



Bureaucracy, Monopoly, and Competition: A Critical Analysis of the Budget- Maximizing Model of Bureaucracy

Author(s): John A. C. Conybeare

Reviewed work(s):

Source: *American Journal of Political Science*, Vol. 28, No. 3 (Aug., 1984), pp. 479-502

Published by: [Midwest Political Science Association](#)

Stable URL: <http://www.jstor.org/stable/2110901>

Accessed: 31/10/2011 10:44

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at
<http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Midwest Political Science Association is collaborating with JSTOR to digitize, preserve and extend access to *American Journal of Political Science*.

<http://www.jstor.org>

*Bureaucracy, Monopoly, and Competition: A Critical Analysis of the Budget-Maximizing Model of Bureaucracy**

John A. C. Conybeare, *Columbia University*

Niskanen has argued that if government bureaus act so as to maximize their budgets, they will always produce an output greater than a private industry, resulting in efficiency losses to society. Since the budget-maximizing model relates to a number of intersecting areas of organizational analysis from several disciplines, it is important to note the limitations of the model. First, Niskanen's result is only true for a bureau which can exercise perfect price discrimination in its relationship with its financial sponsor; where this is not the case, the bureau may produce less than a private industry. Second, further variation is introduced by examining the effects on a bureau of specialized resources, public goods, competition, and low productivity. A bureau which would otherwise produce an output in excess of the competitive level will, when any of these factors are present, produce an output closer to the competitive output. These results may also have significant policy implications, since major industrial countries are favoring policies to return some governmental activities to the private sector.

Introduction

Social theory based on the assumption that individuals may be rational utility maximizers and rent (profit) seekers has rapidly made inroads into the traditional preserves of political science, having a methodological impact which Rogowski (1978, p. 296) referred to as "the fourth great scientific revolution of the past century." One of the next tasks, recently suggested by Riker (1980), will be to integrate rational choice theory into the framework of institutional political science. The explanation of bureaucratic structure and behavior may be a useful area in which to pursue such a task, since the various bodies of literature on bureaucracy appear to share some common concerns (e.g., the behavior of institutions in nonmarket contexts).

Niskanen's *Bureaucracy and Representative Government* (1971) was seen by many to have made such progress in this task that one political scientist stated that "there can be no question that it is the most significant work yet produced by an economist on the role of bureaucracy in the determination of the supply of public goods and services" (Mitchell, 1974, p. 1775). Niskanen argued that a simple assumption (viz., bureaucrats maximize budgets) produces a powerful predictive hypothesis: a bureau will always produce more than a private market, up to twice the output of a competitive industry and four times the output of a monopoly. Not since the work of Davis, Dempster, and Wildavsky (1966), which used first-order autoregressions to predict the appropriations of U.S. government agencies, had we seen a quantitative theory

*The author thanks Fred Thompson and five anonymous referees for their comments.

of bureaucracy which appeared to be both testable and applicable to a wide range of institutions. In a recent typology of the literature Peters (1981) listed the “public choice” theme as one of the three main contemporary approaches to the study of bureaucracy.

Budget Maximization in the Bureaucracy Literature

Niskanen’s work is important to students of public policy not only because of its theoretical parsimony and testability, but also because it overlaps with other analytic approaches to bureaucracy and because of its relevance to current policy issues in developed countries.

Explaining Bureaucratic Behavior

The budget maximization model may be seen as one of the theoretical developments stemming from the sustained critique of Weberian models, which has dominated much of the literature. Emphasizing the need for macro rationality in bureaucratic structures, and assuming that micro rationality in individual behavior would follow from a rational-legal structure, Weber drew criticism from later generations of scholars (such as Blau, 1955; Merton, 1940), who drew attention to a fallacy of composition. Rational-legal bureaucratic structures, they said, do not necessarily lead to the appropriate micro-level behavior, since the forms of behavior which are best for the organization may not be so for the individual bureaucrat. Hence much of the modern literature explains bureaucracy in terms of individual rent-seeking (i.e., wealth redistribution) either on the part of groups outside of the bureau (e.g., the “capture” and “producer protection” theories of industry regulation) or by individuals or groups within the bureau.

Niskanen’s model is, for example, closely related to Downs’s (1967) earlier, dynamic, and more expansive analysis of bureaus, since budget maximization is one of the several elements which Downs postulated to be in the bureaucrat’s utility function, particularly during the bureau’s early years when it will be dominated by “climbers” who see budget maximization as beneficial to their careers. The budget maximization model also overlaps with the “bureaucratic politics” approach popularized by Allison (1971), again because this literature hopes to explain policy in terms of the interaction of various bureaus each pursuing its own selfish goals, amongst which is the goal of budget maximization.

Niskanen’s work is also directly relevant to the theme of elucidating the differences between public and private organizations. The mainstream of public administration literature has mostly emphasized the similarities between public and private organizations—based on interorganizational dependence (e.g., regulation), interchangeable technical and managerial staffs, imitation of organizational structures, and similarities of functions (see Nadel and Rourke, 1975, pp. 399–411). Recent analyses have suggested that “it is premature to discount the significance of public-private differences” (Rainey,

Backoff, and Levine, 1976, p. 233), and elaborated on a number of areas (e.g., exposure to market forces, complexity of objectives, employee incentives) where they should differ. The budget-maximizing bureau model is consonant with this latter theme, despite having its origins in sales-maximizing models of private firm behavior.

Prescriptions for Organizational Design

Niskanen implicitly focused attention on the need for the development of a public sector counterpart to the “corporate strategy and structure” literature (surveyed by Caves, 1980), which examines the connections between long-term corporate strategies and organizational structure. Clearly the “corporate strategies” of governments require attention to questions of organizational design if bureaucrats do behave in ways that Niskanen has ascribed to them. Much of the strategy and structure literature, however, fits more into the Weberian tradition of ignoring rent-seeking behavior, treating organizational design as a problem of matching environmental parameters with corporate objectives so as to determine, for example, when an organization should change from a functional to a multidivisional structure. The difficulties of implementing rationalistic changes in bureaucracies (e.g., systems analysis, planning-programming-budgeting) have been at least partly due to this intellectual gap between rational design and the motivations of individual bureaucrats.

The problem of strategic behavior is connected with another body of prescriptive writing which is more closely related to Niskanen’s work, particularly in its emphasis on individual rent-seeking behavior rather than macro-organizational structures. This is the “principal-agent” literature (see Alchian and Demsetz, 1972; Ross, 1973; Fama, 1980) which examines the implications of different systems of property rights for intra-organizational bargaining. Most of the writing is prescriptive in intent, dealing with the problem of designing intra-organizational contracts (or “team production” as Alchian and Demsetz call it) so as to maximize the “residual rewards” accruing to the owners of the organization (the “principal”) from the activities of the employees (the “agent”). In Niskanen’s model the agent is the budget-maximizing bureaucrat and the principal is what he refers to as the “sponsor” or “collective organization.” The sponsor is ultimately the electorate (the shareholders in the body politic), though operationally the sponsor is more likely to be another governmental group (e.g., budget office, cabinet or executive office, legislative committee). Niskanen’s bureau is a case where the bureaucrat’s lack of an explicit property right in any pecuniary surplus created by the organization leads him to exploit the bargaining power in his contract with the sponsor.

Bureaucracy and Society

Much of the older post-Weber work on public bureaucracy dealt with the relationship of the bureau to society as a problem of meshing the bureaucracy

to certain general needs, such as leadership (Selznick, 1957), or to cultural characteristics unique to certain countries (e.g., Crozier, 1964; Bendix, 1949; LaPalombara, 1963). Others have concentrated on the narrower question of the extent to which public bureaus accurately reflect the distribution of class interests in society (Meier, 1975) and the public constituencies to which bureaucrats appeal (Nadel and Rourke, 1975, pp. 390–99). The budget maximization model can contribute little to this type of analysis, since the model implies that broader social norms, values, and class interests are irrelevant to the rent-seeking bureaucrat; any congruence between them will be purely fortuitous. The thrust of the model suggests that bureaucratic rents are most likely to have a zero-sum relationship to the welfare of the rest of society. The model is, however, relevant to two other areas of concern.

There is now a huge body of research (surveyed in Larkey, Stolp, and Winer, 1981) attempting to explain the secular growth of government in Western societies. The budget maximization model does not by itself, as Miller and Moe (1983, p. 297) have recently suggested, give any explanation of this growth, since it is a theory of the level of government expenditure rather than its growth. The model only contributes to the debate insofar as it suggests that any secular increase in the power of bureaucrats (e.g., federal centralization) will cause government output to grow relative to a hypothetical competitive output. Budget maximization has formed part of more mathematically complex models of the growth of government in a dynamic general equilibrium framework (e.g., van Winden and van Praag, 1981).

