

THE ROLE OF INFORMATION IN A DEMOCRACY AND IN GOVERNMENT OPERATIONS: THE PUBLIC CHOICE METHODOLOGY

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I. INTRODUCTION

A. Objective and Approach

This paper is a part of the Research Methodology Project conducted under the auspices of the Research Committee of the Government and Nonprofit Section of the American Accounting Association. The general goal of the project papers is to describe research methodologies and suggest applications in future governmental accounting research. The other project papers deal with agency theory, behavioral studies and capital markets. Our original goal was to inquire about the methodologies of political science, in the hope that insights from that discipline could be applied to government accounting research. Our preliminary exploration of the political science literature led to three findings. First, much of political science deals with non-financial aspects of government and linkages to accounting and financial reporting are not readily obvious.¹ Second, political scientists use research methodologies similar to other social sciences.² Three, there is considerable interdisciplinary research in the traditional domain of political science. The first two observations do not imply that political science is irrelevant to governmental accounting research. Rather, governmental accounting researchers must define their research objectives before turning to another discipline for specific insights. The third observation calls for an assessment of the unique contributions that could be made by accounting researchers. We have therefore adopted a working premise that a goal of governmental accounting research is to describe, explain, or predict how information (especially financial information) is used by decision makers in making economic, political, and social choices in the political system and government. This will enable us to focus on that part of political science (broadly defined) which is concerned with multi-person decision making under conditions of uncertainty and imperfect information.

A body of literature that meets the above requirement exists in the interdisciplinary field of *public choice*. Using the methodology of economics to model and analyze politics and government operations, public choice is explicit about decision rules and incentives of participants in collective decision-making processes within specific institutional settings (e.g., democracy, representative government). In a significant way, public choice is concerned with how information can affect the production and distribution of government output. These activities are analyzed in terms of demand and supply. Consequently, there are demand models which address how voter preferences for government output are revealed and acted on by political parties and candidates for public offices. And there are supply models which deal with the relationships between the elected legislature and the bureaucracy. Although even elementary economics tells us that both demand and supply intersect to produce equilibrium price and quantity, these demand and supply models are often presented separately in the public choice literature. For ease of exposition, we will follow this practice, even though we do not regard them as alternative explanations of government output or expenditures.

This paper is not intended to be a comprehensive review of the literature (see Mueller, 1979 and Mitchell, 1983). Rather, our purpose is to stimulate interest among governmental accounting researchers, who may then pursue the technical literature, notably the papers in *Public Choice*. With respect to demand models, we will select a relative small number of complementary but eclectic propositions and try to point out their implications for governmental financial reporting. Currently, there are ongoing efforts to modify and extend Niskanen's model of bureaucracy. We will describe this stream of research and suggest research areas where accountants have a comparative advantage. A list of suggested accounting research topics concludes the paper.

B. The Public Choice Perspective

Several social science disciplines study how government makes decisions and how individuals make decisions about government. These include the traditional disciplines of political science and economics, as well as the interdisciplinary field of public choice. Public choice uses the economic approach to the study of political behavior and institutions—voting behavior, political parties, legislature, bureaucracy, etc. A distinguishing characteristic of the public choice approach is that formal mathematical models are constructed by using such standard economic assumptions as rationality and utility maximization; solutions in terms of equilibria are then

sought. Fortunately for our purposes, the "perfect information" assumption typical of traditional economic analysis is often relaxed. This enables one to explore the role of information in a democracy and government operations.

It has often been asserted that the unique nature of governmental accounting is due to the characteristics of the public sector environment. Discussions of the public sector environment in the accounting literature have tended to assume the format of narrative essays (e.g., reports of successive AAA committees on the public sector reviewed in Chan and Picur, 1986). In contrast, public choice adopts a much more rigorous modeling approach, which may facilitate theory development in governmental accounting. For example, external reporting to voters can be viewed in the context of formal models of democracy.³ Similarly, models of bureaucracy provide a context for analyzing managerial accounting and reporting issues. These models provide a framework for addressing the role of accounting information in the demand for and supply of government output.

The public choice literature has been divided into two major branches—normative and positive (Mueller, 1979). Normative public choice is concerned largely with the existence and characteristics of social welfare functions, institutional consequences of voting rules and just social contracts. Without at all denying its fundamental importance and its relevancy to accounting (e.g., Demski's application of Arrow's Impossibility Theorem to standard-setting), we shall focus nevertheless on the positive public choice literature, where financial reporting implications are more readily discernible.

The positive public choice literature deals with decision makers and decision-making processes in government and in the society concerning the role of government. It models both the organizational and societal environment in which political and economic transactions take place. It is particularly attentive to the constitutional and institutional framework in which individuals interact.⁴ Government is assumed to be a political activity conducted by self-interested rational individuals. Voters choose administrations and favor policies which will lead to the most net benefits to them individually. Similarly, politicians pursue policies which will enable them to win elections, while bureaucrats want to maximize their budgets.

