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PUBLIC EXPENDITURE DECISION MAKING:
A COMPARATIVE ANALYSIS

by

Thomas R. Cusack

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Thomas R. Cusack

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Abstract

An effort is made to draw out some of the fundamental distinctions amongst the many approaches to explaining government resource allocation behavior. The "relative dominance of the environment" and "decision making imagery" are suggested as two principal organizing dimensions. A brief survey of the literature demonstrates some of the principal themes that are apparent using this framework. Drawn from one of the many approaches, the Competing Aspiration Levels Model(CALM) is described and then applied to the recent budgetary history of twelve developed market systems. The results of the empirical analysis suggest that some features of the budgetary process in the U.S. make it quite distinctive relative to other industrialized democracies. In particular, it is shown that U.S. fiscal authorities are relatively less committed to balancing revenues and expenditures and that the military sector is more sensitive to international security calculations in the formulation of budgetary targets. Comparison of the results for the twelve countries studied also suggest little support for the hypothesis that wealth/predictability in the budgetary environment leads to greater use of incrementalist strategies. The results of the comparative analysis, however, do support the contention that the defense and civilian sectors are enmeshed in a competitive situation implying trade-offs between the two in spending levels.

Zusammenfassung

Versucht wird, die grundlegenden Unterschiede zwischen den vielen Erklärungsansätzen der Dynamik der öffentlichen Haushalte herauszuarbeiten. Die "relative Dominanz der Umwelt" und die "Typisierung des Entscheidungsprozesses" bilden die wichtigsten Bezugspunkte zur Klassifizierung dieser Erklärungsansätze. Eine kurze Übersicht der Literatur zeigt sodann die zentralen Themen dieses Bezugsschemas auf. Das "Competing Aspiration Levels Model" (CALM) wird erläutert und angewandt auf die Entwicklung der öffentlichen Haushalte zwölf westlicher Industriestaaten während der Periode 1955-1979. Die Ergebnisse der empirischen Analyse erlauben es, den Budgetprozeß der Vereinigten Staaten als sehr verschieden von dem der anderen Staaten zu charakterisieren. Insbesondere wird gezeigt, daß amerikanische Finanzbehörden dem Budgetausgleich weniger Gewicht beimessen, und daß der militärische Sektor bei der Formulierung der Haushaltsziele eine höhere Reagibilität in Bezug auf internationale Sicherheitsüberlegungen aufweist. Die vergleichende Analyse liefert zudem kaum eine Bestätigung der These, daß ein hohes Maß an Reichtum/ Vorhersehbarkeit in der haushaltspolitischen Umwelt einer gesteigerten Anwendung inkrementeller Strategien förderlich ist. Die Ergebnisse der vergleichenden Analyse unterstützen jedoch die Auffassung eines Wettbewerbes zwischen dem militärischen und zivilen Sektor, der ein inverses Verhältnis zwischen den Ausgabenniveaus dieser beiden Bereiche begründet.

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1 Introduction[1]

The growth of government has been one of the most salient phenomena in the western industrialized societies during the post World War II era. As we come to the end of the twentieth century and stand poised to enter the twenty first, the source of this growth remains both an open question and one that has significant political, social and economic consequences. In very recent years there is some evidence to suggest that this expansionary tendency has slackened within some countries while persisting in others. The basis for this selective slowdown is part of the larger puzzle regarding the question of government size and its determinants. Scholars have not ignored this question. Indeed, the literature addressing the problem has more than grown apace. However, the only consensus that appears in this literature is that both the theoretical bases and empirical claims are extraordinarily diverse and contradictory (e.g., Amacher, et al, 1975; Tarschys, 1975; Peacock and Wiseman, 1979; Larkey, et al, 1981). This diversity and contradiction suggests a strong need for a systematic investigation of the problem that both attempts to clarify the theoretical bases of the arguments and their empirical adequacy. In this paper we will attempt to demonstrate that many of the competing (and perhaps complementary) explanations of government resource allocation can be organized within a conceptual framework that allows us to understand some of the principal elements involved in their arguments. We then draw upon one of the many plausible theoretical structures and evaluate the utility of this approach by applying it to a large set of industrial democracies.

2 Explanatory Modes

Almost legion are the ways in which theorists have attempted to grapple with the problem of explaining the determination of government resource allocation behavior and in particular with the way in which

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1 This report is based on research carried out in conjunction with the GLOBUS Project. It is a revised version of a paper presented at the Volkswagen Foundation sponsored conference on "The Growth of Government in Developed Economies," held at the University of Osnabrück, in November, 1986. My thanks to Stuart A. Bremer for suggesting certain revisions. In addition, I would like to thank Gary Flemming, Dale Smith and Uwe Zimmer for their help in the research conducted for this report.

broad budgetary aggregates and specific budgetary items are shaped. Two of the most significant dimensions that may be used to characterize the governmental system and theories pertaining to how that system allocates societal resources include (a) the relative influence of the environment and (b) the image of decision making used to characterize its workings.[2]

2.1 Relative Primacy of the Environment

Much of macro level theorizing and analysis in the social sciences has its roots in nineteenth century thought. Because of the apparent superior relative dynamism of the social and economic spheres, and for deeply rooted reasons of class interest, the role of the state in much of nineteenth century social and economic theory tended to be ignored or dismissed. More a residual nuisance, the state's functions and activities seemed unimportant and of little interest. The intellectual tradition carries on today and imbues many of our theories with a distinct anti-statist hue. It certainly minimizes the autonomy of the state and as a consequence attributes outcomes flowing from the state as merely the derivative product of social and economic forces that overwhelm it. The state is superstructure atop the engine of society. The state system rides on the back of society and one's understanding of what government does needs to based on an appreciation of the laws of macro social and economic dynamics (cf., Tilly, 1984; Evans, et al., 1985). Little is to be gained from peering inside the "black box" of the state for it has minimal transformation capacity and slight competence for self-steering and autonomous restructuring. In cybernetic terms, one could assume that the state has no interesting regulative capacity and, at best, merely amplifies the variety of outcomes generated by the socioeconomic system (Ashby, 1956; Deutsch, 1963).

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2 These dimensions could be employed usefully in the study of many of the forms of political, social and economic organizational behavior. An interesting theoretical statement that somewhat parallels this argument is to be found in Nordlinger (1981).

This view of the political system and of government is typical of the sociologically based theory we have come to associate with the structural functionalist thought of writers such as Easton (1965). While politics is clearly the realm of the "authoritative allocation of values," the independent or even semi-independent production of outcomes by government is minimized. This stands in contrast with an opposing view, the statist approach (cf., Poggi, 1978). This approach emphasizes the central importance of the state. Deriving from a long historical tradition that has paralleled the emergence and development of the modern state, it ascribes an autonomous role to government seeing in it various strengths that help mold and shape the socioeconomic environment as it attempts to ensure survival in a highly competitive world full of similar entities. Indeed, since Machiavelli's time the state has been accorded an independent status of the highest order in this intellectual tradition. In this view, politics and state activity are very deeply rooted in the problem of "us versus them" and resource allocation is tightly intertwined in this conflict.