Finally, Niskanen's bureau fits in with the theories of "institutional weakness" (Peters, 1981, pp. 61–63), which identify bureau power with the weakness of other sources of government authority, due to the overload of demands on democratic governments. These theories are in turn closely connected with the populist, neoconservative backlash against the welfare state, which has as one of its components an anti-bureaucratic sentiment focusing on the tax and spending implications of bureaucratic growth (see Wilensky, 1976). More specifically, Niskanen's comparison of public and private output is especially relevant to the designs of some developed countries in selling off state enterprises to the private sector. Britain's Conservative government has sold Britoil, Cable and Wireless, British Aerospace, and the National Freight Corporation and intends to sell British Airways, the British National Oil Corporation, British Telecom, the National Enterprise Board, Rolls Royce, British Steel, British Leyland, British Shipbuilders, the Royal Ordnance Factories, and some airports. In Canada the last Conservative prime minister promised to sell off Petro Canada, Canadair, De Havilland Aircraft, and Eldorado Nuclear. The last Liberal government in Australia largely dismantled the national health insurance scheme (Medibank) and made tentative moves to deregulate the domestic air passenger market, exposing the government's own carrier (Trans Australia Airlines) to more competition. Niskanen's model would predict that privatization

should cause output to fall, resulting in a welfare gains to society in the form of greater allocative efficiency.

It is the purpose of this paper to review the structure of Niskanen's model, examine its robustness with respect to plausible changes in the assumptions of the model, and consider whatever empirical evidence may bear upon the model or its assumptions. His results depend critically on an initial assumption about bureau bargaining power, and when one considers other contingencies often associated with bureaucratic supply there is even less likelihood of obtaining his results. The section below begins by examining the logic of the budget maximization model and the assumption about bureau bargaining power. Subsequent sections examine the effects of specialized resources, public goods, competition, and low productivity, showing how these contingencies will affect bureau output.

Niskanen's Budget Maximization Model and Bureau Power

Niskanen's premises have been criticized as unrealistic, particularly the two assumptions that utility maximization by bureaucrats leads them to maximize budgets and his characterization of the bargaining relationship with its financial sponsor (e.g., Margolis, 1975; Rogowski, 1978, p. 311). Migué and Bélanger (1974) have altered Niskanen's model to include motives that limit the bureaucrat's desire to maximize budgets. Breton and Wintrobe (1982, pp. 94–99) have argued, in an analogy with the Coase theorem, that competitive rent-seeking amongst bureaucrats within bureaus may remove the incentive to maximize budgets. Many organizational analysts would contend that the nature of public bureaus makes it impossible to deduce any behavioral characteristics from the utility functions of individuals, though salient exceptions may be found (e.g., Thompson, 1981). This paper will not question the premise that bureaucrats attempt to maximize budgets but will, following a brief elaboration of the basic model, discuss the implications of Niskanen's assumption about bureau bargaining power.

The Budget Maximization Model

Niskanen described bureaus as “nonprofit organizations which are financed, at least in part, by a periodic appropriation or grant” (Niskanen, 1971, p. 15). A pure bureau will be financed entirely by appropriations and produce an output that is delivered to the sponsor free of charges on individual units.¹ His basic premise is that “bureaucrats maximize the total budget of their bureau during their tenure, subject to the constraint that the budget must be equal to the minimum total costs of supplying the output expected by the bureau's sponsor” (Niskanen, 1971, p. 42). The sponsor is that “collective

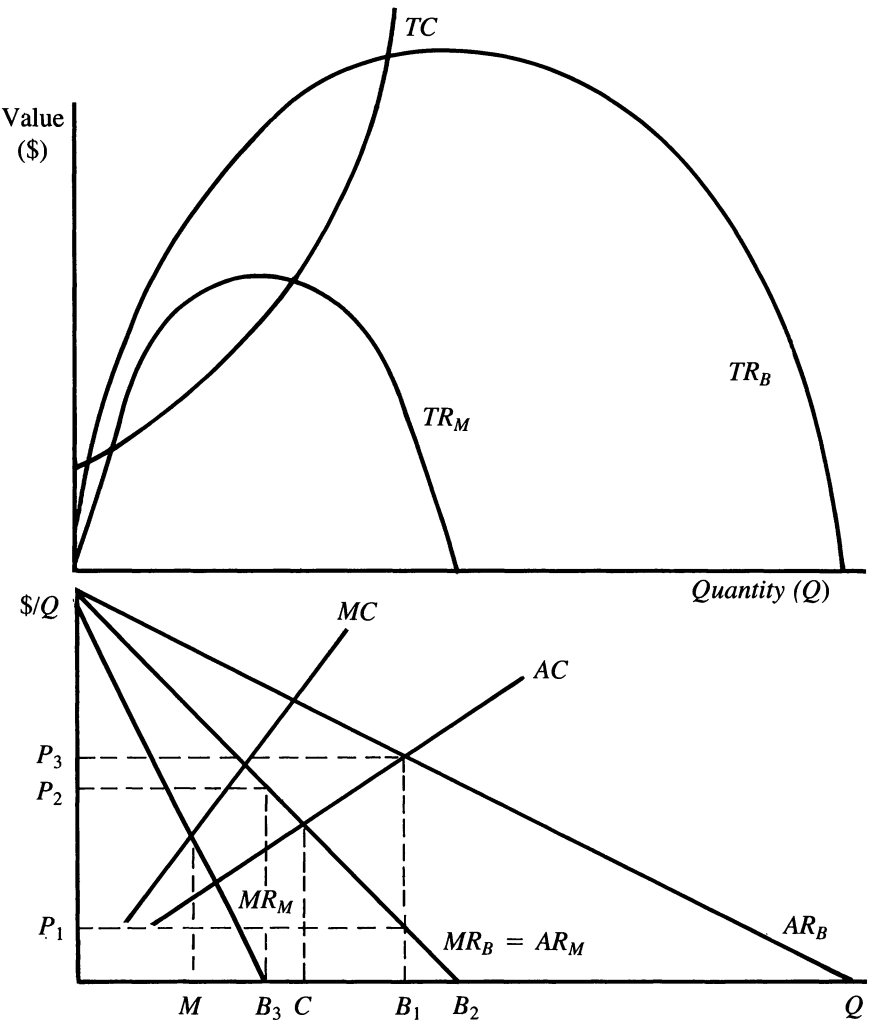
¹ The sponsor may or may not deliver the product free of charges to end users, which depends partly on the extent to which the good has characteristics of publicness (meaning primarily the extent to which “free riders” can be charged for the good, a problem discussed at greater length below).

organization’’ which acquires the bureau’s output in exchange for a total budget.

The model is illustrated in Figure 1, showing the bureau’s total budget revenue (‘‘budget-output,’’ to use Niskanen’s term) and cost curves, assuming quadratic total budget revenue (TR_B) and total cost (TC) curves, with linear

FIGURE 1

The Output Decision of the Bureau



$TC = cQ + dQ^2$; $AC = c + dQ$; $MC = c + 2dQ$; $TR_B = aQ - bQ^2$; $TR_M = aQ - 2bQ^2$; $AR_B = a - bQ$; $MR_B = AR_M = a - 2bQ$; $MR_M = a - 4bQ$.

average (AR_B , AC) and marginal (MR_B , MC) curves.² The constraint that the bureau not make a loss means that it will produce an output at which either MR_B equals zero (the “demand-constrained” bureau, as Niskanen called it) or AC equals AR_B (the “budget-constrained” bureau), whichever occurs at the lower output. In Figure 1 the bureau is budget-constrained and will produce B_1 , since it cannot maximize the budget at B_2 due to the zero-loss constraint. Assuming that the bureau’s marginal revenue (MR_B) is also the demand curve (AR_M) which would be faced by a private firm, the bureau will produce an output that is always greater than a private monopoly (M in Figure 1) or a competitive industry (C).³ An important implication of the model is that the bureau’s output is supraoptimal and that there will always be efficiency gains from changing to competitive market supply.⁴

It was noted above that the bureau’s sponsor could range from the entire electorate to simply another bureau, though the model appears to be robust with respect to sponsor specification. Romer and Rosenthal (1979) have explored a model in which the bureau faces voters directly and is able to present them with a choice only between the bureau’s desired expenditure and a predetermined “reversion expenditure” which will prevail if the bureau’s proposal is rejected. They found that actual expenditure will be greater than under competitive conditions, particularly when the reversion expenditure is less than that desired by the median voter. The recent experience of high inflation should strengthen this tendency by reducing the real value of the reversion level of spending.