In the positive public choice literature, government output or expenditures are determined by voter demand and bureaucratic incentives. Thus it consists of two major groups of models of government output—demand models and supply models. The behavior of the electorate and politicians are covered by *demand models*. Voters reveal their preferences by choosing from competing candidates, who seek to win elections by promising to pursue policies beneficial to voters. It has been found analytically that the "median voter" plays a pivotal role in a democracy under certain restrictive conditions, as stated in the median voter theorem. The electorate also vote with their feet—the Tiebout Hypothesis. Directly relevant to governmental reporting are the assertions in this literature that voters (as potential users of governmental financial information) are rationally ignorant, and are afflicted with fiscal illusion. These considerations affect the role of voters in a democracy in general, and the output and expenditures of government in particular.

Supply models concerned with the interactions between the bureaucracy and the legislature. Bureaucrats (agency heads) are also regarded as rational and utility maximizing individuals, who use information as a strategic resource in dealings with the legislature, especially with regard to the agency's output level and budget. The stream of public choice literature on bureaucratic behavior is directly traceable to Niskanen's book *Bureaucracy and Representative Government* (1971).

The demand and supply models of government output have not been integrated into a more comprehensive framework yet. While accountants may not have a comparative advantage in developing a general theory of government output/expenditure, accounting and financial reporting do address two serious concerns raised in the public choice literature. First, financial reporting reduces the information asymmetry existing (1) between voters and government, as well as (2) between the bureaucracy and its legislative and oversight bodies. Second, the public choice literature, while articulate about the economic and political incentives in communicating or withholding information, is typically rather vague regarding the content of communication. For example, the central concepts of outputs and costs are virtually undefined, and measurement problems are not addressed. The Niskanen model simply assumes that the agency head knows the actual cost of producing various levels of output, but decides not to inform the legislature. No attention is paid to the theoretical (i.e., cost allocation) problems and the costliness of generating cost of services data, which may inhibit the agency head from producing the information in the first place. We therefore see great potential for accounting research to make significant contributions based on our disciplinary expertise.

II. DEMAND FOR GOVERNMENT OUTPUTS MODELS OF VOTER BEHAVIOR

As price theory in economics treats the consumer as sovereign, demand models in public choice regard the voter as supreme in a democracy—public policies emerge from the direct and active demands of citizens.⁵ As previously indicated, this part of the literature deals primarily with the role and characteristics of the voter. Specifically, the median voter is analytically found to play a pivotal role in a democracy under certain conditions. Next, we shall present the Median Voter Theorem, followed by Tiebout Hypothesis, which opens another option to the dissatisfied voter—moving to another jurisdiction. Certainly, the extent to which voters use information and accurately process the information are of concern to accountants as producers of governmental financial information. Accounting research opportunities are pointed out as these topics are presented.

A. Median Voter Theorem

When the number of voters and public policy issues is large, representative democracy replaces direct democracy as the main political system by which collective decisions are made (Mueller, 1979, Chapter 3). The public choice approach assumes that voters are rational maximizers whose utilities are functions of the public goods produced by government. What they get, however, depends on how their representatives will react to their preferences. A related issue is therefore: what motivates candidates for public offices (and their parties)?

According to Anthony Downs' theory of democracy (1957, p. 28), "parties formulate policies in order to win elections, rather than win elections in order to formulate policies." Competing parties and candidates seek support of voters by offering attractive policy options or promises. Black (1948) has proved that majority rule produces an equilibrium outcome when voter preferences are unidimensional and single-peaked, and that this equilibrium lies at the peak-preferences for the median voter. This finding, commonly referred to as the Median Voter Theorem (MVT), has been first presented by Hotelling (1929) as an outcome of two-party representative democracy. The theorem predicts that, under assumed conditions, the party adopting the preferences of the "median voter" will win the election. It has inspired a large literature testing it empirically and exploring the consequences of relaxing its underlying assumptions—one issue dimension; a uni-modal, symmetric preference distribution; all individuals vote; and two candidates/parties. Upon the relaxation of the assumption, the resulting equilibria are not obvious or may not exist.⁶

The Median Voter Theorem has been used to explain local public expenditures. The typical approach is to specify a demand function for a local public good, in terms of the income and tax share of the median voter (Mueller, 1979, pp. 106-107).⁷ One may reverse the relationship and study how political behavior (e.g., voting, formation of coalitions of voters) is affected by economic determinants (e.g., public expenditures and distribution of public goods). Due to the problems elaborated in the following sections, voters are rarely direct users of governmental financial information. It is therefore not surprising that empirical accounting research on the voter is not extensive. One exception is the study by Ingram and Copeland (1981), which predicts mayoral election outcomes in terms of community socioeconomic and financial variables. One way to more rigorously study the relationships between election outcomes (or voter behavior) and public finance is to posit a theoretical model such as the MVT. However, since the median voter may not be representative of all voters, one should not focus on the median voter to the exclusion of a wide range of citizen preferences that reflect diverse socioeconomic status (SES) characteristics. To the extent that SES affects demand for public goods (see dark and Ferguson, 1983 for review), we predict that voters of different SES have varying degrees of interest in and ability to process governmental financial reports. In short, we are not hopeful that the MVT alone can be used to build a theory of voters as users of governmental financial reports.

