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CONTENTION AND COMPROMISE:
A COMPARATIVE ANALYSIS OF
BUDGETARY POLITICS

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ABSTRACT

This paper attempts to place the role of defense spending within the overall context of the budgetary process. Using an extended version of the "Competing Aspirations Level Model" based on the behavioral theory of decision-making, major budgetary aggregates, viz., total spending, defense spending, exhaustive civilian expenditures, and capital outlays, are modelled as outcomes of independently generated aspirations, based on parochial organizational and environmental influences, and a reconciliation process reflecting the bargaining power of budgetary agents. An empirical assessment of the model's performance is conducted using the experience of thirteen national governments, including seven western industrialized states and six developing states. The results of this statistical analysis suggest that the model provides a useful basis for understanding and comparing budgetary processes and outcomes.

ZUSAMMENFASSUNG

Die Bedeutung der Verteidigungsausgaben für den Staatshaushalt insgesamt ist das Problem, das im Mittelpunkt der Analyse steht. Zu diesem Zweck wird ein erweitertes "Competing Aspirations Level"-Modell verwendet, das seinerseits auf der behavioristischen Theorie des Entscheidungsprozesses basiert. Die wichtigen Haushaltsgrößen, Gesamtausgaben, Verteidigungsausgaben, die Gesamtausgaben für zivilen Zwecke und Investitionen werden in der Form modelliert, daß sie als das Ergebnis unabhängig voneinander bestehender Erwartungen zustande kommen. Diese Erwartungen resultieren aus den organisatorisch engstirnigen und umweltbedingten Einflüssen, die dann in einem Prozeß der durch den Machtstatus der verschiedenen Gruppen bis zur Verabschiedung des Gesamtetats, auf einen gemeinsamen Nenner gebracht werden. Die Gültigkeit des Modells wird empirisch für insgesamt 13 Staaten analysiert. Dabei handelt es sich um sieben westliche Nationen und sechs Entwicklungsländer. Die Ergebnisse der statistischen Analyse lassen den Schluß zu, daß das zugrunde gelegte Modell ein sinnvoller Ausgangspunkt zum besseren Verständnis und für den Vergleich der haushaltspolitischen Prozesse und Ergebnisse ist.

CONTENTION AND COMPROMISE: A COMPARATIVE ANALYSIS OF
BUDGETARY POLITICS

INTRODUCTION

Contention and compromise are critical elements in the play of politics. With what regularity do these two phenomena manifest themselves in budgetary politics? Here we will attempt to illuminate their significance by applying a general model of the budgetary process in a comparative study of resource allocation by national governments with a special emphasis on defense spending. The paper proceeds as follows. In the next section we provide a brief review of one of the outstanding issues in government resource allocation research, viz., the "significance of politics," and attempt to clarify some of the conceptual problems endemic to this area. Following that we detail some of the principal elements of the behavioral theory of decision making as they apply to governmental budgeting, outline a recently developed model, "CALM" (the "Competing Aspirations Level Model" put forward by Fischer and Kamlet, 1984) which follows in that tradition, and specify some modifications to the model. This modified model is then subjected to empirical scrutiny in light of recent experience in thirteen states. The results of this application are then compared and finally some concluding remarks are provided.

REVIEW

Government resource allocation has been the focus of an extensive amount of research. A variety of themes and questions permeate this research. One of the more central in this literature focuses on the importance of "politics" in allocational choice and outcomes. Claim and counter-claim abound, though the focus shifts dramatically across a variety of levels, often times attaining rather nebulous reaches. The disarray in this area follows not so much from the lack of good ideas, nor from the quality of individual research efforts. Its roots are to be found in the character of the research agenda. Addressed from a variety of disciplinary perspectives, buffeted to a large degree by the agenda of controversy in the everyday political arena, no sustained and coherent approach with the attendant possibility of cumulativeness has been established (Tarschys, 1975; Larkey, Stolp and Winer, 1981).

Although something of a simplification, it can be said that much of the research in this area falls into one or the other of an opposing set of categories. On the one side is to be found the school of thought that emphasizes the autonomous and separate identity of the budgetary decision making process. Allocational decisions and outcomes derive from conditions internal to the governmental system. The organizational arrangements and structures developed with

the passage of time are seen as promoting a set of acceptable rules and compromises which maintain the insularity of the budget from the buffeting of environmental conditions and allow patterns previously set to persist. Outcomes are generated in ways that are nearly untarnished by the political-economic environment.

On the other side, and in direct contradiction to this image, is the notion of dominant exogeneity. The grounding principle here is that government, particularly in its allocation decisions, is a fairly uninteresting black box. Its decisions represent no more than the provision of an imprimatur to the conditions of its environment. Demographic and economic forces shuttle and shuffle about, the product of long-term "development" and short-term maladjustments, and with them are mirrored budgetary outcomes (e.g., Alt and Chrystal, 1983). A more sophisticated version of this model imposes a regulatory superstructure, that calculating persona, the "utility maximizing" politician, steering the budget with deft maneuverings to allow the optimal conjunction of environmental conditions and budgetary mirror. Here political concerns matter. A propitious set of budgetary and economic conditions well timed to coincide with important events in the political calendar, and sometimes rather gross distinctions in terms of the "ideological" character of the reigning political party, are central to

the adjustment of the mirror (e.g., Frey, 1978; Frey and Schneider, 1981).

Wanting is a coherent structure that allows us to address the relevance and importance of both exogenous and endogenous elements. Needed as well is an approach that remedies the failure of these approaches to recognize the interdependence of budgetary allocations. We can illustrate these requirements by setting forth a set of questions and examining an identifiable area of budgetary politics research, that dealing with defense spending.

How interdependent is the budget? Crecine (1971) has pointed out the importance of the accounting relationship he labels the "Great Identity," i.e.,

$$\sum_{i=1}^n \text{EXPENDITURE}_i = \text{TOTAL REVENUES} + \text{DEFICIT}$$

Any particular expenditure category, such as defense, represents only one of a number of individual items which in the aggregate are equal to the total of revenues plus any deficit (or less any surplus). In an accounting sense, if in no other, there is a relationship between any specific expenditure and all others, as well as the revenue components of the budget. A question sparked by this simple truth, and one critical for understanding both the process and outcome of budgetary politics, then comes to the fore. Any choice regarding a particular component restricts the

choices available with respect to other expenditure items, under all but the limiting case where no restriction obtains with respect to the size of the income side of the identity.