2.2 Decision Making Imagery

The second organizing dimension relates to the imagery employed to describe the decision making processes within the governmental system. Practically all explanations attribute some decision making capacity to the state, although as we have noted above, this may merely be a mirror or repetition of choices in the socioeconomic sphere. The recognition of the importance of decision making in the theoretical apparatus of the various approaches reflects a basic assumption that choice and some measure of free will underlies social behavior; in explaining government resource allocation this is meaningful and obvious.

On the one end of this dimension stand theoretical approaches that represent the state as a unified and unarticulated actor. This can take a number of forms and two fairly common ones portray the state as either an organic whole with a relatively undifferentiated structure or else ascribe almost total control of the state apparatus to a single individual because of the analytical convenience such an assumption provides.

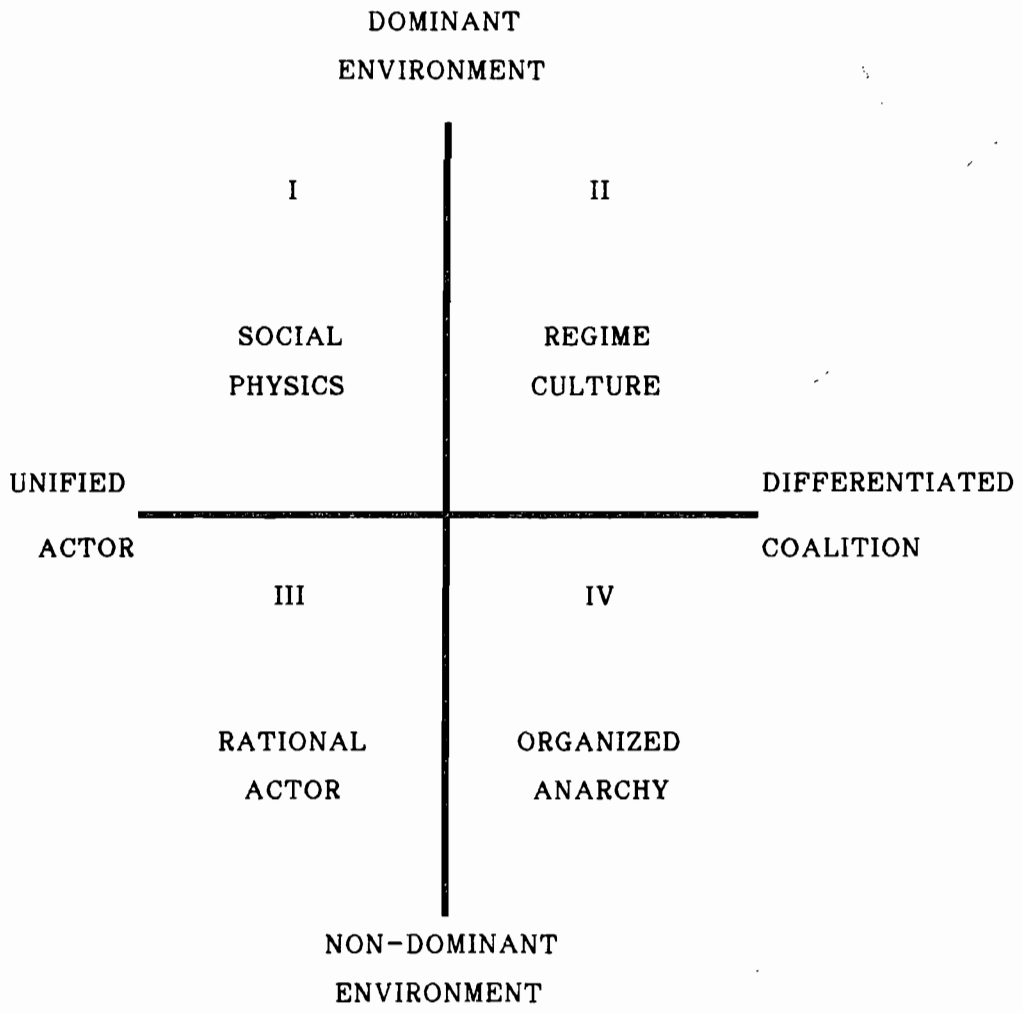
At the opposite end of this dimension one sees the state portrayed as a buzzing welter of disjointed elements and agents. Here the decision making process contains varying degrees of disorder and minimal conscious collective rationality. Although the image may at times evoke a sense that government is little more than an "organized anarchy," most approaches that reside toward this end of the scale incorporate structural characteristics which purportedly help impose some order while at the same time allowing for the play of various contending interests.

2.3 Dimensional Intersection

Our contention is that these two dimensions provide a sound basis for organizing the vast literature on government growth. Taken in combination, in this instance assuming that they can be portrayed as orthogonal scales, there are in the simplest format four categories within which the different approaches can be placed. A graphic portrayal of this configuration is provided in Figure 1. In quadrant I one sees the intersection of approaches that depicts the socio-economic environment as the prime moving force and assumes government to be a unified entity. Quadrant II depicts the conjunction of environmental primacy and assumed differentiation within the government sector. The third quadrant portrays the situation where government is assumed to be an autonomous and vigorous actor and one which has a tightly integrated, unified decision making process. In the last quadrant, autonomy is again assumed but in this instance government is itself represented as a grouping or coalition of actors with various degrees of independence.

FIGURE 1

ORGANIZING
DIMENSIONS



I: Dominant Environment/Unified Government

A very rich tradition characterizes this type of approach to the explanation of government activity. Indeed, one might suggest that explanations relying on this type of imagery constitute a very significant portion of research and writing dealing with the problem

area. Two outstanding characteristics typical of this type approach include the following. First, there is the implicit assumption that the dynamic elements of the social world are to be found outside the analytic and real-world boundaries that define government and the state along with the related assumption that the state itself is a fairly coherent and unified transmission mechanism of the forces of supply and demand at work in the political, social, and economic environments. Second, there is the use of causal imagery that describes the social process as reflecting a kind of ineluctable dynamic that moves society, and thus the state, along some foreordained path(s) of "development."

In short, this approach reflects the macro sociological tradition that has its origins in 19th century thought that itself grew out of an overriding concern with establishing the "natural laws" that govern social relations and their dynamics. A primary example of this theorizing stems from the German economist, A. Wagner (1883), who posited the existence of a "Law of Increasing State Activity" that derived from changing socioeconomic characteristics of society, themselves the derivative of economic progress and the growth of income that accompanied it. Later this approach spawned an incredible number of empirical studies which suggested that a germ of truth existed within the argument. The approach itself, however, has been subject to serious criticism (e.g., Bird, 1971), and has been amended to take into account the critical importance of major systemic upheavals (Peacock and Wiseman, 1961), and the significant structural changes that societies undergo with the transition to third sector, i.e., service oriented, dominance (Baumol, 1967). The roots of the argument remain unaffected. In its simplest imagery, the analytically useful "median voter" derives greater income through economic progress and shifts along the Engel Curve toward a desire for greater satisfaction of needs that are more efficiently filled by the servant of the public, the state. There may be hesitancy to continuously allow the expansion of the cost of satisfying these needs (Peacock and Wiseman, 1961), but exogenous shocks to the system have the effect of expanding tolerance. The state stands in the service of a large and effectively homogenous board of directors within society.

