

Cusack, Thomas R.

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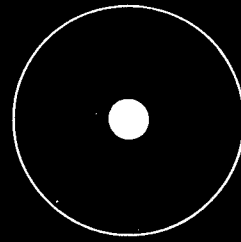
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GOVERNMENT RESOURCE ALLOCATION IN GLOBUS:
BUDGET STRUCTURE AND PROCESSES

by

Thomas R. Cusack

July, 1982

Internationales
Institut
für
Vergleichende
Gesellschafts-
forschung

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ABSTRACT

This paper provides a description of the government resource allocation models in GLOBUS. Based on the behavioral theory of decision-making, these models emphasize the conflictual processes involved in the construction of government budgets. Attention is given to the "top-down" and "bottom-up" influences on budgeting, the variation in these influences in different political-economic settings, and the reliance upon "satisfactory" as opposed to "optimal" solutions in the making of expenditure and revenue decisions. The models have been constructed for the purpose of helping to illuminate the critical choices governments confront as they seek to deal with their nation's political, economic and social problems.

ZUSAMMENFASSUNG

Die Modelle der Ressourcen-Allokation durch die Regierungen, wie wir sie in GLOBUS verwenden, werden in diesem Papier beschrieben. Grundlage ist eine Verhaltenstheorie des Entscheidungsprozesses. Die Konflikte, die beim Entstehungsprozess der Regierungsbudgets auftreten, werden in diesen Modellen hervorgehoben. Besondere Aufmerksamkeit wird dabei zwei gegensätzlichen Ansätzen gewidmet, dem "top-down" Ansatz und dem "bottom-up" Ansatz. Ersterer postuliert, dass zunächst der Gesamtrahmen des Budgets festgelegt wird, bevor die Einzelentscheidungen gefällt werden. Letzterer geht von der Annahme aus, dass die Einzelpläne zunächst bestimmt werden, bevor dann der endgültige Umfang festgelegt wird. Wie sieht der Ablauf in der Wirklichkeit aus, wie unterscheiden sich die Budgetierungsprozesse im Hinblick auf beide Ansätze bei unterschiedlichen politisch-ökonomischen Verhältnissen, und welche Bedeutung haben "befriedigende" im Gegensatz zu "optimalen" Entscheidungen über Staatsausgaben und -einnahmen? Die Modelle sind mit der Absicht konstruiert worden, die kritischen Entscheidungen abzubilden, vor die Regierungen gestellt sind, wenn sie ihre politischen, ökonomischen und sozialen Probleme lösen müssen.

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1. INTRODUCTION

1.1 Government Resource Allocation in GLOBUS

There are numerous areas of critical responsibility confronting governments today. One of the most important is the task of allocating resources within society. The great importance of this area stems from the fact that the activities of government and its capacity for problem solving rest on its ability to extract and allocate resources. The GLOBUS Project has recognized this and has accorded a relatively central role to the budgeting and associated activities of government in the modeling work it has undertaken. This paper reports on the Project's activities in this area. It is meant to provide the reader with a description of the government resource allocation models within GLOBUS.

The primary objective of GLOBUS is to identify major stresses and strains confronting governments in the next few decades and to explore alternative strategies for coping with these problems (Bremer, 1982). Our view is that governments operate simultaneously in four environments: domestic economic, domestic political, international economic and international political. We believe that governments pursue goals within each of these areas, for example, national security, economic growth, political stability, and economic autonomy, and that they are frequently confronted with challenging developments in each. Attempting to overcome these challenges, governments adopt policies which may or may not be successful, and which many times only serve to create new problems in another area, and which quite frequently have some consequence for their decisions with respect to resource allocation.

In our work on government resource allocation we have made a number of assumptions. Each is critical in its own right and together they constitute a certain orientation which is reflected in the results we produce. The most basic of these assumptions--and one that needs to be emphasized here--is that the process of resource allocation must be endogenized within the GLOBUS Model. While we are able to generate a number of interesting scenarios about the nature of government policies and decisions in this area, we suspect that the failure to allow government to be critically affected by the political and economic environments it itself is helping to mold would produce results that are not very useful. In other words, unlike the approach typically taken by many others in their model building and assessment, we believe government resource allocation activities hinge critically on the environments within which government is embedded. We believe, as well, that feedback processes may engender consequences that can not be anticipated by the essentially exogenous representation normally given to government (see, e.g., Crotty, 1973; Davis, 1976; and Lindbeck, 1976). Implicit here also is the assumption that the process of government

resource allocation can be modeled. This may appear patently fallacious to some. However, we think the research results of a fair number of political scientists and economists support the position that they can be modeled successfully (see, e.g., Crecine, 1969, 1971; Fischer and Crecine, 1979; Frey, 1974, 1978a, 1978b; Frey and Schneider, 1978a, 1978b, 1979; Nincic and Cusack, 1979; Cusack, 1980; Ames, 1977)

1.2 Central Queries

Government's role in the allocation of societal resources has a central importance in the affairs of the modern nation-state. Even in the most primitive of polities the authorities and their attendants had a unique ability to requisition and employ private means for public purposes (Schumpeter, 1954; Ardant, 1976). The passage of time has witnessed a marked expansion in the degree to which governments can extract and allocate resources within their political systems' boundaries. The elaboration of ever more sophisticated forms of social and political organization, the evolution of political culture and the exigencies of governance have helped shape these changes (for a review of theories of government growth, see Tarchys, 1975).

The centrality of government's role is not likely to diminish in the foreseeable future. Indeed, much of the present political discourse in the western democracies focuses on the difficulty and desirability of reversing the "unnatural" tendency embodied in the seemingly ineluctable expansion of government (see, e.g., Buchanan and Wagner, 1977). In other systems the legitimacy or "natural" quality of this is less at issue. Regardless of ideological position on this and related issues, government's role is undebatably important. Today most governments directly control from one fourth to more than one half of the income generated by their national economies. Extracting this income through a variety of means, be it different forms of taxation, the return on its entrepreneurial efforts, or the accumulation of debt, government allocates funds to an extensive range of activities. These latter include the maintenance of a military establishment, the provision of social services, such as education and public health programs, the operation of bureaucracies dedicated to regulating the behavior of individuals and organizations within the national boundaries, the transfer of funds to households and firms, investment in capital projects, and so forth.

With the expansion in resource control exercised by government has come a broadening of its responsibilities (Rose, 1976). These responsibilities are not merely formal ones. They extend beyond the provision of traditional public services. They have come to reflect the real degree to which the mass of individual citizens, the plethora of interest groups endemic to modern society and, indeed, the

participants in government, have come to regard government as the ultimate source of social and economic redress, as the regulator of aggregate economic performance, in addition to being the bearer of its traditional responsibilities (Bell,1974).

In an exchange that is difficult to balance and becomes ever more precarious, government legitimately garners the resources of society and employs these for the public purpose. The more it extracts from society, the more apparent is its role and the greater is the likelihood that significant opposition to its purposes and policies--and, indeed, its legitimacy--heightens (Bell,1974). Will the decision strategies employed by governments in the process of allocating resources allow them to cope with the transformations their societies are undergoing? The developed countries have very highly mobilized populations. Indications are that they will become even more highly mobilized. This presents a challenge to government as ever more people and divergent interests become incorporated into the politically relevant strata. The challenge is enhanced because of the strong likelihood that social, economic and political conditions then become the focus of wider criticism and deeper opposition. The extent to which political authorities, the regime, and the polity itself then become targets of both passive and active political opposition is increased (Deutsch,1961;Brunner,1980). Can resource allocation decisions diffuse these challenges? Or will these decisions only aggravate problems? The situation of the developing countries in this regard may be even more severe (Enweze,1973;Pluta,1981). Have their governments the capacity to withstand the stresses and strains endemic to the experience of mobilization and modernization? What role will resource allocation decisions play in this question?

These are important general questions and they encapsulate the set of more specific queries that has guided our research. This set spans a wide area and includes such concerns as the future of the welfare state, the growth of government, and increased competition for scarce resources. As we noted above, the growth of government's control of resources has a wide variety of implications and has engendered concern on the part of many (cf.,Taylor,1981;Tarschys,1982). One of our interests is the question whether governments are likely to increase or decrease their control. It follows that we are also concerned with the question that given whatever path an individual government follows, certain tradeoffs and costs are entailed by this course. Many of these are addressed in the following paragraphs.

In putative pursuit of national security, many governments have dedicated an increasing share of their nations' resources to the purpose of maintaining and enlarging their armed forces (SIPRI,1981). What can we expect of the future? Will international security dilemmas deepen and will they have an impact on the way in which governments

allocate resources (cf., Russett,1970; Bremer and Cusack,1980; Cusack,1981b)? A related problem should be considered as well. The costs of producing military strength have grown disproportionately and are likely to continue to grow (Albrecht,1973). Can governments sustain these costs? At what price in other areas?

In many developed states the inertia of existing welfare programs, demographic shifts and economic slowdown have combined to place great stress on the ability of governments to sustain their commitments to social equality. Many argue that we are likely to witness even further worsening of this situation (see, e.g., OECD,1981). To what extent is this to be the case? Given current tendencies and likely future constraints, how sustainable is the welfare state? What changes are likely to be made and what are going to be the political, social and economic costs of these changes?

