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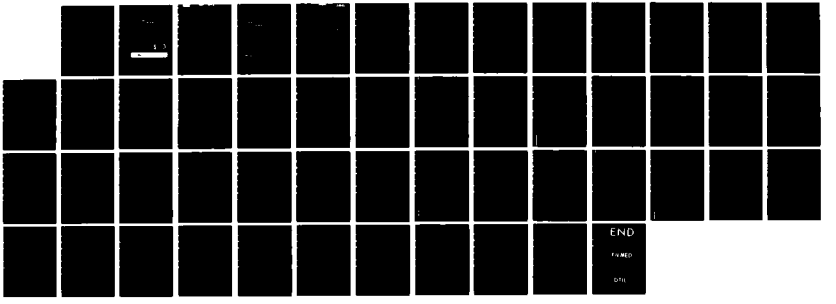

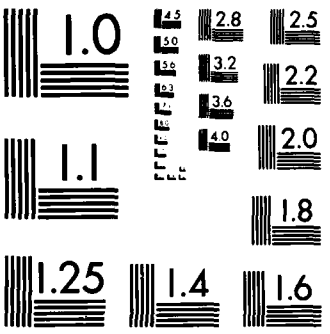

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John E. Dawson

Rand

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This report provides a specification of a research model, in analog and verbal form, for systemic budgeting, an approach to understanding and formulating public budgets. Systemic budgeting is the strategic process of translating beliefs into policies and budgets. It treats the total public budget and the economy as one system. Given a statement of politically selected goals, systemic budgeting provides for a continuously iterative analysis of the budget and the economy to identify preferred courses of action most likely to lead to the achievement of those goals.

PREFACE

The research model presented in this report was developed as the first stage of a broad project of basic research in public budgeting. It is an analog model of the total public budget and the economy treated as one system. The model is designed as a workbench for the performance of various lines of research ranging from the design of budget structures to the development of analytic devices for formulating aggregate budgetary strategies.

The model has very general applicability to public budgeting research, it also has several characteristics of particular interest to the Office of the Assistant Secretary of Defense, Comptroller, as the sponsor of this project. First, the model identifies defense purchases of goods and services and other public purchases as an allocation of the gross national product (GNP). Defense purchases are part of government product in a total public sector budget—federal, state, and local. In this framework, defense purchases in 1982 were 69.3 percent of federal purchases, 27.6 percent of total public sector purchases, and 5.8 percent of GNP.

Second, the model identifies defense and other public purchases of equipment and structures as public investments of the nation. The model provides a basis for budgetary analysis of the longer term treatment of capital stocks for the public sector at all levels, local infrastructure to defense. Finally, other relationships between the defense budget and the economy may be analyzed within the systemic framework of this model. Thus, issues regarding total resources available to defense can be approached from a variety of perspectives with this model—perspectives distinctly different from the usual consideration of defense as a share of federal "spending."

Although these illustrative applications are defense-oriented, there is nothing peculiar to defense about the model. It provides a framework for budgeting research which is applicable across the public sector.

SUMMARY

This report provides a specification of a research model, in analog and verbal form, for systemic budgeting. .

Systemic budgeting is a term coined by the author to identify an approach to understanding and formulating public budgets. Systemic budgeting is the strategic process of translating beliefs into policies and budgets. It treats the total public budget and the economy as one system. Given a statement of politically selected goals, systemic budgeting provides for a continuously iterative analysis of the budget and the economy to identify preferred courses of action most likely to lead to the achievement of those goals.

The model developed here describes the total public budget and the economy as one system for use in the examination of existing budgetary technology and the development of improvements thereto. Areas of particular interest are aggregate classification, micro analysis, and macro analysis. The model is a workbench for developing and applying the concepts of systemic budgeting. As an analog, it is intended to "map" the territory of the economy and the public budget, thereby providing a visualization of the set of elements and set of relationships composing the system.

The model is built in layers through eight figures that map the economy and the public budget in analytical and historical stages, based on accounting identities that facilitate empirical analysis. These various layers provide a set of well-defined models to be used in research. The two most important stages are Fig. 5, the simple budget that is roughly analogous to the 1920s in the United States, and Fig. 8, the complex public budget that reflects the changes that occurred in the 1930s and is analogous to the present system.

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FIGURES

characteristics, and requirements of an analog model for use as a research workbench. Section III builds such a model to guide our subsequent research. Section IV summarizes major features of the model and its potential use.

I. INTRODUCTION

Does anyone truly understand, much less control, the dynamics of the federal budget intertwined with the mysteries of the national economy?

. . . William Greider

We live in a mixed state—composed of market and nonmarket, private and public, decisions and outcomes. Various social disciplines approach the study of the complex reality of society from a multiplicity of perspectives, each claiming parts of that reality as its area of study and each developing customary lines of investigation.

The study of public budgeting usually settles for describing the stuff of budgetary action—the procedures, politics, and personalities that shape and enliven the dynamics of the process. However, we might study the intertwining of budget and economy. To do this would require straddling the mixed state to seek the webbing that links people and leaders through their operative beliefs about society and each other. It would mean wandering among the mysteries of private and public interaction, along a path seldom perceived as the domain of public budgetary research and practice. Such is our chosen study.

Systemic budgeting is a term coined by the author to identify an approach to understanding and formulating public budgets that accepts the quandary of the mixed state in which we live. It treats the total public budget and the economy as *one system*, a position which is both fundamental and bold. From this vantage, we seek to examine and improve the ways of thinking available to those who formulate strategies for translating beliefs into policies and budgets, especially regarding the most aggregate dimensions of national life. We hope to enhance the intellectual constructs available to those who professionally support elected officials in their budgetary tasks. We leave the selection of goals to politicians and strive to devise techniques that would more rationally connect instincts and intentions with estimates of quantities of money to be received and expended in anticipation of eventual societal outcomes.

The discussion is organized as follows. Section II defines systemic budgeting and clarifies premises. It also explains the role,

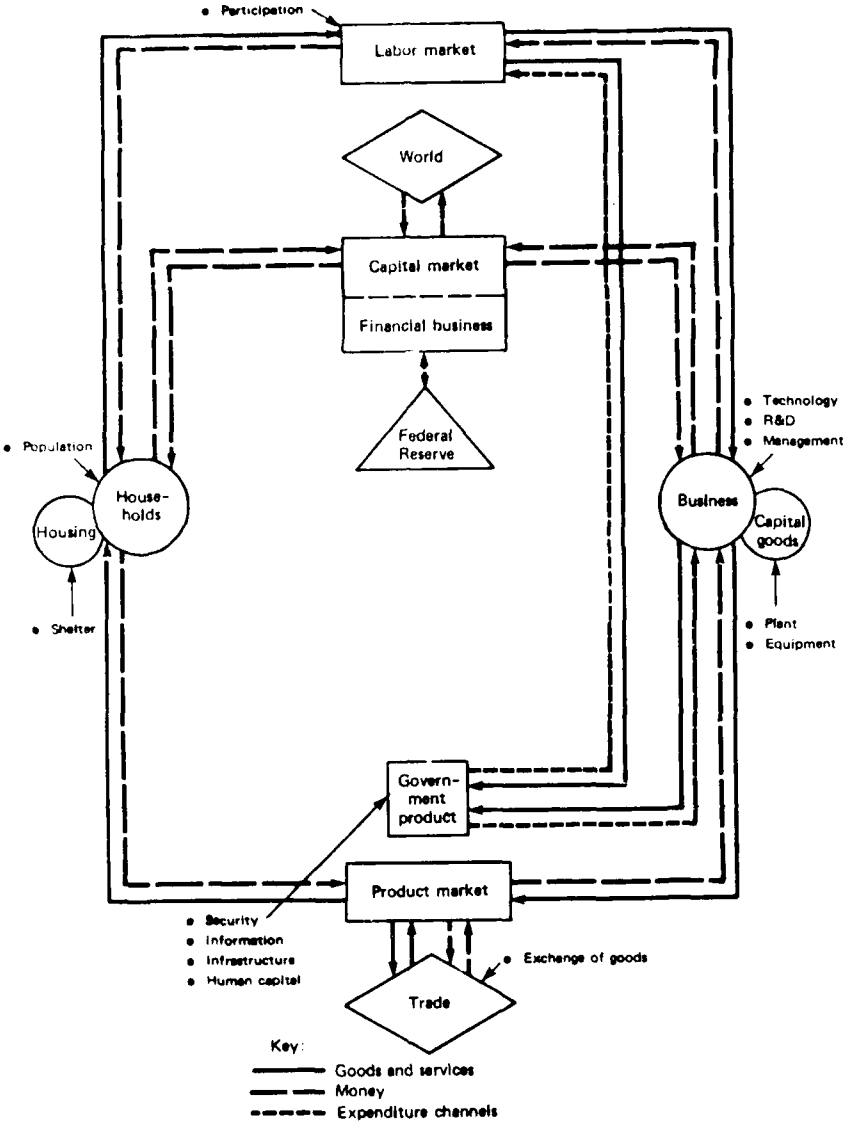

Fig. 3—The monetary economy without taxation

Management conveys more than entrepreneurship; there is a "stock" of corporate and noncorporate institutions which are operative and have a legacy of operational experience. *Technology* is used quite broadly to mean a body of organized knowledge applied to practical tasks. Research and development (*R&D*) reflect the fact that these institutions are continuously creative, both in products and techniques. This form of investment in the future is important to consider whenever the time dimension is extended beyond short-term flows.

Business begins each period with an existing capital stock—*plant, equipment*, and inventories. Change in that stock over time is a critical variable. The use of the terms capital goods in Fig. 1 and plant and equipment in Fig. 2 is to distinguish between flows and stocks.