Empirical Evidence

Niskanen (1975, p. 638) noted that there have been no studies directly testing the oversupply hypothesis, offering his own time-series test on bureau appropri-

² The total revenue curve (TR_B) shows the total budget obtained by the bureau at different outputs, a positive but diminishing slope reflecting the assumption that the bureau’s sponsor enjoys decreasing marginal utility from the bureau’s output and will only pay a decreasing budget “price” per extra unit of output. The total cost curve (TC) shows the total cost of production at different outputs, a positive, increasing slope reflecting the assumption of increasing marginal costs. The average curves (AR_B , AC) show the average budget revenue or cost per unit of output, and the marginal curves (MR_B , MC) the increment to total budget or costs as output increases. Niskanen’s assumption of increasing costs is not necessary to obtain any of the results shown in this paper. Figures 2–6 assume constant costs, for the sake of diagrammatic simplicity.

³ The competitive industry will equate long-run supply (average cost, AC) and demand (average revenue for the private market, AR_M , also equal to the bureau’s marginal budget revenue, MR_B) (see Niskanen, 1971, pp. 59–68). The long-run market supply curve is the aggregation of the minimum long-run average costs of all the firms in the industry. In a recent article, Miller and Moe (1983) err in specifying long-run marginal cost as the market supply curve. The monopolist will maximize the difference between total revenue and total costs, producing where marginal cost equals private marginal revenue (MR_M). The reason for imputing different average and marginal curves to the bureau and private market (i.e., $AR_M \neq AR_B$, $MR_M \neq MR_B$) will be explained in the discussion of price discrimination below.

⁴ The level of production which maximizes the efficiency of resource allocation is where demand (AR_M) equals long-run supply (AC), that is, the competitive output. Moving to the competitive output will produce social welfare gains (i.e., net social benefits exceed costs), though these gains are not necessarily Pareto-optimal (i.e., at least one actor is better off and no actor is worse off).

ations. Using a dummy variable for bureaucratic mergers, he showed that in some cases bureaus which are combined get budgets larger than if they had remained separate (Niskanen, 1975, pp. 640–43). He took this as evidence that larger size increases bureau power and raises output. A better test would be evidence that the elasticity of the bureau's average revenue (AR_B in Figure 1) is equal to or greater than unity.⁵ Much empirical evidence (e.g., Borcharding and Deacon, 1972; Deacon, 1978, 1979; McMillan, Wilson, and Arthur, 1981) has suggested that these elasticities are less than unity for state and local public expenditures. Exceptions cited in the studies were state expenditure on local education, health and hospitals (Borcharding and Deacon, 1972, p. 898), local expenditure on municipal courts (Deacon, 1978, p. 190), and local expenditure in small communities on recreation and culture (McMillan, Wilson, and Arthur, 1981, p. 602). McGuire's (1981) survey of several empirical studies found that in three studies reporting 19 elasticities, only 6 elasticities were greater than unity, implying that bureau outputs are mostly in excess of that which would maximize budgets!

In general, the empirical studies offer little support for the budget maximization hypothesis. McGuire (1981, p. 319) suggested this is because most studies are of local governments, where sponsors have more information, power, and involvement in budget decisions than may exist in federal bureaus. Yet why should sponsors wish to force bureaus to produce in excess of the budget-maximizing level, which is already greater than the competitive output that the sponsor should prefer? One answer may be that if the bureau has less bargaining power than is attributed to it by Niskanen, the competitive output may well be greater than that of the bureau.

Bureaucratic Bargaining Power

The apparent inconsistency between the evidence and model predictions may be due to the contingent theoretical relevance of Niskanen's conclusion. Aside from the problem of whether bureaucrats desire to maximize budgets, there is the notion of monopolistic price discrimination, critical to the overproduction result. Niskanen presumed that the bureau can present the sponsor with an "all or nothing" offer of a given output for a given budget, on the grounds that the sponsor has nowhere else to go, which amounts to assuming that the bureau exercises the nonmarket equivalent of perfect price discrimination.⁶ The consumer surplus

⁵ The elasticity (percent change in output divided by percent change in average revenue) along the bureau's average revenue curve is greater than one to the left and less than one to the right of output B_2 , the point of unitary elasticity ($MR_B = 0$). Production beyond the point of unitary elasticity will reduce the bureau's budget, since a 1 percent increase in output produces a greater than 1 percent fall in average budget revenue, resulting in a fall in the total budget.

⁶ The difference between the demand curve and the market price is known as consumer surplus. It is the benefit accruing to consumers when the market price is less than the demand price (the price consumers would be willing to pay) over the range of output from zero to the actual output, the last unit of output being the only one for which the consumer pays the full demand price. Perfect (or first-degree) price discrimination exists where a monopolist is able to charge consumers their full demand price for each unit of output, the highest price being on the first unit and the lowest on the last unit. The normal triangular area of consumer surplus is thus transferred to producer revenues, raising total, average, and marginal revenue for the producer. In the case of perfect price discrimination, the market demand curve now also shows the producer's marginal revenue.

which would accrue to the sponsor if the bureau were given a constant budget per unit of output is appropriated by the bureau as extra budget revenue, since the bureau is able to charge the sponsor for each successive unit of output at the sponsor's demand price (AR_M) by offering only a total output for a total budget. Hence in Figure 1 the intersection of the bureau's average revenue curve (AR_B) with the horizontal axis is twice the distance from the origin as is the average revenue curve for alternative market forms (AR_M , the market demand curve), so that AR_M equals MR_B . Similarly, the total revenue curve for the bureau (TR_B) is higher than that of a private non-price-discriminating firm (TR_M).⁷

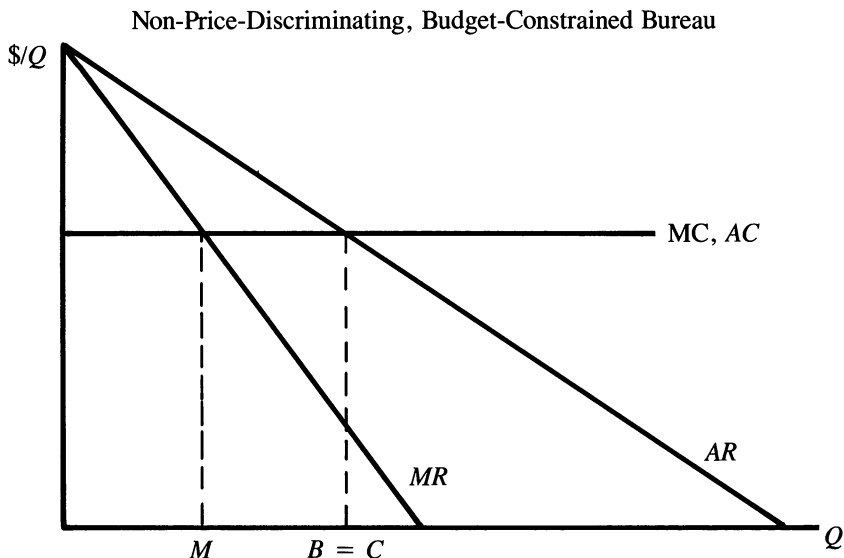
Niskanen characterized the relationship between bureau and sponsor as one of bilateral monopoly (single buyer, single seller) but effectively reduced it to one of monopoly by attributing no power to the sponsor. Breton and Wintrobe's (1975) suggestion that sponsors will invest in devices to control budget maximization does not produce a determinate output solution, since the bureau would no longer be maximizing its budget subject to a constraint endogenous to the model. Others believe that control devices are an ineffective waste of resources (Thompson and Zumenta, 1981), though there appears to be evidence in the organizational design literature that "conforming behavior" can be induced by centralization (Child, 1973). Miller (1977) offered a model in which bureau and sponsor are in a Prisoners' Dilemma game with regard to the provision of rewards by the sponsor and compliance by the bureau.