II: Dominant Environment/ Non-Unified Government

In many instances the theories based on the first approach just outlined implicitly assume that not only is government itself unified but that the forces within the environment are themselves coherent. Such coherence derives from either some independently settled upon contract that joins together separate interests in a ruling compact or that through some simple means of aggregating multitudinous individual preferences which are packed within a coherent policy package. This extra-governmental solution is then foisted upon the state and the outputs of the government system faithfully reproduce that solution. There is an alternative approach which still emphasizes the dominance of the environment but which imputes a non-unified character to the governmental system.

This lack of unity or coherence reflects the diversity of environmental forces. Still, the channels through which these pressures drive the governmental system need to be specified. Here, either explicitly or implicitly, analysts use the device of postulating a set of "regimes" that formally or informally control the policy process from without. Thus, within democratic capitalist states the rise and growth of the welfare state is argued to reflect corporatist political forces (cf., Wilensky, 1981). Alternatively, political parties, rooted in polities sharply divided on a class basis enter and withdraw from the policy process and impose sharply different social programs (cf., Castles, 1978, 1982). Simultaneously, different elites and other powerful groups within society seize control of the national security policy area and drive it independently of concerns in the social and other areas (Melman, 1976; Richardson, 1960). Overall, the degree of societal resources channeled through government has been argued to be a function of the scope of national dependence on the international economy and is used by different interests within society to help deal with the continuous adjustment problems endemic to high interdependence (Cameron, 1978).

The broadest based effort to develop a complete explanation within this approach is to be seen in Wildavsky's recent writing (1985; Webber and Wildavsky, 1986) on government resource allocation. Here regimes

are placed within a "cultural" matrix through which he proposes to describe and explain the dynamics of budgeting. This argument is based on the assumption that what occurs in government merely reflects the pervading culture of society and that the latter, through the integration of potentially conflicting interests and values, promotes the use of behavioral rules in all aspects of life. Government is one of those aspects and the transformation rules it uses are merely those foisted upon it by a dominating culture.

III: Non-Dominant Environment/ Unified Government

Where analysts reject the notion of environmental dominance and accept the notion that the state has an autonomous role within political affairs they often times employ an imagery of the state and the way in which the state behaves which is suggestive of a degree of coherence and unity that implies government is for all intents and purposes a unitary actor. This theoretical style is symptomatic of many of the explanatory efforts found in the field of public choice. Here the government becomes one of a number of critical actors within society and its objective is to maximize some utility function which usually includes such valued objectives as survival and income. Confronted by a structured environment, the governmental actor behaves in a "realistic," i.e., rational way to insure an optimal return with respect to its choices. Now government is clearly filled by many people with varying levels of authority and power -- not to say differences in values. For many public choice analysts, though clearly not all, such diversity is substantively uninteresting and analytical cumbersome. By making the assumption that the government is incarnate in the form of a single individual, e.g., the highest political leader, or a coherent and integrated coalition, e.g., a political party, the analyst disposes of the interest aggregation problem, in other words, the specification of social welfare function, and moves on to the more tractable problem of explaining the budgetary choices of an individual that behaves "as if" it is rational.

Some rather interesting theoretical and empirical work has been done within this school of thought. For example, following on from Downs (1957, 1960), the work of Nordhaus (1975), MacRae (1977), Frey (1978), and Tufte (1978) in establishing a theoretical and empirical basis for the "political-business cycle" in Western democratic systems has spawned a tremendous literature (cf., Mullineux, 1985). Probably the most extensive effort here has been made by the "Zürich school" (cf., Frey and Schneider, 1981). Similar work has gone on as well in trying to account for government resource allocation policies of new and entrenched elites within centrally planned systems (Bunce, 1980).

It should be noted that some of the work in the public choice has come to accept the existence of a degree of pluralism within the governmental system. Thereby, some theorists have been able to point out the importance of the dispersion of power within government and its implications for budgetary behavior (cf., Niskannen,1971; Bendor and Moe, 1985; Moe, 1985; Frey and Schneider, 1979, 1981).

IV: Non-Dominant Environment/ Non-Unified Government

This last approach derives from a basic rejection of many of the assumptions often employed within approaches such as public choice. In particular, the notions of rational maximization and the coherence of the policy making process are dismissed as inadequate. One of the foundations upon which theoretical and empirical work in this area has been built is the behavioral theory of decision making. This theory assumes that neither individuals nor organizations are rational maximizing creatures. Posited instead is the notion of limited rationality or satisficing. Specifically with respect to organizations, the theory asserts that they very pluralistic character of any social institution is a key to its behavior and is not an aspect to be dismissed nor to be assumed away. Organizations, and government is an organization, are coalitions and the structure and weight of the actors in those coalitions, as well as the established procedures (organizational truce), are important in understanding why organizations do what they do.

Following from the work of Simon (1947,1955,1956) and Cyert and March (1963), a number of analysts have attempted to employ this approach in studying government resource allocation behavior. Early work by Davis, Dempster and Wildavsky (1966,1967) prompted numerous efforts at attempting to establish basic rules of budgetary behavior within government. More comprehensive work later attempted to develop full-scale representations of entire budgetary processes (Crecine, 1969; Hoole, 1976) and to elaborate the menu of strategies employed within budgeting (Wildavsky, 1975). Further theoretical and empirical work in this area produced some insightful analysis of the trade-offs and interdependencies within the budget and the budgetary process (Fischer and Crecine, 1981; Fischer and Kamlet, 1984).

3 Specifying and Testing One Approach to Explaining Government Resource Allocation Behavior

3.1 The Competing Aspiration Levels Model

In addressing the question of government resource allocation and in comparing the experiences of a number of developed states we will draw upon the tradition of the fourth quadrant. The model used is a modification of the Competing Aspiration Levels Model (CALM) of the budgetary process originally put forward by Fischer and Kamlet (1984). CALM has a number of attractive aspects. It allows for an explicit representation of the budgetary constraints that apply to the allocation problem. Specifically, it incorporates an identity involving total expenditures, total revenues, and the surplus or deficit. It provides an explicit representation of the interdependence among the major expenditure components. Specification with respect to the parochial environmental and organizational factors that have an influence on spending levels is fairly flexible. CALM also provides the possibility of isolating the competitive positions of different budgetary sectors and the trade-offs that follow from these positions. Finally, CALM has been applied successfully to a number of different national settings (Fischer and Kamlet, 1984; Kamlet and Mowery, 1986; Cusack, 1985a).

The Competing Aspiration Levels Model represents budgeting as a two-step process. The initial step deals with the development of independently generated aspiration levels for major spending aggregates. These are the major spending components as well as a total spending target. With respect to the individual spending components, the competing governmental sectors are portrayed as generating minimal spending level targets. These desired minima are assumed to flow from parochial organizational interests and environmental influences. Simultaneous with these bottom-up developments, the model portrays the development of a potentially conflicting product from the top-down. In this instance, fiscal authorities are represented as generating their own preference for a maximum level of total spending which reflects their concerns for solvency and stabilization.

In the second step of the process, any conflict between these independently generated aspirations is resolved. At work in this resolution stage are a number of factors which shape the final outcome for any particular budgetary component. These include not only the autonomously generated aspiration for that particular component, but also the independently generated aspirations of competitors for budgetary shares, the constraints independently produced by the fiscal authorities, and the bargaining power of each of these actors.