To what extent is the overall budget and its components shaped by top-down versus bottom up considerations? A common assumption in the analysis of expenditure decisions and the formulation of attendant models is the specification of an independent process. For example, defense spending decisions arise because of international stimuli (Richardson threat models: e.g., Allan, 1983; Ward, 1984), organizational inertia (bureaucratic or organizational process models: e.g., Rattinger, 1975), or conditions in the domestic economy (political economy models: Nincic and Cusack, 1979), or some combination of such factors (see, e.g., Ostrom, 1978). And yet, defense is only one component of a national government budget. Is there some a priori reason to assume defense spending, or for that matter any other spending title, is especially endowed with some virtue that prohibits political choices between what might be desired for the particular item, what is desired for other spending programs, and indeed, the preference that fiscal authorities have for the overall size of the budget. Ample evidence has been adduced to suggest that, for reasons completely unrelated to manifold factors putatively driving defense spending, budgetary aggregates incorporating defense spending can be predicted with some accuracy (Alt and Chrystal, 1983 Frey,

1978; Frey and Schneider, 1981; Lowrey and Berry, 1983).

What is the significance of external versus internal conditions (cf., Russett, 1983)? Studies purporting to demonstrate the value of an endogenous approach almost always manage to obtain empirical support. Bureaucratic momentum, a built-in inflexibility in defense allocations, is hypothesized and affirmed. Exogenous considerations, be they related directly to the defense sector, e.g., military requirements prompted by international developments, or indirectly related, constraints imposed by fiscal policy or restricted resources are not apparent influences. On the other side, studies arguing for the importance of exogenous influences, in particular, international developments have achieved at least equal support. Both approaches, neglect the interdependence of the budgetary process. Competition with other elements in that process are not considered relevant. Defense gets what it wants, whatever the basis of its claim. Fiscal constraints, imposed by political leaderships' desires with respect to the overall size of the budget do not matter. The capacity of other programs or agencies to press their case, their needs manifested in their budgetary requests, do not appear relevant. Being the winner is easy because no one else is in the game.

Who wins or who is favored in the budgetary process? Winning is a concern in this area. The assumption that defense is an integral element is not completely ignored. The

question, however, is treated generally not from the perspective of what has influenced the budgetary choices, but rather who has suffered the costs. Controversy flourishes here as well (for an extensive review, see Lindgren, 1984). The question has been: "Are there tradeoffs?" The answers are varied but the route to the answer is generally the same: calculate volume losses and gains in defense and other budgetary areas of concern, ignore the elements that determine the need for defense spending and its competitors, disregard any overall budgetary conditions, such as slack, or lack thereof, in overall budgetary resources, and the identities of victor and vanquished are established.

BUDGETARY POLITICS

Background

Governmental budgeting is a process. The outcomes of this process are not the product of rational calculations on the part of some single individual or a unified and tightly coordinated organization with a well-defined set of objectives and an extraordinary capacity to formulate and evaluate the utility of an infinite variety of clearly specified alternative choices. Rather, the process is

itself one wherein a variety of actors, with different capabilities and aspirations, joined in a network of institutional roles and responsibilities, behave in a structured but semi-autonomous way to resolve the problems and deal with the tasks that confront them. Government budgets reflect this process.

The model outlined below is based on the behavioral theory of decision making (Cyert and March, 1963). A critical assumption in such models is the notion that governments are similar to other large and complex organizations. While government appears to perform a bewildering variety of functions, these functions are actually carried out by a large set of different elements or units within government. The behavior of these elements is best described as being more or less a function of a set of generally accepted practices and rules, the rationality of which would not accord with the conventional, i.e., economic, definition of that term (cf., Simon, 1955, 1956). Although it may be a convenient device to portray government in the image of a unified rational actor with a set of clear and distinguishable preferences and an adequate repertoire of instruments needed to achieve its objectives, such an image is a faulty device for explaining or predicting its behavior. There is probably no aspect of the behavior of government for which the unified rational actor model is more inappropriate than in the case of budgeting. When the

question is one of "authoritative allocation of values," there are many visible hands.

Budgeting is problem solving. Constructing a budget is a recurrent problem for governments. Most organizations when confronted with recurrent problems and the need to contend with changing circumstances come to formulate and maintain a stable set of programs and decision rules that are employed as adaptive problem solving mechanisms (cf., Nelson and Winter, 1982). In governmental budgeting this is almost universal (Wildavsky, 1975). Some of the principal rules and programs used in solving the budget problem include: a cycle or series of activity phases where the elements (or proto-elements) of the budget are constructed; disjointed activity on the part of different government elements that over the cycle of budget construction lead to adjustments and the finalization of the budget; the pursuit of objectives by the different elements which tend to be modified by experience and need not be consistent with each other; and the use of relatively simple decision rules to solve what in some abstract analytical form may appear to be intractable problems (cf., Crecine, 1969, 1971; Hoole, 1976; Wildavsky, 1975).

A government budget is the manifestation of both the objectives and power of the different elements of government and the interests they represent. It also involves what is in essence a plan for the activities of government.

Constructing a budget, then, requires an incredible number of tasks to be coordinated. A government budget cannot be produced instantaneously. Rather, the problem of the budget is generally factored into a number of subproblems. These subproblems are then dealt with in seriatim when they are the responsibility of the same element. If, however, they are within the domain of different units, they are treated either simultaneously and later reconciled when necessary or after another element has solved the subproblem that circumscribes the solution of the unit's own task.

These different subproblems and the processes associated with them represent the peripatetic solution of the governmental system when it deals with the budget problem. In its starkest terms the ultimate solution represents a combination of conflicting objectives and necessary constraints. On the one hand, each element is seeking objectives which need not accord with and may indeed conflict with those of some other element. On the other hand, these objectives and the claims they represent must be reconciled in some way. The principal means by which these conflicts and constraints are manifested in budgeting usually involves the determination of macro-budgetary objectives by the governmental leadership or authorities, the demands from the different bureaucracies for funds to finance their activities at some desired level, and the reconciliation, if necessary, of these potentially

inconsistent aspirations (cf., LeLoup, 1978; Fischer and Crecine, 1978; Fischer and Kamlet, 1984; Larkey, Stolp and Winer, 1981).

While behavior is usually purposeful, it need not be synoptically rational (Braybrooke and Lindblom, 1963). An organization and the elements within it pursue goals. From the perspective of the behavioral theory of decision making organizational goals can be seen as a set of "independent aspiration level constraints" that have been imposed on the government by the elements that comprise the government coalition (cf., Simon, 1964). This collection of constraints arises because government of a need must factor decision problems into subproblems and assign them to its different elements. In so doing, government can introduce a limited level of rationality since each unit is focusing on a vary restricted set of goals. By promoting such local rationality, through devolution and specialization in objectives and decisions, the incredibly complex set of interdependent tasks and objectives involved in creating a budget become more manageable.