Thompson (1973, p. 951) argued that if, as Niskanen assumed, the sponsor knows its own demand but not the bureau's costs, it could offer a constant budget per unit of output equal to the sponsor's demand price along AR_M , at whatever output is offered by the bureau. When the bureau offers output B_1 for a budget of B_1P_3 (Figure 1), the sponsor will grant a budget of B_1P_1 , forcing the bureau to either reduce its output offer to B_3 for a budget of B_3P_2 or to refuse to supply any output at all. The modification retains a realistic aspect of the model (viz., that sponsors are hampered by ignorance of a bureau's costs), while restoring a plausible degree of bilateral monopoly, producing significant changes from Niskanen's original predictions. Miller and Moe (1983) used the constant-unit-cost rule to generate a legislative constraint on budget maximization, though their output predictions are distorted by an incorrect specification of the competitive output (see footnote 3).

Assuming the sponsor is able to prevent price discrimination by the means suggested above, both bureau and private markets will face the same demand (AR_M) and marginal revenue (MR_M) curves. The bureau shown in Figure 1 becomes demand constrained, producing B_3 (where $MR_M = 0$), which is less than the competitive output C (where $AR_M = AC$). The case of a budget-constrained bureau is shown in Figure 2: the bureau and competitive outputs should be iden-

⁷ An inconsistency occurs here in Niskanen's determination of the monopoly output: if the monopoly bureau can exercise price discrimination, why should a private monopolist not do the same? In this case, the monopoly output would be closer to the competitive industry when the monopolist equates MC with the price-discriminating marginal revenue curve (MR_B).

FIGURE 2



tical. The evidence that bureaus produce more than the budget-maximizing output appears to be consistent with the existence of demand-constrained bureaus operating under some pressure from sponsors to increase output toward the competitive level.

Specialized Resources

In Weberian models the possession of specialized knowledge is one of the defining characteristics of a bureau (Weber, 1964, pp. 337–41). Critics of Weber noted the problems created for bureaus by the existence of technical expertise, such as conflict between hierarchical power and expertise (e.g., Parsons's introduction to Weber, 1964, p. 59; Crozier, 1964). A microeconomic perspective on bureaucracy may shed light on other implications of bureaucratic expertise by treating it as a specialized factor of production.

Resources with no use outside of the industry in which they are employed may reduce differences in output between market structures. Dowell (1979) has shown that specialized resources will reduce the gains from merger in a competitive industry for the creation of a monopoly or oligopoly. There will be a cost disadvantage in reducing output because factors cannot be sold without preventing the collusive industry from reducing output, since factors can be sold only to someone who wants to produce the same product (see also Porter, 1980, pp. 259–60). Output expansion would also be inhibited due to the potential cost of buying resources which may not be salable in the event of future output reductions. If specialized resources must be used in fixed proportions, there will be, at the

existing industry capacity, a vertical discontinuity in the cost curves, the size of which will depend on the importance of specialized resources in the production process and the rate at which resources can be depreciated (since they no longer carry a cost penalty when fully depreciated).⁸

Bureaus may have both specialized labor and capital, reducing any output changes from privatization.⁹ Labor may be specialized for two reasons. First, bureaucrats have greater security of tenure than private employees, making them specialized insofar as they cannot be dismissed. Sale of the bureau to private enterprise may reduce this aspect of specialization, though privatization would most likely involve job guarantees and the transfer of benefits costly to a private firm. Second, bureaucrats may become specialized in proportion to the amount of time they spend in the bureau (Nadel and Rourke, 1975, pp. 374–75, 389) and may become locked into a career path that reduces the relative value of outside employment (see Black, 1972). Downs (1967, p. 95) also notes the constraining effect of specialization on bureaucrats hoping to “jump” to other organizations. Breton and Wintrobe (1975, p. 206) believe that specialized bureaucrats will have more incentive to maximize budgets if they cannot earn rewards by moving to another agency. Large organizations experience greater problems with the transaction costs of information flows (Williamson, 1967), reinforcing the effect of division of labor in producing skills that may be hard to transfer. Bureaucrats may thus have both tenure and a disinclination to seek alternative employment, especially as the bureau ages and becomes populated with a higher proportion of what Downs (1967) referred to as “conservers.”¹⁰

⁸ Fixed factor proportions are not necessary for specialized resources to carry a cost penalty, but are required to produce the diagrammatically simple vertical discontinuity in costs and also to produce corner solutions, such as a monopoly output which remains at the competitive output (see Dowell, 1979).

⁹ Bureaus do not necessarily suffer from specialized resources any more than other market structures, since their existence is more a function of the type of product in question. The importance of specialized factors here lies not in any claim that they are a distinguishing feature between public and private enterprise, but simply that they will impose a cost penalty on any change in output, such as might otherwise occur when the bureau is turned over to private firms.

¹⁰ Considerations of portfolio diversification might also encourage bureaucrats to be more specialized in their human capital than they would wish to be, since it may be more difficult for a bureaucrat than for a private sector employee to hold a diversified portfolio of employment or equity rights in unrelated activities (particularly within the public sector). A private sector individual may work at or own unrelated businesses for the purpose of reducing the variance in his income. The bureaucrat may not only have less reason to fear any variance in his income, but would find it difficult to be simultaneously employed by unrelated bureaus and certainly impossible to buy equity rights in different bureaus. Constrained in seeking more diversified sources of income, the bureaucrat may also, however, be prevented from becoming more specialized. The reason is again the same: in the private sector individuals may become highly specialized and sell their services (or own equity) in many businesses within a narrow range of specialized activity; a bureaucrat cannot do this because he has no access to ownership rights and cannot normally be employed by multiple bureaus. De Alessi (1969) emphasizes this latter argument. The only clear conclusion from this line of reasoning is that bureaucrats have a relatively fixed portfolio of human capital, whereas private sector individuals may become more diversified or more specialized according to their preferences. Again, however, it must be noted that the argument sustained here depends simply on the existence of specialized resources, not on any claim that they are more prevalent in the public sector.

Bureaus may also use specialized capital factors. A postal sorting machine, telephone exchange, or jet fighter, for example, is specialized and must be used with relatively fixed proportions of labor, and hence may be unsalable in the event of output reductions.¹¹ The use of specialized capital may be encouraged by incentives to use capital-intensive production, since large-scale capital equipment is likely to be more specialized. The bureaucrat's desire to maximize current spending may lead to a preference for production processes with higher capital and lower operating costs (Niskanen, 1975, p. 639; De Alessi, 1969). If the bureau considers its implicit cost of capital to be less than a market rate, the Averch-Johnson (1962) effect would suggest an additional incentive to prefer capital-intensive techniques. De Alessi (1960) noted the tendency for public decision-makers to use less than market discount rates in cost-benefit analysis (i.e., they will underestimate the true social cost of capital and employ excessively capital-intensive production).¹²

However, bureaus might prefer labor-intensive production so as, for example, to maximize the patronage value of the budget or because salaries may be a function of numbers of employees supervised (Downs, 1967; Fiorina and Noll, 1978, p. 26). Labor-intensive production may also lead to greater specialization of the bureau's human capital, as the division of labor becomes more complex with larger numbers of employees. There may be some conflict between the short-term budgetary gain of capital-intensive production and the longer term gains from a larger staff. Empirical estimates of factor intensity have been inconclusive (see Borchering, 1980, pp. 49–54). One study by Orzechowski (1977, pp. 253–58) found public universities in Virginia to be less capital-intensive than private institutions.¹³

Where specialized resources are present, the effects of shifting between bureau and other market structures will be diminished. In the case of the budget constrained bureau exercising price discrimination (Figure 3), the bureau's output (B , at $AC = AR_B$) reflects existing industry capacity. The cost of carrying specialized factors reduces the cost saving from a fall in output; at outputs less than B , MC and AC shift down to MC_1 and AC_1 . If the bureau is sold to private enterprise, output will fall only to M_1 (rather than M , in the case of monopoly) or to C_1 (rather than C , in the case of a competitive industry). Specialized factors

¹¹ Neither monopoly nor competitive industry could sell off factors which have to be used in fixed proportions, since when output contracts there is a determinate quantity of unusable factors. If factors can be used in variable proportions, they could not be sold in a competitive market without accepting a decline in the marginal cost savings caused by a decline in the equilibrium price of the factor.

¹² The Averch-Johnson effect was originally elaborated in the context of a regulated industry which is allowed a rate of return greater than the market cost of capital, inducing the industry to underestimate the true cost of capital and therefore use excessively capital-intensive production. Insofar as bureaus (especially those "mixed bureaus," as Niskanen calls them, which sell their output to the public) are allowed an implicit rate of return in excess of the cost of capital, the same effect may occur.

¹³ Although inappropriate factor intensities may increase factor specialization, their primary effect may be in creating technical inefficiency in the bureau's production, discussed in a later section.