The resolution stage of the CALM equation system used in this paper is specified in the following way.

(Set 1)

$$T_t = DMIN_t + CMIN_t + KMIN_t + a_1 \cdot (TMAX_t - DMIN_t - CMIN_t - KMIN_t) + u_{1_t}$$

$$D_t = DMIN_t + a_2 \cdot (TMAX_t - DMIN_t - CMIN_t - KMIN_t) + u_{2_t}$$

$$C_t = CMIN_t + a_3 \cdot (TMAX_t - DMIN_t - CMIN_t - KMIN_t) + u_{3_t}$$

$$K_t = KMIN_t + a_4 \cdot (TMAX_t - DMIN_t - CMIN_t - KMIN_t) + u_{4_t}$$

$$T_t = D_t + C_t + K_t$$

where:

T = Total Spending (less debt management payments)

D = Defense Spending

C = 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

a_i = Bargaining Power of ith actor.

This represents a slightly more disaggregated representation relative to Fischer and Kamlet's formulation in that our version decomposes the non-defense spending into two elements, consumption and transfers on the one side, and capital outlays on the other. Our reason for disaggregating further was the assumption that capital spending targets are driven by forces quite different from those driving civilian consumption and transfers and that the bargaining weights of the two sectors are unlikely to be the same. One other difference should be noted. Government debt management payments are excluded from the system. Total expenditure and revenue (see below) figures are net of interest payments. We make the assumption that in advanced capitalist democracies these are not subject to trade-offs and effectively act to crowd out other spending elements, other things being equal.

The "a" coefficients in the military, civilian and capital equations represent the bargaining powers of the respective sectors. The bargaining power of the fiscal authorities is represented by $1 - a_i$, the parameter in the total expenditure equation. Both these implications hold under the restrictive assumptions that the sum of the "a"

coefficients in the sectoral equations sum to less than unity and that each individual sectoral bargaining coefficient ranges between zero and positive unity. Finally, the sum of the sectoral coefficients is also constrained to being equal to the a_1 term in the total expenditure equation.

The value of a_1 reflects the degree to which fiscal authorities are able to place constraints on spending aspirations developed from the bottom-up. The higher the value of a_1, the less effect the maximum aspired to by these authorities plays a role in restraining autonomously developed spending by the sectors, and vice versa.

On the other hand, the value of any individual sector's bargaining weight reflects the degree to which its minimal aspiration can be improved upon during budgetary periods when the combination of the top-level fiscal target and the sum of the sectoral targets independently combine to produce "budgetary slack," i.e., when:

$$TMAX_t > DMIN_t + CMIN_t + KMIN_t$$

Under that condition, the actual amount of slack is represented within what Fischer and Kamlet describe as the "zone of contention":

$$a_1 \cdot (TMAX_t - DMIN_t - CMIN_t - KMIN_t)$$

Should, however, the sum of sectoral aspirations exceed the maximum aspiration for total spending held by the fiscal authorities, i.e.,

$$TMAX_t < DMIN_t + CMIN_t + KMIN_t$$

the outcome of the reconciliation process in the presence of bargaining strength on the part of the those authorities ($a_1 < 1$) is to penalize larger values for sectoral bargaining weights. Essentially, then, the system represents reconciliation as an organizational truce with "fair-share" bargaining whereby sectors most favored during times of plenty are least favored during times of scarcity. Any particular sector's relative gain or loss is then equal to the ratio of its bargaining weight relative to the a_1 term within the total expenditure equation.

The reconciliation process is activated by discrepancies that are generated when different actors independently produce demands or targets that conflict. The targets are represented as minimum level aspirations on the part of the spending sectors and a maximum level aspiration or tolerance on the part of the fiscal authorities for the total level of spending. The aspiration level equations used in the present model take the following form:

(Set 2)

$$TMAX_t = b_1 \cdot ER_t + b_2 \cdot STAB_t + u_{5_t}$$

$$DMIN_t = b_3 \cdot DMOM_t + b_4 \cdot \mathrm{SEC}_t + u_{6_t}$$

$$CMIN_t = b_5 \cdot CMOM_t + u_{7_t}$$

$$KMIN_t = b_6 \cdot KMOM_t + u_{8_t}$$

where:

ER = Expected Revenues (less debt management payments)

STAB = Unemployment Rate times Expected Revenues

DMOM = Depreciation in Military Capability Units (conventional only) times Unit Cost of Capabilities

SEC = Monetarized Value of Capability Acquisition Required to Close Gap Between Expected Threat and Sum of Own Capabilities and Expected Support (last element an extension of definition employed in 1985a)

CMOM = Product of Previous Performance Level in Civilian Area, Expected Clientele Size, and Income Target

KMOM = Previous Share of Societal Income Allocated to Government Investment times Expected Level Societal Income

For the fiscal authorities, the aspiration level for total spending is specified as being a function of expected income and stabilization policy concerns. In effect, their maximum tolerance for total spending is

postulated as reflecting some "natural" inclination to employ resources available to them, an inclination perhaps shaped by what Frey and Schneider (1978) describe as the financial community's and general public's desires to see a "reasonable" relationship between revenues and outlays, modified by a concern with employing the budget to stimulate or dampen aggregate demand in a counter-cyclical fashion. The revenue term thus incorporates an income effect that the model, as specified, treats as exogenous.[3] The concern for unemployment explicit in the equation is meant to capture authorities' political sensitivity to economic performance and the use of budgetary instruments to deal with problems in that domain.[4]

The specification of the military authorities' minimal target for defense spending is meant to improve upon the standard shorthand representation of parochial and external elements usually portrayed by one's own and a single international competitor's previous spending levels (cf., Russett, 1983). In their stead, variables closer to the theoretical conceptions in the Richardson (1960) tradition are used.

The bureaucratic momentum variable incorporates capital and labor requirements in the defense sector, depreciation of the sector's capabilities, and changing capability acquisition costs. Thus, DMOM is defined as:

$$DMOM_t = DDEP \cdot CAP_{t-1} \cdot UCD_t$$

where: $DDEP$ = Rate of depreciation in conventional military capabilities;

CAP = An index of conventional military capabilities based on capital and

---

3 The treatment of revenues as an exogenous element of the system is a fairly critical assumption, one that we will in later efforts alter. There is conflicting evidence, at least in the case of the United States, regarding whether revenues lead or follow expenditures (see Blackley, 1986; von Furstenberg, Green, and Jeong, 1985).

4 Rice's (1983) extensive comparative study of industrial democracies suggests that this is one of the most consistent contributors to the growth of total spending in the post World War II era. For supporting evidence on the importance of unemployment in loosening fiscal restraint in the United States, see Lowery (1985).

labor inputs;

UCD = Measure of the unit cost of capabilities deflated prices.

This variable is a more adequate measure of the considerations that would shape a military establishment's spending aspirations when it comes to defining in cost terms what is needed to maintain or enhance operating levels. Its rationale and measurement are discussed in earlier papers (Cusack, 1981, 1985b).

On the external side analysts often resort to representing security concerns through the shorthand device of specifying some principal opponent of the state and incorporating that opponent's military expenditures as a determinant of state's own defense outlays. There are many problems with such an approach (cf. Stoll, 1983). Two that are critical include linkage between threat and spending and the complexity of the international environment.

