAJ) indicates a positive relationship with legislative output, and is significant at the .01 level. This positive relationship coincides with the theoretical discussion, which suggests that decision costs decrease as a majority proportion increases, and consequently output will increase.5

5 A dummy was introduced into Equation [1] to signify states whose majority parties are split across the legislative assemblies (i.e., the house is dominated by Republicans, and the senate is dominated by Democrats, or vice versa). Six state legislatures fell into this category, however, the variable was insignificant in explaining legislative output, and therefore, is excluded.
The estimated coefficient for the logarithmic transformation of the variable representing the level of bicameralism (RATIO) is not significantly different from zero. Thus, the hypothesis that legislative output increase for higher levels of bicameralism is not supported by this result.

The estimated coefficient for the variable that signifies the number of committees relative to the size of a legislature (COM) exhibits a positive relationship with the output of legislation. This finding supports the theoretical arguments explaining the gains in output that can be captured by a legislature from the expansion of the committee system. The estimated coefficient is statistically significant at the .10 level.

The estimated coefficient for the variable that represents the average number of committee assignments per legislator (CA) is negative and significant at the .05 level. This result agrees with the theoretical discussion. As the number of committee assignments per legislator increases, legislator specialization decreases, thus increasing production costs. Furthermore, as the number of committee assignments per legislator increases, the size of committees will tend to rise, thus preventing the legislature from capturing some of the reduced decision costs from committee formation. These combined effects have the net result of decreasing legislative output as the number of committee assignments per legislator rises. The emerging trend for state legislatures in 1975-1976 is a reduction in the number of committee assignments per legislator. This action can be interpreted as legislatures' response to an inefficiency in their production process and a move to correct it.

The regression results for Equation [2], which explains interest-group pressure, will now be discussed.

The parameter estimate for the variable representing population size (POP) is positive and significant at the .01 level. Population size should reflect the diversity of interests within a state, as well as the potential for group membership. The results imply that the degree of interest-group pressure is influenced by the size of the population. Similarly, the
parameter estimate for population growth (PGR) is positive and significant at the .01 level, indicating that interest-group pressure responds to the growth of a state's population.

The parameter estimate for the per capita income variable (PCI) is not significantly different from zero. This insignificant result might be explained within the framework of the theoretical discussion. The substitution effect for increasing income levels will discourage individual participation in interest group activities. The income effect attributed to increasing income levels encourages individuals to participate in interest group activities. No a priori argument was made as to which effect would dominate, and it could be that the opposing effects offset each other.

The parameter estimate for the variable representing the proportion of retired individuals in a state population (RET) is positive and significant at the .01 level. This significant result confirms the proposed hypothesis that retired individuals have lower opportunity costs of forming and joining interest groups. States that have a higher proportion of retired citizens in their population exhibit a higher level of interest-group pressure.

The parameter estimate for the variable representing the proportion of a state population with a college-level education (EDU) is positive, which corroborates with the proposed hypothesis that individuals with college-level educations have lower costs of forming and joining interest groups, and possibly greater incentives to become involved in collective actions. However, the estimate is only weakly significant, and thus, the hypothesis is not strongly supported by this statistical estimation.

The parameter estimate for the variable represented by the magnitude of legislation enacted previously (PLEG) is not significantly different from zero. Thus, the empirical results do not support the hypothesis that incentives for individuals to join interest groups are induced by the amount of legislation enacted in the previous sessions. This conclusion can be substantiated by both the insignificance of the coefficient and the extremely small
magnitude of the estimated coefficient. However, in light of the shortcomings of the bills passed measure, the rejection of the hypothesis based upon this empirical result may not be warranted. Since the number of bills passed is an imperfect measure of the magnitude of transfers initiated by legislative decisions, the data may not reflect the incentives for people to organize as a result of previous legislation. Furthermore, this insignificant result may be attributed to the fact that organizational costs prohibit the formation of groups within a one-to-two year time period. The incentives for interest group formation in 1975 may be induced by legislation previous to the 1973-1974 legislative data used here, and thus previous legislation should proxy a more distant lag.