The provision of public services, especially in the areas of education and health, have gone far to improve the quality of life. In most developed countries these services are generally wide-spread. The scope of their provision is generally narrower in the developing lands but tremendous progress has been made in many of these countries as recognition of the need to provide for basic human needs through the public sector has grown (Cusack,1982a). Recently, however, with the general slowdown in economic growth, the ability of governments to sustain, let alone expand, these services has decreased. Will we witness a change in these patterns over the coming decades? If we are confronting an era of scarcer resources and increasing competition for these resources, will the production of public services in these social areas decrease? What are the implications for the quality of life, especially given other trends such as changing population structures?

Growth, it is often argued, has been the source of general satisfaction with the nature of society and the prevailing political system. Under conditions of growth governments are afforded opportunities to provide relatively painless solutions to perplexing social problems. Extracting resources and redistributing them at an expanded pace is generally less likely to provoke opposition during periods of growth. Most governments have developed policies and institutions dedicated to promoting economic progress and thus availing themselves of the opportunity to develop and sustain remedial programs that require a large financial base. In an era of heightened economic interdependence and general economic slowdown, government's ability to foster this growth has diminished markedly. Given its increased responsibilities in other areas, and the need to fund related activities, can government's resource allocation decisions engender a reversal of recent economic performance? What will be the consequences of such efforts--both in the short and the long term?

The ways in which governments have financed themselves might

best be characterized as monuments to human creativity and perversity. Nonetheless, the instruments governments use to raise revenue entail consequences in a variety of areas (Hanneman,1981). They may sustain or hinder growth and efficiency (Aghevli and Khan,1978; Cameron,1978; Cebula,1978, Silva,1975). They may promote or destroy the potential for social equality (Lipton,1978). They may, as well, provoke untoward political consequences for government itself (Tilly,1975). What may we expect of governments in the future? In what ways are they likely to finance their activities and what will this entail in the political, social, and economic arenas?

1.3 An Overview

To provide any meaningful answers to these questions, certain conditions must be met. In terms of our own work, this means the production of models of government resource allocation that (a) can represent the critical choices confronting government, (b) are capable of reproducing past trends and patterns in this area, and (c) allow us to generate forecasts of probable trends and problems. Another condition is that the other elements of the GLOBUS Model provide an environment that allows government resource allocation decisions to be linked, directly and indirectly, to economic, political and social processes where their impacts can be manifested. An overview of the entire GLOBUS Model can be acquired from Bremer's paper(1982). Specific discussions of the international economic and political, domestic economic and political sectors of GLOBUS are provided, respectively, in Pollins(1982), Ward(1982), Kirkpatrick(1982), and Widmaier(1982). Both this and the papers just mentioned are meant to provide a description of the structure of the models in the five different sectors within GLOBUS.

In the next section we address the basic theoretical aspects that describe the nature of our modeling efforts. Since the area of substantive concern is basically related to the products of decisions by governments, we have naturally focused on the question of how decisions are made by government, particularly those decisions that affect its budget--the major instrument and record of its activities in the area of resource allocation. In the succeeding section we provide a description of each of the prototypes used in modeling government resource allocation processes within two different systems: market and centrally planned. The last section of the paper goes on to provide some concluding remarks.

2. THE PROCESS OF BUDGETING

Governmental budgeting is a process. The outcomes of this process are not the product of rational calculations on the part of some individual or 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 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 models we have constructed attempt to capture the principal elements of this process.

The government resource allocation models in GLOBUS are based on the behavioral theory of decision making (Cyert and March, 1963). A critical assumption of these models, then, is the notion that governments are similar to other large and complex organizations. While it, the government, appears to perform a bewildering variety of functions, these functions are actually performed 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 control procedures, the rationality of which would not accord with the conventional 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 clear set of preferences and an adequate repertoire of instruments needed to achieve its objectives, we believe 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. 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 the different government elements that over the cycle of budget construction lead to adjustments and the finalization of a budget; the pursuit of objectives by the different elements which (1) tend to be modified by experience and (2) need not be consistent with each other; and the use of relatively simple decision rules to solve what may in some abstract form may appear to be intractable problems (cf., Crecine, 1969, 1971; Hoole, 1976; Bremer, 1977; Wildavsky, 1975).

A government budget is a 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 that need to be coordinated. A government budget cannot be produced instantaneously. Rather, the problem of the budget is generally factored into a number of subproblems (see e.g., Crecine, 1975). 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 or after another element has solved the subproblem that circumscribes the solution of the unit's own subproblem.

These different subproblems and the processes associated with their solutions 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 different bureaucracies for funds to finance their activities, and the reconciliation, if necessary, of these potentially inconsistent elements (cf., LeLoup, 1978; Fischer and Kamlet, 1981; Fischer and Crecine, 1978; Larkey, et al, 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. Organizational goals must be seen from two perspectives. From the one side there is the problem of defining what is and what is not a goal. On the other side, there is the question of how the aspiration level with respect to any goal changes through time.

In the behavioral theory of decision making, governmental 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 tends to factor decision problems into subproblems and assigns them to its different elements. In so doing, government can introduce a limited level of rationality since each unit is focusing on a very 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.

The way in which an aspiration level changes with respect to a goal reflects to a great extent the quality of learning within an organization. In the main, this involves an "extrapolation of past achievement and past aspiration" (Cyert and March, 1963). It is a reaction to experience and may as well be vicarious--reflecting either the performance of others or some universal prescription adopted for exogenous reasons.

Every element of government, especially when engaged in solving recurrent problems, rely upon standard operating procedures. This tendency arises because any other would doom those involved to become overwhelmed with the complexity of their task (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 has to deal with generally is complex and uncertain, all the units of government normally come to use such decision rules when they involve themselves in the budgeting process.

3. DESCRIPTIONS OF THE BUDGET MODELS

3.1 The Structure of the Budget

Before turning to a discussion of the details of the model's structure it might prove helpful to first describe the set of outputs that it generates. The overall product is the budget of the government sector. There are, of course, many ways to construct a budget and each has a different story to tell about the allocation activities of government. Because of the requirement to maximize the possible linkages between this and other sectors of GLOBUS, and given the need for uniformity (both from a modeling and validation perspective), we have chosen to represent the government sector's budget in those terms generally employed in standard national accounting practice.

Table 1 provides an example of the GLOBUS governmental budget accounts. Those who are familiar with national accounting practices will recognize most of the contents of this table. Those who are unfamiliar should refer to either official (e.g., U.N., SYSTEM OF NATIONAL ACCOUNTS, 1968) or unofficial sources (e.g., Ruggles and Ruggles, 1970). A useful description of the standardized government sector accounts for market economies is provided in Wasserman (1976). There are a number of items in this table that need to be clarified. First, it should be noted that the item labelled indirect taxes is in reality indirect taxes net of subsidies (see Bremer and Cusack, 1981). Second, foreign aid has been incorporated into the accounts and is included within current government transfers (see

Table 1
 Government Sector Budget
 GLOBUS Accounts
 Federal Republic of Germany, 1962

Indirect Taxes (VTAX)	49.1	Government Consumption (GCON)	52.5
Business Taxes (BTAX)	9.8	Defense (DEX)	17.2
		Education (EDX)	10.3
Personal Taxes (PTAX)	28.0	Health (HEX)	4.1
		Adminis. (ADX)	21.9
Welfare Contributions (WCON)	35.5	Welfare Benefits (WBEN)	45.1
Government Profits (GPRO)	6.0	Foreign Transfers (GFT)	2.7
		Interest Payments (GIP)	2.4
<hr/>		<hr/>	
(1) Current Government Revenues (CGR)	128.3	(2) Current Government Expenditure (CGE)	103.7
		(3) Government Savings (=1-2) (GSAV)	24.6
Government Savings (GSAV)	24.6	Gross Capital Formation (GINV)	14.28
Consumption of Fixed Capital (GKDA)	1.4		
Capital Transfers, Net, (GKTD)	-6.7		
Capital Transfers, Net, From ROW (GKTF)	-.97		
<hr/>		<hr/>	
(4) Finance of Gross Accumulation	18.33	(5) Expenditure on Capital Account (GEKA)	14.28
		(6) Net Borrowing (BORN) (=5-4)	-4.05
(7) Total Expenditures (TOTEX)	=CGE - GKTD - KDTF + GINV		
(8) Total Revenues (TOTER)	=CGR + GKDA		

Cusack, 1981a). Third, the two capital transfer items, domestic and foreign, are net figures. With respect to these items it is worthwhile to note that in some countries, for example, the FRG, government has traditionally given more than it has received, while in others, such as the US, the opposite is true. For the while we have adopted the convention that net flows are to be modeled and that traditional practice dictates whether they are to be considered expenditure or income. Fourth, we have collapsed net purchases of land and intangible assets into the item gross capital formation. These purchases are generally quite small and their redefinition does not seem to be an egregious simplification.

At the operational level the budgetary model needs to produce a variety of results. On the income side, the rates at which taxes and other earned revenues flow into the government sector must be determined. Borrowing by government, another means to acquire revenue, also needs to be determined. On the expenditure side, the levels of spending on an array of current and capital items need to be produced. Given revenue raising rates, flows within the economic sector, and expenditure flows outward, the budget picture is complete.