Spending levels are not always a good measure of a nation's capabilities, and, hence, the potential threat that it poses. Changes in spending levels can arise from a number of sources and the purpose of signalling threat is only one potential basis. Recognition of the need to develop capability-based measures for use within military spending reaction functions is becoming more common (cf., Luterbacher and Allan, 1981; Ward, 1984). The measures used here are reported upon in extensive detail in other reports (Cusack, 1981, 1985, 1987).

The modern state is embedded in a large multi-state system of often fluid character. National security officials make their calculations of defense requirements in a more subtle way then by continuously focusing their attention upon a single opponent. The sources of threat directed toward any one state are multiple and the hostile and cooperative intentions of most states change through time. We have attempted to capture some of these multiple dynamics by constructing a composite measure of international security based upon assessments of both threat and support from within the international system:

$$SEC_t = \left(ATHREAT_{t-1} - ASUPPORT_{t-1} - CAP_{t-1} \right) \cdot UCD_t$$

where: *ATHREAT* = Moving average of the *THREAT* index defined below; and
ASUPPORT = Moving average of the *SUPPORT* index defined below.

THREAT is an annually measured index of the sum of the product of hostile intentions and capabilities of other states in the international system. *SUPPORT* represents the the sum of the product of the cooperative intentions and capabilities of other states in the international system. The formula for both is similar and the *THREAT* index is as follows:[5]

$$THREAT(j)_t = \sum_{i=1}^{n} RHINTENT(i,j)_t \cdot CAP(i)_t$$

where : j = receiving nation;
i = acting nation;
n = 50 nations (largest military budgets as of 1970);

$$RHINTENT(i,j)_t = \frac{HINTENT(i,j)_t}{\sum_{j=1}^{n} HINTENT(i,j)_t}$$

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[5] $$SUPPORT(j)_t = \sum_{i=1}^{n} RCINTENT(i.j)_t \cdot CAP(i)_t$$

where : j = receiving nation;
i = acting nation;
n = 50 nations (largest military budgets as of 1970);

$$RCINTENT(i,j)_t = \frac{CINTENT(i,j)_t}{\sum_{j=1}^{n} CINTENT(i,j)_t}$$

$$CINTENT(i,j)_t = \frac{CSENT(i,j)_t^2}{HSENT(i,j)_t + CSENT(i,j)_t}$$

note, *HSENT* and *CSENT* = respectively, weighted annual flows of hostile and cooperative acts from i to j as measured within the COPDAB Events Data Set (see, Azar, 1980, Cusack, 1985)

$$HINTENT(i,j)_t = \frac{HINTENT(i,j)_t^2}{HSENT(i,j)_t + CSENT(i,j)_t}$$

HSENT and *CSENT* = respectively, weighted annual flows of hostile and cooperative acts from *i* to *j* as measured within the COPDAB Events Data Set (see, Azar, 1980, Cusack, 1985)

Spending for non-military goods and services and in support of income transfers is a large element of modern developed states' budgets. Growth in this category of spending has been attributed to many factors, but clearly from an organizational perspective, the pressures for retaining program level performance by the responsible bureaucracies, along with changes in the clientele serviced and supported by these programs, and prevailing economic norms, have had a central role (cf., Kelly, 1977;O.E.C.D., 1976,a,b,1977; Wilensky, 1975). The term included within the civilian sector's minimum aspiration level equation attempts to incorporate these factors:

$$CMOM_t = PERF_{t-1} \cdot CLIENT_t \cdot INCTARG_t$$

where: *CLIENT* = The size of the principal demographic groups serviced and/or supported by civilian government consumption and transfers (the population from 0 to 24 and over 64, plus the unemployed);

INCTARG = GDP per capita; and

PERF = ratio of per client expenditures (*C/CLIENT*) to *INCTARG*.

Finally, the capital expenditure target is represented as simply being a function of previous commitments of societal resources to

public investment (cf., Jarrouge, 1979). The term in the aspiration equation is set equal to the previous share of GDP allocated to public investment times the level of GDP in the budgetary period:

$$KMOM_t = \left(\frac{K_{t-1}}{GDP_{t-1}} \right) \cdot GDP_t$$

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

$$T_t = a_1 \cdot b_1 \cdot ER_t + a_1 \cdot b_2 \cdot STAB_t + b_3 \cdot (1 - a_1) \cdot DMOM_t + b_4$$
$$\cdot (1 - a_1) \cdot \mathrm{SEC}_t + b_5 \cdot (1 - a_1) \cdot CMOM_t + b_6 \cdot (1 - a_1) \cdot KMOM_t + e_{1t}$$

$$D_t = b_3 \cdot (1 - a_2) \cdot DMOM_t + b_4 \cdot (1 - a_2) \cdot \mathrm{SEC}_t - a_2 \cdot b_1 \cdot ER_t$$
$$+ a_2 \cdot b_2 \cdot STAB_t - a_2 \cdot b_5 \cdot CMOM_t - a_2 \cdot b_6 \cdot KMOM_t + e_{2t}$$

$$C_t = b_5 \cdot (1 - a_3) \cdot CMOM_t + a_3 \cdot b_1 \cdot ER_t + a_3 \cdot b_2 \cdot STAB_t$$
$$- a_3 \cdot b_3 \cdot DMOM_t - a_3 \cdot b_4 \cdot \mathrm{SEC}_t - a_3 \cdot b_6 \cdot KMOM_t + e_{3t}$$

$$K_t = b_6 \cdot (1 - a_4) \cdot KMOM_t + a_4 \cdot b_1 \cdot ER_t - a_4 \cdot b_2 \cdot STAB_t$$
$$- a_4 \cdot b_3 \cdot DMOM_t - a_4 \cdot b_4 \cdot \mathrm{SEC}_t - a_4 \cdot b_5 \cdot CMOM_t + e_{4t}$$

$$T_t = D_t + C_t + K_t$$

In the next two sections results from the estimation of this system are first reported for the United States and then for a set of eleven other developed democracies. The focus on one country initially is intended to allow a more complete discussion of the results and interpretations that derive from the analysis.

3.2 CALM Estimation for the United States

This simultaneous equation system was estimated by using a full information maximum likelihood procedure.[6] Because of the identity, it

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6 The RESIMUL algorithm within the econometrics package developed by C. Weymer was used.

was necessary to estimate the functions for only three of the four behavioral equations. The constraints on the "*a*" parameters, as described earlier, were imposed.

It should be noted that the "consolidated central government" definition was used in constructing the empirical referents. This definition includes the central government budget plus social security programs. The estimation period in the American, as with most of the cases reported in the next section, is from 1955 to 1979. Extension of the series to years before 1955 and beyond 1979 was not possible because data on international events and military capabilities used to construct variables within the defense equation are not available.

The estimates for the United States are reported in Table 1. As with earlier efforts at applying CALM to the American experience, though with different specifications of some of the independent variables as well as alternative data (Fischer and Kamlet, 1985, Kamlet and Mowery, 1985, Cusack, 1985a), the model performs reasonably well both in the sense that the parameter estimates are quite sensible and that the overall fit of the model is good.

In terms of the fiscal authorities maximal aspiration for total spending the parameters suggest that the budget ceiling, other things being equal, could rise to nearly half- again the revenue base. The ceiling would be further elevated proportionate to the level of unemployment -- suggesting that Keynesian stabilization policy was indeed at work in setting overall fiscal policy.