FIGURE 3

Specialized Resources in a Price-Discriminating, Budget-Constrained Bureau

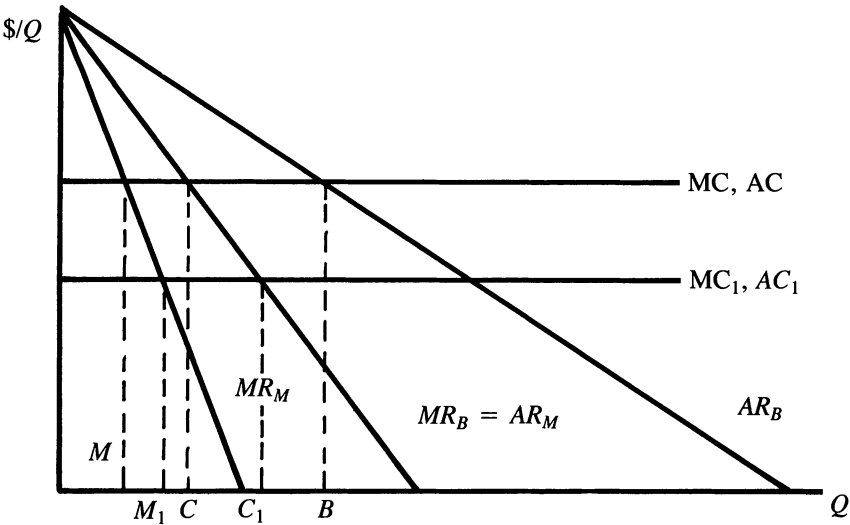
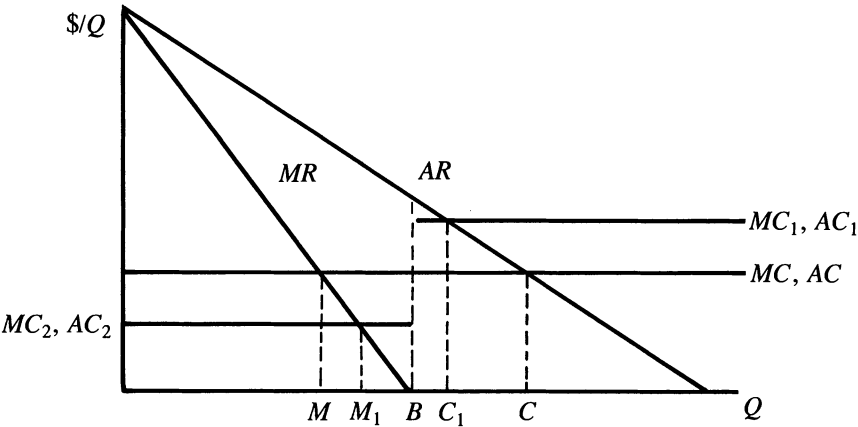


FIGURE 4

Specialized Resources in a Non-Price-Discriminating, Demand-Constrained Bureau



will also impose a cost penalty on output expansion, as in the case of the demand constrained bureau not exercising price discrimination (Figure 4): the marginal cost of expansion rises, lowering the competitive output (C_1) toward the bureau's existing capacity, while the cost saving from contraction falls, raising the monopoly output (M_1).

Niskanen mentioned only the case where specialized factors confer monopsony power on the bureau and lower its costs (Niskanen, 1971, pp. 30–33). This will produce an additional cost penalty when shifting from bureau to competitive industry raises output, since monopsony power over factors will be lost in transition. Where the competitive industry seeks to reduce output, loss of monopsony power might not affect costs, since the market either will have a surplus of these factors (if used in fixed proportions) or will be inducing a decline in the relative price of the factor (if used in variable proportions).

Public Goods

There is a need to integrate a microeconomic model of bureaucracy with what we know about the supply of public goods.¹⁴ Bish and O'Donoghue (1970) noted the possibility of suboptimal public good supply under conditions of monopsony demand articulation. Pauly (1970) has shown how the spillover of benefits between local governments (e.g., in the provision of education) will result in a suboptimal supply. Hettich (1975) has pointed out that the existence of publicness in a bureau's output will reduce any tendency toward overproduction.

Where benefits are conferred on parties beyond the reach of the sponsor's revenue-raising activities, these benefits will not be reflected in the sponsor's demand for the bureau's output. A local bureau producing, say, education and parklands, will face a sponsor demand curve which is determined only by the needs of a particular area and does not reflect the global social demand for the bureau's output from adjacent areas which may benefit from the education or parkland as a public good. In the case of a nonregional bureau, such as a federal government department, public good spillovers may also occur. The demand of the government for defense or space travel, for example, may not reflect social demand for these goods where there are spinoff effects beneficial to some, but of no direct value to the bureau's sponsor. The undersupply of the public good in such cases does rest on the presumption that it is the demand for the good itself which determines production, rather than returns to the factors used in producing the good. If the latter were true, production of the public good might not be reduced because of pecuniary losses inflicted on the factors used intensively in producing the good, though this is a problem of predicting the output of any good, whether public or private, and reflects on the general assumptions of the model (viz., that budget maximization dominates the bureaucrat's utility function).

If the bureau is actually producing a pure public good, it would be difficult to compare the bureau output with that of private enterprise, since markets will probably fail to provide any of the public good where there are a large number of

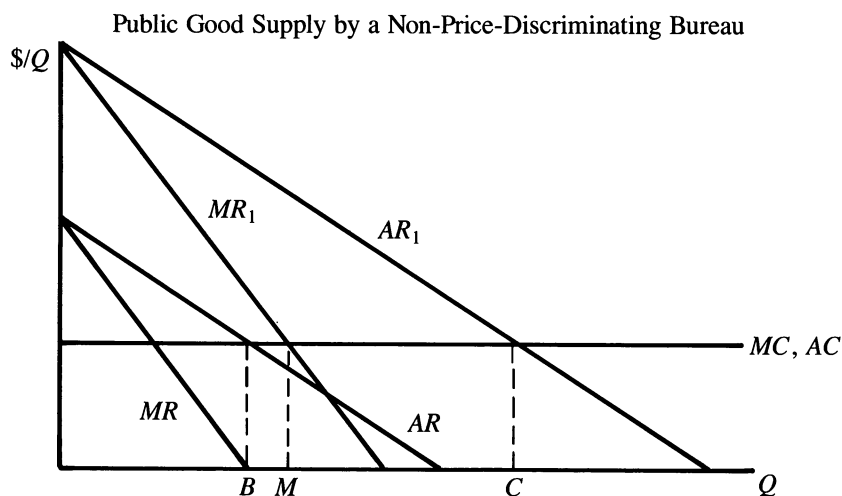
¹⁴ Public goods are distinguished by the qualities of nonrivalry in consumption (joint supply) and, more important for the present discussion, nonexcludability of "free riders" who do not pay for the good. Markets will tend to undersupply public goods under most conjectural variations, especially as the number of beneficiaries increases.

beneficiaries. Nevertheless, whatever bureaucratic oversupply exists will be reduced by the presence of publicness. McMillan, Wilson, and Arthur (1981) found a high degree of publicness for municipal services in small communities, but admitted that most empirical studies agree that many local government services (e.g., fire, police, parks, recreation, garbage collection) have a low degree of publicness and could be provided by private contracting.

A private producer may be able to change the nature or marketing of the bureau's good in such a way as to charge users the full cost of the good, an increasingly frequent phenomenon in recent years, as tax cutting has forced governments to contract public services to private firms. Assuming that private contracting is feasible, Figure 5 shows the case of a non-price-discriminating bureau, where the degree of publicness under bureau production reduces the sponsor's demand to AR , lower than the true social demand curve AR_1 . The output of the bureau (B) may be reduced to less than that of a private monopoly (M) or a competitive industry (C).

The question of why governments have assumed functions which are not public goods, but (in many cases) provided them via bureaus as if they were public goods, leads into the recently popular "growth of government" literature.¹⁵ Director's law, for example, would suggest that these quasi-public goods serve the goal of redistributing income toward the median voter (see Stigler, 1970). Peltzman (1980) found the public good explanation of the growth of government to be empirically unsupported, and also favored an electoral income redistribution theory of the growth of government, based on a secular rise in the equality of

FIGURE 5



¹⁵ One of the original explanations for the growth of government, known as "Wagner's law," argued that government in developed countries will grow relative to the private sector as a result of income effects which increase the demand for public goods or goods which are distributed as if they were public (e.g., welfare expenditures).

incomes. Whatever the redistributive goals of governments may be, expanding the scope of government to include goods which have a low degree of publicness may achieve these goals with greater accuracy. Another reason for the public provision of nonpublic goods may be that weak demand relative to costs and/or regulatory restraints make some nonpublic goods unattractive to private enterprise, particularly at the municipal level. These goods are also likely to be those that do not lend themselves to technical innovation, so that local governments may be burdened with the provision of low-efficiency, nonpublic goods—a problem discussed at greater length below.