On the revenue side, there are four tax items: indirect, business, personal, and welfare. Each tax is levied against a distinct and specific base at a rate usually determined within the budgetary process. In the case of indirect taxes the rate is applied against the base of gross national product at factor prices. Business taxes are levied against the pre-dividend profits (or operating surplus) of the firm sector. Personal taxes are income taxes and these are levied against the income of the household sector--which includes wages and salaries, dividends and interest. Welfare contributions represent payments for social insurance and associated schemes. The sum of wages and salaries is the base from which this last tax is drawn.

In the current version of the market system model, three of these four taxes (welfare contributions, indirect and business taxes) are subject to direct government modification in terms of the flat rate at which they are applied against their bases. Personal taxes are handled differently. For the while we have chosen to assume that the personal income tax system is very elastic (see Bremer and Cusack, 1981). By implication, growth in the tax base, be it real or nominal, produces significantly higher tax yields. Thus, all four taxes can in practice have different rates of application over time. Only the first three, however, move in response to endogenous processes--in these instances, some aspect of the financial situation of the government. The implicit flat rate at which personal taxes are extracted moves in response to developments in the base and the initial conditions describing the personal tax system.

The two other commonly present sources of earned revenues in the government's accounts, profits and depreciation allowances, are assumed to be fixed by constant rates of flow from the national product. Net borrowing on the part of government is a target of a set of decisions by government and its realization is based on the budgetary plan adopted and prevailing economic conditions.

On the expenditure side four components of what has come to be called government consumption are generated by the model. In the instance of defense, one of the four, the expenditure is presently composed of two items: payments for the acquisition of military capital and payments for military labor. It should be noted that capital defense spending at present represents only outlays for conventional capital items and excludes strategic capital outlays. Plans call for the inclusion of this latter item in the near future.

The other three items include education, health and administration. Education expenditures, in the present version of the model, represent total current educational outlays by government. An alternative formulation of the subsector representing the processes whereby expenditures and enrollments evolve at three educational levels (primary, secondary, and tertiary) has been successfully completed and will be incorporated shortly within the model. Health expenditures represent the public health outlays of government. These include direct purchases of goods and services and exclude health related transfers which are actually included within welfare benefits. Administration, the fourth government consumption item, is a residual and includes payments for a diverse set of public programs and activities.

Another major budgetary item generated by the model is what has been labelled welfare benefits. This category includes a variety of expenditure programs which share the characteristics of (1) representing transfers to the household sector and (2) generally being based on some sort of insurance-funding scheme. The latter characteristic, however, is not universal across all of the programs included within this item (see: U.S. Dept. of HEW, 1977; ILO, 1981). Examples of the programs included in welfare benefits item are pension/retirement plans, unemployment compensation, and family allowances. Our plans call for the decomposition of this item in order to acquire the opportunity to provide a more realistic representation of the processes surrounding the development of welfare spending.

Foreign transfers, as noted above, include expenditures for foreign aid. For the non-developing states this item is generally found on the expenditure side of the budget. It is usually a revenue item for the developing countries, although some of the developing countries in the GLOBUS sample have recently become either minor or major sources of foreign aid (see Cusack, 1981a).

Interest payments, or as they are sometimes called, property income payable, actually represent all payments necessary to maintain the outstanding debt that the government sector has managed to accrue.

Government capital formation represents the expenditures made by government for the purchase of non-military capital items. In the case of the developed market systems this is mainly restricted to infrastructure development and the purchase of buildings. In developing countries a fair portion of this item actually represents investment for economic purposes. In centrally planned economies this is one of the major sources of investment within the economy.

In modeling centrally planned systems it was decided that the system of national accounts used in market economies should serve as a basic economic framework (Flemming, 1982). For the resource allocation area this has meant using, to the fullest extent possible, the same set of budgetary accounts employed in the market system models. There are, it should be noted, some minor differences. These include the identification of what is called government savings in the GLOBUS accounts with what is labelled centralized investment in the centrally planned budget model (see sec. 3.3). The minor items in the capital sector, consumption of fixed capital and net capital transfers (domestic and foreign) have been dropped from consideration. On the revenue side, business taxes are, of course, excluded and the rate of extraction for government profits is endogenized.

3.2 Budgetary Model for Market Systems

In the market model, government resource allocation is viewed as a process of constructing a budget that reflects the interests and power of the political leadership on the one hand, and the bureaucracies (and the interest groups they represent) on the other. The making of a budget, then, is a product of both "top-down" and "bottom-up" influences (Cusack, 1980). It occurs with regularity and it involves an effort on the part of quite different elements in the coalition called government to construct a plan that incorporates varying expectations and conflicting goals.

The model is structured in a way that allows it to manifest the dynamics and uncertainty generally found in budgeting. Since a budget requires time to construct and even more time to gain acceptance, it must be developed well prior to implementation. This, of course, demands that those involved in the process develop forecasts of conditions they think likely to hold, and formulate what they believe should be their preferences for a time in the future. In so doing, they may prove wrong in the decisions they have taken. This consequence is unattractive, but nonetheless it is a fundamental truth of the budgetary process. To allow for

this, we have constructed the model so that in any period the different actors are engaged in a variety of activities, many of which pertain to the formulation of decisions that are to be implemented at a later time.

Let us turn to a brief general description of the timing of events in the model. In any period, the political leadership engages in the construction of the general constraints it will impose on the budget for the succeeding period. At the same time, the different bureaucracies are engaged in the process of formulating requests for spending and other decision items. Once both of these activities have been completed, the bureaucracies pass their requests and the leadership evaluates these in light of the constraints it has formulated. If action is required, the leadership alters aspects of the budget (reflected in bureaucratic requests and revenue generation arrangements). With these actions completed, the budget for the succeeding period is finalized and, in light of any changes in tax rates, the leadership goes on to generate certain forecasts and recommendations which it passes on to the bureaucracies. There they are included in the process of developing expenditure requests in the next budget formation cycle. With transition into the next period, the budget elements fixed in the last period are implemented and the process of formulating another budget begins.

A representation of the process just described can be seen in Figure 1. Those who are familiar with the research on government resource allocation will note the attempt to integrate the generally counter-posed approaches of modeling government budgeting from the top-down and from the bottom-up (see Kamlet and Winer, 1978). In addition, the inclusion of both revenue and expenditure decisions within one model is a fairly unusual aspect of our approach (cf., Larkey, et al, 1981). A more detailed description of the processes included within the model is now warranted. Let us turn first to the question of the budget constraints developed by the leadership.

An understanding of the process whereby these constraints are formulated can be gained by examining Figure 2. There are two basic constraints employed in the construction of the budget. The first is the desired total for spending and the second is the tolerance for a deficit. In terms of the former, we assume that every time the government engages in the construction of a budget, the leadership has a significant and determining influence on the overall size of government spending. A critical means by which this is implemented is through the formulation of its own desired total which reflects what it views as responsible and self-rewarding fiscal policy.

Three critical factors are at work in fixing the overall level of spending as desired by the leadership (cf., Crecine, 1971; Cusack, 1980). First, and very important, is simply how much revenue the government expects to receive