B. Tiebout Hypothesis

When one votes in an election in a jurisdiction, he/she is exercising what Albert Hirschman (1970) calls the "voice" option. However, one may choose to "exit"—moving to another jurisdiction, as described in the Tiebout Hypothesis (TH). is based on that premise that a voter's utility is a function of the public goods available in the community in which he/she resides. A rational person would choose to live in a community whose mix of public and private goods (and their prices) are most compatible to his/her tastes and ability to pay. As it is usually not worthwhile for an individual to expend personal resources to effect desired changes in the community, he moves to a more congruent community. Although the theorist may assume perfect mobility and zero transaction costs, the process actually happens over time. Other assumptions in the formal model include: full knowledge of all the characteristics of the communities; the availability of a full range public good possibilities desired by citizens; and no spillover across communities.

The Tiebout Hypothesis and particularly the "full knowledge" assumptions raise several governmental financial reporting implications. First, it provides the rationale for making financial information comparable across communities, since the users are assumed to conduct inter-community comparisons. Second, a well-informed prospective resident needs information about public goods available in a community and their prices in terms of taxes. Such disclosures may be in monetary terms (e.g., public expenditures) or nonfinancial (e.g., five public parks scattered throughout the village). Few jurisdictions have laws requiring nonfinancial disclosures of public services, and there are no professional standards to ensure quality of reporting. TH points out a very specific rationale for further research and policy action in this area.⁸ Finally, the hypothesis raises the possibility of using the *community* as a reporting entity. Tiebout defines a community in terms of homogeneity of amenities and preferences of its residents. While this may be the relevant reporting entity to the prospective resident, it may not coincide with political jurisdictions for which financial reports are prepared. For example, the City of Chicago can and does have many diverse "communities" defined in terms of their socioeconomic characteristics. A financial report for the City of Chicago as a whole does not reveal the intra-entity diversity, and is therefore not useful for Tiebout's migrant. Conversely, for some purposes, such as determining one's property tax burden, one has to consider all the taxing

authorities, which probably issue separate financial reports. These observations reinforce the need to critically reexamine the reporting entity issue.

The Median Voter Theorem and the Tiebout Hypothesis are macro-level political and sociological predictions based on certain behavioral assumptions about voters, such as utility maximization and perfect information. Once the perfect information assumption is relaxed, one is faced with questions about how voters acquire and process information. The following sections analyze "rational ignorance" and "fiscal illusion."

C. Voter's Rational Ignorance

Citizens (voters, taxpayers, service recipients) are most often not direct users of governmental financial reports. Given their central role in a democracy, this poses a great predicament to governmental accounting and financial reporting, as standard-setting agencies have persistently regarded the citizenry as an important user group (e.g., GASB, 1986). Rather than condemning the citizen's neglect of governmental financial reports as a reflection of political apathy, the public choice approach is to consider it as the result of a rational calculation of marginal costs and benefits of becoming informed. Under some incentive systems, it may be rational for citizens to be ignorant. As summarized below, Downs (1957, Chapters 11-13) offers perhaps the most complete account of the rationality of ignorance.

In an uncertain world, rational decision-makers (e.g., citizens) acquire only a limited amount of information before making choices, and systematically expose themselves to only a particular set of information sources. (All these sources are biased in some ways due to the selection and condensation of facts by the reporter.) In varying degrees, they delegate the information acquisition, analysis, and evaluation functions to others, thereby minimizing the economic burden of becoming politically well-informed. Consequently, citizens will not be equally well-informed politically, even if they are equal in other respects.

Downs' assertion about the voter's rational ignorance is deduced from rational (cost minimization) individual behavior and is based on the existence of a particular distribution pattern of the costs of information production and communication throughout the society. While he does not offer any empirical evidence, Downs (1957, p. 210) has classified information costs into "transferable costs" and "nontransferable costs" and separated the transferable costs into three types: (a) procurement costs—the costs of gathering, selecting and transmitting data; (b) analysis costs—the costs of making factual analysis of data; (c) evaluative costs—the costs of relating data or factual analysis to specific goals (e.g., whom to vote for/against).

One implication of the Rational Ignorance Hypothesis⁹ is the need to study the incentive structure of citizens as users of governmental financial reports, and the ways in which their information costs are shifted. Daily experience suggests that citizens obtain public affairs information from such diverse mass media—television, newspaper, radio, and free newsletters. However, to our knowledge, there has not been any empirical study on the citizen's allocation of time (and other resources) to become familiar with governmental finance. Surveys can be undertaken to ascertain how people of different SES allocate their time to becoming informed about governmental finances, especially at the local level.

If Downs is right about the citizen's reluctance to use even free information, *information intermediaries* play an important role in informing the public. Information intermediaries include not only the news media, but also organizations such as political parties, citizen groups such as civic federations and League of Women Voters, one of whose functions is information dissemination. Research can find out how these organizations acquire, filter, and communicate governmental financial information. Such a study should include a test of Down's hypothesis that all information intermediaries are biased because they can pass only a subset of the information to the audience. One could evaluate the reporting practices of the information intermediaries by doing content analyses. However, field studies that include observations and interviews would probably give one better insights about how information processing works.