The estimated coefficients for the explanatory variables in both Equation [1] and Equation [2] remain stable when three-stage least squares is applied to estimate the two equations simultaneously. If the disturbance terms of the two equations are uncorrelated, the three-stage least squares estimator will reduce to the two-stage least squares estimator, and in this recursive system ordinary least squares will be appropriate for each equation. In this system of equations, uncorrelated disturbances across equations is not the case. The estimated correlation coefficient for the disturbance terms of the two equations (determined using the observed correlation between the estimated residuals of the two structural equations) is -.60. Still, the three-stage least squares estimates for the explanatory variables of the two equations and their respective t-values are basically the same as their two-stage least squares counterparts, except for three notable exceptions.

First; in Equation [1], the estimated coefficient for the logged value of the variable representing the level of bicameralism (RATIO) increased in magnitude, as did its corresponding t-value. However, this coefficient estimate is significantly different from zero only at the .20 level. Thus, the statistical results only weakly support the proposed hypothesis of increasing returns to legislative output for increasing levels of bicameralism.
Second; in Equation [1], the coefficient estimate for the committee variable (COM) decreased, as did it corresponding t-value. This estimate is no longer significantly different from zero at any level. This result might indicate that legislatures have increased their committee systems to the size where the gains from breaking off into more committees are offset by the losses associated with relatively large numbers of committees. The trend for state legislatures in 1975-1976 is to have fewer standing committees as compared to previous years. Thus, legislatures seem to respond systematically to constraints on their production capabilities.

Third; in Equation [2], the parameter estimate associated with the variable representing previous legislation (PLEG) increased greatly. The corresponding t-value for this estimate, however, indicates that the estimate is still only significantly different from zero at the .20 level. This result gives only weak support to the hypothesis that the increased incentives derived from large magnitudes of previous legislation increase the degree of interest-group pressure.

In the current model specification, the lagged value of the dependent variable in Equation [1] is used as an explanatory variable in Equation [2]. Serial correlation may exist in the legislative output variable (LEG), and thus, the previous legislation variable (PLEG) could be correlated with the disturbances in Equations [1] and [2]. In order to correct for this problem, the two equations are re-estimated by using two-stage and three-stage least squares with previous legislation (PLEG) treated as an endogeneous variable.\(^6\) The results are presented in Table 3.

By comparing the two-stage least squares estimates in Table 3 to their corresponding estimates in Table 2, one can see that the results are virtually the same. The estimated correlation coefficient for the system disturbance terms is -.38, so it is still justifiable to estimate the system using the three-stage least squares. The three-stage least squares esti-

\(^{6}\) See Kmenta (1971) for a presentation of instrumental variables.
Table 3. Estimated Coefficients for Equations [1] and [2]: Legislative Output and Interest-Group Pressure (previous legislation endogenous).

<table>
<thead>
<tr>
<th>Dependent</th>
<th>Two-Stage Least Squares</th>
<th>Three-Stage Least Squares</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
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<td>1.82</td>
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<td>4.44</td>
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<td>.82</td>
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<td>logMAJ</td>
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</tr>
<tr>
<td>logRATIO</td>
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<td>361.9</td>
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<tr>
<td>COM</td>
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<tr>
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<tr>
<td>PGR</td>
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</tr>
<tr>
<td>PCI</td>
<td>.006</td>
<td>.004</td>
</tr>
<tr>
<td>RET</td>
<td>28.3</td>
<td>25.8</td>
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<tr>
<td>EDU</td>
<td>16.7</td>
<td>17.9</td>
</tr>
<tr>
<td>PLEG</td>
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<td>-.03</td>
</tr>
<tr>
<td>INTERCEPT</td>
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<td>-6508.5</td>
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</tbody>
</table>

R² = .44  R² = .55  R² = .42  R² = .54  SEE = 385.6  SEE = 98.9  SEE = 390.8  SEE = 99.9

n = 46; asymptotic t-values are listed in parenthesis; SEE = standard error of the estimate.
mates in Table 3 are comparable to their counterparts in Table 2, except for two exceptions in Equation [2]. First, the parameter estimate for the variable representing the proportion of a population with a college-level education (EDU) is somewhat larger, and is significant at the .10 level (rather than the .20 level reported in previously). The significant result for this variable supports the hypothesis that individuals with a college education will have lower costs of forming and joining interest groups. States with higher proportions of college-educated citizens should exhibit more interest-group pressure, and the statistical results uphold this implication. Second, the parameter estimate corresponding to previous legislation (PLEG) is not significantly different from zero. This result holds for both two-stage and three-stage least squares estimates.