Figure 1: Overview of
Budgeting Process

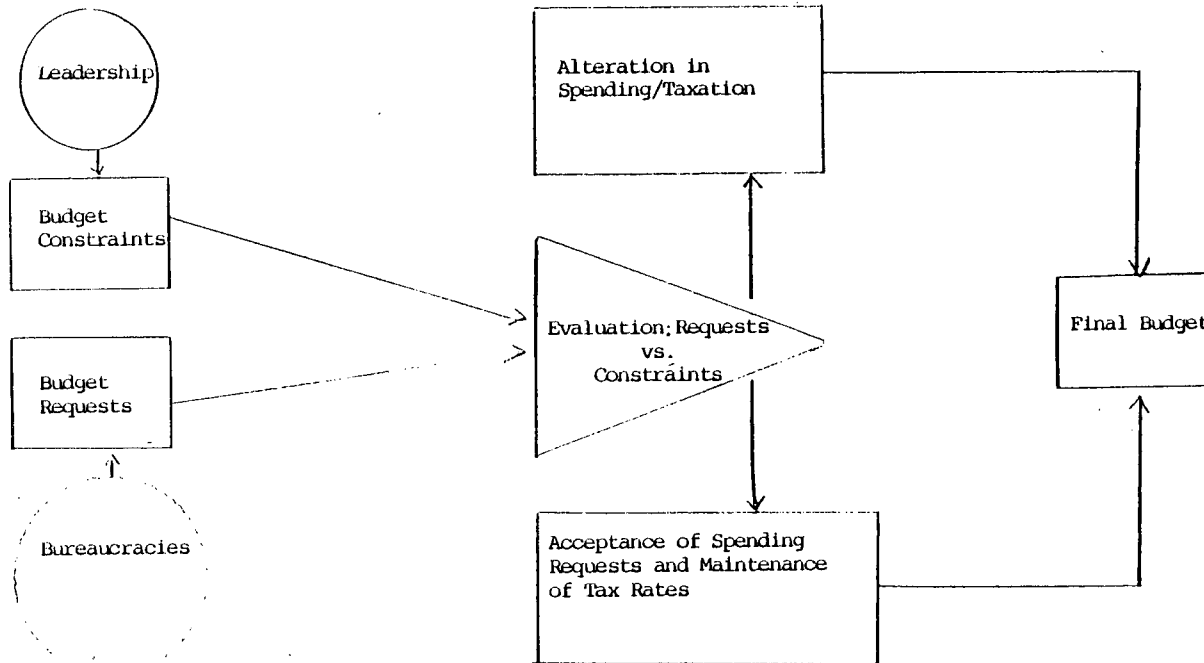
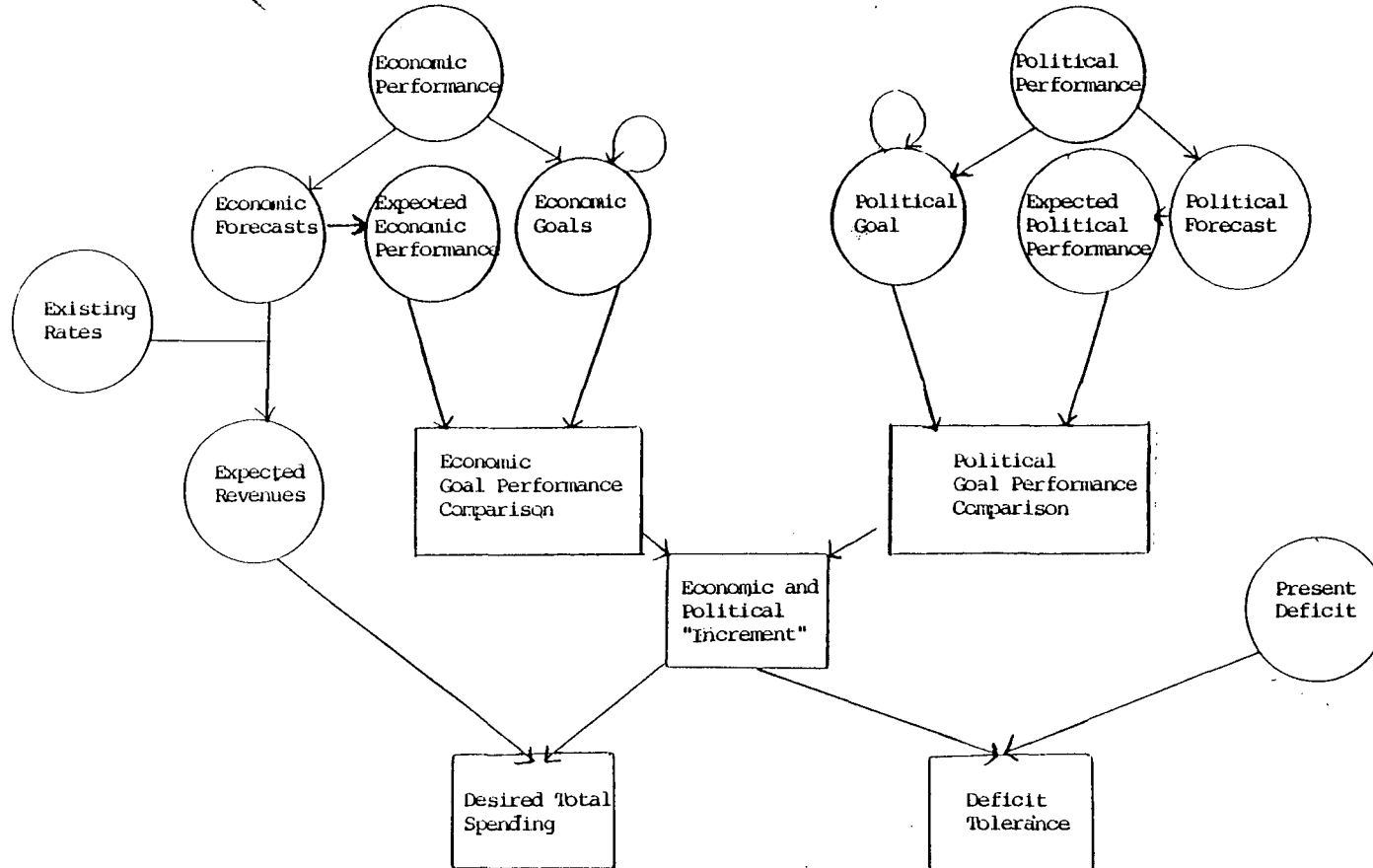


Figure 2: The Development of Budgetary Constraints By the Authorities



during the period for which the budget is being formulated. This expectation is constructed by forecasting the level of revenue bases and applying the existing rates to the expected base levels. Added to this total are two other fundamental considerations. One of these relate to the economic management responsibilities of government.

There are two major and somewhat conflicting concerns of this type incorporated in this model. On one side there is the problem of price stability and on the other is the problem of full employment. A good deal of economic theory and most western governments treat these as items that are and should be influenced by fiscal policy. In addition, there is usually assumed to be a tradeoff between these two objectives (cf., Lindbeck, 1976; Frey, 1978; Hibbs, 1978). The model includes both these assumptions and allows, as well, for the leadership to incrementally adapt its goals in light of performance with respect to these targets. Performance (vis-a-vis the respective goal) in both areas influences the decision as to the desired total spending--as well as the deficit tolerance. Both contribute to what is called the economic and political increment which specifies the degree to which government will deviate from expected total revenues in setting a total spending limit.

The second other factor that operates on the decision about the extent to which total spending will deviate from expected revenues is the success the authorities have in acquiring popular political support (see, e.g., Tufte, 1977; Frey, 1978a, 1978b). Again, we have postulated that aspirations adapt to performance in this area and that the extent to which goal and performance differs influences the size of the deviation from a balanced expenditure and revenue situation. It should be noted that the economic and political increment is formulated in such a way that the leadership will respond to the economic and political concerns it embodies only when the sum of the components leads the government to spend beyond the level of expected revenue. Thus, the increment is asymmetric, taking on only positive values and preventing any planned surplus.

The economic and political increment also affects the other major constraint, deficit tolerance, developed by the leadership. This contribution is smaller than that provided in the determination of the desired level of total spending but it is complemented by another factor--the present level of deficit financing. Here we have assumed that government leaders will adapt themselves to the situation of deficit financing. It follows that the existence of a deficit in the period during which a budget is being formulated will enhance the leadership's willingness to tolerate a deficit in the new budget.

Simultaneously at the lower level, the bureaucracies develop their requests for expenditures. In general, we have postulated that each of the bureaucracies engage in a routinized search for an alternative expenditure request

that satisfies both of two conditions: (1) the request it puts forward would allow it to fulfill its function at least to the degree it aspires, and (2) that from a set of defensible alternatives, it requests the highest (cf., Cyert and March, 1963; Cowart, 1976).

In effect, then, each sector of the bureaucracy is assumed to be pursuing two objectives. The first pertains to the functional task it must perform. How well it is doing with respect to this task and how well it seeks to do can be denominated in any number of ways. But in the end there is almost always a direct correspondance between aspiration and performance on the one hand and the the financial resources it has available to it on the other. The connection is not always clearly stated. Nor is it likely to withstand a sustained critical analysis. As with so many other problems confronting decision makers, the link between these two is quite frequently based on some simple rule of thumb or an approximation of the actual cost/benefit ratio (Wildavsky, 1975).

The second goal refers to the amount of financial resources available to the bureaucracy. This is an instrumental goal that goes beyond the functional task of the organization. Within the overall context of the government, the amount of resources controlled by any bureaucracy is both a reflection and a function of its power and prestige. Inside the bureaucracy itself, these resources play an important role in minimizing conflict and inducing cooperation and non-dysfunctional behavior on the part of the actors and units that comprise it (March and Simon, 1958; Niskanen, 1979).

As with any organization, the amount of resources available to develop solutions to a problem--in this instance, the budget problem--is fairly limited. To cope with this situation bureaucracies usually restrict themselves to the development of a limited set of possible budget requests and choose only from amongst these. It is, as well, the case that all these alternatives characteristically reflect an awareness of the limits that circumscribe the possible set of budget requests that are likely to be accepted (Simon, 1955, 1956; Cyert and March, 1963). It should be noted that this set includes more than the frequently cited budgetary rule that states: every bureaucracy's request is always incremental relative to its present level of spending (Davis, Dempster and Wildavsky, 1966).

Much of the budgetary literature has focused on the concepts of base and increment. The general argument is that in addition to the base level of expenditures, variously and confusedly described, each year an agency will ask for and receive a small increase proportional to that base. Many have taken objection to this image (see., e.g., Bailey and O'Connor, 1971; Gist, 1977; Kamlet and Mowrey, 1979; Padget, 1980; Wanat, 1974). They argue that this is an overdrawn and misleading picture of the actual process. It

may accord with a fair portion of the outcomes of many budgetary experiences, but is actually only a special case. Indeed, while the invocation of a simple decision rule generally transpires, there are more available. The selection of that rule will hinge on the overall budgetary situation and the goals of the bureaucracy. Sometimes a request is made by a bureaucracy that entails far greater change in its budgetary allocation than that in one characterized by a marginal markup over last year's level.