D. Fiscal Illusion

Fiscal illusion means having a distorted view on some aspect of public finance. More specifically, it refers to the citizen's inability to accurately detect costs and benefits of government programs. While it may seem intuitive to regard fiscal illusion as a behavioral perceptual problem susceptible to psychological investigation, the public choice approach so far has chosen to relate it to the economics and properties of public goods.

1. *Fiscal Illusion (A)*

According to Downs (1965), because voters are more aware of the costs of government than its benefits, a vote-seeking democratic government would enact a budget smaller than it would have if voters held a more balanced view of costs and benefits. He attributes the phenomenon to the significant differences between transactions in the public and private sectors. First, government does not operate on an explicit quid pro quo basis, due to the collective

nature of public goods and its income redistribution function. Second, some transactions between citizens and government are coercive. These differences give rise to the remote and uncertain nature of government benefits. Consequently, citizens under-value those benefits, while being aware of the private costs. That is, citizens believe that the actual government budget is too large in relation to the benefits they themselves are deriving from it.

We call this differential awareness of costs and benefits FI (A), or type A Fiscal Illusion to distinguish it from the traditional definition explained below.¹⁰ Downs basically argues politicians responded to FI (A) by curtailing programs with visible costs and (relatively) invisible benefits. This hypothesis is very difficult to test empirically, because one would have to know what the budget would be in the absence of fiscal illusion; Laboratory experiments would be necessary to simulate these two scenarios. The phenomenon of FI (A) alone can be studied, but first it has to be identified and measured. For example, West and Winer (1980) have argued that fiscal illusion could occur with respect to both revenues and expenditures, and the relationship between revenues and expenditures has to be considered in concluding whether government is too large. That is, revenues can be too large relative to a given level of expenditures, and expenditures could be too large relative to a given level of revenues. A second research objective is to find out whether FI (A) varies among members of the society, for example, in terms of SES. We believe that this kind of empirical knowledge is a necessary foundation for ultimately testing Downs' hypothesis on the effect of FI (A) on a government's budget.

2. *Fiscal Illusion (B)*

Even though public finance theorists have often assumed that the amounts of public goods to be produced are decided by separately proposing to voters each public good along with a tax to finance it (Mueller, 1979, p. 90), in actual practice, much of government expenditures are financed by "general revenues" raised by general taxes on the population. This method of financing government greatly complicates the voter's decisions. Due to the lack of the amalgamation of revenues in the general fund, it is difficult for the voter to know the true extent of his tax burden and exactly how much he is benefiting from government expenditures. It is uncertain as to whether an increased tax will lead to an increase in expenditures he favors. Similarly, proposed expenditure cuts may or may not reduce his tax burden (Buchanan, 1967, p. 73). The inability to correctly assess one's tax burden is the traditional definition of fiscal illusion; we shall label it as FI (B).

This concept of fiscal illusion was originally proposed by Amilcare Puviana near the turn of the century to describe how the state, controlled by a ruling class, sought to extract as much revenue as possible from the ruled class. Fiscal illusion is the intended result of a deliberate strategy of exploitation (Puviani, 1903; Buchanan, 1967, pp. 126-143). By using numerous tax revenue sources, the government rendered each source less visible, making the taxpayer less aware of the actual extent of taxation. As such, FI (B) provides a Marxian interpretation for the using general fund financing. One does not have to agree with this interpretation, but it fills a theoretical void in conceptualizing the general fund, which is defined as the fund used to "account for all financial resources except those required to be accounted for in another fund" (NCGA, 1979).

Similar to FI (A), FI (B) is predicated on some financial reporting strategy, namely the inadequate disclosure of detailed revenue sources in the general fund. If that was done, as is the case with the Special Revenues Fund, we predict that FI (B) would decrease. Indeed, the general implication of FI (B) for governmental financial reporting seems to be a more clear delineation of revenue sources and a better pairing of revenues (i.e., costs to the public) and expenditures (i.e., benefits to the public) as made possible by the creation of funds. Interestingly, it has also been argued that the multi-column fund-type format in governmental reports creates a fragmented picture of public finance, thereby enabling public officials to frustrate citizen oversight (Zimmerman, 1977). That is, FI (B) could also result from (allegedly) confusing reporting. Synthesizing these seemingly contradictory hypotheses, we offer a prediction that FI (B) declines then rises as a function of the level of aggregation, looking like a U or V. The FI profiles of individuals, or classes of individuals, could be the object of empirical research.

FI (B) has not been extensively tested empirically. Wagner (1976) found an inverse relationship between the level of government expenditure and the degree of concentration of revenue in a few tax sources. From this result, fiscal illusion was inferred. This is at best an indirect test of fiscal illusion as a psychological construct. We recommend an experimental research strategy as an initial step to comprehend the full complexity of FI (B). For example, one might compare estimates of tax burdens made by two groups—a control group which has been given information about the amounts of individual taxes, and an experimental group which has been given only a general revenue figure. The FI (B) hypothesis predicts that the tax burden estimates made by the control group would be more accurate than the experimental group. Similarly, behavioral studies can be conducted to assess FI (A) and FI in general. Thus, we see many opportunities for governmental accountants to operationalize and measure different types of fiscal illusion. This will be the first step necessary before one can measure the effect of FI on government finances.