Estimates for Equation [1] have been done, so far, for the combined characteristics of the two assemblies of the legislature. This procedure is based on the fact that legislation must pass in both assemblies to be enacted. Legislative output is characteristic of the legislature as a whole, not of the separate legislative assemblies. However, estimates for separate equations for the house and the senate are also presented, which further demonstrates the robustness of the model.7

Equation [1] is re-written in Equations [3] and [4] in order to conform to the different explanatory variables that are induced by separating the legislature into its two assemblies. The structural equation that explains total legislative output in terms of house constraints (and interest group pressure) can be written as:

\[
\text{LEG}_i = \gamma_0 + \gamma_1 \text{IG}_i + \gamma_2 \text{REP}_i + \gamma_3 \text{SES}_i + \gamma_4 \text{AB}_i + \gamma_5 \log \text{HMAJ}_i + \gamma_6 \log \text{RATIO}_i + \gamma_7 \text{HCOM}_i + \gamma_8 \text{HCA}_i + \nu_i
\]  

\( \text{REP}_i = \) the number of representatives during the legislative sessions in 1975-1976 in state \( i; (\gamma_2 \geq 0) \)

7Crain (1979) estimates separate equations for the house and the senate in his empirical test.
HMAJ\textsubscript{i} = the number of representatives who are members of the majority party, in the house, divided by the total number of representatives is defined as the house majority proportion during the legislative sessions in 1975-1976 in state i; \((\gamma_5 > 0)\)

HCOM\textsubscript{i} = the number of standing committees in the house divided by the number of representatives, during the legislative session in 1975-1976 in state i; \((\gamma_7 > 0)\)

HCA\textsubscript{i} = the average number of committee assignments, in the house, per representative during the legislative sessions in 1975-1976 in state i; \((\gamma_8 < 0)\)

\(v_i = \) a stochastic disturbance term

All other variables remain as previously defined.

The structural equation that explains total legislative output in terms of senate constraints (and interest group pressure) can be written as:

\[
\text{LEG}_i = \delta_0 + \delta_1 \text{IG}_i + \delta_2 \text{SEN}_i + \delta_3 \text{SES}_i + \delta_4 \text{AB}_i + \delta_5 \log\text{SMAJ}_i + \delta_6 \log\text{RATIO}_i + \delta_7 \text{SCOM}_i + \delta_8 \text{SCA}_i + w_i \quad [4]
\]

\(\text{SEN}_i = \) the number of senators during the legislative sessions in 1975-1976 in state i; \((\delta_2 > 0)\)

\(\text{SMAJ}_i = \) the number of senators who are members of the majority party, in the senate, divided by the total number of representatives is defined as the senate majority proportion during the legislative sessions in 1975-1976 in state i; \((\delta_3 > 0)\)

\(\text{SCOM}_i = \) the number of standing committees in the senate divided by the number of senators, during the legislative sessions in 1975-1976 in state i; \((\delta_7 > 0)\)

\(\text{SCA}_i = \) the average number of committee assignments, in the senate, per senator during the legislative sessions in 1975-1976 in state i; \((\delta_8 < 0)\)

\(w_i = \) a stochastic disturbance term

All other variables remain as previously defined.
Equation [3] is estimated with Equation [2] (an instrument is used for previous legislation) using two-stage and three-stage least squares. Likewise, Equation [4] is estimated with Equation [2]. The results are presented in Table 4 and Table 5, respectively, and are consistent with the previous estimations.