Exchange of goods is intended to convey terms of trade, comparative advantage, critical materials, protectionism, and other long-term factors arising from interdependence with the real world economy.

Finally, the four factors listed with government product convey the longer term forms of support and/or potential hindrance to the economy and society that are the product of government. Although this list is not exhaustive, it does emphasize four areas of considerable importance to the real economy: *security*, external and internal, or "provide for the common defence" and "insure domestic Tranquility" to use the Constitutional phrases; *information*, available to the community to aid decisionmaking; *infrastructure*, such as roads and other facilities basic to the economy and society; and *human capital*, through education, health services, and other assistance. Systemic budgeting directs attention to the longer term contribution of government to the "stocks" available to the going economy and society.

The elements added by Fig. 2 extend the model of Fig. 1 to include major considerations in the longer term development, retrospective and prospective, of the economy and society. The figure provides the basis for broadening the scope of an analysis to consider the cumulative capacity for growth—or stagnation—in the longer run.

Finally, we reiterate that the elements of Fig. 2 are components of the real economy. In fact, this figure completes the simple model of the real economy. The additions made to the model by Figs. 3 through 8 are all monetary.

Figure 3: The Monetary Economy Without Taxation

The first two figures presented the flows and stocks of the real economy. The requirements for the model discussed earlier dictate that the model for systemic budgeting be built with two interacting

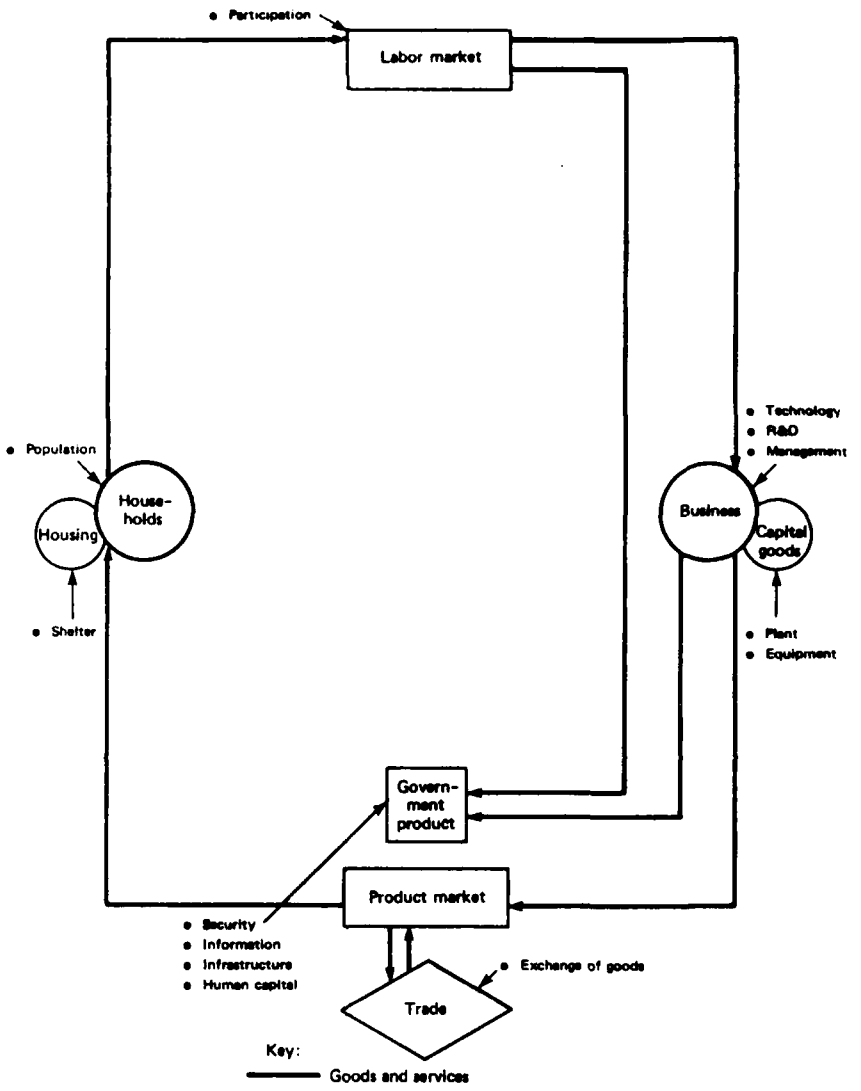

Fig. 2—Human and physical stocks in the real economy

and are final products in the product market en route to households; gross private domestic investment, composed of residential and non residential investment and changes in business inventories, is designated by housing and capital goods attached to households and business, respectively; government purchases of goods and services are the inputs to government product; and net exports, the difference between imports and exports, are labeled trade.

As presented in Fig. 1, this is not a functioning economy. The flows are wrong for barter, and money will be introduced in Fig. 3.

Figure 2: Human and Physical Stocks in the Real Economy

The title of this figure is inadequate. The intention of Fig. 2 is much broader than what "stocks" can convey. Figure 1 is devoted to short-term flows. Figure 2 identifies a number of factors that ordinarily are assumed to be constants in short-term flow analysis. However, rates of longer term change in these "constants" are of vital importance to the economy and in public budgeting. The factors indicated in Fig. 2 are the basis for the "going economy and society" implicitly assumed in Fig. 1. These factors are intended to suggest the broader, longer term base of the system; they are not an exhaustive listing.

Beginning on the left side of Fig. 2, we will briefly discuss each factor.

Households occupy an existing *shelter* stock which is altered over time. The term shelter is used to designate the existing stock of residential structures and to distinguish it from the term housing (Fig. 1) which identifies the flow of new investments in residential structures.

Population includes the entire gamut of demographic characteristics of people—one of which is that they form and maintain households. Change in those characteristics over time is of particular significance. For example, the postwar baby boom initially affected the maternity wards of hospitals and the demand for baby food. Soon it affected school construction and employment, the toy industry, and housing. Later it was to boost enrollments in the universities, entrants to the labor market, and auto sales. The population aspect of the economy and society is the basis for a sub field of systemic budgeting which will be referred to as demographic budgeting.

Members of households vary their rate of *participation* in the labor market over time, changing the rate of employment (and unemployment).

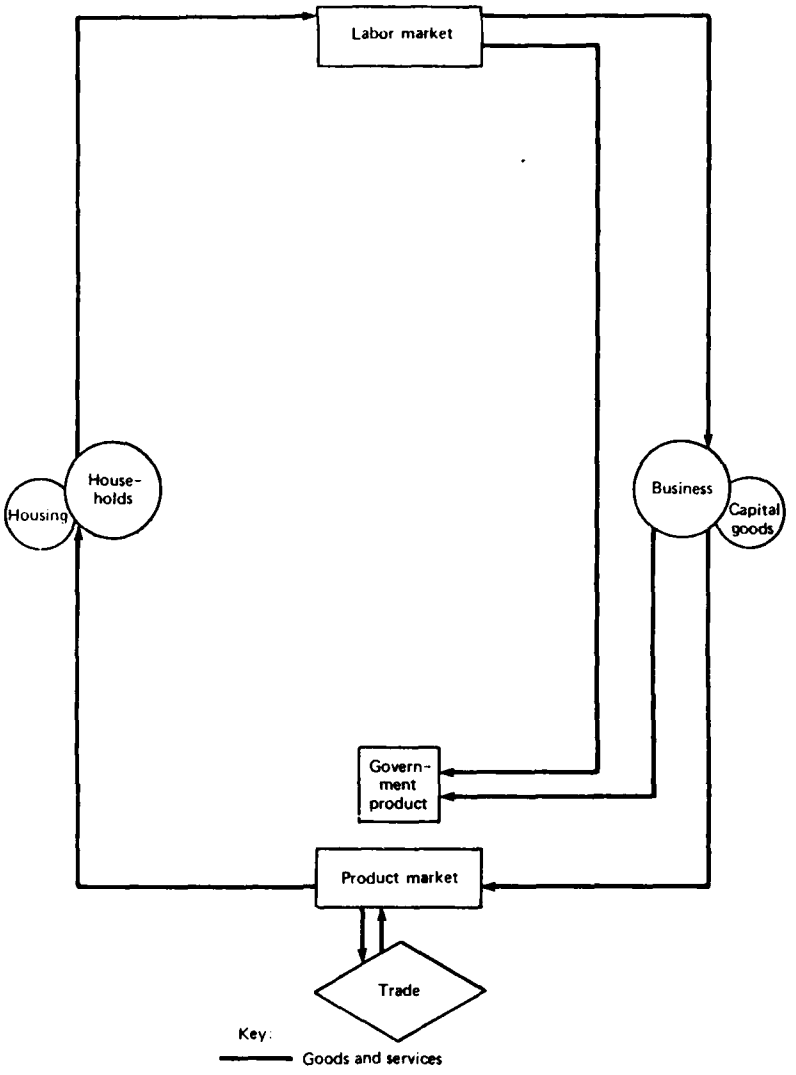

Fig. 1—Labor and product flows in the real economy

Each stage (and figure) is additive to the preceding one, with the exception of Fig. 4, which yields to the simple public budget in Fig. 5 and all subsequent figures.

Each stage of the model will be explained to clarify understanding of the model but not to explain how either the budget or the economy "works." Our purpose is to communicate a picture of the system as a reference point, to construct a basis for subsequent inquiry.

Figure 1: Labor and Product Flows in the Real Economy

The base of the model is the real economy. Households furnish labor through the labor market to business which produces goods and services which pass through the product market to households. The flow is clockwise as indicated by the arrows. The product market is devoted to "consumption" goods and services, including consumer durables.

Flows occur during a period of time, usually measured as one year unless otherwise specified. New real investments in housing or capital goods during the specified period of time are attached to the users (households and business, respectively). Markets for such real investments are subsumed; the connection to users becomes important in later stages of the model. In addition to new real investments, other changes in these assets during the period are permissible such as depreciation, repair, and maintenance. In the case of business, changes in inventories during the period are included in capital goods. Housing plus business capital goods compose gross private domestic investment.