In summary, a normative theory of democracy commending citizens to be well-informed underlies the objective of governmental accounting and financial reporting to make governmental financial reports useful to them. Positive public choice theories, however, focus on the incentive (or the lack of it) of citizens to be informed ("rational ignorance"), the reasons why they may end up being misinformed ("fiscal illusion"), and specific decisions to be

facilitated (e.g., the Tiebout Hypothesis). We have suggested several ways for governmental accounting research to further refine, and reformulate as well, empirically testing these propositions.

III. SUPPLY OF GOVERNMENT OUTPUTS: MODELS OF BUREAUCRATIC BEHAVIOR

The models of voter behavior discussed in the previous section usually assume government to be a unitary entity with the single goal of satisfying citizen preferences. Obviously, even the layman would know that government in the United States is characterized by separation of powers and extensive checks and balances. The problem is how to move beyond the narrative descriptive approach typical of traditional political science and constitutional law to the construction of analytical models. Such a transition occurred in economic theory a long time ago with the emergence of the neoclassical theory of the firm, which despite criticisms, still serves as the basis against which other models are compared. Similarly, William Niskanen's book *Bureaucracy and Representative Government* (1971) has generated a stream of literature. We will present the essence of his theory, followed by studies that modify, extend, and expand the basic model.

Governmental accounting researchers would find the key variables of the model quite familiar—output level, cost of service, and the budget. However, the methodological twist here is that, while accountants try to empirically estimate cost functions, Niskanen defines them priori, and proceeds to deduce the organizational consequences of managers and legislators' asymmetric access to information about the agency's cost and production functions.

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A. The Original Niskanen Model

Niskanen (1971) uses the standard economic approach of studying the supply of and demand for a product—government output in this case. The legislature as a monopolistic buyer (a monopsonist) demands a monopolistic agency's output in the amount Q , and offers a schedule of budgets (i.e., appropriations), B , equal to the perceived value of output at the level Q :

$$B = aQ - bQ^2, (a, b > 0). \quad (1)$$

The agency is headed by a budget-maximizing director, who is assumed to be perfectly informed about its cost function,

$$C = cQ + dQ^2, (c, d, > 0) \quad (2)$$

which however is assumed to be unknown to the legislature. In this bilateral monopoly situation, the agency director presents all-or-nothing budgetary alternatives to the legislature (i.e., "reversion point" = 0). Niskanen assumes that the agency director's utility is a monotonically increasing function of the budget under his command. Consequently the agency director's task is to:

Maximize B , subject to the constraint that $B = C$.

Niskanen further assumes that the legislature reveals the maximum amount it is willing to pay for the agency's output. The maximum budget corresponds to the demand-constrained solution (see Figure 1)

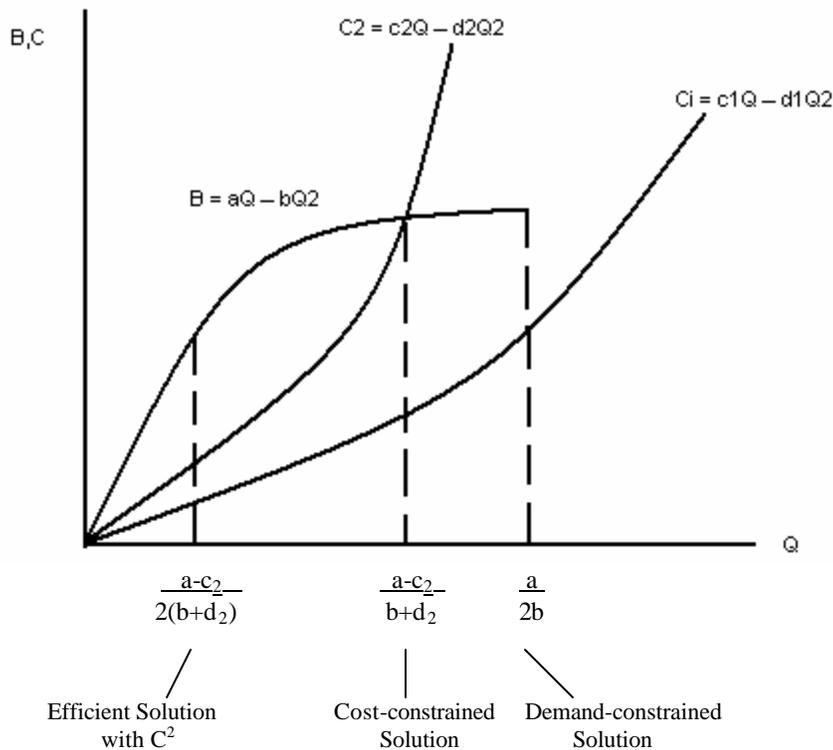
$$Q = a/2b. \quad (3)$$

This solution is, however, not always obtainable if the B and C curves intersect at a lower level. For example, B and C_2 intersect at the level of:

$$Q = (a-c_2) / (b+d_2), \quad (4)$$

which is called the cost-constrained solution. At this level of Q , the maximum budget obtained by the agency director is a break-even budget, because $B = C$. This is an internally efficient solution, as the agency produces any level of output at the least cost.