Table 1
Estimation Results for the
Competing Aspiration Levels Model:
The United States, 1955-1979

		USA
Authorities' Total:		
Expected Income:	b_1	1.471
		(4.89)
Fiscal Response:	b_2	1.323
		(3.86)
1 - Barg. Wght.:	a_1	.247
		(2.21)
Defense:		
Bur. Momentum:	b_3	.736
		(9.63)
Sensitivity:	b_4	.141
		(2.20)
Barg. Wght.:	a_2	.175
		(2.02)
Civilian:		
Bur. Momentum:	b_5	.853
		(21.64)
Barg. Wght.:	a_3	.027
		(1.34)
Capital:		
Bur. Momentum:	b_6	.757
		(14.30)
Barg. Wght.:	a_4	.044
		(1.56)
Carter-Nager R^2 :		.984
X^2 :		6408

t-statistic in parentheses

Minimal aspirations for the three major spending aggregates, particularly as defined by the factors that assure the maintenance of previous levels of operation, be it in defense, the civilian, or the capital area, appear to suggest that something between three-quarters to 85% of the costed requirements can be seen as the "reservation price" of the bureaucracies. A second term helps to define the aspiration level in the defense area. Here, the coefficient as estimated

is significant and takes on the correct sign but is somewhat lower than could have been expected. However, its value is still plausible when one considers that it can be interpreted as meaning that in any budgetary period, national security officials saw that closing at least 14% of any international security gap was a minimal budgetary requirement.

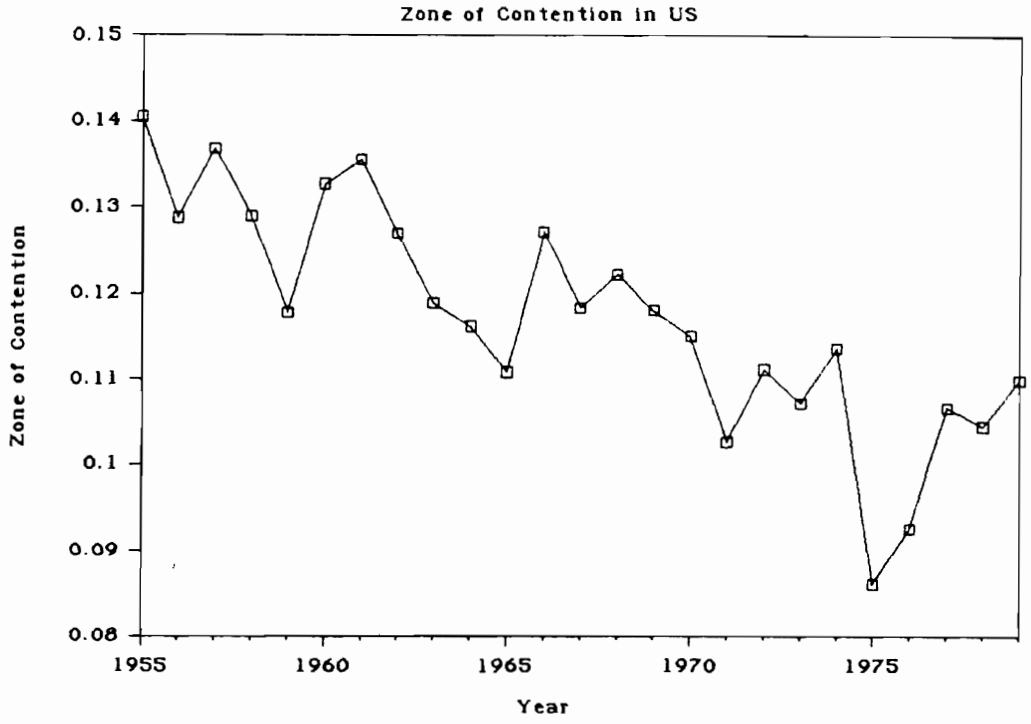
The other parameter estimates suggest that the American budgetary process has been one where a reconciliation of independently generated aspirations was required. In other words, the spending targets of both the fiscal authorities as well as the major sectors have not been sufficient in and of themselves to produce the final budgetary picture. Although the fiscal authorities appear to have had relatively lax standards when it comes to specifying a balance between taxes and expenditures, their weight in resisting the combined pressures of the three spending sectors has been fairly heavy ($1 - a_1 = .753$).

The combination of the parameters in the aspiration level equations along with the a_1 term allow one to develop a composite measure of the "zone of contention" within which the spending agencies have operated. Recomputing the sum of the minimal aspirations as well as the maximum total for the estimation period, a picture of the "zone of contention" can be created with the following:

$$a_1 \cdot \left(1 - \frac{\sum_{i=1}^{n} MIN_i}{TMAX} \right)$$

The average value of this index during the estimation period was .117, suggesting a situation of "slack" wherein, through the fair share system of bargaining, each of the sectors stood to gain over their minimum aspirations in proportion to the relative strength of their bargaining weights. Of the three sectors, defense stands out with far and away the greatest weight in the bargaining process -- one which through time has tended to tighten as the zone of contention narrowed somewhat (see Figure 2).

FIGURE 2



3.3 CALM Estimations for Other Advanced Industrial Democracies

The picture of the American budgetary process that emerges from the CALM analysis can be seen against a backdrop that portrays budgeting within other advanced industrial democracies. Table 2 reports the estimated parameter values for the CALM model for 11 other states (Canada, the United Kingdom, the Netherlands, Belgium, France, the Federal Republic of Germany, Sweden, Norway, Denmark, Japan, and Australia).

Table 2
Estimation Results for the
Competing Aspiration Levels Model:
Other Industrialized Democracies, 1955-1979

		CAN	UKG	NTH
Authorities' Total:				
Expected Income:	b_1	.723	1.182	1.758
		(13.03)	(7.88)	(2.05)
Fiscal Response:	b_2	1.061	-1.702	.627
		(3.97)	(0.99)	(1.78)
1 - Barg. Wght.:	a_1	.539	.184	.186
		(5.13)	(3.42)	(1.33)
Defense:				
Bur. Momentum:	b_3	1.331	.701	.911
		(9.20)	(11.92)	(15.71)
Sensitivity:	b_4	.076	-.075	.035
		(2.91)	(4.01)	(1.40)
Barg. Wght.	a_2	.000	.110	.020
		(0.00)	(4.27)	(0.85)
Civilian:				
Bur. Momentum:	b_5	.961	1.095	.843
		(18.31)	(28.68)	(8.03)
Barg. Wght.:	a_3	.486	.000	.166
		(4.68)	(0.00)	(1.39)
Capital:				
Bur. Momentum:	b_6	.995	.555	.984
		(9.68)	(3.32)	(11.25)
Barg. Wght.:	a_4	.046	.074	.000
		(3.31)	(1.49)	(0.00)
Carter-Nager R^2 :		.979	.947	.991
X^2 :		3452.	1239.	7680.

t-statistic in parentheses

Table 2 (continued)