Inside the loop, a channel from the labor market and a channel from business provide for flows of real labor and real goods and services as inputs to provision of government product. One way of defining government product is those goods and services provided the community which are not subject to marketing under the exclusion principle—that is, which are not to be used exclusively by the purchaser. The classic example is a lighthouse. As a *practical* matter, government product is counted as equal to and valued by the real inputs provided from the labor market and from business. We mean to include total government product—federal, state, and local.

Finally, trade denotes imports and exports as conventionally treated.

Thus, Fig. 1 provides a real economy consistent with a basic identity, namely, gross national product equals consumption plus gross private domestic investment plus government purchases of goods and services plus net exports ($GP = C + I + G + X_n$). In Fig. 1, services, nondurable goods, and durable goods for households are consumption

III. BUILDING THE MODEL

This section builds in a series of stages the analog model for systemic budgeting. The stages facilitate different degrees of simplification in the consideration of budget structures, policy analyses, or economic theories and represent two historic phases of budgetary development. These two historic phases are called (a) the simple public budget, roughly but not precisely analogous to that existing in the 1920s in the United States, and (b) the complex public budget, mainly created in the 1930s in the United States and continually modified in subsequent decades, although as yet unaltered in fundamental systemic character.

The simple public budget is devoted to the conduct of government through the purchase of goods and services as inputs used in what government does—what we designate as government product. Financing for this simple budget is derived from taxation and/or borrowing, and expenditures include net interest along with the purchase of goods and services. The simple budget concentrates on the allocation of real resources to the public sector as a portion of the gross national product.

The complex public budget widens the sphere of government programs to include transfer payments to individuals derived partly from contributions to social insurance funds, grants among jurisdictions of government, subsidies to businesses, surpluses of government enterprises, credit activities involving direct and indirect loans, and tax code provisions which extend beyond the collection of revenues. Whereas the simple budget is devoted to the allocation of GNP to the public sector, the complex budget adds a variety of governmental actions which alter the allocations of income and credit throughout the system.

The major stages of the model are listed below:

Figure	Stage of the Model
1.	Labor and product flows in the real economy
2.	Human and physical stocks in the real economy
3.	The monetary economy *without taxation*
4.	A transitional state—a simple revenue function
5.	The simple public budget
6.	Additional expenditure functions
7.	Direct and indirect credit functions
8.	The complex public budget

1. The model should provide a visual reference point to facilitate the consideration and explanation of more abstract models or theories—verbal or mathematical.
2. The model should provide readily agreed upon relationships or connections among elements. In the case of flows, direction is indicated. However, the overall pattern simply exists. The model does not indicate causation, that is, what are determinants and determinates, independent and dependent variables.
3. The model should facilitate research regarding the three major intellectual constructs of public budgeting:
   a. The classification problem—the identification of structures for naming, recording, and sometimes deciding the components of the budget.
   b. The micro policy problem—the methodology of nonsystemic and systemic analyses of specific public policy alternatives, such as public job programs, defense expenditures, loan guarantees, tax deductions, rental subsidies, and so forth.
   c. The aggregate policy problem—the broad consideration of the interrelationships of the budget and the economy, usually referred to as, but not limited to, monetary and fiscal policy.
4. The model should be built in layers so that different stages of historic evolution and different levels of simplification are available, consistent with other stages of the model.
5. The model should use, to the extent possible, well-established elements and identities consistent with historical data series. This permits existing bodies of data to be easily attached to the model for empirical purposes.

These five requirements have guided the development of the analog model of the budget and the economy which is constructed in the next section.

The model is of a system—a well-defined set of things and a set of relationships among that set of things.

The model is an accounting model based on identities. The set of things composing the system is selected and defined so that the set of relationships among them can be stated as identities. For example, the model specifies the components of consumption, investment, government purchases, and net exports so that these components are equal to gross national product. These identities permit the use of existing major data bases for empirical research within the framework of the model. The identities include, or can be disaggregated or extended to include, the parameters and variables used in the formulation of major theories or techniques. However, in the identity form, the defined relationships do not impose upon the model a forgone choice of a theory. Rather, the identities provide a basis for comparative research among such theories. In particular, combinations of identities may represent multiple conditions that a theory or technique may need to satisfy. The major identities are specified when they first appear in the model and then are summarized and discussed in Sec. IV.

The model is developed through a succession of figures which serve two functions. First, the figures facilitate selective simplification by a sequential explanation of components and relationships which provide reference points such as the simple (Fig. 5) and complex (Fig. 8) budgets. Second, the figures roughly approximate historical stages in the development of the system in the United States. This feature provides historical reference points so that theories or techniques can be researched in the temporal context of their origin.

Subject to the premises stated earlier, the model strives for neutrality with respect to various theories so that it can serve as a workbench. The neutrality sought is both intradisciplinary and interdisciplinary. As an example of the latter, the model as defined imposes no prior choice between some economic theory of optimization, some political theory of disjointed incrementalism, and some managerial theory of satisficing. The essence of the model is that the set of elements and the relationships among them are just "there" as a map of the territory to be researched.

Requirements Guiding the Development of the Model

We can summarize the considerations that have shaped this research model in terms of five requirements.

A MODEL FOR SYSTEMIC BUDGETING RESEARCH

We shall explain briefly the role, characteristics, and requirements of an analog model for systemic budgeting.

Role of the Model

Most of this report is devoted to the development of a model that defines the total public budget and the economy as one system. This model is not intended to be an operative model of budgeting. We cannot even use it to describe the budget process because the usual institutional components (executive, legislative, etc.) are not represented. The model described in this report is designed solely to serve as a workbench for systemic budgeting research.

There are four areas of budgetary research which can be aided by this model. First, major developments in budgetary technique usually are accompanied by alterations in budgetary classification. The systemic approach of this model is particularly suited to investigating possible improvements in budgetary structures, the fundamental construct in budgetary systems design. Second, micro analyses of specific public policy alternatives often are narrowly bounded, with minimal attention given to wider implications. The systemic approach of this model provides a broad, connected framework for the examination of secondary and tertiary implications of specific policies. Third, macro assumptions regarding the economy are a critical element in the formulation of budget estimates. The systemic approach of this model is designed to address the formulation of such assumptions along with other elements of strategy in aggregate budgetary analyses. Finally, the model could facilitate the use of quantitative information to complement conventional materials in historical budgetary research.

Potential uses of this model are discussed more specifically in Sec. IV.

Characteristics of the Model

The characteristics of the model stem from the definition of systemic budgeting and the premises discussed earlier. In order to support research into existing and alternative theories, concepts, and techniques, the model is primarily definitional.

The model is an analog—a visual diagrammatic picture of the total public budget and the economy as one system. It is a "map" of the territory to be researched.

the monetary economy that are reflected in the budget, thereby permitting the budget to be entirely monetary.

A fifth premise is that systemic budgeting considers both the stocks and flows of the system, especially in the longer term. By definition, a stock variable has no time dimension, whereas a flow variable does; a stock variable is measured as of a point in time, whereas a flow variable is measured per unit of time.

Historically, budgeting has tended to emphasize the very short run of the fiscal year and to measure only flows of receipts and expenditures. Although short-run flows are important, systemic budgeting also emphasizes the analysis of longer time dimensions—past and future—in the formulation of budget strategies. When only the short run is considered, stocks usually are accepted to be constant or they are ignored. When the time dimension is lengthened, stocks of either physical assets or financial assets and liabilities become susceptible to change. They become variables of importance in the analysis of the system.

The physical stocks of the system provide an inventory of assets available for use at a particular time and to be accumulated, consumed, and replaced over time. Because systemic budgeting assumes one system, the consideration of physical stocks includes those held publicly and privately, by households, businesses, and governments. Structures, durable equipment, and inventories—from houses, factories, and store counters to streets, school desks, and warships—are all assets of the system that are critical to longer term analyses and strategies. Similarly, the monetary stocks of the entire system—from deposits to debts, public and private—are considered along with the monetary flows.

A sixth premise underlying our definition of systemic budgeting is that people and their characteristics have a great deal to do with what governments do and with the financial actions that governments impose, require, or facilitate. In fact, the preponderance of the major components of the budgets of governments is related to people. The characteristics of people, as represented by demographic measurements, are presumed to offer a source of independent variables in the conduct of aggregate budgetary analysis. We term this approach demographic budgeting.

Beyond the measured stocks of the system, physical or monetary, there is a stock of intangibles within the people—of customs, attitudes, expectations, aspirations, and memories. Although far less quantifiable than the ingredients suggested by our other premises, these intangibles are no less important to our quest.

political choice and that may lead to modifications in the mix of goals selected. Thus, systemic budgeting is about budget technology, defining technology broadly as the development and application of organized knowledge to practical tasks.

To be sure, we are wading in very deep water. Political philosophy and operative politics do not separate so neatly from the professional task of budgetary technology. However, we proceed as though the foregoing separation is acceptable and workable, a first concession to the pragmatism that permeates budgeting.

A second premise is that systemic budgeting specifically treats the public budget and the economy as one system. A major way to approach analysis of the mixed state is to emphasize (exclusively or dominantly) one or another of its attributes. This approach may make the task more tractable, but it does so by pulling society apart. We take the position that it may be less manageable but more relevant to keep the system together.

A third premise is that the system is composed of two subsystems or economies—one for real goods and services that are produced, acquired, and used and another for monetary assets and liabilities that are created, acquired, and expended. The two economies interact to facilitate the exchange among parties of real goods and services without resort to barter. The monetary economy operates to facilitate various actions among parties beyond the process of exchange of real goods and services.