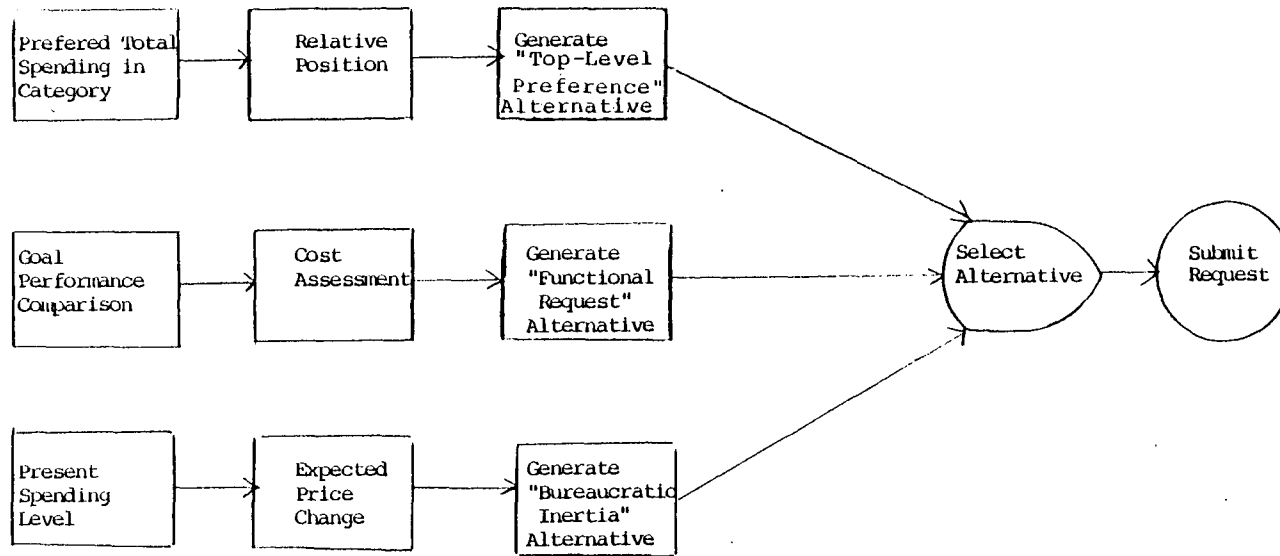
With only one exception, the case of welfare spending, we postulate that each of the bureaucracies engage in a process of generating and evaluating three budget request alternatives. From amongst its three alternatives, each bureaucracy selects one to be its budgetary request. The immediate criterion used in evaluating these alternatives is size--the highest of the feasible options is selected.

The three alternatives that are modeled include the bureaucratic inertia, the top-level preference, and the functional request (see Figure 3). The first, the bureaucratic inertia option, is specified as the base figure for the bureaucracy (here defined as the present level of spending), plus the proportion of that base that would allow the bureaucracy to purchase and provide the same level of services in the next period given an expectation regarding the change in prices confronting the bureaucracy (cf., Kamlet and Mowrey, 1979).

The top-level preference option is based on a calculation of the stated and perceived preferences of the leadership. In the case of military expenditures, this comes directly from the information passed by the leadership sector at the end of the last budget cycle. At that time, a preferred defense/civilian split is determined (in the present version of the model, this is based on a "fair-share" calculation) (cf., Crecine, 1971; Fischer and Crecine, 1979; Kamlet and Winer, 1978). In the case of most civilian expenditures items (welfare spending and interest payments being the exceptions), the concerned bureaucracies use the information on the desired total of flexible civilian expenditures (produced by the defense/civilian split set by the leadership in the last cycle) as the basis for calculating the request option. Again, a "fair share" rule is employed, with each bureaucracy using its relative share of present flexible civilian spending in combination with the desired total flexible civilian expenditures to arrive at the request that would reflect the top-level preference.

The third option, reflecting functional requirements and the related aspirations of the bureaucracy is usually a bit more complicated. The general structure used in formulating this option has each bureaucracy monitoring its own performance, adapting its aspirations, and developing a budget request that would allow it to achieve a performance level equal to its aspiration (cf., Bremer, 1977).

Figure 3: General Paths for the Development of
A Bureaucracy's Expenditure Request



An example of this can be seen in the defense area (cf., Figure 4). (It should be noted that this is the one area in the model where the aspiration level is supplied exogenously.) In order to arrive at its functional request, the defense bureaucracy employs a set of decision procedures (Cusack, 1981a). It first calculates the level of capabilities it can expect to have available in the next period. This expectation is based on an assumed constancy in the level of military labor, an assumed rate of depreciation on the present level of defense capital, and a capability production function. Next, given an exogenously specified level of defense capabilities, the gap between desired and expected capabilities is calculated, and, in light of the size of this gap, and given the constraint of a desired capital to labor ratio, both the desired change in defense labor and the the desired level of acquisition of new capital are determined. Third, after developing estimates of the unit costs of both labor and capital, the component elements of the desired defense budget are calculated. These two, labor and capital acquisition expenditures are then combined to produce the functional request for the defense sector.

It was mentioned above that two categories of civilian expenditures, interest payments and welfare spending, do not conform to the general pattern used in modeling the other expenditure items. In the first instance, we have made the assumption that under normal circumstances governments will treat their debt management payments as mandatory and not subject them to any adjustment or modification. In the present version of the model they are set equal to the level of outstanding debt times the appropriate interest rate. With respect to welfare spending, the character of many of its programs and the financing arrangements associated with this area have led us to model the decision-making process in a very different way.

The process of determining the level of welfare spending requires a number of calculations and decisions. An overview of the process can be acquired by examining Figure 5. Of special interest here is the direct linkage between the expenditure decision and a decision regarding revenue acquisition. Since a number of the programs in the welfare area are legally required to provide for some element of their own funding--they are in effect, trust or insurance programs--it is only reasonable to model such an expenditure-revenue connection (cf., Scharf, 1981).

The procedures by which welfare spending and taxation are decided upon can be briefly described in the following way. Initially, a desired level of commitment is produced. This variable represents the desired generosity and scope of the program. It changes in light of the previously determined aspiration level and actual performance. Given this commitment goal, and forecasts about the expected target population, i.e., the part of the population eligible to receive welfare transfers, and a target income level, in