If B and C do not intersect at a level less than $a/2b$, as in the case of C_1 , the legislative budget offer at $Q = a/2b$ will be greater than the value of C at the same output level. The agency director will take the maximum budget, and produce at the level $Q = a/2b$. This is an



Source:
Figure 1 in Miller and Moe (1983)

Figure 1. The Niskanen Model

internally inefficient solution $B > C$, where C is minimum necessary cost. The agency director can therefore use his discretion in allocating the slack ($B - C$).

Thus far, we have dealt with internal efficiency or inefficiency. Internal efficiency occurs when the agency produces any level of Q at the lowest possible costs, given the current state of technology. Niskanen contrasts "internal efficiency" with "social optimality." By assuming the legislature's evaluation curve of agency output (B) to be an accurate reflection of the underlying social evaluation, and the agency cost function (C) to represent the minimal social costs of producing the output, Niskanen analytically finds that social optimality occurs at

$$Q = (a - c_2) / 2(b + d_2), \quad (5)$$

where the social surplus ($B - C$) is maximized and marginal social benefits equate with marginal social costs.

Based on the above analysis, Niskanen concludes that the internally efficient cost-constrained solution results in budgets and output levels higher than the socially optimal amounts. Furthermore, the demand-constrained solution is associated with even higher levels of budgets and output, and the social surplus generated is captured entirely by the agency. By aggregating the agencies, Niskanen argues that government is too large—bureaucracies produce too much at too high a cost—relative to the social optimum.

The Niskanen model contains two propositions germane to managerial accounting. First, cost accounting alternatives (e.g., actual cost, and standard costs reflecting various levels of efficiency) play a pivotal role in determining a government agency's budget. Second, the manager's monopoly of cost information, given certain institutional features (e.g., a passive legislature), enables him/her to obtain a larger budget. However, accountants would quickly notice that Niskanen does not operationalize or measure the key variables—outputs, costs, and budgets. There are considerable measurement problems associated with each of these variables, and each can be measured in several ways. Perhaps, this is one area where accountants can make a major contribution in refining the Niskanen model, especially with respect to the specification of the cost functions. We can also apply standard costing

and behavioral budgeting (especially slack budgeting) to the public sector.

Other aspects of the Niskanen model have given rise to a body of literature. We will next review efforts to modify, extend, and expand the basic model, as a better specified and operational model of the bureaucracy would be more useful for accounting research.

B. Modifications and Extensions

1. Maximizing Discretionary Budget.

An important aspect of the Niskanen model is that the agency director seeks to maximize "B"—the total budget under his control. Migue and Belanger (1974) hypothesize that the agency director would rather maximize the *discretionary* portion of the total budget, i.e., $P = B - C$, where P is termed "the manager's budget" or "discretionary profit." If the legislature does not the agency's minimum cost function, it cannot calculate P and take it back. Consequently, P is available to the manager for discretionary spending.

Since P increases with Q and reaches a maximum at $Q = (a - c) / 2(b + d)$, then declines and reaches zero at $Q = (a - c) / (b + d)$, the agency would produce between these two amounts. Contrary to Niskanen's hypothesis that the agency head would prefer $Q = (a - c) / (b + d)$ as a possible output level, Migue and Belanger argue that the agency head would prefer $Q = (a - c) / (b + 2d)$ in order to maximize P. In that case, the government's output level and budget would be less than Niskanen's prediction. Recall that $Q = (a - c) / (b + 2d)$ is a socially optimal amount under the assumption that B and C represent social valuation and cost, respectively. Thus, even though the output level is socially optimal, the outputs are purchased at a price (B) greater than the minimum necessary production cost (C).

Migue and Belanger (1974) argue that basically, bureaucrats are cost-maximizers at given output levels, and not necessarily outputmaximizers as Niskanen describes them. In their view, government produces two kinds of goods: services to consumers and benefits to bureaucrats. Bureaucrats would welcome a higher level of output only to the extent that it brings in additional resources for their discretionary spending. Both Niskanen (1971) and Migue and Belanger (1974) are fundamentally talking about slack, but do not offer the tools for detecting it. One possible accounting approach is to operationalize slack as a cost variance, i.e., $\text{slack} = \text{actual costs} - \text{standard costs}$, where the standard costs reflect achievable levels of efficiency, and actual costs are greater than the standard costs (Chan and dark, 1984). Exactly what levels of efficiency are achievable or acceptable—crucial in deciding whether an actual cost is "favorable" or "unfavorable"—are often explicitly negotiated by labor and management. Such negotiations do not take place in Niskanen's model, even though scrutiny for "waste" and "inefficiency" is increasingly a part of the legislative action on the executive budget.

2. Legislative Control Devices

Niskanen's assumption of the passive legislature has been rejected. For instance, Thompson (1973, p. 951) stated that "in the real world it is obvious that the trustees—not the bureaucrats—decide on the final budget of the bureaus," but did not offer theoretical justification or empirical evidence. Breton and Wintrobe (1975) observed that legislatures can institute control devices to enforce their own preferences, albeit at a cost. These control devices include direct monitoring and acquiring information from sources other than the bureaucracy, thereby reducing information asymmetry between the legislature and bureaucracy.