Every element of government, especially when engaged in solving recurrent problems, relies upon standard operating procedures. This tendency arises because any other would doom those involved to become overwhelmed with the complexity of their tasks (Davis, Dempster and Wildavsky,

1966; Wildavsky, 1975). "Aids to calculation" allow the participants not only to survive the process but also to achieve results which more oft than not are satisfactory. Satisfaction comes not from obtaining some optimal state, but rather from producing a short term reaction in response to short term feedback (Cyert and March, 1963). Since the environment government must deal with generally is complex and uncertain, all the units in government normally come to employ such decision rules when they involve themselves in the budgeting process.

The Competing Aspirations Level Model

In order to address the questions outlined above we have adopted a modified version of the Competing Aspirations Level Model of the budgetary process developed by Fischer and Kamlet(1981,1984). The CALM formulation has a number of attractive qualities which favor its use. First, it allows for an explicit representation of the budgetary constraints endemic to the allocation problem (viz., adding up identity involving total expenditures, total revenues, and surplus/deficit; representation of major component items of expenditure in explicit form with interdependencies; flexibility in the specification of parochial environmental and organizational factors influencing spending levels; possibility of isolating competitive position of different

budgetary components and the tradeoffs that follow from these positions). Second, while the model has been applied in a number of restricted settings, it is quite general and should be applicable to a variety of divergent national settings.

CALM represents budgeting as a two-step process. The first step focuses on the development of independently generated aspiration levels for broad spending aggregates. These aggregates are the major spending components as well as a total spending target. With respect to the individual components, the model represents the competing governmental sectors as generating what they consider to be minimal spending levels required for their areas. These desired minima reflect the influence of parochial organization and environmental factors. Concurrent with these bottom-up developments, the model posits the existence of a potentially conflicting product from the top-down. Here fiscal authorities are modelled as developing their own preference for a maximum level of total spending which reflects their concerns for solvency and stabilization.

The second step of the process focuses on the resolution of any conflict that is inherent in these independently generated aspirations. In the resolution stage, the general outcome of the budgetary process with respect to any component reflects not only the autonomously generated aspirations with respect to that particular component, but

will also derive from aspirations held by other sectors, the constraints placed on total spending, and the budgetary bargaining power of the major actors involved.

The specification of the version of the CALM equation system used in this paper takes the following form:¹

$$T_t = D_{t,MIN} + C_{t,MIN} + K_{t,MIN} + a_1 * (T_{t,MAX} - D_{t,MIN} - C_{t,MIN} - K_{t,MIN}) + u_{1,t} \quad (1.1)$$

$$D_t = D_{t,MIN} + a_2 * (T_{t,MAX} - D_{t,MIN} - C_{t,MIN} - K_{t,MIN}) + u_{2,t} \quad (1.2)$$

$$C_t = C_{t,MIN} + a_3 * (T_{t,MAX} - D_{t,MIN} - C_{t,MIN} - K_{t,MIN}) + u_{3,t} \quad (1.3)$$

$$K_t = K_{t,MIN} + a_4 * (T_{t,MAX} - D_{t,MIN} - C_{t,MIN} - K_{t,MIN}) + u_{4,t} \quad (1.4)$$

$$T_t = D_t + C_t + K_t \quad (1.5)$$

where:

- T = Total Spending (less debt management payments)
- D = Defense Spending
- C = Exhaustive Civilian Spending (including purchases of goods and services and transfers)
- K = Capital Spending
- TMAX = Fiscal Authorities Aspiration Level for Maximum Total Spending
- DMIN = Defense Sector's Aspiration Level for Minimum Defense Spending
- CMIN = Civilian Sector's Aspiration Level for Minimum Civilian Spending
- KMIN = Capital Sector's Aspiration Level for Minimum Capital Spending
- ai = Bargaining Power of i

In Fischer and Kamlet's (1984) study of American federal budgeting only two budgetary components, defense and non-

defense, were included. We decided to disaggregate the latter into its two major components, exhaustive civilian spending (including civilian government consumption and transfers) and capital spending. Our purpose in doing so derived from our assumption that capital spending is likely to be driven by forces other than those pushing exhaustive civilian spending and that the strength of bargaining power for the two elements are as well likely to differ. It should also be noted that government debt management payments are excluded from the system--both in terms of expenditures and revenues from which the latter derive (see below). This follows from our assumption that such payments are normally sacrosanct.

The budgetary bargaining power of any actor, at least in the cases of defense, civilian, and capital, is represented by the "a" coefficient explicit in the individual equation. However, it should be noted that certain restrictions must hold. First, the sum of $a_2 + a_3 + a_4$, representing the bargaining power of the individual spending sectors must be within the range of 0 to +1.0, inclusive. Each of these coefficients must, as well, be within that range. a_1 , must also be equal to the sum of $a_2 + a_3 + a_4$. The value of $1.0 - a_1$ can, in turn, be seen as the bargaining power of the fiscal authorities.

The implications of the equational system and the restrictions just mentioned provide for some interesting

insights into the allocational process. In the case, for example, of one of the three individual spending items, a value of 0 attributed to its "a" coefficient would imply that the sector would receive the minimum level to which it aspires. There are two possible regimes which are associated with instances where the coefficient is greater than 0. In the instance where slack is present, that is where $TMAX > DMIN + CMIN + KMIN$, then the "zone of contention", represented by $a1 * (TMAX - DMIN - CMIN - KMIN)$, would be available to be added to its minimum aspiration level at the average rate equal to the associated "a" coefficient. On the other hand, under the regime where the minimum aspiration levels were higher than the fiscal authorities desired maximum, i.e., $TMAX < DMIN + CMIN + KMIN$, then the sectors's "fair-share" cut from its minimum would be equal to its "a" coefficient times the amount represented in the "zone of contention."