A fourth premise of systemic budgeting is that the public budget, as an abstract entity distinct from government, exists entirely in the monetary economy. The public budget epitomizes governmental involvement in both economies, real and monetary. It is the vehicle for the legal authorization to purchase for governmental use some portion of the real goods and services available to the nation as its gross national product. The budget also sanctions taxation of income, property, and transactions; it authorizes payments to individuals, subsidies to businesses, loans or the guarantee of loans, and payment of interest and the return of funds to those from whom government borrows. The budget reflects the involvement of government as the source of, or as a participant in, many of the actions that occur exclusively in the monetary economy.

If the real goods and services acquired by government for its use are viewed from the monetary side of the transactions of exchange, then the payments for those purchases are in the form of money. These money payments can be considered along with all the other actions in

II. SYSTEMIC BUDGETING

INTRODUCTION AND DEFINITION

This section defines systemic budgeting, briefly discusses premises, and then explains the role, characteristics, and requirements of an analog model for systemic budgeting research.

Let us begin with a definition.

Systemic budgeting is the strategic process of translating beliefs into policies and budgets. Given a statement of politically selected goals, systemic budgeting provides for a continuously iterative analysis of the budget and the economy to identify preferred courses of action more likely to lead to the achievement of those goals. Analytically, it treats the total public budget and the economy as one system. The system is composed of two economies, real and monetary, and the public budget exists entirely within the monetary economy. Along with the flows of the system, stocks of physical and financial assets are considered, especially in the longer run. Finally, the system literally is for, by, and of the people of the nation—as producers, consumers, voters, and the major catalysts of change.

PREMISES

This brief discussion of the premises that underlie the definition stated above is intended to enhance understanding of the model which follows; it neither exhaustively explains nor debates the fundamental issues beneath these premises.

The first premise underlying our definition is that systemic budgeting is not a theory of budgeting. In this field, theory is most appropriately stated in the negative, as V. O. Key did four decades ago in an article entitled, "The Lack of a Budgetary Theory." The issues and alternatives confronted in public budgeting lack a common denominator and thus can only be "settled" in terms of political philosophy.

Systemic budgeting delegates upward to the political arena the problems of public choice. The definition accepts as given the goal selections of elected political decisionmakers. However, systemic budgeting accepts responsibility for professional support—techniques, tools, and the conduct of analyses that may be found relevant to the conduct of

characteristics, and requirements of an analog model for use as a research workbench. Section III builds such a model to guide our subsequent research. Section IV summarizes major features of the model and its potential use.

economies—one real and one monetary. Figure 3 and the five that follow add the flows and stocks of the monetary economy.

Figure 3 adds a third market—the *capital market*—to the two identified in Fig. 1 (labor and product with investment markets subsumed). Alternatively, this market could be called the financial market or the monetary market. Regardless of labels, it includes all actions which create, destroy, and exchange financial assets and liabilities. Thus, it includes bond markets, equity markets, "money markets" for short-term issues, loans, mortgages, deposits, and both spot and future instruments. It is a dollar dominated market, with transactions to exchange currencies treated as part of the entity marked "world."

Figure 3 also adds three entities to the four identified in Fig. 1 (households, business, government, product, and trade). The *world* is the external monetary counterpart to the capital market, whereas trade is the external product counterpart to the product market. Thus, the open economy has two entry and exit points which when combined represent the balance of payments. *Financial business* is all forms of business dealing in the commodity of money. The distinction of the monetary economy regarding kinds of business is apt. The entity "business" on the middle right side of the diagram is denoted "nonfinancial business" by the monetary economy. "Financial business" includes banks, thrifts, insurance companies, brokers, dealers, exchanges, and similar operations. Essentially, they are all intermediary and/or fee service organizations dealing in various forms of financial assets and liabilities of different maturities, risks, and yields. The third added entity is the *Federal Reserve* or central bank.

The national monetary unit, or United States dollar, is the unit of measurement of all financial assets and liabilities which exist in the monetary economy. It is used to designate the price (in dollars) of a real good or service that is exchanged for some financial asset or liability. One characteristic of the monetary unit is that it permits aggregate measurement (in dollars) of collections of diverse real goods and services. Thus, it is usual to quantify the measurement of gross national product (GNP) in dollars rather than by a lengthy listing of quantities of actual goods and services (seven million automobiles, thirteen billion hamburgers, and so forth). Another characteristic of the monetary unit is that it is not invariant over time in terms of the quantity of a specific good or some general collection of goods for which some dollar-denominated financial asset can be exchanged.

Quantities denominated in dollars as of a particular time are stated in "current" or "nominal" dollars. When quantities of real goods and services are to be measured at different times and the variability of the

monetary unit over time is to be excluded, the nominal dollar prices are adjusted to those of some base period (for example, 1972 dollars). These adjusted measurements are stated in "constant" dollars and are monetary measurements of the real economy for comparisons over time. The dollar remains the same unit of measurement over time within the monetary economy. A five dollar Federal Reserve Note today is a five dollar Federal Reserve Note two years from today, although what the Note may be exchanged for in terms of goods and services may vary between today and two years from today.

The stocks of the monetary economy are all of the various financial assets and liabilities held at a particular time by the various entities of Fig. 3 (and other entities to be added in later figures). These range from bonds maturing in 30 years, an asset of the holder and a liability of the issuer, to currency (Federal Reserve Notes), a liability of the Federal Reserve and an asset of households and businesses outside the banking system and vault cash of financial business. Although most financial instruments represent such an asset/liability matched relationship, common stock is an exception as it represents an ownership claim. The stocks of the monetary economy can be identified and classified to create measurements that are less comprehensive than "all financial assets and liabilities," including various measures of money supply.

The flows of the monetary economy mapped in Fig. 3 will be described in three groups: (a) flows to and from the capital market and households and business; (b) flows around the real economy; and (c) flows involving government product.

The dual channels for flows to and from households, the capital market, and business are *entirely* monetary—involving no real goods or services. They handle all the transactions from deposits and check clearing and primary origination of new loans, mortgages, and securities, to the secondary marketing of existing instruments to facilitate changes in portfolios. The two-way channel to the Federal Reserve provides for flows incident to the conduct of monetary policies, specifically, flows of Federal Reserve Notes, check clearings, bank reserve maintenance transactions, discount window loans, and open market purchases and sales.

The monetary flows around the real economy are shown as flowing counterclockwise, inside the flow of labor and products. Thus, money flows in the opposite direction to the flows of the real economy. Money going into a market is being paid; money leaving a market is being received. In the labor market, wages are paid by business and received by households as income (money "coming in"). In the product

market, sales are paid for by households, and the payments are received by business as revenue.

Finally, let us specify the monetary flows related to government product on Fig. 3. The real labor and real business product flows to government product (as in Fig. 1) now are matched by monetary payment flows back as wages and sales revenues to labor and business, respectively. Note that on Fig. 3, government product has no source of funds—no revenue, no tax system. Thus, this figure represents a pure example of "printing press" governmental finance. Although it does not reflect the way the U.S. system works today, it is a reasonable historical portrayal of 1779 when the Continental Congress issued notes that spawned the phrase, "not worth a Continental." Figures 4 and 5 will introduce two versions of taxation.

To summarize, Fig. 3 has added to the model the capital market, financial business, the world, and the Federal Reserve as entities; the dollar as a monetary unit; and the stocks and flows of the monetary economy. It also has added two identities. The first identity is simply the equality of assets and liabilities. For every borrower, there is a lender in the monetary economy. We shall specify a specific form of this first identity later when more entities and flows have been added to the monetary economy (Fig. 7). The second identity is between a selected stock of the monetary economy and the nominal dollar measurement of GNP (a flow). The general form of this identity for use with this model is:

$$M \cdot Z = NGNP$$

where M is any specified categorization of monetary assets, $NGNP$ is GNP measured in nominal dollars, and Z is a variable which satisfies the equality. The statement of this identity in this general form is made to avoid limiting the model as a research workbench to the use of any specific form of this identity.

Figure 4: A Transitional Stage—A Simple Revenue Function

Figure 4 adds only one item to Fig. 3—a single revenue function between the product market and the government product. The model of Fig. 4 can be used in two ways. First, an assumption can be made regarding this single revenue function to suit some analytic purpose. Second, a major historical period of the U.S. federal budget can be examined when a single revenue source was dominant. Each of these uses of Fig. 4 is discussed below.