Similarly, Spencer (1980) shows that a legislator with only minimal information can significantly reduce the power of the bureau. This reduction in power may actually result in less than optimal services. Later (1982), she develops a sequential budgetary mechanism utilizing partial information and the labor market to constrain budgetary slack. One of her conclusions is that incremental budgeting may be an efficient budgetary method when information asymmetry exists.

Bendor, Taylor, and Van Gaalen (1985) provide the most recent and complete treatment of the role information plays in the provision of resources by the legislature to the bureau. The authors seek to assess whether the expertise of the bureau is by itself sufficient to cause excessive government growth. They assume that legislature can use its superior authority offset the bureau's information advantage. The legislature can select the rules of the budgetary process, the type of alternatives the bureau can offer, and the final budget and control devices to monitor the bureau's actions. Thus, the budgetary process is assumed to be a truly bilateral monopoly.

These authors found that the outcome of the budgetary process is not as deterministic as implied by the Niskanen model; but rather is contingent upon several factors: the elasticity of the legislature's demand for the bureau's output, the likelihood of the legislature's detection of deceit by the agency, and the penalty associated with such discovery.

While not mentioned specifically in the literature cited, *auditing* is a means by which legislature carries out its oversight. Comprehensive audits examining efficiency, economy, and effectiveness are not new to government. What may be new, however, is the implication that *pre-audits* of efficiency and economy be conducted on agency budgets.¹¹ Such an audit would seek to uncover the cost-output relationships in the Niskanen model, and would not be limited to reviewing executive budget proposals. Not only would this kind of auditing have a profound affect on the

relationship between the legislative and executive branches of government, it would also require the development of professional standards and skills in budgetary auditing.

3. *Game-theoretic and Simulation Models*

The shift of focus to take into account strategic behavior and political incentives is further evidenced in Miller (1977). He views the dynamic interactions between the legislature and agencies in terms of *games*, more specifically nonzero-sum infinite games (for details, see Miller, 1977, pp. 44-46). Carrying this nondeterministic approach one step further, Miller and Moe (1983) simulated a model which, while based on the original Niskanen, did incorporate a number of significant modifications and extensions. These are: (1) The legislative committee (instead of the legislature at large) is a monopoly buyer and the agency is a monopoly supplier, constituting a bilateral monopoly situation; (2) There exists a hierarchical relationship between the legislature and the agency—the executive proposes, the legislature disposes. The role of the agency is to supply cost information to the legislature for use in determining the budget; (3) The legislature exercises two modes of oversight by either (a) revealing its demand function (which can be high or low) before soliciting cost information from the agency, or (b) asking the agency to submit a supply schedule before making its final decision, and (4) the legislature, knowing the agency's monopoly over cost information, does not try to present alternative estimates, but states its offering price of \$*p* per unit of output.

The levels of output and budget are derived by simulating the model under different combinations of values of the parameters. Their general conclusion is that "different legislative conditions give rise to different conclusions about bureaucracy and the size of government" (Miller and Moe, 1983, p. 321). That is, the bureaucracy's excessive production of goods at inflated cost cannot be accomplished without an accommodating legislature and favorable rules of the game. The sort of implicitly universal claims that Niskanen and others made are shown to be contingent upon specific model specifications.

4. *Supply Models with Voters and Interest Groups*

The above modifications of the original Niskanen model are confined to two sets of actors—legislators and agency heads. Voters and interest groups have also been added to expand these models of bureaucracy to be more encompassing models of politics. First, Romer and Rosenthal (1979) link a supply model with the median voter. Later, Filimon, Romer, and Rosenthal (1982) further characterize the voter as being afflicted with fiscal illusion, and examine the results for local public expenditures. Second, adopting the "contingency" approach to supply modeling as in Miller and Moe (1983), Bendor and Moe (1985) adds interest groups to the basic model.

Filimon-Romer-Rosenthal Models. Niskanen's model of bureaucracy implicitly assumes that the voter, through the legislature, allows the bureaucracy to control public policy agenda. On the other hand, the median voter model makes the equally extreme assumption of an almost perfectly responsive bureaucracy. In response, Romer and Rosenthal (1979) examine the Niskanen model within the explicit framework of direct democracy—i.e., referendum voting on public expenditures. On the basis of jointly considering voter and bureaucratic behaviors, they conclude that "the level of [public] expenditure depends critically on the reversion; that is, on what happens if the voters turn down the proposed budget." On the basis of examining Oregon public school expenditures from 1970 to 1977, they concluded that the data are consistent with the Niskanen model, and "highly implausible as median voter outcomes" (Romer and Rosenthal, 1979, p. 565).

These authors also investigated the consequence (in terms of public expenditure) of having the budget-maximizing bureaucrats and voters with fiscal illusion (Filimon, Romer, and Rosenthal, 1982). They are particularly concerned with illusion due to intergovernmental grants. Their Niskanen-inspired model concludes that government lacks the incentive to share "inside information" about the true value of grants (and tax base) with voters.