As noted above, the CALM formulation is a flexible structure in that it allows for alternative specifications of the determinants of the aspiration level terms in the finalization equations. In Fischer and Kamlet's original specification, the aspiration level equations took the following form:

$$TMAX_t = c1 * \bar{R}_t + c2 * TIME_t * \bar{R}_t + c3 * REC_{t-1} * \bar{R}_t + e1_t$$

$$DMIN_t = c4 * D_{t-1} + c5 * S_{t-1} + c6 * W_t + e2_t$$

$$CMIN_t = c7 * C_{t-1} + e3_t$$

The fiscal authorities aspiration for the maximum total expenditures was specified as being a function of expected revenues (\bar{R}), a growth term representing a presumed loosening of fiscal restrictiveness over time ($TIME * \bar{R}$) and a dummy variable term ($REC=1$ if recession in previous year, 0, otherwise) representing counter-cyclical fiscal policy ($REC * \bar{R}$). Defense was seen as aspiring to a minimum which would be based on its previous spending level (D at $t-1$), the military spending of the major US rival, the Soviet Union (S at $t-1$), and a variable reflecting the war mobilization effort on the part of the US (W). Civilian spending aspirations are portrayed as simply a function of the previous spending level (C at $t-1$).

In addition to the minor changes noted previously, i.e., the introduction of a fourth equation dealing with capital outlays, and the representation of debt interest payments as mandatory and thus requiring the redefinition of the revenue and total expenditure terms, the specifications we employ for the aspiration level equations vary to different degrees from those employed by Fischer and Kamlet. Our belief is that most of these respecifications improve the theoretical basis of the model.

The aspiration level equations used in the present model take the following form:

$$TMAX_t = b1 * ER_t + b2 * STAB_t + u5_t \quad (2.1)$$

$$DMIN_t = b3 * DMOM_t + b4 * SEC_t + u6_t \quad (2.2)$$

$$GMIN_t = b5 * CMOM_t + u7_t \quad (2.3)$$

$$KMIN_t = b6 * KMOM_t + u8_t \quad (2.4)$$

The TMAX equation, dealing with the maximum total aspired to by fiscal authorities differs from the Fischer and Kamlet formulation in two ways. In one instance, fiscal restraint is not postulated as loosening over time. Thus, the parameter directly linking expected revenues (ER: here defined as revenues in the spending period less debt management payments) and fiscal authorities maximum aspiration level is not assumed to vary. While we share their implicit view that national government budgets have tended in recent times to outstrip revenues, we believe that this can be accounted for by other terms within the model and the model structure itself. First, counter-cyclical policy is included and given the historical record, this should permit the model to generate post-dictions that accord with that experience. Second, the form of the model gives parochial environmental conditions a place of prominence and we take as a maintained hypothesis the idea

that a significant amount of the pressure toward imbalanced budgets derives from the translation of these conditions into pressures from the bottom. In the second instance, stabilization policy concerns, represented by STAB, are indicated by unemployment (rate of unemployment times ER, in the case of industrialized states) and foreign sector imbalances (in the case of developing lands), and not the lack of growth term used by Fischer and Kamlet.

The aspiration level equations for the three spending elements, defense, civilian exhaustive, and capital, are of a similar form but the character of the terms included are markedly different. With respect to defense, we have gone beyond the short-hand representation of parochial internal and external elements represented by one's own and one's competitor's previous spending levels. In their stead, we have substituted variables that are closer to the theoretical conceptions employed in the different arguments about the factors driving defense spending. The bureaucratic momentum variable employed here takes into account the capital and labor requirements of the defense sector, depreciation in the elements that make up the capabilities of this sector, and the changing costs of acquiring these capabilities. Thus, DMOM is defined as:

$$DMOM_t = (DDEP_{t-1} * CAP_{t-1}) * UCD_t$$

DDEP represents the rate of loss in defense capabilities in the absence of any allocation of resources to the sector. CAP, which stands for the defense capabilities of the state, is a scale we have developed to portray the production of military capability given the capital and labor inputs to that sector. UCD is a measure of the unit cost of CAP, and incorporates the cost of those capabilities at some base year (in real local currency) as well as the increase in those costs deriving from both general price changes and price changes internal to the defense sector. Represented, then, in this variable is a more adequate measure of the forces at work in defining the spending level the defense sector would aspire to in order to maintain or enhance its organizational apparatus.

On the external side, it is frequently argued that threats from the international environment are critical in driving arms accumulation and the attendant growth in military outlays. As a shorthand device to represent such threats, analysts often resort to using the defense spending effort of some putative opponent. The use of such an index, however, can be questioned on at least two grounds. First, spending levels are not always a good measure of the a nation's capability and thus the threat that one state can pose toward another. Movements in such series can arise from a number of sources, of which the signalling of threat is but only one. Second, such a surrogate seems

insufficient on the grounds that modern international politics are conducted in a multi-state system of somewhat fluid character--and not between only two perpetual enemies. The threats that are directed toward any one state arise generally from more than one other--and the hostile intentions displayed by another are dynamic and not static. In order to incorporate these considerations into our examination of the experience of this diverse set of nations, we represent the external security based factor in the determination of defense spending aspiration levels by incorporating a THREAT measure that is a function of the hostile intentions of a large number of states and the military capabilities, not the allocations, of these states (cf., Singer, 1958; Deutsch and Singer, 1964; Cusack, 1984)².

SEC, a measure of the external considerations that the defense sector would take into account is defined as follows:

$$SEC_t = (ATHREAT_{t-1} - CAP_{t-1}) * UCD_t$$

CAP and UCD are as defined above. ATHREAT represents an expected level of military threat directed toward the state from a multi-state international system. It is a moving average of an annual measure labelled THREAT which incorporates an assessment of the relative hostile intent and capabilities of other states:

$$\text{THREAT}(-\rightarrow j)_t = \sum_{i=1}^n \text{RINTENT}(i-\rightarrow j)_t * \text{CAP}(i)_t$$

RINTENT, the measure of relative hostile intent, defines the intentions of any state toward any other as:

$$\text{RINTENT}(i-\rightarrow j)_t = \frac{\text{INTENT}(i-\rightarrow j)_t}{\sum_{i=1}^n \text{INTENT}(i-\rightarrow j)_t}$$

INTENT takes into account the hostile and cooperative actions that states direct toward one another and uses relative proportions of these measures to provide an indication of the orientation any one state has toward any other:

$$\text{INTENT}(i-\rightarrow j)_t = \text{HSENT}(i-\rightarrow j)_t * \frac{\text{HSENT}(i-\rightarrow j)_t}{\text{HSENT}(i-\rightarrow j)_t + \text{CSENT}(j-\rightarrow j)_t}$$

HSENT and CSENT are measures of the annual flow of hostile and cooperative acts directed by one state toward another. Based on the COPDAB Events Data Set, these scales represent the weighted sums of an extensive variety of foreign actions undertaken by states.