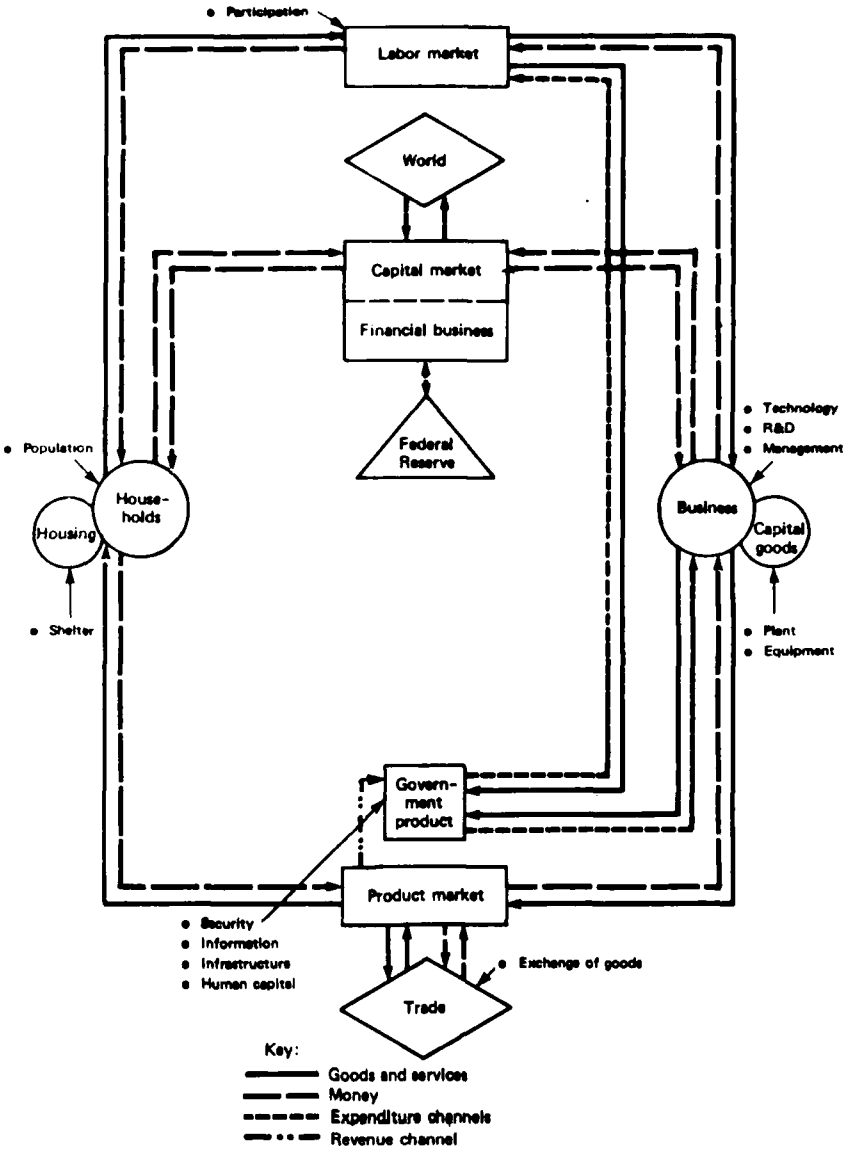

Fig. 4—A transitional stage—a simple revenue function

The single revenue function assumed in Fig. 4 could be a flat rate tax on purchases in the product market. The tax rate is set and government purchases of goods and services are budgeted so that revenues equal expenditures - a "balanced" budget. The tax raises the price of all goods by the same percentage. The government revenue, as it is expended, flows back to labor and to business by the exact amount added to the cost of goods by the tax, thereby restoring the income flow to pay the higher prices. In effect, consumers pay for consumer goods and government product by their total purchases. Individually, they pay for government product in direct proportion to their individual expenditures for consumption.

From an historical standpoint, if the tax is a tariff on imports, then Fig. 4 approximates the way the U.S. federal government (but not state and local government) operated during most of the 19th century. In this historical mode, the model can be used to examine the problems of surplus that occurred in most years, the occasional periods of major deficit that occurred due to war, the problems caused by the periodic lack of a central bank, and the various 19th century financial panics.

Figure 4 is a transitional stage of the model; it is included to facilitate analysis under various assumed conditions or for explanation of 19th century U.S. federal budgetary experience.

Figure 5: The Simple Public Budget

Although Figs. 1 through 4 are individually useful, they are mainly building stages to arrive at Fig. 5, where we include a public budget.

Figure 5 deletes the simple revenue function of Fig. 4 and begins instead with Fig. 3, adding to it the public budget entity and six monetary channels. The public budget in this model is involved only with "money."

The public budget is the total of federal, state, and local budgets. This public budget can be disaggregated by jurisdiction or by category of revenue or expenditure, just as other aggregate entities in the model can be disaggregated (business by type of product or service, for example).

Figure 5 adds six channels to the monetary economy:

a. An expenditure channel from the public budget to government product, equal to the payment flows from government product to the labor market (and from there to households) and to business for the real inputs supplied.
b. Three revenue channels—one each from households, business, and the product market to the public budget. (Financial

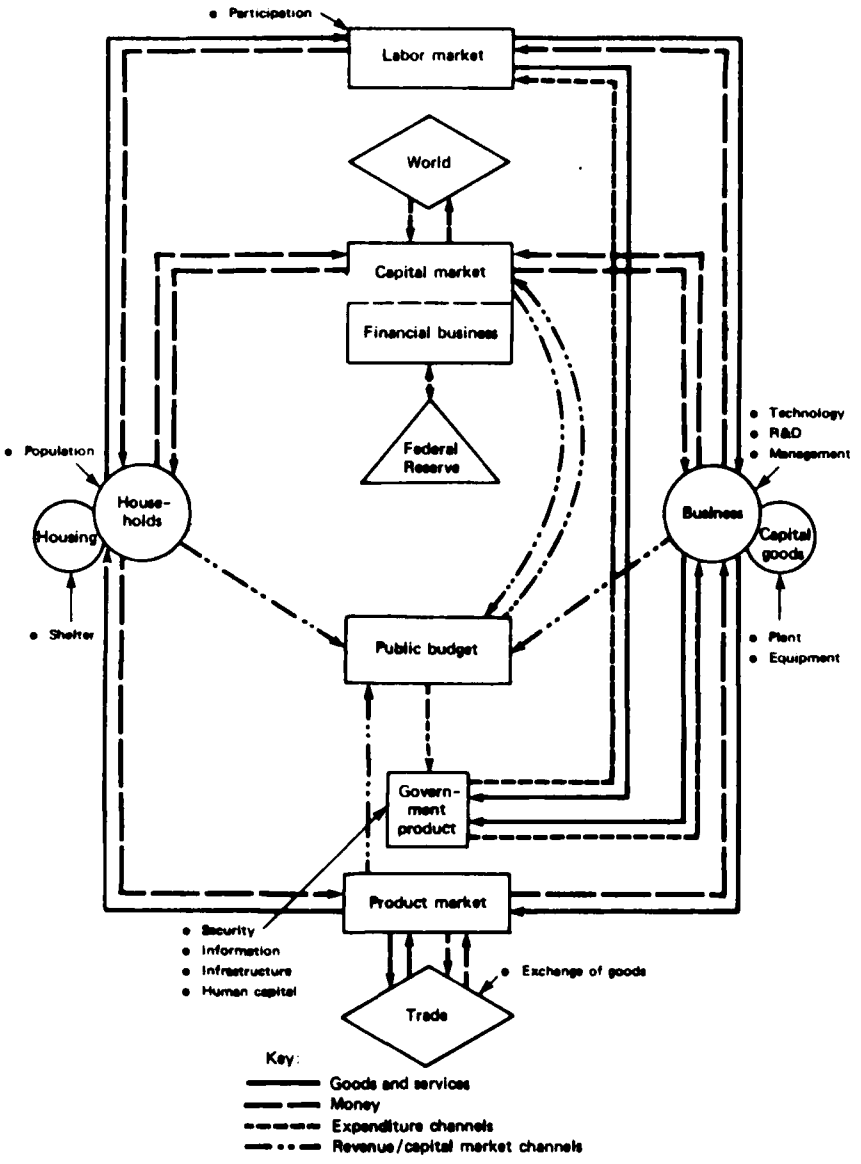

Fig. 5—The simple public budget

business also supplies revenues, but to avoid unnecessary clutter in the analog model, the business revenue channel is considered to include revenues from both financial and nonfinancial business.) Through these channels flow all forms of revenues from the identified source to the public budget, whether based on stocks (property taxes, estate and gift taxes) or flows (income, profits, sales taxes). License and user fees, etc., are included for each source. Source is defined here as the point of initial exaction or collection, not the location of ultimate incidence.

c. A dual channel connection from the public budget to the capital market, which *exactly* parallels the similar dual channel connections of households and business.

With the addition to the model of the public budget and its six channels for expenditure, revenue, and capital market flows, Fig. 5 provides the basis for the introduction of the basic budgetary identity. This identity is simply that revenues minus surplus (or plus deficit) equals expenditures ($R - S = E$). It is always a balanced budget as an accounting identity; it is not a balanced budget as understood in the popular mind, which further assumes the absence of surplus or deficit. (The single tax assumption of Fig. 4 specified such a classical balanced budget.) To be very explicit about the budgetary identity of Fig. 5, a numerical example is offered:

Expenditures (for government product)	100	Tax revenues	110
		Surplus	−10
Total budget balance	100		100

Thus, surplus or deficit is the difference between revenues and expenditures. This difference is equal to net additions to or withdrawals from the capital market, including net interest. Interest paid (or earned) by government does *not* represent an expenditure for government product and is not part of the "G" of GNP. It is a payment due to governmental financial liabilities that is made to the holders of those liabilities.

So far, "government" is in three pieces in this model: government product, the Federal Reserve, and the public budget. In Fig. 7, a fourth and last piece of government will be added.

Figure 5 is one of two basic models in systemic budgeting. It provides the simple public budget fully related to the economy as one

system. (Figures 6 through 8 will build the second basic model, that of the complex public budget.)

The simple public budget model of Fig. 5 has great usefulness in examining history and various theories because it approximates the stage of development of the system at the onset of the Great Depression in the 1930s. The Fig. 5 model can be used as a simplified model excluding later developments or it can be used in contrast to more complex models up to and including the complex public budget of Fig. 8.

Figure 6: Additional Expenditure Functions

Figure 6 begins the process of adding those additional categories of budgetary expenditures begun during the Depression of the 1930s. Some of these categories do have earlier historical precedents; however, it is much better for the diverse uses of the model to introduce these expenditure functions together at this point. As each type of expenditure function is identified, at least one example from the 1930s will be given to show how that type started. However, each of these functions represents a generic type of flow which can include additional expenditures for similar purposes. To trace additional programs since the 1930s, we need only identify its type and add it to the appropriate function in the model. Disaggregation of any function can then be used to display either historical evolution or contemporary content.

Function 1 (numbered for ease of reference) is expenditure flow for government product, the only expenditure function in the simple public budget of Fig. 5.