Bendor-Moe Simulation Model. This model (Bendor and Moe, 1985) is innovative in several important respects. First, they add interest groups as an active participant in politics. Second, it is a multiperiod dynamic model. Third, they endow the actors with minimal information and simple decision rules—their decision making relies heavily on the feedback about past performance and other actor's responses. Specifically, the bureaucracy being modeled is a consumer protection agency. Consumers and businesses are therefore two relevant interest groups. The agency's output is enforcement; other variables are the standard variables in supply models—budget, cost, and benefits. Consistent with their other studies, this one reinforces the conclusion that the outcomes of the politics are more complex and uncertain than the original Niskanen model would suggest—contingent upon model specification and the values of the basic parameters.

Conclusion

Supply models describe the roles of the legislature and bureaucracy in the determination of government's levels of outputs and expenditures. As information on cost and production levels affects the bargaining power of agency heads and the legislature in the budgetary process, it becomes an integral part of the bureaucratic politics. Unfortunately, the technical aspect of information production has received relatively little systematic attention. In particular, it is generally

assumed that the agency director has perfect information about not only actual costs and production levels, but also the costs of producing services at various levels of efficiency. Attention is therefore focused on his incentive not to fully inform the legislature. The literature has completely overlooked the (management) accountant's problems in (1) quantifying many types of government services, (2) measuring the cost of such services, and (3) relating costs to output level. These represent potentially fruitful areas of empirical accounting research, initially as case studies but gradually moving to comparative studies across agencies and cities.

IV. TOPICS FOR FURTHER RESEARCH

The models of demands for and supply of government outputs have not been integrated into a general equilibrium model. Such an integration is certainly a goal of public choice research. We are not sure, however, that governmental accounting research has a comparative advantage in this task. In previous section, we have limited our suggestions to more technical accounting and financial reporting issues. In brief:

1. How much governmental financial information *is* used by citizens? From what sources?
2. How is governmental financial information filtered by information intermediaries, such as the newspaper and interest groups? With what effect?
3. How can government services and finances be reported at the *community* level to prospective residents?
4. How much is the cost of producing and disseminating governmental financial reports? Who bears the cost?
5. How severe is the citizen's fiscal illusion? In what forms?
6. Do other users of governmental financial reports (i.e., investors, legislators) also have fiscal illusions? How severe? With respect to what?
7. How much of each type of outputs is produced by government? At what cost?
8. Are Niskanen's budget and cost functions (Equations 1 and 2) empirically valid?
9. How much cost and output information is withheld by agency heads from the legislature? With what effects on the agency's budgetary appropriations?
10. How much slack is there in government?

These empirical questions can be answered by using social science methodologies. The public choice models discussed in this paper put these questions in explicit organizational (i.e., bureaucracy) and societal (i.e., democracy) contexts. They attribute a significant role to information in the demand for and production of government output. Answers to the above questions will improve our understanding of the role of governmental accounting and financial reporting in a democracy and governmental operations.

ACKNOWLEDGMENTS

An earlier version of this paper was presented at the Methodology Workshop sponsored by the Government and Nonprofit Section of the American Accounting Association. Critical comments and helpful suggestions from James Patton, Rhoda Icerman and others are gratefully acknowledged.

NOTES

1. In 1983 the American Political Science Association published a compendium on the "state of the discipline" of political science (Finifter, 1983), which provides a sampling of areas of interest.

2. For example, see Garson (1971), Issak (1975), and Bernstein (1984).

3. It should be noted that, among the user groups of governmental accounting information commonly mentioned, the citizenry (i.e., voters) is most extensively and systematically analyzed in the public choice literature, and investors and creditors are not.

4. Agency theory can be regarded as a part of the public choice paradigm. Public choice deals with multilateral relations, of which the bilateral relations between the principal and agent is a more limiting case.

5. In the public choice literature, the terms "voters" and "citizens" are often used interchangeably. The distinction between the various roles of a person in society—voters, taxpayers, and government service recipient—is commonly not made.

6. Enelow and Hinich (1984) provide a thorough treatment of this literature, while a summary in Mueller (1979, p. 40) would serve as an excellent introduction.

7. This approach has been used by a stream of research, beginning with Barr and Davis (1966) and Davis and Haines (1966), followed by Borcharding and Deacon (1972), Bergstrom and Goodman (1973), Peterson (1973), Clotfelter (1976), Pommerehne and Frey (1976), and Deacon (1978) and Pommerehne (1978).

8. The paucity of systematic disclosure about public goods could give rise to a "fiscal illusion" that they are underproduced. This issue will be explored further in a later section.

9. We have chosen to call rational ignorance a hypothesis because its assertions remain to be tested.

10. It should be noted that Downs himself did not use the term "fiscal illusion" to describe the differential valuation of costs and benefits of public goods.

11. Auditing the budget is not as far-fetched as it may sound. Indeed, the Gramm-Rudman-Hollings Balanced Budget Law originally provided that the Comptroller General of the United States, head of the General Accounting Office, review and revise budget estimates made by the Office of Management and Budget and the Congressional Budget Office in order to achieve a balanced budget. In response to questions about the GAO's capacity to carry this task, Comptroller General Charles Bowsher stated that it is "the kind of thing we do every day. It's really an audit review—did they calculate it right, is everything included" (Congressional Quarterly, February 15, 1986, p. 298).

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