Figure 4: A Process View of the Development of the Defense Functional Request

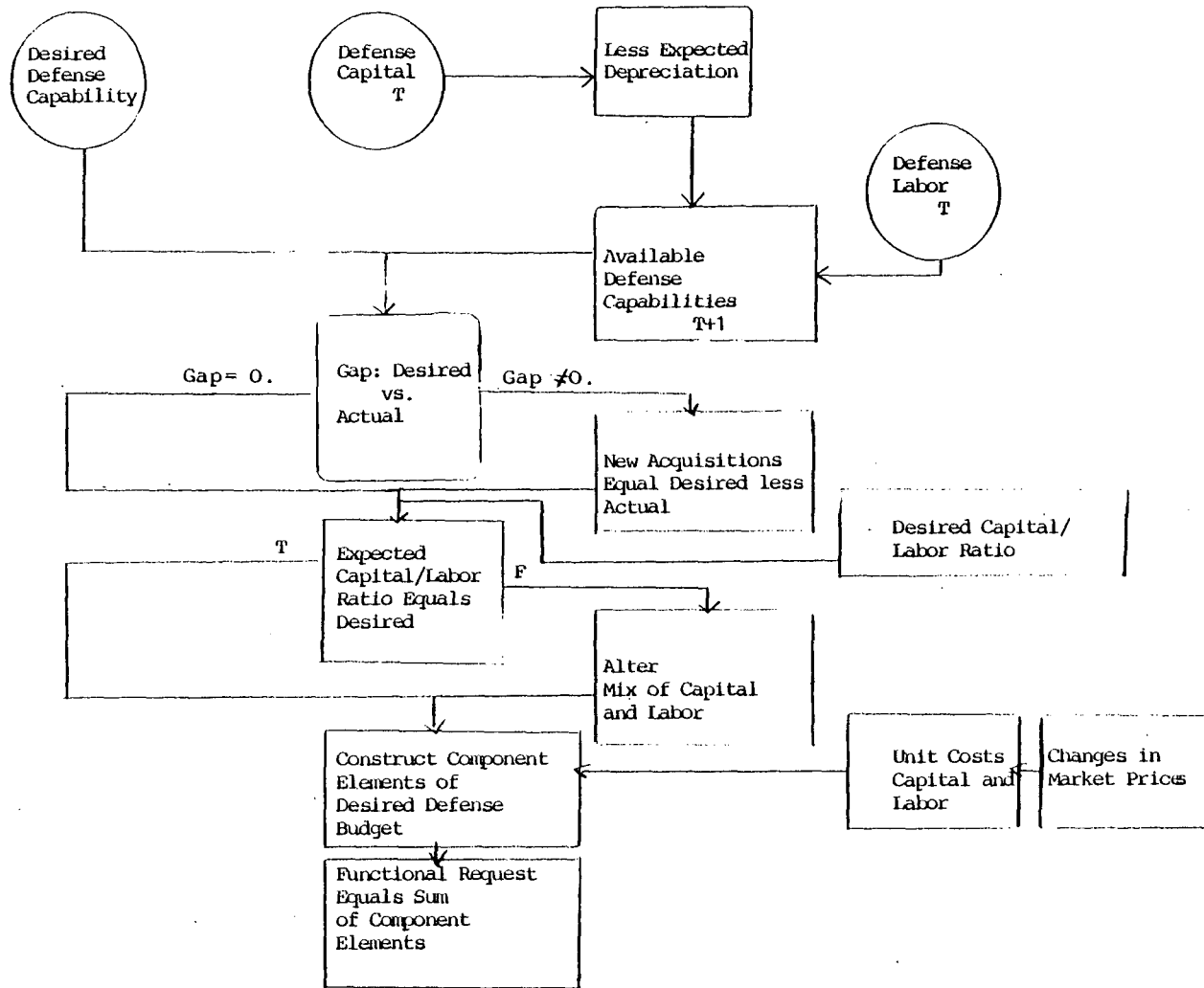
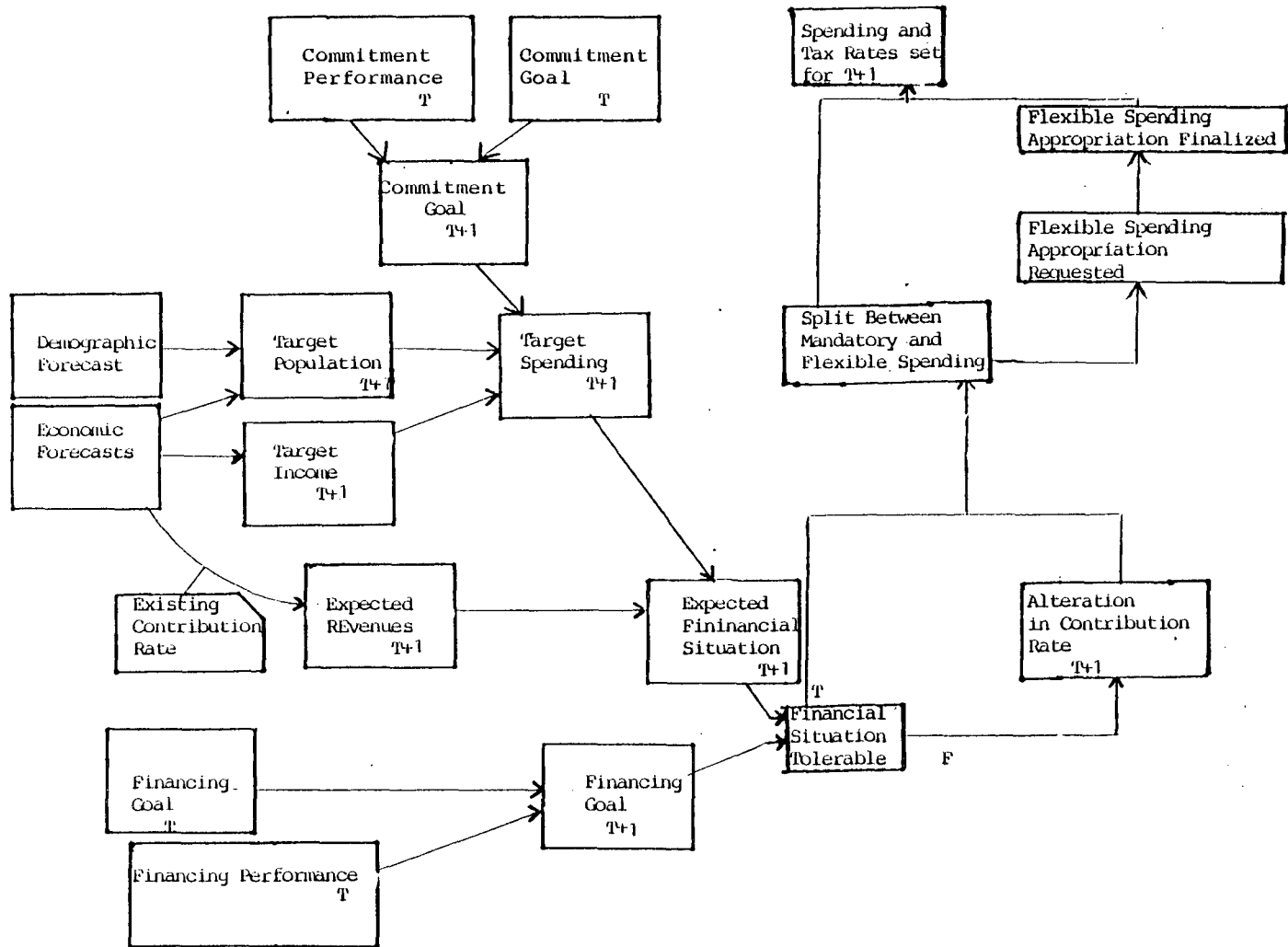


Figure 5: A Process View of Decisions on Welfare Spending and Taxation



this instance, expected disposable personal income per capita, a total target spending level is generated (cf., Wilensky, 1975).

The target spending level is then evaluated in terms of its implications for the welfare financing target. Two other steps need to be taken in order to reach this decision point. First, an expected level of revenues needs to be calculated. This is done by forecasting the expected base and applying the existing welfare contributions tax rate to that base. Second, the financing goal must be adjusted by evaluating present performance against the existing aspiration level. This defines the target the authorities have regarding the degree to which welfare benefits and welfare contributions should accord with each other, i.e., the extent to which the welfare program is to be self-financing and not dependent on general revenues.

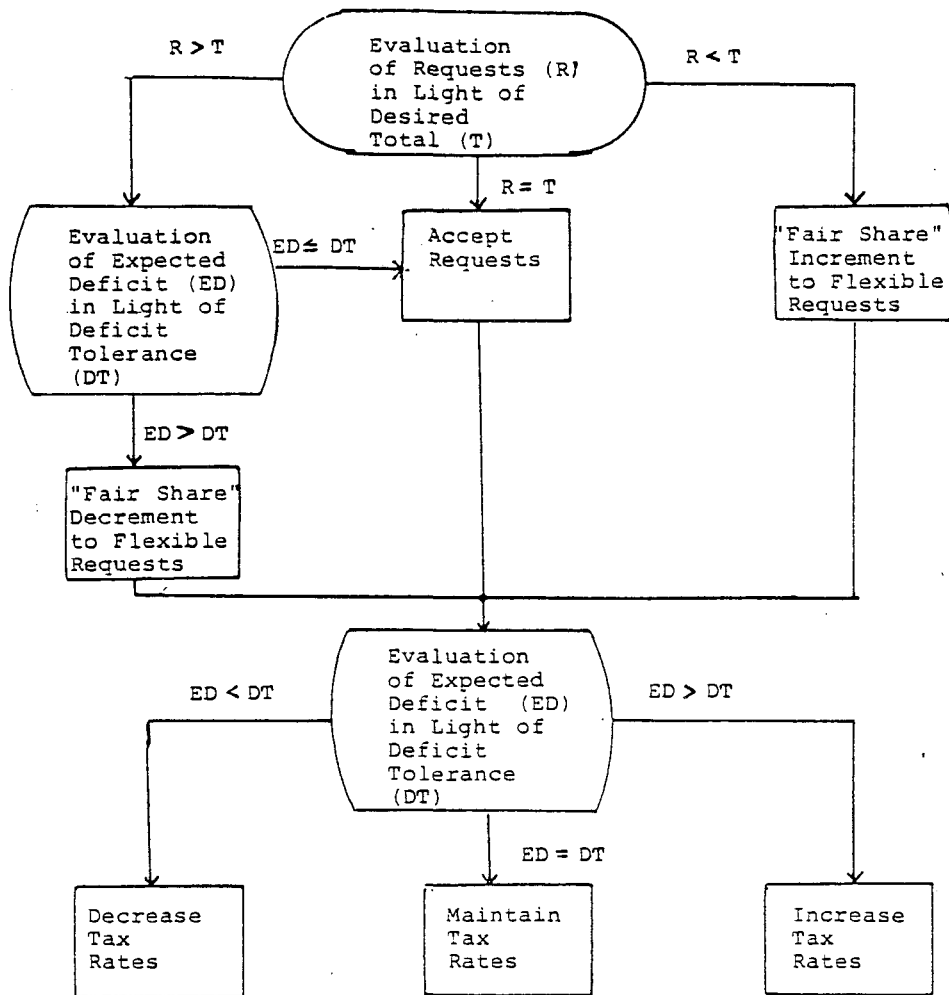
The evaluation leads the authorities down one of two alternative paths. If the spending target and expected revenues combine to fall within the bounds of an acceptable financing situation, then the tax rate is retained and the flow of decision moves to the next problem. If, however, the expected financing situation is outside the tolerance of the authorities given their financing goal, then the welfare contributions rate is modified to bring the situation back within the tolerable range.

The next problem to be dealt with is the decision with respect to how much of the welfare spending target must be regarded as mandatory and not subject to modification in the overall budget reconciliation phase. The total welfare spending target is thus split into two components: mandatory and flexible expenditures. This decision hinges on the degree to which the program is self-financing. If it is completely self-financing, then all of the amount provided for in the total spending target will be considered mandatory and not subject to adjustment. If, however, general revenues are required to fund part of the total spending, that element is designated as flexible and may be modified during the overall budget adjustment phase.

The next major phase in the budgetary cycle is where the authorities evaluate the results of the situation in light of the constraints that they have imposed on the overall structure of the budget. Again, the two principal constraints are the desired level of total spending and tolerance for a deficit. Given the total sum of requests and mandatory expenditures, as well as their own forecast on the expected total revenues, the authorities are in a position to make this evaluation and then to execute any necessary remedial actions.