Chapter Summary

In general, the two equations explaining legislative output and interest group pressure provide good results. The hypothesis that the legislature responds to the demands of interest groups is strongly supported by the parameter estimate for IG in Equation [1] (and in Equations [3] and [4]). The results also indicate that legislatures respond to the political and institutional constraints that are imposed on their decision-making. In Equation [2], which explains the degree of interest group pressure, the results were reliable, with population size and growth, the retired proportion of a population, and the college-educated proportion of a population showing significant influences upon the variation in interest group pressure.

The estimated coefficients for the variables and their t-values remained consistent for different model specifications (a combined legislature, and separate assemblies), and estimation techniques (two-stage and three-stage least squares).
Table 4. Estimated Coefficients for Equations [3] and [4]: Legislative Output and Interest-Group Pressure (lower house).

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<th>Three-Stage Least Squares</th>
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<td>(-3.0)</td>
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\[ R^2 = .37 \quad R^2 = .55 \quad R^2 = .34 \quad R^2 = .54 \]

\[ \text{SEE} = 408.2 \quad \text{SEE} = 98.5 \quad \text{SEE} = 418.9 \quad \text{SEE} = 99.9 \]

\( n = 46; \) asymptotic t-values are listed in parenthesis; SEE = standard error of the estimate.
Table 5. Estimated Coefficients for Equations [4] and [2]: Legislative Output and Interest-Group Pressure (upper house).

<table>
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<tr>
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<th>Two-Stage Least Squares</th>
<th>Three-Stage Least Squares</th>
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</thead>
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<td>-6149.9</td>
</tr>
</tbody>
</table>

R² = .43  R² = .52  R² = .43  R² = .51
SEE = 388.8  SEE = 102.2  SEE = 389.2  SEE = 102.7

n = 46; asymptotic t-values are listed in parenthesis; SEE = standard error of the estimate.
CHAPTER 5

SUMMARY AND CONCLUSIONS

Summary

The interest-group approach to government is an attempt to explain the rationale for government actions. Relying on accepted (economic) behavioral assumptions, the activities of politicians and citizens within the political arena are perceived as rational attempts to maximize their respective net utilities. This thesis aims to generalize the developing interest-group theory since many of its assumptions and implications have not been fully outlined. Specifically, this thesis focuses its analysis on the legislative branch of government. Legislative decision-making is proposed to be a direction function of the demands of interest groups for favorable legislation. Previous research that relies on assumptions of the firm in analyzing legislative behavior is also utilized in formulating the constraints on legislative fulfillment of these demands. Furthermore, arguments are proposed that begin to develop a theory for interest-group formation and the pressure on legislatures resulting from these groups. The interest-group model is tested for state legislatures in 1975-1976 by the use of econometric methods.

Conclusions

In deriving conclusions from this study, one must be aware of the limitations that are present. It is obvious that the data available to test the implications of the model often requires an incomplete measure of the particular variable, or a proxy, to be used. A more important point, however, is that this is a relatively new area of study. Thus, this thesis
cannot benefit from the findings and mistakes of a substantial and accepted body of economic works.

In spite of these shortcomings, several significant conclusions are obtained in regards to the interest-group theory. The primary hypothesis of the theory is well supported by the econometric results. The results indicate that legislative output is significantly related to the degree of interest-group pressure displayed. Consequently, the implication that legislative decision-making caters to the demands of special interest groups is substantiated. As the political exchange model is outlined in this thesis, the theoretical arguments, as well as the empirical data, only reflect interest-group pressure from private citizens. Nevertheless, a recommendation for further research should be the incorporation of bureaucratic agencies as an additional source of interest-group pressure. An emerging hypothesis from the study of government activity is that bureaucrats are demanders of their own output in order to maintain the existence and stability of their public positions.

In the process of legislative decision-making, the legislature must respond to institutional and political constraints on their actions. The statistical results, in regards to these constraints, can be summarized in four parts. First; legislatures that are allowed a larger size are shown to produce more output. Hence, legislatures seem to respond to the potential gains in output from legislator specialization while increased transaction costs may be mitigated by the practice of not observing quorum rules. Second; legislatures that have a longer allowable production period do not show relatively more output, according to this statistical study. In light of this result, the trend for states to increase the number of days its legislatures spend in session may not change the number of bills passed. However, statistical results do indicate that annual legislatures enact more legislation than biennial legislatures. Third; legislatures gain from the benefits of a large majority proportion. The decreasing decision costs of a larger majority is an economy that seems to be effectively captured by state legislatures. Fourth; the fact that legislatures perform much of their
work within the committee system attests to the importance of this apparatus to the legislative process. The empirical results indicate that legislatures may have overextended their use of the committee system. Yet, the emerging response of state legislatures to reduce their number of committees, and reduce the number of committee assignments per legislator, indicates a systematic adjustment by the legislatures to decrease their production costs.