Competition between Bureaus and Sponsors

Tiebout (1956) argued that if citizens “vote with their feet,” local governments will be forced to act as if they were in a competitive industry. Though Epple and Zelenitz (1981) have qualified Tiebout’s hypothesis (viz., not all factors of production can “vote” by moving away), competition may have a major constraining effect on the budget-maximizing bureau. Competition, whether actual or potential,¹⁶ may affect the model in two ways: the bureau’s sponsor may be competing with other sponsors for tax residents (the Tiebout effect) and different bureaus may be competing for the same sponsor’s funds.

The counterpart to the public goods case is the situation where the sponsor can exclude categories of consumers, so that there are no public good spillovers into other sponsor catchment areas, but where sponsors are competing for tax residents by offering better services or lower taxes. Bureaus will prejudice their sponsor’s competitive position by wasting taxpayers’ funds in overproduction and will have an incentive to offer a budget-output mix closer to the competitive level. Courant, Gramlich, and Rubinfeld (1979) showed how the ability of bureaucrats to expand local governments by using their voting power will be constrained by the ease with which private firms can exit from the area. They also suggest that this restraint may not work if bureaucrats miscalculate the effects of their behavior, and offer the fiscal crisis of New York City in the 1970s as an example! Another problem may occur if the sponsor has many client bureaus, none of which has any incentive to limit its demands on the sponsor because its needs are too small relative to the total resources of the sponsor. The financial survival of the sponsor may then assume the nature of an *n*-Prisoners’ Dilemma for the bureaus.

Sponsors with many bureaus may be helped by a second form of competition, that is, between bureaus attempting to provide the sponsor with the same or substitute products. Allison’s (1971) “bureaucratic politics” model focused on this form of competition. Under such conditions bureaus are unlikely to be able to remain price discriminators and will be forced, again, to offer a competitive

¹⁶ Following the recent “contestable markets” literature (Baumol, 1982), we may add that competition between sponsors, like firms, may need only be potential (i.e., sponsors may only actually compete where other sponsors seek to extract supranormal rents from their tax residents), as long as there is free entry and costless exit from the market for tax residents.

budget and output. The sponsor may benefit even if the bureaus are not producing substitute products, but are still competing for the sponsor's funds (McGuire, Coiner, and Spancake, 1979). Unfortunately, competition may also bring some negative side effects (e.g., higher monitoring costs for the sponsor, wasteful "political advertising" by bureaus, loss of economies of scale if decreasing costs are possible) (see Thompson and Zumenta, 1981; Faith, 1980).

Niskanen did not deal with the question of competing sponsors but did outline a case of bureau competition before a review committee (Niskanen, 1971, pp. 155–68), concluding that competition will increase efficiency but not reduce overproduction. His example appears misleading, since he assumed that the review committee has the same interest as the bureaus and simply attempts to optimize their joint gains subject to the sponsor's cost constraint. Naturally, he found the joint output to be the same as for a single bureau. In a later note Niskanen (1979) restated his previous conclusion that competition will stimulate efficiency, though again, he does not appear to believe that it will reduce oversupply.

Though the effects of competition have not been well tested, Niskanen has himself provided some evidence for the budget-expanding effect of reducing competition by merging bureaus (Niskanen, 1975, pp. 640–43). Deacon (1979) provided some evidence of the beneficial effects of competition, showing that local governments in Los Angeles which purchased services from outside their own administrative structure had lower budgets than those which produced the services with their own bureaus. As Deacon noted, given his result that elasticities were less than one (i.e., outputs were in excess of the budget-maximizing level), falling budgets could be accompanied by either a fall in output (if the effect of competition is to reduce the bureau's bargaining power, lowering the sponsor's demand) or a rise in output (if competition reduces costs). Welfare gains are possible in both cases.¹⁷ Most studies of competition emphasize the clearly beneficial effect of reducing costs when bureaus are forced to compete with private enterprise, presumably losing much of their price-discriminating capabilities and setting price and output nearer to that of a competitive oligopolist. Caves and Christenson (1980) noted this effect on the Canadian National Railroad, when it was forced to compete with the private Canadian Pacific Railroad. The possibility remains, however, that bureaus and private producers may simply collude to maintain price discrimination and other anti-competitive devices which cause welfare losses. Davies (1977), for example, found that competition between Australia's government-owned Trans Australia Airlines and the private Ansett Airlines has not eliminated efficiency differences between the two.

¹⁷ In Niskanen's standard model competition may reduce the bureau's price discriminating power, shifting average revenue (AR_B in Figure 1) downward and reducing bureau output toward the competitive level. If competition causes costs to fall, welfare gains are possible if output does not rise by the full amount permitted by the cost reduction.

Bureau Productivity

The above discussion suggests another contingency relevant to Niskanen's results. Lack of competition is a major cause of technical inefficiency in production, and there appears to be much evidence that public bureaus are less technically efficient than private firms (see Borcharding, 1980, pp. 34–45; Orzechowski, 1977, pp. 248–53; Savas, 1977; Stevens, 1978; Frech, 1976). Though these findings are clearly contrary to the traditional identification of bureaucracy with rationality and efficiency, Niskanen's original model did not deal with this problem; the bureau overproduces, he said, but not necessarily inefficiently. Breton and Wintrobe (1975, p. 202) argued that inefficiency should be more prevalent than supraoptimal production, since inefficiency is harder for sponsors to detect. Niskanen's later work (1975, pp. 635–38) acknowledged that overproduction and inefficiency could be substitutes. Miller and Moe (1983, p. 297) suggested that evidence for bureaucratic inefficiency supports Niskanen's model, though it will be shown below that inefficiency offsets any tendency to overproduction.

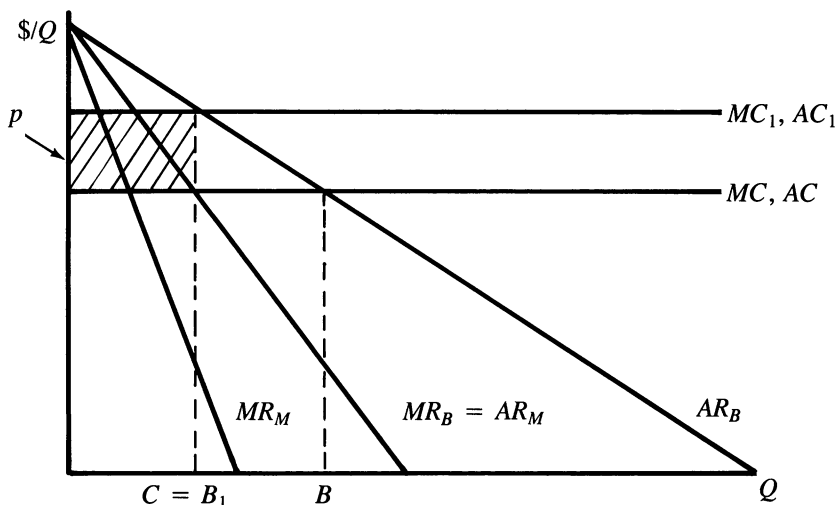
directly appropriate the pecuniary profit of the bureau. They may choose to seek rents through what Leibenstein (1966) has called "X-inefficiency," or higher bureau costs deriving from such private benefits as fewer working hours, underemployment, and perquisites of office.¹⁸ Williamson (1964) suggested that inefficiency will arise as a result of excessively labor-intensive production, which raises managers' salaries, security, and power. Migue and Belanger (1974) showed how inefficiency may be a deliberate attempt by the bureau to maximize that part of its budget not used producing the output (i.e., profits or discretionary budget, as they call it). Producing at B_1 where $MC = MR_B$, the price-discriminating bureau in Figure 6 will maximize its profits ($p = B_1(MC_1 - MC)$), which it can retain only by transforming these profits into higher costs (MC_1) accruing to bureaucrats as private rents. In the absence of inefficiency, these profits would appear as a budget surplus and most likely be claimed by the sponsor.