The evaluation and requisite actions take place in a sequential manner (see Figure 6). Initial consideration is given to the total spending item. One of the simpler cases here is where the sum of requested and mandatory

Figure 6: A Process View of the Budget Adjustment Phase



expenditures fall within the range of values that delimit the total desired by the authorities. In this instance, the proposed expenditures in each category are accepted and the expenditure side of the budget is finalized. Proceeding further with this general case, the next problem is the extent to which the expected deficit is tolerable. If it is within a tolerable range, the existing tax rates that are manipulable in this sphere (indirect and business) are maintained. An expected deficit greater than what is considered tolerable leads to an increase in tax rates. The extent to which each rate is increased depends upon the difference between the upper limit on the deficit tolerance and the relative magnitude of each base. Expected deficits below the lower limit of the range of a tolerable deficit (this could, of course, include an expected surplus) lead to cuts in the two tax rates based again on the magnitude of the difference and the relative size of the bases.

In the case where the sum of requests and mandatory expenditures is below the lower bounds of the total desired by the authorities, action is taken to add to the requests (note, no addition is made to mandatory outlays). The difference between the sum of requests and mandatory outlays, on the one side, and the lower limit of the range of desired total, on the other, serves as the base for calculating each bureaucracy's increase over its request. This base is divided by using a "fair share" rule, i.e., the increment to the request is equal to the above-mentioned difference times the bureaucracy's share of the total of flexible expenditure requests. Once expenditures have been finalized in this way, the authorities attend to the next item in the sequence, the deficit situation and any remedial tax rate changes.

The last possible general sequence arises when the sum of requests and mandatory spending exceeds the desired total. The steps taken by the authorities here in terms of the finalization of expenditures hinges on the deficit situation. If the second constraint, the deficit tolerance, is also violated, flexible expenditures are cut using, again, a "fair share" rule. If however, the expected deficit is not greater than the upper limit of the deficit tolerance, requests are accepted. Both these paths lead to a further examination of the deficit situation with a decision on the modification of tax rates following from that consideration.

With these evaluations and potentially invoked procedures completed, the budget for the next period has been finalized and will be implemented at the start of the next cycle. One last set of steps, however, is taken before the budget cycle is completely ended. This is the development of forecasts, based on the just finalized budget and economic extrapolations, and recommendations to the bureaucracies for consideration in the development of budget requests in the next period (described earlier).

The budget reconciliation phase represents one of the most critical elements in the budgetary process. As it is modeled here, one of the central propositions in the behavioral approach to budgeting is implemented. In effect, there are no "mechanisms for deciding holistically about optimal budget sizes and revenue structures" (Larkey, et al, 1981). Rather, governments adopt search procedures in terms of both revenues and expenditures. Search is ended if a "satisfactory solution," relative to the constraints that are invoked, is found. The emergent characteristic of such a system of behavior is that "revenue structures and budget size evolve as a cumulative and largely unintended result of solving a succession of annual budget problems" (ibid.).

It should be pointed out that the market system model has been only slightly modified for purposes representing developing countries. These modifications represent only a first step in extending and reformulating it. In its present version, two modifications are worthy of note.

First, the formulation of the "political economic increment" has been altered. This alteration is reflected in the economic situation that is deemed to be of concern to the authorities. In the developed context, price stability and full employment were the two factors taken into account. In the developing context these have been removed and inserted in their place is the consideration of real economic growth per capita. Second, foreign aid is treated as a revenue item. For quite a number of the GLOBUS sample countries this represents a sometimes very significant source of income (Cusack, 1981a). It is, as well, a rather difficult item to control and anticipate. The implications for budgeting by these countries can be quite profound.

Two other changes are being formulated and should be mentioned here. One of these changes will attempt to deal with the very recent restructuring of the domestic political and economic systems in the GLOBUS representation of developing countries. Initial efforts have been made to specify and model two arenas for each of these sectors. These arenas, the urban and rural, are clearly very distinct and the political, social, and economic dynamics in and between both pose challenges to government in its resource allocation decisions. Such policies as relative taxation and levels of social and investment expenditures can have dramatic impacts (cf., Brunner and Brewer, 1971; Linn, 1982). The mechanisms for making such relative allocational choices should soon be in place.

The second change to be introduced shortly includes a greater emphasis on the connection between the goals of political authorities and the relative priorities accorded to certain spending items along with both the development of national plans and their linkage to the budgetary process. In effect, an effort will be made to provide a synthetic model representing elements found in both market and centrally planned systems (the model for the latter is

described in the next section). This should render greater verisimilitude between the developing nation budgetary models and the referent world (cf., Caiden and Wildavsky, 1974; Kalid, 1969).

3.3 Budgetary Model for Centrally Planned Systems

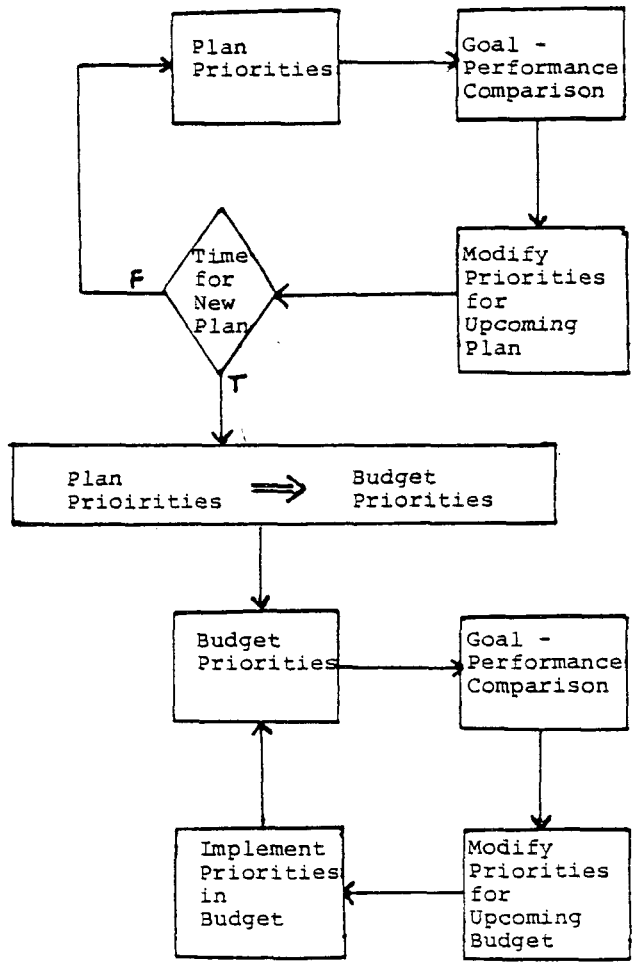
In the centrally planned model we have taken a somewhat different approach. The differences in this approach reflect, in part, the generally conceded greater power of the authorities in the process of allocating resources (cf., Bunce and Echols, 1978). In effect, the priorities at the top are assumed to have more of an impact on the way in which the budget is constructed. In addition, given the fundamental differences between this kind of system and that found in a market economy, the construction and implementation of a national economic plan needs to be taken into consideration. The budget should be viewed as one of the principal instruments of this plan (see, e.g., Nove, 1977).

In centrally planned systems the political authorities pay critical attention to the way in which resources are allocated. The distribution of these resources in the areas of defense, consumption, and investment is the most central consideration (cf., Portes and Winter, 1977). In order to affect these allocations and provide for a properly functioning economy, it is the practice in this type of system to engage in the development of medium-term plans which in their broadest form provide a specification of the system's goals or aspirations and its set of distribution priorities that reflect these goals.

Figure 7 allows the reader to gain a basic understanding of the place of the budget in the implementation of the plan. In this figure, the problem of plan and budget priorities is highlighted. The central decision makers are assumed to have aspirations with respect to three goals: political stability, economic growth, and national security. Each of these goals is directly related to an area of resource allocation and as the aspiration levels for each of these goals change, the relative priorities attached to consumption, investment and defense change (cf., Bremer, 1977; Bremer and Cusack, 1980; Elder and Pendley, 1981).

It should be pointed out that the aspiration levels and, hence, the priorities adapt in light of performance. Furthermore, the degree to which this reality-testing mechanism has consequences for priorities differs between the plan and the budget. In the case of the plan, it is assumed that adaptation occurs with far greater speed relative to the adaptation going on at the budgetary level. However, while this adjustment is far more rapid, its impact is not continuously felt at the budgetary level. Indeed, the transmission of priorities from the one level to the other occurs only at the time of the introduction of a new

Figure 7: Plans, Budgets and Priorities



plan. In the present version of the model this occurs every five years. By implication, major revisions of budgetary priorities have a far greater likelihood of occurring at the time of transition from one plan to another.

Priorities can and do change with the construction of each new budget during the longer plan period, but the latitude or opportunity for doing so is more restricted (cf., Gacs and Lacko, 1973). This restrictiveness helps to incorporate within the model the quintessentially political character of the budget and the plan. Each represents a compromise of purpose and interest, and the likelihood of introducing a major new compromise during any plan is likely to be quite small. The chances are far greater at those times when a new set of medium-term priorities are being crafted.