Spending by government for non-military goods and services and in support of income transfers has come to be one of the

principal items in modern budgets. In the main, the growth of this category of spending is thought by many to depend upon persistent but incremental pressures from bureaucracies administering such programs, demographic developments, in the form of a waxing clientele, and improvements in general economic well-being (Kelly, 1977; O.E.C.D., 1976, a, b, 1977; Wilensky, 1975). Here in the civilian sector, the minimum aspiration spending level is specified as being a function of a variable representing previous performance levels and requirements dictated by two important environmental conditions: size of clientele and economic well-being. The variable incorporating these elements, CMOM, is defined in the following way:

$$CMOM_t = PERF_{t-1} * CLIENT_t * INCTARG_t$$

INCTARG represents the contribution of prevailing economic conditions and is defined as national income per capita. CLIENT stands for the principal demographic groups that are serviced by or receive transfers from the government. The size of the age group from 0 to 24, retirement age population (65+), and the unemployed (the latter, only in the case of the developed countries) are counted within this variable. PERF represents the ratio of the term (C / CLIENT) to INCTARG in the previous period.

Capital expenditures on the part of government represent

government's direct contribution to national investment levels. This category of spending is frequently financed in ways different from other government expenditures (Goode and Birnbaum, 1956). Though there exists very little in the way of empirical studies on government investment, such as do exist suggest that some measure of incrementalism and the level of national economic performance contribute to the determination of these outlays (Jarrouge, 1979; Lioukas and Chambers, 1981). With this in mind, KMOM is defined in the following fashion:

$$KMOM_t = (K_{t-1} / Y_{t-1}) * Y_t$$

Thus the previous share of national income going to government capital is presumed to act in combination with expectations regarding income to generate a desired level of capital spending.

ANALYSIS

Thirteen country experiences are examined using the model. This group of thirteen includes seven industrialized western economies, viz., Canada, the Federal Republic of Germany, France, Italy, Japan, the United Kingdom, and the United States. Six developing countries are also included, these

being: Argentina, Brazil, India, South Africa, Turkey, and Venezuela. The time span covered in our analyses is not exactly the same in each instance, owing to data problems, but generally deals with the period from the mid-1960's to the mid-late-1970's.

In order to estimate the model, it is necessary to substitute the aspiration level equations (equa. set 2) into the reconciliation system (equa. set 1).

$$T_t = a_1 b_1 ER_t + a_1 b_2 STAB_t + b_3 (1-a_1) DMOM_t + b_4 (1-a_1) SEC_t + b_5 (1-a_1) CMOM_t + b_6 (1-a_1) KMOM_t + e_1 \quad (3.1)$$

$$D_t = b_3 (1-a_2) DMOM_t + b_4 (1-a_2) SEC_t - a_2 b_1 ER_t + a_2 b_2 STAB_t - a_2 b_5 CMOM_t - a_2 b_6 KMOM_t + e_1 \quad (3.2)$$

$$C_t = b_5 (1-a_3) CMOM_t + a_3 b_1 ER_t + a_3 b_2 STAB_t - a_3 b_3 DMOM_t - a_3 b_4 SEC_t - a_3 b_6 KMOM_t + e_2 \quad (3.3)$$

$$K_t = b_6 (1-a_4) KMOM_t + a_4 b_1 ER_t - a_4 b_2 STAB_t - a_4 b_3 DMOM_t - a_4 b_4 SEC_t - a_4 b_5 CMOM_t + e_3 \quad (3.4)$$

$$T_t = D_t + C_t + K_t \quad (3.5)$$

This is a simultaneous equation system without any unobservable variables. The dependent variables in the system are constrained, due to the identity (3.5) that must

hold. With this identity, as well, one of the four behavioral equations becomes superfluous and its parameters can be derived from the other three. In our statistical analysis, the total expenditure equation (3.1) was dropped. All of the parameters in the system are identifiable. In order to estimate the parameters it was necessary to use a simultaneous equation full-information maximum likelihood procedure.

The results of the estimation effort, using C.R. Wymer's RESIMUL econometrics package are presented in Table 1. At the system level, the Carter-Nager r-square, a measure of the overall fit of the model is quite good for all thirteen countries. Comments on more specific aspects of the statistical results are presented in the succeeding sub-sections.

Parameters for Total Spending Aspiration

Two variables are directly included in the equation (2.1) for the aspiration with respect to maximum total spending held by the fiscal authorities. The parameter associated with the first variable, expected revenues, defines the base around which this aspiration is adjusted in light of stabilization concerns as represented in the second variable. A value of 1.0 on the parameter for the first

TABLE 1
ESTIMATION RESULTS

		U.S.A.		F.R.G.	
		coeff.	t ratio	coeff.	t ratio
TOTAL (T)					
b1		1.649	3.63	1.105	12.20
b2		.416	.97	.605	5.11
a1		.149	1.94	.770	6.41
DEFENSE (D)					
b3		.746	9.26	.628	7.02
b4		.108	4.39	.069	6.39
a2		.096	1.64	.127	2.56
CIVILIAN (C)					
b5		.937	20.99	.739	8.19
a3		.035	1.43	.563	3.89
CAPITAL (K)					
b6		.815	11.43	.702	6.14
a4		.017	1.36	.080	3.36
Carter Nager R	2	.972		.969	

TABLE 1 (cont'd)
ESTIMATION RESULTS

	CANADA		UKG	
	coeff.	t ratio	coeff.	t ratio
TOTAL (T)				
b1	1.099	6.63	1.285	12.48
b2	1.031	2.51	1.012	3.67
a1	.514	3.10	.348	2.82
DEFENSE (D)				
b3	.926	19.12	.850	10.74
b4	.037	2.54	-.021	1.65
a2	.000	.00	.032	.89
CIVILIAN (C)				
b5	.808	10.74	.947	19.83
a3	.491	3.39	.054	.69
CAPITAL (K)				
b6	.815	11.43	.702	6.14
a4	.017	1.36	.080	3.36
Carter Nager R	.970		.934	

TABLE 1 (cont'd)
ESTIMATION RESULTS

	FRANCE		ITALY	
	coeff.	t ratio	coeff.	t ratio
TOTAL (T)				
b1	1.251	6.62	1.690	1.20
b2	.888	1.65	.012	.03
a1	.530	3.42	.605	1.12
DEFENSE (D)				
b3	.548	10.25	1.236	8.21
b4	.191	7.98	.392	3.78
a2	.097	2.12	.032	1.02
CIVILIAN (C)				
b5	.729	6.24	.164	.67
a3	.417	3.60	.484	1.11
CAPITAL (K)				
b6	.896	14.30	-.200	.84
a4	.016	1.22	.089	1.14
Carter Nager R	.988		.971	