In general, low productivity or technical inefficiency raises the bureau's cost curves, reducing the output of the budget-constrained bureau and that of the demand-constrained bureau if costs rise enough to transform it into a budget-constrained bureau. If the bureau's output had been above the competitive level, inefficiency will reduce this difference. Fiorina and Noll (1978) have also derived this output-reducing effect, assuming that inefficiency arises from the input-maximizing proclivities of bureaucrats (e.g., excessively large staffs). Finally, it should be noted that there may still be welfare gains from a competitive market, even where the two outputs do not differ. In the case of the bureau shown in Figure 6, the bureau's output is reduced to the competitive level ($B_1 = C$), but

¹⁸ The existence of X-inefficiency has been questioned by some, including Stigler (who argues that X-inefficiency is merely a preference for a different output mix) and several of the "principal-agent" theory writers who believe that intra-organizational competition will constrain managerial inefficiency (see DiLorenzo, 1981).

FIGURE 6

Low Productivity in a Price-Discriminating, Budget-Constrained Bureau



there may be a welfare benefit from competition equal to rectangle p , depending on whether cost curve MC_1 is considered a true cost or merely a contrived transfer.¹⁹

Inefficiency may have even more severe consequences at the macro level. Baumol (1967) showed how, in an economy with public sector productivity declining, if wages are determined in the private sector and the government constrains any relative decline in bureau output, costs will rise without limit in the government sector, labor employed in the private sector will tend to zero, and the economy as a whole will suffer a declining rate of growth. Though inefficiency may reduce bureau output in Niskanen's static model, it may provide a basis for the secular growth of government. Spann (1977) found Baumol's model consistent with empirical evidence.

Conclusion

Niskanen's famous generalization, that bureaus will always oversupply their output, has been shown to be limited to the case of a bureau able to exercise perfect price discrimination in its relationship with its financial sponsor. The assumption of such a capability imputes an implausible degree of monopoly power

¹⁹ Rectangle p is a welfare loss associated with bureaucracy if we consider the difference between MC and MC_1 to reflect a "real" cost increase or inefficiency in production rather than merely a dishonest statement of costs for the purpose of maximizing the bureau's discretionary income. If the bureau's "real" costs are still MC , there is no welfare gain from privatization. However, following Posner (1975), we may still wish to consider rectangle p a welfare loss because these windfall gains are likely to be wasted in the use of resources to maintain the bureau's privileged position (e.g., lobbying the sponsor).

to the bureau. Where the bureau acts as a non-price-discriminating budget maximizer, output may be equal to or less than that of a competitive industry. Restoring a reasonable degree of bilateral monopoly to the problem produces results more consistent with the empirical evidence that bureaus produce greater-than-budget-maximizing outputs.

The other variations introduced in the paper show that some of the characteristics often associated with government production make the comparison of public and private output even more difficult to predict. Table 1 summarizes the relative output effects of changing from a bureau to a competitive market. Whenever $B > C$, any of the contingencies will reduce the difference between the two outputs. Where $B < C$, two of the contingencies (public goods and low productivity) will widen the same difference and the other two will reduce it. These extensions to the budget maximization model are of more than mere intellectual interest, since there is a widespread belief that selling off bureaus to private enterprise will produce large welfare or allocative efficiency gains.

The microeconomic approach can doubtless be extended to incorporate many other conjectural variations on the bureaucracy theme. It may, for example, be reintroduced into the more dynamic, longitudinal framework of Downs's life-cycle hypothesis of the rise and decline of bureaus, so we may understand how the behavior of a bureau relative to other market structures may change over the life of the bureau. This should be especially important if bureaus have adverse macroeconomic consequences of the kind discussed by Baumol (1967). More work also needs to be done on the task of bringing into the bureau model the behavior of other governmental institutions, such as legislatures (see, for example, Miller and Moe, 1983).

We should, however, also be aware of the limitations of static market structure models of bureau behavior. Most important is the caveat that we are here comparing the bureau with an ideal competitive market. Furthermore, other differences may remain even where some market structure characteristics converge. Rainey, Backoff, and Levine (1976) point out in their survey a number of differences other than market structure (such as the role of coercion and the complexity of objectives) which might be expected to persist in the absence of output or welfare differences to which the budget maximization model refers. An explication of the consequences of other bureau characteristics might be most fruitfully pursued by following some of the clear connections in the model to other bodies of literature (e.g., organizational design, principal-agent bargaining, bureaucratic politics) which analyze different types of causal variables.

Manuscript submitted 25 October 1981

Final manuscript received 27 October 1983

REFERENCES

- Alchian, Armen A., and Harold Demsetz. 1972. Production, information costs, and economic organization. *American Economic Review*, 62 (December):777-95.

TABLE 1

Output Effects of Changing Bureau into Competitive Market

Difference between Bureau and Competitive Output:		
	Non-Price-Discriminating Bureau	Price-Discriminating Bureau (Niskanen's Case)
Budget-constrained:		
Standard case	$B - C = 0$	$B - C > 0$
Specialized resources	$B - C = 0$	$B - C > 0, B - C \rightarrow 0$
Public good	$B - C < 0, B - C \rightarrow C$	$B - C > 0, B - C \rightarrow 0$ for $B > C$ $B - C < 0, B - C \rightarrow C$ for $B < C$
Competition	$B - C = 0$	$B - C > 0, B - C \rightarrow 0$
Low productivity	$B - C < 0, B - C \rightarrow C$	$B - C > 0, B - C \rightarrow 0$ for $B > C$ $B - C < 0, B - C \rightarrow C$ for $B < C$
Demand-constrained:		
Standard case	$B - C < 0$	$B - C > 0$
Specialized resources	$B - C < 0, B - C \rightarrow 0$	$B - C > 0, B - C \rightarrow 0$
Public good	$B - C < 0, B - C \rightarrow C$	$B - C > 0, B - C \rightarrow 0$ for $B > C$ $B - C < 0, B - C \rightarrow C$ for $B < C$
Competition	$B - C < 0, B - C \rightarrow 0$	$B - C > 0, B - C \rightarrow 0$
Low productivity	$B - C < 0, B - C \text{ constant}$ if B is at $MR_M = 0$ $B - C < 0, B - C \rightarrow C$ if B is at $AC = AR_M$	$B - C > 0, B - C \text{ constant}$ if B is at $MR_B = 0$ $B - C > 0, B - C \rightarrow 0$ if B is at $AC = AR_B$ for output $B > C$ $B - C < 0, B - C \rightarrow C$ if B is at $AC = AR_B$ for output $B < C$

NOTE: B = output of budget maximizing bureau; C = output of competitive industry; MR_M , AR_M , AR_B , and AC all refer to Figure 1; $|B - C|$ refers to the absolute difference in output between the bureau and competitive industry.

Allison, Graham T. 1972. *Essence of decision*. Boston: Little, Brown.
Averch, Harvey, and L. L. Johnson. 1962. Behavior of the firm under regulatory constraint. *American Economic Review*, 52 (December):1052-69.