		BEL	FRN	FRG	SWE
Authorities' Total:					
Expected Income:	b_1	.761	1.009	.939	1.205
		(.35)	(26.11)	(11.54)	(3.28)
Fiscal Response:	b_2	4.922	.519	1.301	-.846
		(.54)	(4.57)	(8.39)	(.92)
1 - Barg. Wght.:	a_1	.545	.776	1.000	.283
		(1.60)	(4.63)	(3.61)	(2.42)
Defense:					
Bur. Momentum:	b_3	1.025	.792	.675	1.077
		(1.59)	(10.43)	(4.29)	(15.98)
Sensitivity:	b_4	.014	.045	.075	.037
		(1.59)	(2.45)	(1.93)	(1.32)
Barg. Wght.:	a_2	.008	.195	.233	.000
		(.41)	(2.45)	(2.46)	(.00)
Civilian:					
Bur. Momentum:	b_5	1.150	.916	.655	.626
		(1.55)	(22.49)	(8.11)	(4.54)
Barg. Wght.:	a_3	.536	.447	.682	.274
		(1.60)	(4.34)	(3.74)	(2.39)
Capital:					
Bur. Momentum:	b_6	.171	.617	.603	.947
		(.54)	(8.29)	(3.58)	(22.11)
Barg. Wght.:	a_4	.000	.134	.085	.008
		(.00)	(6.53)	(1.02)	(1.58)
Carter-Nager R^2 :		.991	.994	.984	.986
X^2 :		7033.	11592.	3749.	5038.

Table 2 (continued)

		NOR	DEN	JPN	AUL
Authorities' Total:					
Expected Income:	b_1	1.154	.917	1.006	1.146
		(13.69)	(8.79)	(9.25)	(11.38)
Fiscal Response:	b_2	-1.859	.401	2.090	1.216
		(2.62)	(2.05)	(1.81)	(6.10)
1 - Barg. Wght.:	a_3	.283	.687	.620	.746
		(4.37)	(5.26)	(4.69)	(4.83)
Defense:					
Bur. Momentum:	b_3	.878	.876	.854	.553
		(7.43)	(10.06)	(7.19)	(3.85)
Sensitivity:	b_4	.018	-.033	-.028	.100
		(1.31)	(3.02)	(1.04)	(6.87)
Barg. Wght:	a_2	.102	.021	.008	.249
		(2.46)	(.89)	(.57)	(4.53)
Civilian:					
Bur. Momentum:	b_5	1.034	1.135	1.053	.841
		(24.10)	(3.45)	(9.39)	(17.99)
Barg. Wght:	a_3	.269	.666	.232	.205
		(3.15)	(4.44)	(2.46)	(3.24)
Capital:					
Bur. Momentum	b_6	.729	.945	1.351	.434
		(7.16)	(25.36)	(2.04)	(8.48)
Barg. Wght.:	a_4	.039	.000	.380	.292
		(1.97)	(.00)	(10.32)	(3.39)
Carter-Nager R^2 :		.994	.990	.989	.996
X^2 :		11129.	5960.	5184.	15574.

In general, the model seems to apply reasonably well to all of these countries. Two areas where problems are apparent include the stabilization response of fiscal authorities and the response of the military sector to security needs. In three instances, the United Kingdom, Sweden, and Norway, the parameter estimate for the stabilization response (b_2) takes on a sign opposite that expected. Three instances of contrary signs on the parameter values for the security response (b_4) are also evident: again, the United Kingdom, plus Denmark and Japan.

Space constraints do not permit a very detailed discussion of the results for these countries. A comparison of the average or typical estimation result with those of the US is, however, possible. Relative to the American case, the fiscal authorities within these other industrial states seem more restrictive in terms of attempting to balance expenditures against revenues (US: 1.471; Other Ave.: 1.072). Also, the average stabilization response is lower (US: 1.323; Other Ave.: .703), although if countries with negative coefficients are excluded, the average for these other states is higher (1.517).

In terms of the minimal aspirations of the spending sectors, one similarity and a number of differences are manifest. The US case is quite similar to the average of the others in the capital expenditure area (US: .757; Other Ave.: .757). However, there are clear differences in the realms of defense and civilian spending. The US case is lower than the average in terms of civilian spending (US: .853; Other Ave.: .937). It is also lower with respect to maintaining previous levels of operation within the military (US: .736; Other Ave.: .879) while it is appreciably more sensitive to the security situation (US: .141; Other Ave.: .024; Other Ave. excluding three negative coefficients: .050). Overall, the general picture that emerges is one where the minimal aspirations, at least as affected by the degree to which sector authorities attempt to maintain previous levels of operation, tend to be lower in the US than elsewhere and the higher "reservation prices" based on this consideration seem concentrated in the defense and non-capital civilian areas.

The reconciliation process appears to have a different shape as well. The average weight of the fiscal authorities is lower in the other industrial states (US: .753; Other Ave.: .469). In terms of the bargaining weights of the different sectors there are some clear contrasts. The American military sector has far greater relative weight (its bargaining parameter divided by a_1) than is found in any other state and is significantly higher than average (US: .702; Other Ave.: .177). The source of the difference is to be seen in terms of the relative weight of the civilian consumption and transfer sector (US: .109 ; Other Ave.: .688) and not in the capital area where the relative weights are practically identical (US: .178; Other Ave.: .174).

The composite measure of the "zone of contention" reveals further differences between the American and the other cases. Having an average value of .117 over the estimation period in the US case, it tended on average to be lower for the other states (.075). Indeed, in three of the other eleven states, the average "zone of contention" took on a negative value (Canada: -.176; Belgium: -.044; and Denmark: -.104), indicating that these countries were generally confronted with a regime of scarcity wherein fair-share principles would require reductions from the sectors' minimum aspirations during the reconciliation process. For some countries the size and character of the zone of contention remained relatively constant. This was the case in the Netherlands, France, the FRG, Sweden, Norway, Japan, and Australia. In other cases, though, some significant variation was apparent. In Canada, for instance, some of the earlier years were effectively "positive sum" while the end of the estimation period saw real contraction and effective scarcity. The British case was generally less contentious than the Canadian but took on very "negative sum" aspects in last five years of the estimation period. In Belgium the pattern shifted back and forth between scarcity and modest plenty while in Denmark scarcity became quite stark toward the end.

3.4 Structural Properties of the Budgetary Process

Although there are no well developed theories that would allow a systematic investigation of the emergent properties of the estimation results, some questions can be tentatively addressed. Two will be dealt with here. The first relates to the question of using an incrementalist approach in formulating spending targets as opposed to more complex and subtle strategies. The second deals with the question of trade-offs between defense and civilian objectives.