TABLE 1 (cont'd)
ESTIMATION RESULTS

		JAPAN	
		coeff.	t ratio
TOTAL (T)			
b1		.987	10.11
b2		2.399	2.18
a1		.627	4.70
DEFENSE (D)			
b3		.957	21.72
b4		.032	1.55
a2		.001	.06
CIVILIAN (C)			
b5		1.058	10.70
a3		.208	2.19
CAPITAL (K)			
b6		1.498	1.93
a4		.418	2.68
Carter Nager R	2	.990	

TABLE 1 (cont'd)
ESTIMATION RESULTS

		VENEZUELA		BRAZIL	
		coeff.	t ratio	coeff.	t ratio
TOTAL (T)					
b1		1.646	3.27	.849	16.66
b2		-.033	.59	-.013	.60
a1		.465	2.59	.602	4.18
DEFENSE (D)					
b3		.681	5.06	2.201	7.01
b4		.038	1.92	.988	2.52
a2		.033	1.80	.000	.00
CIVILIAN (C)					
b5		.296	1.82	1.116	12.98
a3		.339	2.38	.285	1.56
CAPITAL (K)					
b6		.663	5.29	.894	5.62
a4		.098	2.27	.317	3.29
Carter Nager R	2I	.874		.981	

TABLE 1 (cont'd)

ESTIMATION RESULTS

	ARGENTINA		SOUTH AFRICA	
	coeff.	t ratio	coeff.	t ratio
TOTAL (T)				
b1	1.178	9.12	1.657	8.42
b2	-.013	.41	.003	.04
a1	.760	3.74	.440	3.75
DEFENSE (D)				
b3	.776	5.74	.692	1.45
b4	-.099	.99	.283	12.93
a2	.003	.14	.076	2.45
CIVILIAN (C)				
b5	.833	5.52	.845	12.05
a3	.468	3.21	.205	2.50
CAPITAL (K)				
b6	.440	2.46	.526	3.06
a4	.289	3.25	.159	2.79
Carter Nager R	.800		.965	

TABLE 1 (cont'd)
ESTIMATION RESULTS

	TURKEY		INDIA	
	coeff.	t ratio	coeff.	t ratio
TOTAL (T)				
b1	2.366	.50	1.245	7.80
b2	-.067	1.64	-.032	.82
a1	.135	.46	.407	3.29
DEFENSE (D)				
b3	1.300	9.73	.882	11.72
b4	.170	3.34	.115	4.24
a2	.010	.42	.081	2.06
CIVILIAN (C)				
b5	.780	4.90	1.008	21.18
a3	.046	.42	.084	1.30
CAPITAL (K)				
b6	.584	2.26	.847	10.51
a4	.080	.47	.242	3.32
Carter Nager R	.981		.876	

variable would indicate that the authorities maximum aspiration would center on a balanced budget; greater values on this parameter are indicative of a willingness to engage in deficit spending even under good economic conditions; values smaller than 1.0 would suggest a desire to employ revenues for purposes of retiring debt or engaging in lending to other sectors of the economy. For the most part we see that the countries in our sample tend toward the former disposition. Indeed, the average value of the estimate for this parameter is approximately 1.4. Only three of the thirteen nations have estimated parameters indicative of the more parsimonious sort, these being: Japan, India, and Brazil. With the exception of Italy and Turkey, all of the parameter values are large relative to their estimated standard errors. This helps sustain confidence in their statistical accuracy.

The second variable in the equation, STAB, is meant to represent economic stabilization concerns. The variable was operationalized in two different ways with its formulation dependent upon the type of country being modeled. In the case of developed countries, unemployment concerns were assumed to be paramount and STAB represents the product of expected revenues time the share of the labor force that is unemployed. For developing countries, the balance in the foreign sector was assumed to be the most critical stabilization concern. The variable was specified as

product of two sets of terms, with one being 1.0 minus the ratio of imports to exports and the other being the expected revenue term.

In both instances, then, the stabilization variable can be seen as an "add-on" term which pivots around the base tendency to spend more or less of expected revenues. For the developed economies, our expectations are generally fulfilled. In six of the seven cases, the parameters are in the expected positive direction, large relative to their standard errors, and assuming sensible values. Italy, again, is somewhat problematic with the estimate being statistically indistinguishable from zero. Among the developing countries the specification met with little success. Indeed, all of the estimates take on signs opposite that expected, although in only one instance is the parameter size more than significantly different from zero.

Parameters for Sectoral Minimal Aspirations

Our expectations were, other things being equal, that the parameters associated with the variables in each of the sectoral minimal aspiration equations would take on values at or close to positive unity. While practically all of the parameters take on statistical significant positive values, the range of the estimates is rather wide. In the defense

sector (eq. 2.2), the bureaucratic momentum variable's parameter takes, on average a value quite close to 1.0 -- though the range of the estimates varies all the way from a low of about .55, in the case of France, to a high of 2.2, in the case of the Brazil. The second variable in the defense aspiration level equation, that dealing with external security considerations, is generally revealed to have a parameter in the direction predicted, though it almost always takes a much lower value than 1.0. Indeed, the average value for this parameter is estimated as being slightly less than .2, indicating a generally lower sensitivity to external threat considerations than one would expect were one to assume that the defense sectors acted as if no external assistance might be expected in countering threats to their nations' security positions.

The bureaucratic momentum variable in the civilian exhaustive expenditure aspiration equation (2.3) has an average estimated parameter somewhat below unity, viz., around .8. Again, across all thirteen states there is a wide range in the value of the estimates with Italy having the lowest, .16, and Brazil the highest, 1.12. These two extreme cases aside, though, the parameter estimates do tend to cluster closer to unity than do any of the others.

In the capital expenditure area (eq. 2.4) the average value of the estimated aspiration level parameter is the lowest of all (approximately .65). For two of the countries, the

United Kingdom and Turkey, the estimate is statistically indistinguishable from zero--suggesting that at least in these two cases whatever funding occurs arises because of slack in the system, given authorities desires with respect to spending and the other two sectors minimum aspirations along with the relative bargaining power of the capital sector. Even excluding these two extreme cases, the average value for this parameter is only about .75, still the lowest of the principal parameters in the minimum aspiration equations.

Across the sample the pattern of estimates seems to suggest that there are distinct differences in the size of the minimum aspirations that the three sectors display. The tendency to seek allocations which would maintain previous levels of performance or operation are, on average, rather different across the three sectors with defense, on the basis of the bureaucratic momentum variable alone generally seeking more than the two civilian sectors and the capital sector being the more demure of the civilian elements.