- Baumol, William J. 1967. Macroeconomics of unbalanced growth: Anatomy of the urban crisis. *American Economic Review*, 57 (June):415–26.
- . 1982. Contestable markets: An uprising in the theory of industry structure. *American Economic Review*, 72 (March):1–15.
- Bendix, Reinhard. 1949. *Higher civil servants in American society*. Boulder: University of Colorado Press.
- Bish, Robert L., and Patrick D. O'Donoghue. 1970. A neglected issue in public goods theory: The monopsony problem. *Journal of Political Economy*, 78 (November):1367–71.
- Black, Gordon S. 1972. A theory of political ambition. *American Political Science Review*, 66 (March):144–59.
- Blau, Peter M. 1955. *Dynamics of bureaucracy*. Chicago: University of Chicago Press.
- Borcherding, Thomas E. 1980. Toward a positive theory of public sector supply arrangements. Simon Fraser University. Mimeo.
- Borcherding, Thomas E., and Robert T. Deacon. 1972. The demand for the services of non-federal governments. *American Economic Review*, 62 (December):891–901.
- Breton, Albert, and Ronald Wintrobe. 1975. The equilibrium size of a budget maximizing bureau. *Journal of Political Economy*, 83 (February):195–207.
- . 1982. *The logic of bureaucratic conduct*. Cambridge: Cambridge University Press.
- Caves, Douglas W., and Laurits R. Christenson. 1980. Relative efficiency of public and private firms in a competitive market. *Journal of Political Economy*, 88 (October):958–76.
- Caves, Richard E. 1980. Industrial organization, corporate strategy and structure. *Journal of Economic Literature*, 13 (March):64–92.
- Child, John. 1973. Strategies of control and organizational behavior. *Administrative Science Quarterly*, 18 (no. 1):1–17.
- Courant, Paul N., Edward M. Gramlich, and Daniel L. Rubinfeld. 1979. Public employee market power and the level of government spending. *American Economic Review*, 69 (December):806–77.
- Crozier, Michel. 1964. *The bureaucratic phenomenon*. Chicago: University of Chicago Press.
- Davies, D. G. 1977. Property rights and economic efficiency: The Australian airlines revisited. *Journal of Law and Economics*, 20 (April):223–26.
- Davis, Otto A., M. A. H. Dempster, and Aaron Wildavsky. 1966. A theory of the budgetary process. *American Political Science Review*, 60 (September):529–47.
- Deacon, Robert T. 1978. A demand model of the local public sector. *Review of Economics and Statistics*, 60 (May):184–92.
- . 1979. The expenditure effects of alternative public sector supply institutions. *Public Choice*, 34 (nos. 3 & 4):381–98.
- De Alessi, Louis. 1969. Implications of property rights for government investment choices. *American Economic Review*, 69 (March):13–24.
- DiLorenzo, Thomas J. 1981. Corporate management, property rights and the X-istence of X-inefficiency. *Southern Economic Journal*, 48 (no. 1):116–23.
- Dowell, Richard. 1979. Market distortions in a world of specialized resources. University of New South Wales. Mimeo.
- Downs, Anthony. 1967. *Inside bureaucracy*. Boston: Little, Brown.
- Epple, Dennis, and Allan Zelenitz. 1981. The implications of competition among jurisdictions. *Journal of Political Economy*, 89 (December):1197–1217.
- Faith, Roger L. 1980. Rent-seeking aspects of bureaucratic competition. In J. M. Buchanan, R. D. Tollison, and G. Tullock, eds., *Toward a theory of the rent-seeking society*. College Station: Texas A&M Press: pp. 332–43.
- Fama, Eugene F. 1980. Agency problems and the theory of the firm. *Journal of Political Economy*, 88 (April):288–307.
- Fiorina, Morris P., and Roger G. Noll. 1978. Voters, bureaucrats and legislators. *Journal of Political Economics*, 9 (April):239–54.

- Frech, H. E. 1976. The property rights theory of the firm. *Journal of Political Economy*, 84 (February):143–52.
- Hettich, Walter. 1975. Bureaucrats and public goods. *Public Choice*, 21 (no. 1):15–25.
- LaPalombara, Joseph, ed. 1963. *Bureaucracy and political development*. Princeton, N.J.: Princeton University Press.
- Larkey, Patrick D., Chandler Stolp, and Mark Winer. 1981. Theorizing about the growth of government. *Journal of Public Policy*, 1 (no. 2):157–220.
- Leibenstein, Harvey. 1966. Allocative efficiency vs. X-efficiency. *American Economic Review*, 56 (June):392–415.
- Margolis, Julius. 1975. Comment (on Niskanen). *Journal of Law and Economics*, 18 (December):645–60.
- McGuire, Thomas G. 1981. Budget maximizing governmental agencies: An empirical test. *Public Choice*, 36 (no. 3):313–22.
- McGuire, Thomas G., Michael Coiner, and Larry Spancake. 1979. Budget maximizing agencies and efficiency in government. *Public Choice*, 34 (nos. 3 & 4):333–57.
- McMillan, Melville L., W. Robert Wilson, and Louise M. Arthur. 1981. The publicness of local public goods: Evidence from Ontario municipalities. *Canadian Journal of Economics*, 14 (November):596–608.
- Meier, Kenneth John. 1975. Representative bureaucracy: An empirical analysis. *American Political Science Review*, 69 (June):526–42.
- Merton, Robert. 1940. Bureaucratic structure and personality. *Social Forces*, 17 (May):560–68.
- Migué, Jean-Luc, and Gérard Bélanger. 1974. Toward a general theory of managerial discretion. *Public Choice*, 17 (no. 3):27–47.
- Miller, Gary J. 1977. Bureaucratic compliance as a game on the unit square. *Public Choice*, 19 (no. 3):37–61.
- Miller, Garry, and Terry M. Moe. 1983. Bureaucrats, legislators and the size of government. *American Political Science Review*, 77 (June):297–322.
- Mitchell, William C. 1974. Review of *Bureaucracy and representative government*, by William A. Niskanen. *American Political Science Review*, 68 (December):1775–77.
- Nadel, Mark V., and Francis E. Rourke. 1975. Bureaucracies. In F. I. Greenstein and N. W. Polsby, *Handbook of political science*, vol. 5: *Governmental institutions and processes*. Reading, Mass.: Addison-Wesley: pp. 373–440.
- Niskanen, William A. 1971. *Bureaucracy and representative government*. Chicago: Aldine.
- . 1975. Bureaucrats and politicians. *Journal of Law and Economics*, 18 (December):617–44.
- . 1979. Competition among government bureaux. *American Behavioral Scientist*, 22 (no. 5):517–24.
- Orzechowski, William. 1977. Economic models of bureaucracy. In T. E. Borchherding, ed., *Budgets and bureaucrats*. Durham, N.C.: Duke University Press: pp. 229–59.
- Pauly, Mark V. 1970. Optimality, public goods and local governments. *Journal of Political Economy*, 75 (May):572–85.
- Peltzman, Sam. 1980. The growth of government. *Journal of Law and Economics*, 23 (October):209–87.
- Peters, B. Guy. 1981. The problem of bureaucratic government. *Journal of Politics*, 43 (February):56–82.
- Porter, Michael E. 1980. *Competitive strategy*. New York: Free Press.
- Posner, Richard A. 1975. Social cost of monopoly and regulation. *Journal of Political Economy*, 83 (August):807–27.
- Rainey, Hal G., Robert W. Backoff, and Charles H. Levine. 1976. Comparing public and private organizations. *Public Administration Review*, 36 (no. 2):233–44.
- Riker, William H. 1980. Implications from the disequilibrium of majority rule for the study of institutions. *American Political Science Review*, 74 (June):432–46.
- Rogowski, Ronald. 1978. Rationalist theories of politics. *World Politics*, 30 (January):296–323.

- Romer, Thomas, and Howard Rosenthal. 1979. Bureaucrats vs. voters: On the political economy of resource allocation by direct democracy. *Quarterly Journal of Economics*, 43 (November):563–87.
- Ross, Stephen A. 1973. The economic theory of agency: The principal's problem. *American Economic Review*, 63 (May):134–39.
- Savas, E. S. 1977. Policy analysis for local government: Public vs. private refuse collection. *Policy Analysis*, 3 (Winter):49–74.
- Selznick, Peter. 1957. *Leadership in administration*. Evanston: Row, Peterson.
- Spann, Richard M. 1977. Macroeconomics of unbalanced growth and the expanding public sector. *Journal of Public Economics*, 8 (December):397–404.
- Stevens, Barbara J. 1978. Scale, market structure and the cost of refuse collection. *Review of Economics and Statistics*, 60 (August):438–48.
- Stigler, George J. 1970. Director's law of public income distribution. *Journal of Law and Economics*, 13 (April):1–10.
- Thompson, Earl A. 1973. Review of *Bureaucracy and representative government*, by William A. Niskanen. *Journal of Economic Literature*, 11 (September):950–53.
- Thompson, Fred 1981. Utility-maximizing behavior in organized anarchies. *Policy Sciences*, 36 (no. 1):17–32.
- Thompson, Fred, and William Zumenta. 1981. Controls and controls: A reexamination of control patterns in budget execution. *Policy Sciences*, 13 (no. 1):25–50.
- Tiebout, Charles M. 1956. A pure theory of local expenditure. *Journal of Political Economy*, 64 (October):416–24.
- Weber, Max. 1964. *The theory of social and economic organization*. New York: Free Press.
- Wilensky, Harold L. 1976. *The new corporatism, centralization and the welfare state*. Beverly Hills: Sage.
- Williamson, Oliver E. 1964. *Economics of discretionary behavior: Managerial incentives in a theory of the firm*. Englewood Cliffs, N.J.: Prentice-Hall.
- . 1967. Hierarchical control and optimum firm size. *Journal of Political Economy*, 75 (April):123–38.
- Winden, Frans van, and Bernard van Praag. 1981. A dynamic model of the interaction between the state and the private sector. *Journal of Public Economics*, 16 (August):53–86.