Wildavsky (1975) has suggested that wealth and predictability may lead budgetary actors away from the use of complex strategic calculations and maneuvers and toward more fixed and relatively straightforward, i.e., incremental and not strategic, procedures in formulating budgetary requests. In Wildavsky's approach, the absence of such conditions lead spending agents to treat the process as a gaming situation, one where the objectives of the parties are fairly

constant, but their actions, as in formulating budgetary targets, are characterized by maneuver and variation. Although it is not a straightforward procedure to take Wildavsky's rich notions and translate them into easily testable propositions, whether within CALM or any other theoretical context, some traces might still be detected. The most likely candidate is to be seen in the relationship between parameters that define the behavior of the fiscal authorities on the one hand and the spending sectors on the other. Table 3 provides the matrix of correlations amongst the parameter estimates across the sample of the twelve countries included within this study. The first three columns report the correlations of interest. The most direct linkage between wealth and predictability in the budgetary context and the use of incremental strategies by spending sectors should be manifested in the correlations between the parameters of the total spending equation (b_1, b_2, a_1) and the bureaucratic momentum parameters in each of the sectoral spending equations (b_3, b_5, b_6). Higher values on the parameters in the total spending equation, particularly for b_1 and b_2, could be interpreted as implying a relatively wealthy and perhaps predictable overall budgetary situation. A tendency to engage in incrementalist budgeting would likely correspond to high values on the bureaucratic momentum parameters. However, there are no significant ($p = .05$) relationships between these two sets of parameters. This suggests that within the CALM context there is no evidence that the provision of a predictably resource rich environment tends to promote excessive reliance on incrementalist approaches to budgeting by spending sectors.

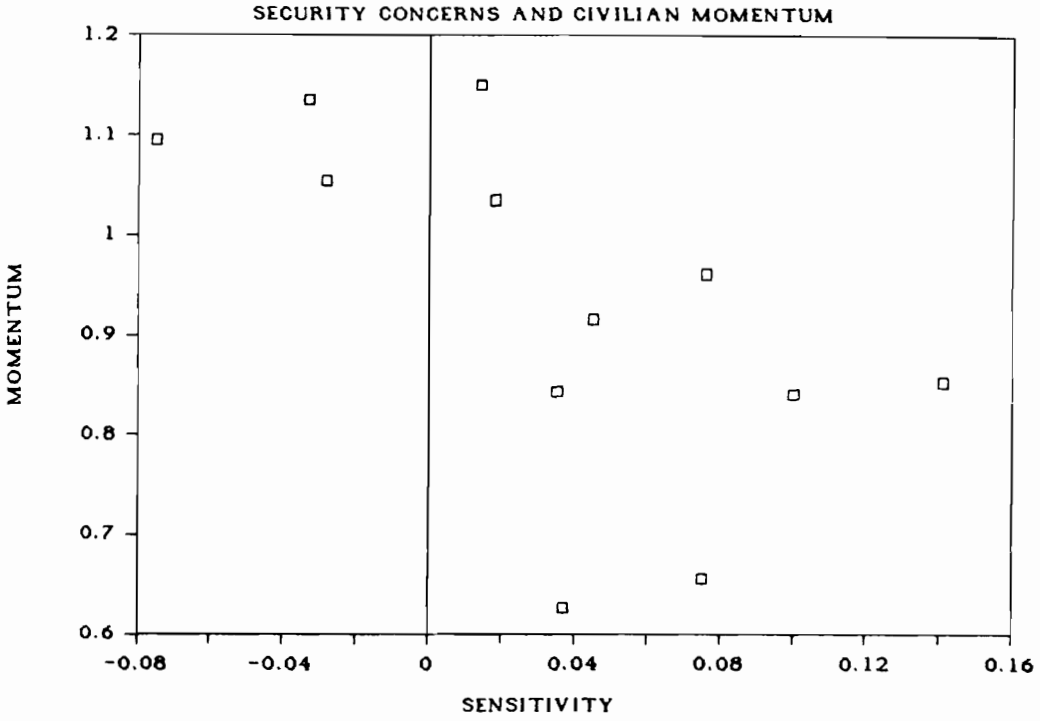
TABLE 3: PEARSON PRODUCT MOMENT CORRELATIONS AMONGST PARAMETER ESTIMATES FOR THE 12 COUNTRIES

b1	1.00									
b2	-0.35	1.00								
a1	-0.62	0.41	1.00							
b3	-0.33	0.12	-0.23	1.00						
b4	0.18	0.24	0.17	-0.06	1.00					
a2	0.11	-0.10	0.42	-0.79	0.49	1.00				
b5	-0.35	0.18	-0.12	0.12	-0.61	-0.37	1.00			
a3	-0.70	0.37	0.74	0.28	-0.01	-0.08	0.03	1.00		
b6	0.19	-0.26	-0.16	0.33	-0.16	-0.48	-0.08	-0.11	1.00	
a4	-0.11	0.16	0.40	-0.42	-0.01	0.29	0.03	-0.21	0.23	1.00
	b1	b2	a1	b3	b4	a2	b5	a3	b6	a4

A second question that can be addressed here is one that has engaged the interest of more than a few analysts. This deals with the question of trade-offs between the defense and civilian sectors.[7] The correlations reported in the intersection between rows 7 through 10 and columns 4 through 9 can be used to address this problem. Nothing of significance can be observed between the parameters defining the behavior of the defense sector and those characterizing spending behavior within the the capital area. However, between defense and the civilian consumption/transfer area, one relationship is quite strong. This deals with the sensitivity to international threats in the military area and the level of momentum observable in attempting to retain previous levels of performance in civilian consumption and transfer programs. The relationship is negative and significant (see Figure 3), suggesting that indeed some trade-off between budgeting for defense and for civilian purposes is manifest in the resource allocation processes across these states.

7 For an extensive overview of this literature, see Lindgren (1984).

FIGURE 3:



4 Conclusion

There are certain distinguishing features of American budgeting that derive from a comparative application of the Competing Aspiration Levels Model. First, American fiscal authorities seem to enter the budgetary fray with a comparatively looser commitment to balanced budgets. This, however, has to be seen in the context of a second distinctive element, viz., the relatively strong bargaining weight that appears to be a property of these authorities. This strength would appear to imbue these authorities with a relatively stronger capacity to resist combined upward pressures from sectoral spending authorities. A third element of difference is the apparently lower tendency on the part of the Americans to engage in the kind of incremental budgeting that allows previous levels of bureaucratic output to be maintained. This applies specifically to the defense and non-capital civilian sectors. Related to this, though, is a fourth difference: the relatively sensitive character of the Americans to security problems emanating from the international political environment. One further difference is also related to the military sector. The organizational truce implicit in the

bargaining weights of the spending sectors suggests that the American military, relative to its foreign peers, possess appreciably greater capacity to claw resources from the zone of contention.

This report draws upon a second effort at applying CALM in cross-national analysis. It differs from an effort reported earlier (Cusack, 1985a) in three ways. First, it relies upon a new and somewhat improved data set. Second, the specification of the security-based measure in the defense sector has been expanded to take into account potential support from allies in countering international threats. Third, it expands the number of advanced industrial democracies to which the model has been applied. We still remain dissatisfied with the quality of the data employed and have recently begun another effort at improvement is this area. The revised measure of international security does not seem to perform all that much better than the previous one and an effort to further refine it may be required. On the whole, the model remains robust in that it does seem applicable to this even broader set of states.

Our immediate plans are threefold. First, an effort will be made to reestimate the model relying upon the new data sets under construction. Second, the treatment of revenues in the model needs to be improved upon. In the present version revenues are treated as exogenous to the budgeting process. This is clearly a weakness of the model and an effort will be made to "endogenize" revenue decision-making.[8] Third, and finally, we plan to begin evaluating the performance of the model against at least one or more contending formulations drawn from the approaches discussed earlier.

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8 See Karan (1985) for one of the few efforts at developing and testing a political-economic representation of revenue decision processes at the national level.

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