The Tradeoff Parameters

In general, the pattern of estimated parameters relating to tradeoffs appear to substantiate the conjecture that expenditures are not solely a function of aspirations by spending agencies. Allocation is also a function of the

restrictions imposed from the top and the bargaining power of all the principal actors involved. For the most part, the parameter "a1" is consistently significant. While the average value of this parameter which helps to define the scope of the bargaining situation is approximately .5, there is no uniformity in the size of this parameter across the sample of countries. Indeed, the range of values for this parameter varies from about .14 in the instances of Turkey and the United States, all the way to .75 in the cases of Argentina and the Federal Republic of Germany.

Among the individual sector tradeoff parameters some patterns are apparent. For more than half of the cases the estimates suggest that defense is the least active element in the reconciliation of competing aspirations. The civilian exhaustive and capital sectors seem, on the whole, to be more active and thus achieve generally larger values in terms of the tradeoff parameter estimates.

The Zone of Contention

How large is the zone of contention and is this area of contention one where slack is being parcelled out or where fiscal limits impose such restrictions that cutbacks are required? Using the estimated parameters and the observed values of the exogenous variables in the aspiration level equations we can determine the extent to which the budgetary

regimes of the governments in our sample have been confronted with choices as to whom is to be cut back or whom is to be rewarded. The difference:

$$1.0 - \frac{\sum_{i=1}^n \text{MIN}_i}{\text{TMAX}}$$

when positive indicates that the different sectors have minimum aspirations that sum to a value less than the maximum spending level desired by the fiscal authorities. A negative value implies the opposite and entails a situation where cutbacks are required. Column 2 of Table 2 shows the average value observed in the estimation periods for the thirteen different countries in our sample. It should be noted that in all cases reported only a few country-year observations on this index took a sign opposite that of the reported mean value. Among the developed countries only one, Japan, appears to have had a regime of scarcity, i.e., one where aspirations from below were greater than the total spending maximum imputed to the fiscal authorities. In the six developing countries only two, Brazil and India, had a similar profile.

The index, however, needs to be seen in light of other information available from the system's estimation. For example, it is not necessarily the case that the maximum spending level that fiscal authorities are willing to grant

TABLE 2
THE ZONE OF CONTENTION

NATION	$\sum_{i=1}^n \text{MIN}_i$ TMAX	$1 - \sum_{i=1}^n \text{MIN}_i$ TMAX	$a_1 * 1 - \sum_{i=1}^n \text{MIN}_i$ TMAX
U.S.A.	.555	.445	.066
CANADA	.791	.209	.107
VENEZUELA	.311	.689	.320
BRAZIL	1.347	-.347	-.209
ARGENTINA	.784	.216	.164
UKG	.689	.311	.108
FRANCE	.590	.410	.218
F.R.G.	.670	.330	.254
ITALY	.112	.888	.537
S. AFRICA	.537	.463	.204
TURKEY	.322	.678	.092
JAPAN	1.177	-.177	-.111
INDIA	1.121	-.121	-.049

necessarily goes to completely fulfill the desires of the spending agencies. Just how much latitude is granted is reflected in the overall tradeoff parameter, "a1" (refer to Table 1), that is embodied in the TMAX equation. That value times the index reported in the second column provides us with a refined measure of the size of the zone of contention (col.3). The larger the absolute value of the product of these two numbers, the broader the real zone of contention and the wider the range of differences possible between minimum aspirations and actual or finalized outcomes.

Amongst the developed countries only Italy manifested an extremely large absolute value, in this case, indicating that about 50% of the average gap between what the spending agencies minimally desired and the maximum total aspired to by the fiscal authorities was available to be parcelled out according to whatever standard compromise procedures were extant. Germany and France have values a bit over twenty percent while the U.K., Canada, and the U.S. have values of less than eleven percent. Japan, with a regime of scarcity, has a negative eleven percent score. Amongst the developing countries, Turkey, Argentina, and South Africa are all in the modest range of ten to twenty percent while Venezuela has a value of over thirty percent. The two constrained developing countries, India and Brazil, have values of about five and twenty percent, respectively.

The patterns so far have been somewhat diverse. Most of the

countries, ten out of thirteen, seem to operate under regimes where minimum aspirations by the spending agencies in combination with the concerns of fiscal authorities apparent in the desired maximum total leave a fair amount of slack which could theoretically be apportioned to the spending agencies. However, the willingness of fiscal authorities to do this varies widely. We turn now to consider who wins and who loses under these diverse conditions.

Within the zone of contention, the general pattern across the developed countries is one where defense seems to play a small role. Indeed, excluding the case of the U.S., the combined size of the tradeoff parameters for the civilian and capital areas suggest that at least 80% of the reconciliation activity (upward or downward) is concentrated outside of the defense sector. The range extends all the way up to 100% in the case of Canada and, for all intents and purposes, Japan as well. The U.S. case reverses the picture somewhat. Here the defense sector plays the dominant role with close to 65% of the reconciliation activity affecting defense. A somewhat similar pattern holds with respect to the developing countries in our sample. Indeed, for all of these states the results suggest that the non-defense elements are involved in at least 80% of the reconciliation activity.

Summary

Returning to the questions outlined earlier in the paper a number of tentative conclusions can be drawn on the basis of our analysis of the experience of the thirteen nations in our sample. The first question dealt with the degree of interdependence within the budgetary process: Are budgetary outlays purely a function of independent processes? The evidence presented here would lead us to reject the notion that independent processes alone determined the spending patterns revealed in the past by these nations. In the overwhelming majority of cases the estimated tradeoff parameters are significant and thus suggest that, on the whole, the overall budgetary process is a mixture of both contention and compromise.

However, the extent to which top-down versus bottom-up forces are dominant is a difficult matter to summarize. Clearly, the tendency of fiscal authorities to move away from a concordance between total spending and expected revenues minimizes the pressures that emanate from the top. On the other hand, there appears to be an inverse relationship between how close fiscal authorities wish to come to a balanced budget and the portion of the gap between their total spending target and the spending agencies minimum that they are willing to parcel out.

In the defense area, what may we conclude with regard to the

significance of internal versus external forces in the shaping of its budget? The results of our analysis would suggest that both the defense sector's parochial desire to maintain existing force levels, an internal consideration, and a sensitivity to threats emanating from a multi-state international environment, an external consideration, are significant forces in shaping both aspirations for defense spending. In about half of the states examined, pressures deriving from other actors in the budgetary process also combine with these elements in the final determination of the defense budget.