Function 2 is intergovernmental grants between and among jurisdictions of government—federal, state, and local. The public budget in this model is always the Total Public Sector Budget unless specified otherwise. Federal grants to the states at the beginning of the New Deal are an example from the 1930s.

Function 3 is all transfer payments, private sector through government to private sector, based on "contributions" for revenues, usually collected from business as the source (but not necessarily incidence) and managed through a trust fund. Social Security (OASI) is the most prominent and largest of these payments; it began in the 1930s.

Function 4 includes all transfer payments similar to those in function 3 except that they are transfers to the private sector resulting from past employment in the public sector. Retirement programs at all levels of government and veterans' benefits compose most of this function and predate the 1930s.

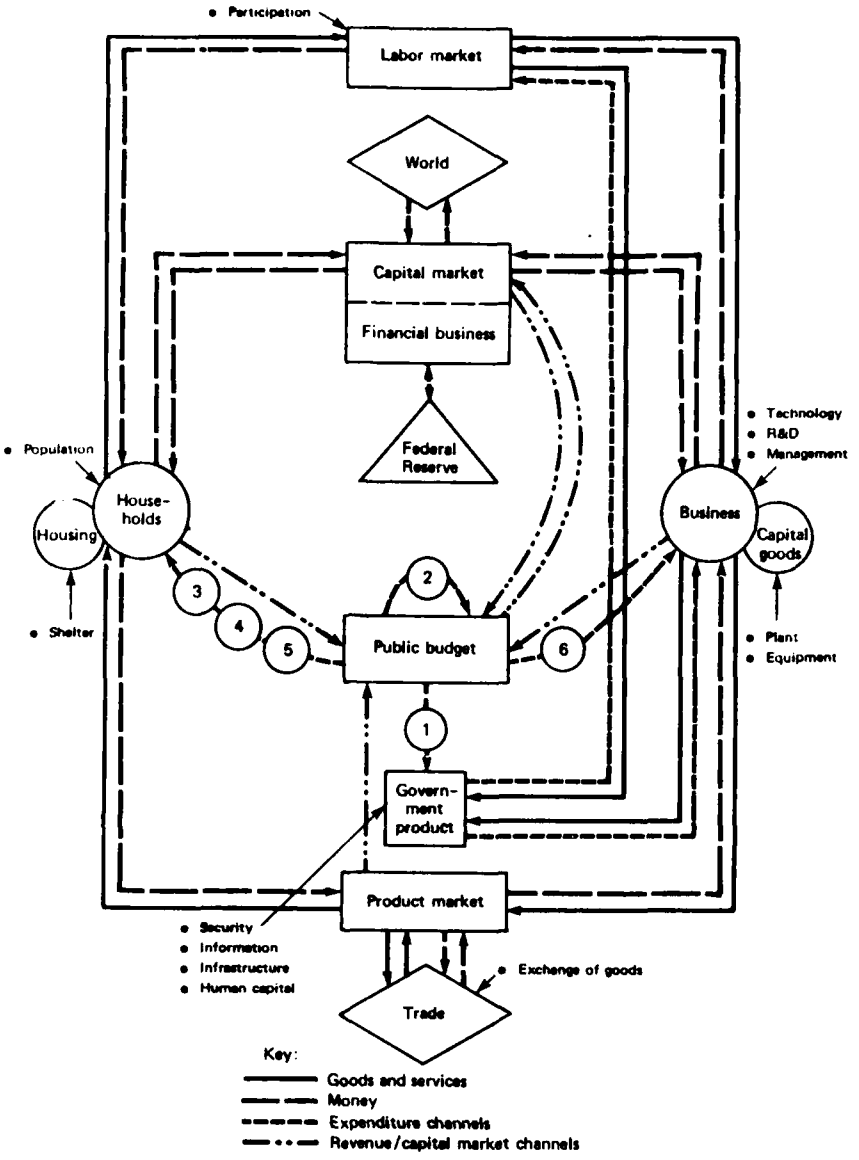

Fig. 6—Additional expenditures functions

Function 5 includes all transfer payments that are not based at least partially on past employment, private or public. An example from the 1930s is public relief payments, including aid to families with dependent children (AFDC).

The preceding definitions of functions 3, 4, and 5 are the preferred categorization in the model, namely, transfers related to prior private employment (3), related to prior public employment (4), and not related to prior employment (5). As a practical matter, empirical work may deviate from these definitions with appropriate notation. For example, former state and local employees may receive social security benefits due to their prior public employment and/or mix of prior public and private employment. Usually, all transfers for social security will be identified with function 3, including benefits to state and local former employees. The transfer payments to those employees derived from state and local employee retirement systems will be identified in function 4. An alternative set of definitions also will be used with appropriate notation whenever quarterly data are involved. The present national income and product accounts, as reported, only provide annual data that are consistent with the preferred categorization of functions 3, 4, and 5.

Function 6 is all payments made to business which are not in payment for real inputs to government product. Function 6 also includes all "businesses" (primarily municipal utility services) conducted by the public sector. Thus, as a *practical* matter, function 6 is counted as equal to all subsidies less current surpluses of government enterprises. The 1930s example is various payments to farmers to restrain farm production.

With these six functions, all expenditures can be categorized as flows in the monetary economy such that these expenditures in total are an approximation of the expenditures "on the budget," federal, state, and local. (There are some remaining classification differences involving the functions added by Fig. 7. These can be handled when they arise in empirical analyses.)

The additional expenditure functions of Fig. 6 alter the basic budgetary identity introduced with Fig. 5. First, we will add these functions to the identity, continuing the numerical example previously used (the numbers in parentheses refer to the functions of Fig. 6).

Expenditures (1) (for government product)	100	Tax revenues	110
		Contributions to social insurance	60
		Grants (2)	0
		Transfers (3,4,5)	− 65
		Subsidies (6)	− 5
		Surpluses of govmt enterprises (6)	10
		Surplus	− 10
Total budget balance	100		100

The example focuses attention on several important aspects of the changes that occur between Fig. 5 and Fig. 6. First, the adoption of transfer programs related to prior employment (functions 3 and 4) involves an additional category of revenues for the collection of contributions to social insurance. Second, the grants category is zero because the budget identity illustrated above is for the total public sector. When the identity is disaggregated by jurisdictional levels, grants are a minus for the grantor and a plus for the grantee. Third, all the changes for the functions added by Fig. 6 have been made on the right side of the identity. The left side of the identity is the same as with Fig. 5—it reflects only the nominal dollar expenditures to purchase goods and services for governmental use as an allocation of GNP to the public sector. The left side of the identity relates to the real economy of goods and services. The right side of the identity relates entirely to flows within the monetary economy, which we will designate as income allocation. The distinction between product allocation (on the left) and income allocation (on the right) is basic in this model. The product allocation occurs in the real economy of Fig. 1. It is financed in the monetary economy by the simple public budget of Fig. 5. The expenditures of the simple public budget are function 1 of Fig. 6 and the left side of the illustrated identity. The additions of Fig. 6 are all on the right side of the budget identity and are entirely flows of the monetary economy.

Because the illustrated accounts are an identity, the items can be rearranged. We will do so, continuing the numerical example. The rearrangement presented below moves all but one of the items added by Fig. 6 to the left side in order to arrive at the conventional form of this identity.

Purchases (1) (for government product)	100	Tax revenues	110
Grants (2)	0	Contributions to social insurance	60
Transfers (3,4,5)	65		
Subsidies (6)	5		
Surpluses of government enterprises (6)	−10		
Net interest paid	5		
Surplus (or deficit)	5		
Government expenditures and surplus	170	Government receipts	170

First, the item for surplus used in the earlier examples has been separated into net interest paid and surplus because we are now ready to recognize net interest as an "expenditure" through the capital market for credit extended to government. Second, all the items that were moved from right to left, of course, changed signs. Third, the totals have increased while the equality of the identity has been maintained. Fourth, the identity now is presented as a budget of expenditures and receipts. Fifth, and importantly, the left side of the budget identity now includes what we have designated as items involving different allocations—product, income, and credit. It is a *mixture* of government expenditures to purchase (allocate) a portion of GNP for the conduct of the public sector, government expenditures to alter income allocation, and government expenditures to pay interest resulting from capital market borrowing, which affects credit allocation within the system.

Figure 6 includes those revenues and expenditures which are usually referred to as the budget, with the exception that it is at the level of the total public sector rather than a specific jurisdictional level such as the federal budget. Current budgetary structures *mix* expenditures for product, income, and credit, as illustrated by the last budget identity. Consequently, Fig. 6 is designated the contemporary budgetary structure for convenient reference.