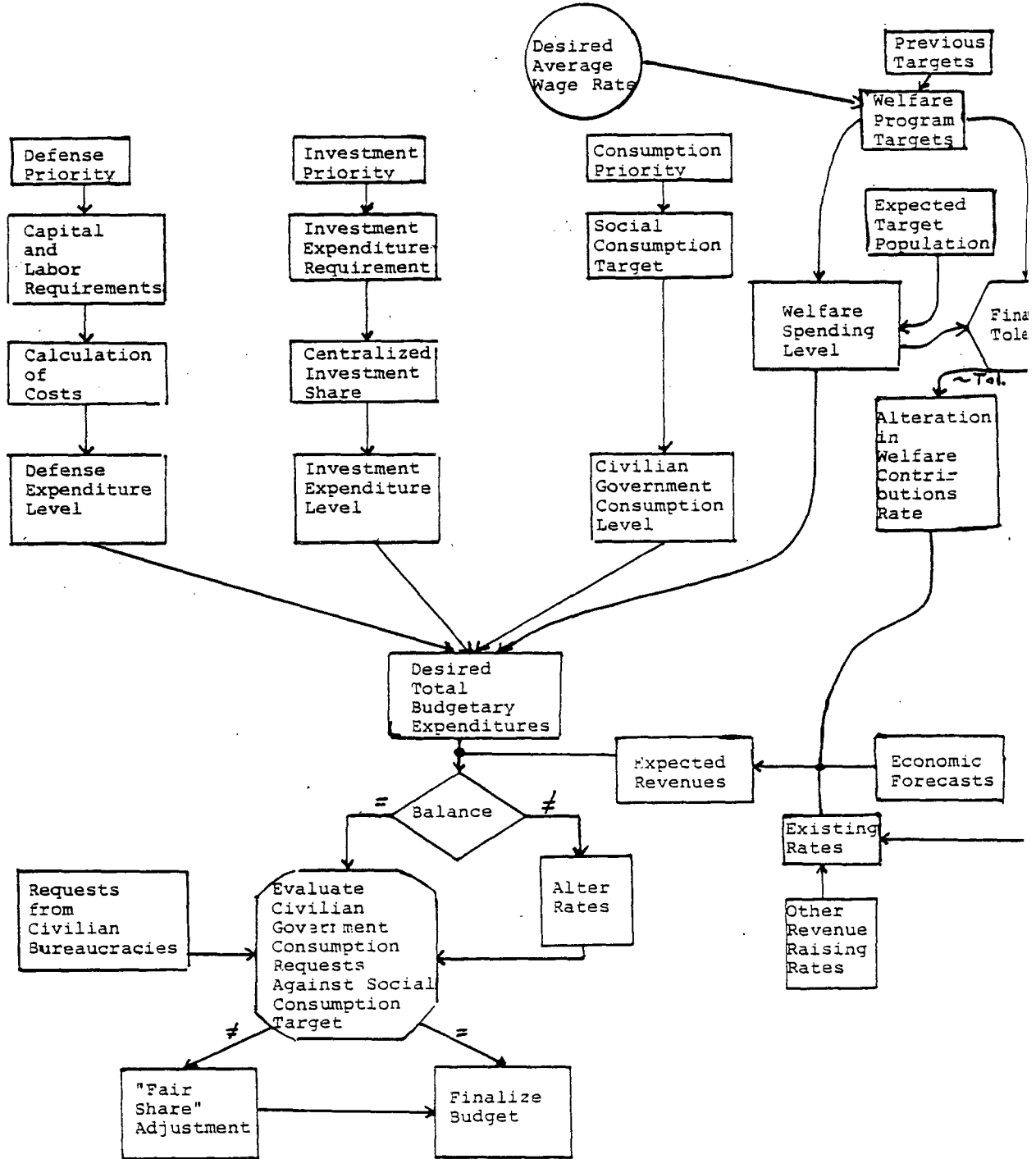
Figure 8 provides a somewhat detailed picture of the steps involved in constructing the budget. An initial step, not shown here, is the development of a projection for the possible level of goods and services that will be available during the time of budget implementation. With this projection, a first step is taken to allocate these resources across the three areas: defense, investment, and consumption. At this time, a set of recommendations are also transferred to the enterprise level. These recommendations include a suggested average wage rate and an advisory target on reinvestment out of the profits earned by the enterprises. They include, as well, target levels of production in the three areas.

In the defense area, the leadership decides on a target level of defense capabilities in light of their security aspirations. They then proceed to compose a defense budget taking into account the required change in capital and labor, the associated unit costs of these inputs, and the desired capital/labor ratio.

In the investment area, having already specified a desired total for investment, the budget figure for centralized investment is set. This represents the money that the government can directly control in allocating across different production sectors. In the present version of the model, the investment budget figure is set in accordance with the presumed output productivity of capital investment and the desired rate of economic growth.

The consumption area is the third to be treated. The priority attached to this area basically moves in response to the perceived level of public political support for the regime (cf., Elder and Pendley, 1981). Since non-defense consumption has two elements, individual and social, the major consideration in budgetary terms, once the government has set its overall priority for consumption, is the split between the two elements. The concern here, then, is with the determination of a social consumption target, i.e., civilian government consumption expenditures. In the present version of the model this is done by allowing the

Figure 8: An Overview of the Budgetary Process in the Centrally Planned System Model



movement in the priority given to consumption to be echoed in the share of expected product that is to be allocated for all social consumption purposes (cf., Pryor, 1968; Rimashevskaja and Shatalin, 1977).

One other item also needs to be considered before the major outlines of the expenditure side of the budget is completed. This is the welfare spending decision. Here we have employed the same general structure and processes outlined for this sector in the other model. This includes, as well, the linkage to the determination of the welfare contributions rate. Two points of difference should be noted. First, the target income level is set equal to the budgeters' own recommendation on the average wage rate. Second, the demographic base is more narrowly defined in this model with the expected population age 65 and over being the only group included (cf., ILO, 1981)

The four major components of total government spending having been determined, the next thing considered is the degree to which their total accords with the expected revenues of the government sector. These expected revenues are based on economic forecasts and existing tax rates. The evaluation leads the authorities to either alter or refrain from altering revenue raising rates in order to bring the expected income and desired outlay into balance. The goal here is to have them accord with each other and the way in which this is done is by either raising or lowering the rates when there is an expected deficit or surplus.

The welfare contributions rate has already been set in light of the financing situation and goal in that sector. There are three other rates that could be manipulated. These are the personal tax rate, the indirect or turnover tax rate, and the government profits rate. Given the general constancy of the first, the personal tax rate, in centrally planned systems, we have excluded the possibility of altering that rate in the present version of the model (cf., Nove, 1977). The other two, however, are subject to manipulation and, as in the other model, the relative levels of reliance depend on the relative magnitudes of the revenue bases.

A final set of processes is implemented before the budget is finalized. These activities include evaluating and possibly altering the expenditure requests from the bureaucracies in the civilian area. If the sum of these requests does not accord with the social consumption target, the authorities engage in the activity of either increasing or decreasing these requested figures. In both instances, where the requested total is greater or less than the desired total, a "fair share" adjustment rule is employed.

4. CONCLUDING REMARKS

The purpose of this paper was to provide a description of

the government resource allocation models within GLOBUS. Given space restrictions it was rather difficult to discuss every detail and nuance of these models. In addition, the theoretical undepinnings could not receive extensive attention. Nonetheless, we believe that the preceding pages have allowed the reader to gain a basic understanding of the principal elements and processes depicted within the models as well as the reasoning that supports them.

There has been no effort to report here on the results that have been produced with these models. Perhaps a few words on this subject are in order. To date we have focused most of our attention on simulating the experiences of four countries: the Federal Republic of Germany, the United States, the German Democratic Republic, and the Soviet Union. Some initial experiments have, as well, been conducted for the case of India. Given our intention to significantly modify the structure of the prototype used for developing countries, we have not experimented very extensively with this case. Our experiments in the other four instances have been fairly extensive and, on the whole, quite successful. We have restricted most of our efforts to attempting to reproduce the patterns of the recent past for these four countries. Given data limitations, this has meant starting the models in 1962 and terminating the runs sometime in the mid or late 70's--the specific end-point being determined by data availability.

Comparison of the simulation output with real measurements has shown the models to be quite capable of reproducing past trends and patterns. A few areas appear to require improvement and we have undertaken to bring this about. The recent modification of the education sector is one such example and the results based on this modification are quite pleasing. Other areas will be altered in the near future. In particular, we should note the scheduled modification in the defense sector. Here we will introduce, where relevant, a distinction between strategic and conventional weapons choices and associated budgetary processes. Further elaboration of the welfare spending sector also is scheduled. This involves disaggregating the welfare benefits item, where appropriate, into four categories (pension, unemployment compensation, medical cost transfers, and all other income maintenance items). This should allow for a more realistic representation of the spending and financing decision processes in this area.

The schedule of activities for the next few months includes, amongst other things, introduction of the modifications just noted, further development and implementation of the modified developing country model, implementation of the different models for the broader set of GLOBUS countries, some parameter estimation, and sensitivity and validation analysis. Given the fruitful results of the past efforts, our expectation is that the models should prove very useful instruments for representing the critical choices confronting governments, reproducing past patterns and

trends in this area, and generating forecasts of probable trends and problems.

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