This latter point leads to the question of tradeoffs. To a higher degree than the other spending categories, defense appears less likely to suffer from the competing desires of other actors. At the same time, the results also suggest that under tight fiscal conditions both civilian exhaustive and capital outlays are more likely to be squeezed by defense. In turn, slack will tend to enhance the position of the civilian elements to a greater degree than it will defense.

CONCLUSION

This study was undertaken with the intention to evaluate the utility of a model of central government budgeting across a

diverse set of national experiences. The model is an extension of the "Competing Aspirations Level Model" and is based on the behavioral theory of decision making. Represented is governmental budgeting as a two step process wherein desired levels of spending are first formulated by competing budgetary agents (desires based on parochial organizational and environmental concerns) and then reconciled on the basis of stable bargaining power rules. The determination of defense, civilian exhaustive, and capital outlays are included in the model specification. Using a systems estimation technique the model was applied to thirteen countries, including seven OECD and six LDC lands. The model was found to be a useful tool in accounting for the budgetary behavior of the national governments of these countries.

A number of conclusions can be drawn from the analysis reported here. First, the evidence supports the notion that independent process specifications are, by themselves, inadequate descriptions of the determination of budgetary totals and components. While parochial organizational and environmental concerns are critical in the budgetary process, they tell only half the story. The competing aspirations of other budgetary agents and their bargaining power needs to be considered when dealing with the transformation of desire into actuality.

Second, in the specification of the determinants of

parochial organizational and environmental influences, analysis would be greatly aided by the use of indices that bear a direct relation to the theoretical substance of the putative causal agent or process. Our use of such measures, particularly in the area of defense and exhaustive civilian spending has proven rewarding. Thus, replacing the ersatz measures of one's own and one's principal competitor's defense spending levels and substituting in their stead specifications that more adequately capture organizational tendencies to seek to maintain extant levels of operations in light of changing costs and responses to international threats from a multi-state system composed of many states with changing hostile intentions and capabilities has allowed us to demonstrate the importance of both these influences on defense budgeting. Controversy has centered on this issue, and most previous analysis has generally come down on one side or the other; rarely is support adduced for a synthetic formulation such as that employed here.

Third, the results of our analysis suggest that there are both similarities and differences in the style of budgetary politics practiced across the fairly wide variety of national experiences studied. Most of the countries examined seemed to have engaged in a fair amount of bargaining for resources above minimal aspirations by spending agencies. Only three of the thirteen seemed embedded in regimes of scarcity where bargaining is

basically on the question of "who loses what?". Defense spending seems to have been, on average, the most insulated agent--although this appears to have had both its benefits and its drawbacks. While seemingly more likely to achieve operating levels consistent with past practice, regardless of cost, and while generally responsive to threats from the international environment, defense spending seemed least susceptible to benefitting from fiscal windfalls as fiscal authorities loosened overall constraints. On the other side of the coin, tightening fiscal conditions would appear to have injured defense to a lesser degree than it did the civilian competitors.

We think the direction of research represented here, which attempts, as Gist (1982) has advocated, to integrate the incremental and competitive perspectives, should help improve our understanding of budgetary politics. Our present efforts continue along these lines and include three aspects. First is the need to explicitly include within the specification of the model a representation of the decision-making process surrounding the determination of revenues and expectations thereof. A similar model to that used here which incorporates such a specification can be seen in the work of Auten, et al (1984). A second need is to be seen in the specification of the influence of international conditions on the determination of defense spending. While the results of our present formulation are certainly

satisfactory, it is clear that the assumption of self-reliance in countering threats should be revised so as to include assessments of support from other states in the system. The third need is to be seen at a higher level of abstraction. The point here is that a comprehensive explanation of the sort of budgetary patterns revealed in this analysis is required. Thus, our efforts are also directed toward the expansion of the size of our sample with the intention of first undertaking the type of analysis conducted here and then attempting to evaluate these results in light of institutional and environmental structures which have been argued to be critical influences on the style and character of budgetary processes (see, e.g., Wildavsky, 1975).

NOTES

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1. All budgetary data used here refer to central government accounts supplemented by data on social security funds. In the main, international data sources were employed with the principal being: THE WORLD TABLES (various volumes) from the World Bank, The United Nations' STATISTICAL YEARBOOK (various volumes), the International Monetary Fund's GOVERNMENT FINANCIAL STATISTICS (various volumes), the O.E.C.D.'s NATIONAL ACCOUNT STATISTICS (various volumes), and the International Labour Organization's publication, THE COST OF SOCIAL SECURITY (various volumes). Data on defense expenditures were mainly drawn from various volumes of the SIPRI YEARBOOK, WORLD ARMAMENT AND DISARMAMENT. It should be noted that an extensive effort was made to develop a consistent and comparable set of accounts for the nations under study by working up from a set of about twenty-five expenditure and revenue accounts.

Expenditure variables as well as any other variables defined in monetary terms were expressed in constant price 1970 values. In the main, a GDP deflator was used. Principal sources for this variable included the U.N. YEARBOOK OF NATIONAL ACCOUNT STATISTICS (various volumes), a tape supplied by the United Nations Office for Development Research and Policy Analysis, and the International Monetary Fund's INTERNATIONAL FINANCIAL STATISTICS YEARBOOK (various volumes).

Data on unemployment and foreign sector balances derive from, respectively, the International Labour Organization's Yearbook of Labour statistics (various volumes) and the United Nations' YEARBOOK OF INTERNATIONAL TRADE STATISTICS (various volumes). Gross Domestic Product data were drawn mainly from the U.N. YEARBOOK OF NATIONAL ACCOUNT STATISTICS (various volumes).

The military capability index was constructed by the author who relied principally on the International Institute for Strategic Studies annual publication, THE MILITARY BALANCE,

This data was supplemented by information provided by the Correlates of War Project and a variety of other sources. Descriptions of the coding and scaling procedures are available in earlier papers (Cusack, 1981, 1984). An explanation of the methods used to determine the unit cost of defense capabilities, the autonomous military inflation terms, and the depreciation rate is available in a forthcoming paper (Cusack, 1985). Data used to construct the hostile intent scores are scales of hostility and cooperation developed using the events data from COPDAB (Azar, 1980; Cusack, 1984).

2. It should be noted that in constructing the threat and associated measures, we include in the specification of the system only twenty-five major countries. These represent the set of states in the GLOBUS Project sample and include, in addition to the thirteen states examined in this paper, the Soviet Union, Poland, Czechoslovakia, the German Democratic Republic, the People's Republic of China, Indonesia, Pakistan, Iran, Saudi Arabia, Egypt, Nigeria, and Mexico.

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