Figure 7: Direct and Indirect Credit Functions

Figure 7 adds two functions (numbers 7 and 8) to the contemporary public budget to identify and categorize governmental credit functions. It also adds an entity, *credit agencies*, to conduct these functions. This

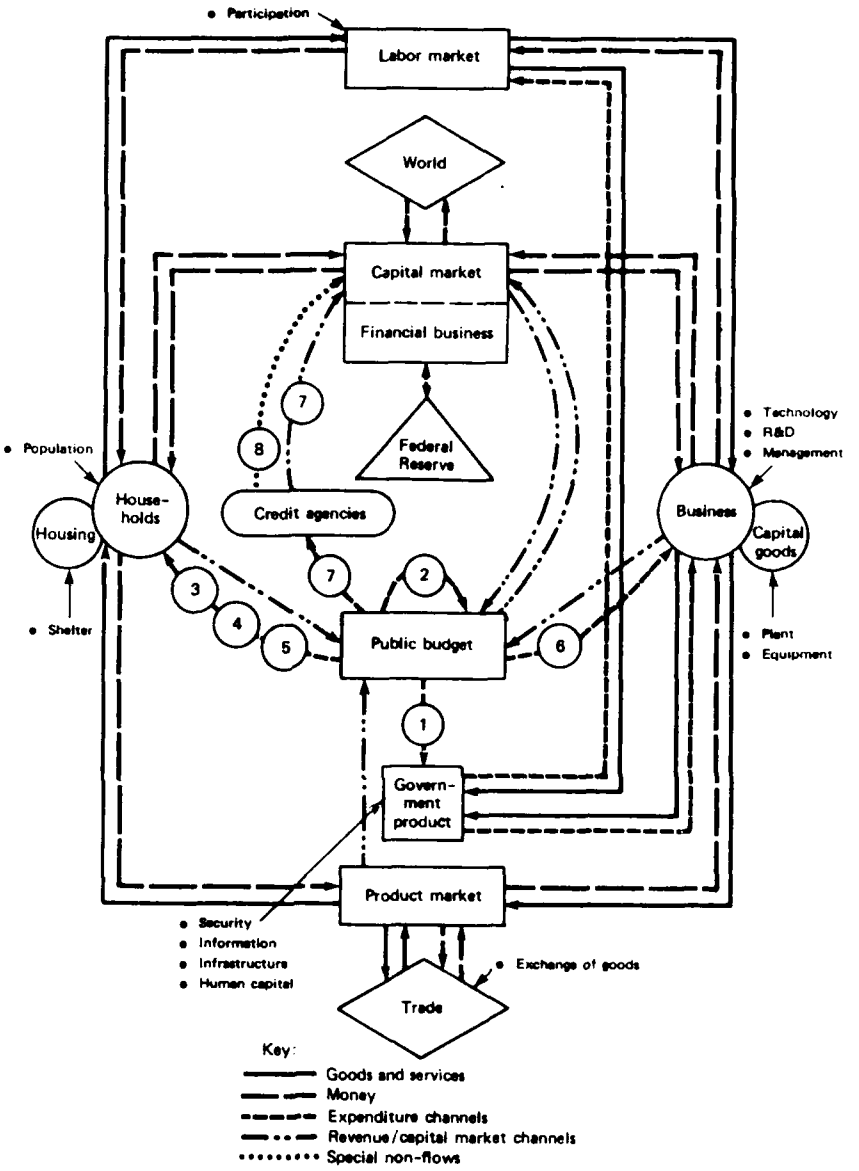

Fig. 7—Direct and indirect credit functions

entity is the fourth piece of government in the model and is composed of both governmental and privately owned but governmentally supported institutions that are public sector related components of financial business, functioning as intermediaries and/or fee/service organizations. They either supply credit directly to businesses or households or they support the provision of credit through financial businesses.

Function 7 provides for direct loans of public funds derived either from surplus or borrowing. This function is not part of the budget identity introduced with Fig. 5 and extended with Fig. 6. If function 7 is separated from the rest of the budget because of the repayment feature of loans in any given jurisdiction, it becomes essentially the "off-budget" of that jurisdiction. The earliest 1930s example of direct loans is the Reconstruction Finance Corporation (RFC), which predated the New Deal.

Function 8 provides for various forms of credit assistance to the making of private loans—loan guarantees, etc. Note that the arrow from credit agencies to the capital market for this function is designated as a "special nonflow." Function 8 programs alter the terms of an otherwise private capital market transaction without an immediate expenditure from the public budget. The 1930s example is guarantee of home mortgages by the Federal Housing Administration (FHA).

In the discussion of Fig. 3, a general statement of identity between borrowers and lenders was mentioned. This identity can be specified in terms of the net positions (creditor or debtor) of the various participating entities in the capital market and the monetary economy (as shown on Fig. 7). The net positions of the various entities must equal zero. Thus, households (H) plus business (B) plus financial business (FB) and the rest of the world (W) and the Federal Reserve (FR) plus the credit agencies (CA) plus the public budget (PB) is equal to zero when the net debtor or creditor positions of each of these entities of the model are summed. This identity can be written as $H + B + FB + W + FR + CA + PB = 0$. If the deficit or surplus of the public budget is defined in terms of the capital market, it is the net position of PB in this identity. Any of the entities in this identity can be in deficit or surplus; however, such intersectoral borrowing and lending are offsets, and the sum of net sectoral positions is zero.

Figure 8: The Complex Public Budget

Figure 8 is the last figure and presents in its entirety the complete public budget fully related to the economy as one system. Figures 5 and 8 provide the two basic models, one for the simple budget and a second for the complex budget.

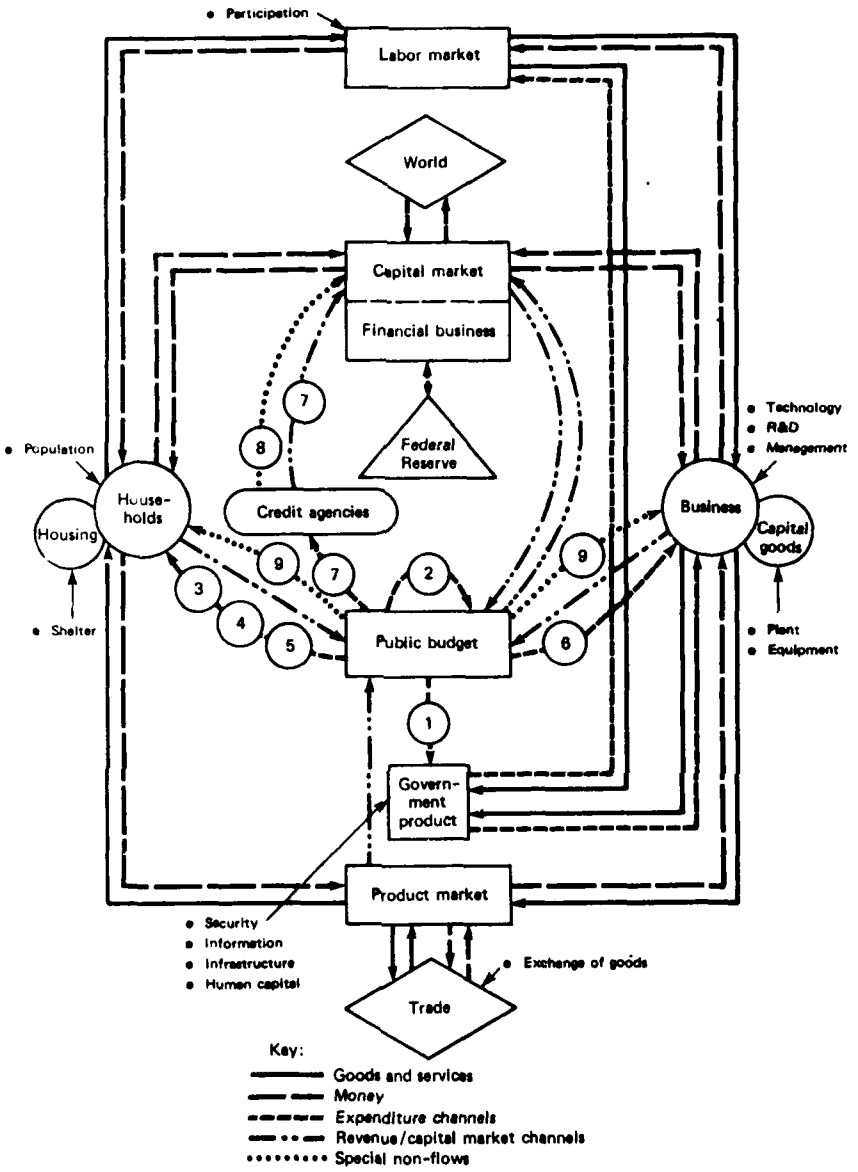

Fig. 8—The complex public budget

Figure 8 adds only function 9 for all forms of deductions from taxes authorized by the tax codes of government—federal, state, and local. These deductions are sometimes referred to as "tax expenditures," although they are not a tax paid by households or businesses (in fact, they are a legal means of tax avoidance), and they are not an expenditure by the public budget (in fact, they may be a substitute for such an expenditure). Function 9 is designated as a "special nonflow." Functions 8 and 9 are functions of consequence in the total system although neither involves actual monetary flows per se. In this model, these two functions are called the off-off budget.

Figure 8 presents the final model of systemic budgeting. Previous figures are used for historical reference or to provide models appropriate to or simplified for the examination of various theories or other analytical purposes.

IV. THE MODEL AND ITS USES

INTRODUCTION

This concluding section reviews the model and suggests some of its potential uses. The model as a workbench can support research that is so extensive and diverse that no attempt to catalog uses will be made. Instead, we provide a sample of major lines of inquiry.

The summary review of the model is organized by the characteristics specified in Sec. II. The model is an *analog* of a *system*, based on *identities* and built in *stages*, with a striving for *neutrality*.

The potential uses are organized by the intellectual constructs of budgeting mentioned in Sec. II. Budgeting involves *structure, micro analysis*, and *aggregate budgetary strategies*.

SUMMARY REVIEW

An Analog

The model is an analog—a visual diagrammatic picture—of the total public budget and the economy as one system. It is a "map" of the territory to be researched.

The text accompanying the figures is a verbal model of the system, which can be presented more briefly and simply than would be the case without the figures. The text is primarily definitional.

The figures provide *a way of thinking about an abstract complex system* that can lead to other ways, verbal and mathematical. The figures also provide a means of communicating analyses of various parts or stages of the system.

A System

The model is of a system—a well-defined set of things and a set of relationships among a set of things. The *substantive thrust* of this model is to treat the mixed state as one system, an intertwining of the dynamics of the budget and the mysteries of the economy. The *analytic oppportunity* provided by this model is a defined system that can be approached by any of the techniques which have been developed to

analyze systems, any kind of system. The model provides a potential means for the *systems analysis of aggregate budgetary strategy*, independent of analytic methods or theories derived from politics, economics, budgetary experience, or other sources. Any of the techniques which have been devised to analyze systems are potentially available to assist us. They become ways of thinking strategically about decisions characterized by complexity and uncertainty.