The portion of the interest-group model and the corresponding empirical results that describes the development of interest-group pressure also yields significant results. Population size and growth are strong indicators of the amount of interest-group pressure inherent in a state's citizenry. Also, this study seeks to initiate the development of individual characteristics that influence interest-group pressure. Two characteristics, age and education, are shown to be significantly related to interest-group pressure. A third characteristic, income, did not prove to be significant in this empirical test. It is acknowledged (and recommended) that further study of the factors that affect interest-group pressure should be undertaken.

Hopefully, this study adds to the development of the interest-group theory of government, as well as to an understanding of the government process as a whole. With government and politicians becoming increasingly important in influencing the decision process of individuals, valuable insight can be obtained from the continued study of the governmental process. Furthermore, the acknowledgment that special interest groups hold considerable influence in today's political process warrants research in the area of interest-group formation and action. Of particular interest is the possible welfare loss (gain) to society resulting from government action on the behalf of special interest groups.
REFERENCES CITED
REFERENCES CITED


_____. “Rent Seeking from a Property Rights Perspective.” working paper, Montana State University, December 1983.


This appendix briefly presents the mathematical properties of the relationship between the level of bicameralism and similarity of constituency bases. This analysis demonstrates that the returns to an increasing level of bicameralism are positive, yet marginally decreasing. Denoting the size of the senate as $S$, the size of the house as $R$, the total number of legislators as $Z$ (thus $Z = R + S$), and the size of the population as $P$, the range of possible constituency sizes in the respective assemblies are:

$$2P/Z \leq P/S \leq P \quad \text{(senate)}$$
$$P/Z \leq P/R \leq 2P/Z \quad \text{(house)}$$

The maximum constituency size in the house is equal to the minimum constituency size in the senate when the level of bicameralism is equal to 1. By taking the partial derivatives of the constituency bases with respect to changes in the respective assembly sizes:

$$\frac{d(P/S)}{dS} = -(P/S^2) < 0 ; \quad \frac{d^2 (P/S)}{dS^2} = 2P/S^2 > 0$$
$$\frac{d(P/R)}{dR} = -(P/R^2) < 0 ; \quad \frac{d^2 (P/R)}{dR^2} = 2P/R^2 > 0$$

and

$$\left| \frac{d^2 (P/S)}{dS^2} \right| > \left| \frac{d^2 (P/R)}{dR^2} \right|$$

As the level of bicameralism increases from 0 to 1, $P/S$ approaches its minimum level, $2P/Z$, at a decreasing rate; while $P/R$ approaches its maximum, $2P/Z$, at an increasing rate. Graphically, this relationship is shown in Figure 1.
Figure 1. Constituency size and bicameralism.

The net effect for increases in the level of bicameralism results in less than proportionate increases in the similarity between the constituency bases of the two assemblies.
APPENDIX B

This appendix briefly presents a graphical explanation of the relationship between changes in the level of bicameralism and the labor specialization of legislators. As depicted in Figure 2, under the conditions of diminishing returns to specialization, the net gain in output from more similar assembly sizes is positive.

Starting with the initial assembly sizes $S_0$ and $R_0$, an increase in bicameralism shifts the sizes to $S_1$ and $R_1$, respectively. The gain in senate output, $Q^S_1 - Q^S_0$, is greater than the loss in house outputs, $Q^R_0 - Q^R_1$. However, as the level of bicameralism increases further, and eventually reaches the point where $S_2 = R_2$, the rate of change will become less disparate, and thus, the net gain will be diminishing.

Figure 2. Output and legislator specialization.
Development and analysis of the interest-group theory of government