This model has been devised to foster systemic analyses of budgetary structures, of the wider implications of narrow policy analyses, and of aggregate budgetary strategies.

Identities

The model is an accounting model based on identities. The set of things composing the system is selected and defined so that the set of relationships among them can be stated as identities. Identities, of course, are statements which are true but which as such are meaningless as explanations of causation.

The identities defined by the figures and text of Sec. III provide the hooks for attaching time series information to the model for empirical use. As the stages of the model were developed, four major identities were specified. These were:

1. The real economy identity ($GNP = C + I + G + X_n$) with Fig. 1.
2. The monetary stock identity ($M \cdot Z = NGNP$) with Fig. 3.
3. The budget identity ($R - S = E$) with Fig. 5 and extended with Fig. 6.
4. The capital market identity ($H + B + FB + W + FR + CA + PB = 0$) with Fig. 7.

These four are extraordinarily important identities of the model. There are many more. For example, Figs. 3, 5, and 6 add the entities and relationships essential to the income approach to GNP. Thus, by Fig. 6:

$$C + I + G + X_n = GNP = NI + OC + CCA + SD$$

where the left side is the first identity listed above and NI is all the components of national income, OC is all other charges against net national product, CCA is capital consumption allowances with capital consumption adjustment, and SD is the statistical discrepancy. Thus, the model can be "hooked" to the entirety of the National Income and Product Accounts of the United States (NIPA), including such

additional identities as the budget identity (listed as 3 above), and the important savings equals investment identity. Similarly, the capital market identity (listed as 4 above) can be hooked to the entirety of the Flow of Funds Accounts (FFA) maintained by the Federal Reserve, including the various identities internal to those accounts.

In both of these major instances, our model alters the location, definition, or relationships of various entities from the way they are treated in NIPA and FFA. These major systems were designed for purposes and analyses other than budgetary. Further, these major systems do not connect well to each other. Our model conceptualizes the basis for a national system of product, income, and credit accounts for public budgeting, incorporating stocks and flows, and derivable from existing sources. Such a system does not now exist, but it could be developed.

More generally, the model based upon identities contains the variables and parameters that can be manipulated to form various theories. Thus, the model is a workbench for the comparison and alternative use of such theories. The workbench contains the *ingredients*, but it has not chosen the *recipe* of any particular theory.

The identities are connectors—to data, to account systems, and to theories.

Stages

The model is developed through a succession of figures which serve two functions. The stages provide different degrees of simplification, and they reflect rough approximations of different historical periods.

Although the most dominant stages of the model are the simple and complex budgets of Figs. 5 and 8, each of the figures has either analytical or historical research potential. The incremental development of the figures aids understanding of the model itself.

Analysis can dwell upon a single figure, even those figures that precede the introduction of the budget. Figure 2 adds the population to the system and indicates that the people and the public budget can be related one to the other. This assertion is based upon previous research which indicates that changes in demographic characteristics (especially age cohort sizes) can be usefully treated as independent variables in budgetary research. The separate figures provide an easy device for specifying an analysis solely using demographic variables (Fig. 2) which subsequently may be broadened to include income vari-

ables (Fig. 6) but not credit variables ables (Fig. 7). The figures provide *reference points* to clarify what is being examined and/or excluded.

Historical stages provide other avenues for research. The major budget reforms of this century have occurred during the periods characterized by the different figures. Figure 5 is relevant to the Taft Commission on Economy and Efficiency (1912) and the subsequent authorization of the President's Budget (1921). Figure 5 is also relevant to the various economic theories of the 1920s and 1930s before and after the onset of the Great Depression. The President's Committee on Administrative Management (1939) occurred after the various developments added by Figs. 6 and 7. The Second World War, with its extraordinary demands upon the real economy for national security, can be usefully examined in terms of the reality of only Figs. 1 and 2, and then again in terms of Fig. 5 regarding the strategy of taxation and borrowing. The Employment Act of 1946 drew upon earlier economic concerns and theories (Fig. 5), although the complex budget of Fig. 8 already was generically complete. The Hoover Commissions (1949, 1955) focused on "performance" of what we denote as government product or the essence of the simple public budget (Fig. 5), whereas the growth of the public budget was already developing in the more complex channels (at least Fig. 6). The investment tax credits of the early 1960s are a "channel 9" approach on Fig. 8. The development of PPB in the 1960s was an advance beyond performance techniques in the analysis of purchases for defense, the largest component of the simple federal budget (Fig. 5). PPB was not a methodology designed to cope with all the difficulties of Fig. 8. The President's Commission on Budgetary Concepts (1967) recommended the "unified" budget—a thorough mixing of Fig. 6. In the 1970s, the additional channels of Figs. 7 and 8 flourished. The system was characterized by "stagflation;" political stability of the system was strained, but sustained, and alternative economic theories waxed and waned.

Both budgetary reform and economic theory have evolved intellectually while the system has evolved in actuality. The complex public budget was completed in its functional capacities in the 1930s. The author contends that budgetary structural reform has yet to comprehend the budget that exists. Similarly, at least some of the controversies in aggregate economic theory involve theories whose origins or simplifying assumptions are more easily examined in terms of the simple public budget of Fig. 5—or earlier historical models. One research interest in systemic budgeting is how much assistance is provided by any or all of those theories to the individuals who must cope with Fig. 8—the complex public budget of contemporary America.

The stages of the model provide reference points for analytical or historical use in research.

Neutrality

The model strives for neutrality with respect to various theories so that it can serve as a workbench. The neutrality sought is both intradisciplinary and interdisciplinary. The essence of the model is that the set of elements and the relationships among them are just "there," as a map of the territory to be researched.

Neutrality, like objectivity, is best achieved by the dead. The living are personally interested in what they think and do. By definition, systemic budgeting delegates upward to politically chosen leadership the problems of public choice. In return, systemic budgeting accepts responsibility for *professional support.* The professional builds skills, capabilities, or a technology. He does so without choice of employers or their goals. Systemic budgeting strives for both common devices and adaptability in order to be suitable to the needs of any political leadership that might be electable in the United States.

The stress on neutrality of the workbench, including the base of identities and the use of any means of analysis, reflects the task professional budgeting must be prepared to accomplish. The professional cannot choose leaders' politics, economic theories, or managerial tactics. The professional and the tools of his profession can only attempt to enhance the rationality of the connection between beliefs, policies, and budgets made by those elected to decide.

USES OF THE MODEL

The previous review of the model implies some major uses that may be pursued. These, and a few others, are discussed below.

Budgetary Structure

Advances in budgetary technique usually are accompanied by alterations in budgetary classification. This model conceptualizes a set of connected identities with which to restructure information for budgetary use, including a set of national accounts. Research regarding alternative structures for presenting and approving the federal budget would benefit from this model and the restructuring it implies. A structure could be sought for the existing budget.

This model focuses attention upon the Total Public Sector Budget--composed of federal, state, and local budgets. Development of this Total Public Sector perspective for use in federal budgetary strategy is a major contribution anticipated from research with this model.

Micro Analyses—Six Samples

In connection with Fig. 2, we mentioned a sub field called demographic budgeting. A major area of micro policy analysis is connecting government programs with the people served and identifying changes in these demographic relationships over time. Such research may be limited to a program or collection of programs or may be generalized as a "people base" of the entire system.

Purchases of goods and services to produce government product remain the bulk of total government expenditures. These purchases distinguish between the public and private sectors in the allocation of GNP in the real economy (Fig. 1). Analysis of this allocation has great relevance to such federal budget issues as "resources available for defense."

Purchases of goods and services by government involve consumption and investment. The public sector shares with other sectors the need for physical assets—durable goods and structures. Analysis of stocks as well as flows is relevant in public budgeting—and woefully neglected.

Transfer payments to individuals through public budgets are a reallocation of income. Most of these transfers are related to retirement. There are other programs for retirement, organized or individual, in the private sector which are affected directly or indirectly by other public budgetary policies. A demographically sensitive analysis of retirement income, from public or private sources, would widen the perspective for the consideration of these transfer programs and their periodic crises and reforms.

Credit activities by government as an intermediary or source of guarantee are not connected to the budget identity that deals in product and income allocation. However, the credit activities interact with "on-budget" programs in terms of expenditures for interest and tax code provisions affecting revenue. Analysis of these interactions based on Figs. 6, 7, and 8 would help clarify some of the least understood portions of the complex public budget.

Expansions or reductions in grants (Fig. 6) may alter public employment or purchases at other jurisdictional levels, which ultimately may affect levels of transfer payments or other parts of the budget at one or more levels of government. Analysis of the fungibility of grants and

their spillovers could contribute to the consideration of intergovernmental budgetary relationships.

The preceding list is an indicative sample of various lines of budgetary micro research that can be shaped, stimulated, and assisted by this model and its research potential. These six areas are just a beginning of the possible agenda.

Aggregate Budget Strategies

Beginning with the definition of systemic budgeting, the approach of this model has been designed to facilitate research which may support improvements in the formulation of aggregate budget strategies. This model painstakingly seeks a broad, deep, and multidisciplinary basis for thinking about the quandary of the mixed state and ways of formulating those public decisions affecting the most aggregate dimensions of national life. In this field, our aim is to better "tool" those faced with daily reality and public responsibility to cope with what is not quite understood or controlled—the dynamics of the federal budget intertwined with the mysteries of the national economy.

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NOTE: The quotation at the top of p. 1 of this report is from William Greider, "The Education of David Stockman," *The Atlantic*, December 1981, p. 38.

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