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*Budget Development
in OMB:
Aggregate Influences
of the Problem
and
Information Environment*

PHILIP BROMILEY

JOHN P. CRECINE

AS HAS BEEN NOTED BY T. Anton¹, J. P. Crecine², P. D. Larkey³, Aaron Wildavsky⁴, and others, there are major differences between the details of the budgetary process at any level of government and the kind of governmental resource allocation decision making prescribed in the normative literature. Observations of real government officials indicate that they rely on a series of "aids to calcula-

* Research described here has been supported by the National Science Foundation, SOC76-01052 and SOC72-05488. Data used in the work reported here was made available through the efforts of Mark S. Kamlet, David C. Mowery, Douglas B. Neal, John F. Padgett, Chandler Stolp and one of the authors. Their generous assistance was essential. The analysis reported here builds in substantial ways on ideas developed in the context of this larger project. We wish to thank Kamlet and Mary Kuiper for their helpful comments on an earlier draft and Stolp for his invaluable assistance.

¹ T. J. Anton, *Budgeting in Three Illinois Cities* (technical report, Institute of Government and Public Affairs, University of Illinois, 1964.)

² J. P. Crecine, "A Computer Simulation Model of Municipal Budgeting," *Management Science* XIII (July, 1967), 786-815; J. P. Crecine, "A Simulation of Municipal Budgeting: Impact of Problem Environment," in W. D. Coplin, ed., *Simulation in the Study of Politics* (Markham, 1968); J. P. Crecine, *Governmental Problem Solving: A Computer Simulation of Municipal Budgeting* (Rand McNally, 1969); J. P. Crecine, *Defense Budgeting: Organizational Adaptation to External Constraints* (technical

tion,"⁵ "standard operating procedures,"⁶ heuristics,⁷ and "rules of thumb"⁸ to define their problems, interpret the situation, evaluate programs and "solve" *their* budget problem. Budgetary decision makers focus on a small set of the potentially relevant factors and make decisions based on a few pieces of salient information, rather than handle the potential complexity of the resource allocation problem. The information attended to is likely to be that routinely provided by the organization to decision makers and the "problem" attended to is likely to be defined more by the bureaucracy than by globally rational or objective considerations.

This paper explores the implications of two kinds of information routinely generated by OMB — agency-specific information and aggregate economic or fiscal policy information — for the repeated adjustments OMB makes to a succession of tentative budgets. These tentative, Trial Budgets converge at the end of the year to make the President's annual budget. The adjustments to tentative agency budgets are made in a coordinated way so that OMB, in the end, solves its "organizational problem," that of coming up with an acceptable Budget recommendation for the President.

The U.S. Office of Management and Budget's (OMB) preparation

report RM-6121-PR, The Rand Corporation, 1970); J. P. Crecine and G. W. Fischer, "On Resource Allocation Processes in the U.S. Department of Defense," 181-236, in *Political Science Annual, Volume 4, 1974*, Cotter, et al., eds., (Bobbs-Merrill, 1973); J. P. Crecine, "The Defense Budget in Fiscal Planning and Management," 70-85, in Volume IV, *Appendices: Commission on the Organization of the Government for the Conduct of Foreign Policy*, Commission on the Organization of the Government for the Conduct of Foreign Policy, ed. (Government Printing Office, 1975); J. P. Crecine, "The Shape of the Defense Budget: Internal DOD Resource Allocation Processes," 92-110, in Volume IV, J. P. Crecine, "Coordination of Federal Fiscal and Budgetary Policy Processes," (technical report, American Political Science Association, 1977, University Microfilms.)

³ Patrick D. Larkey, *Process Models and Program Evaluation: The Impact of General Revenue Sharing on Municipal Fiscal Behavior* (Princeton: Princeton University Press, 1979).

⁴ Aaron Wildavsky, *The Politics of the Budgetary Process* (Little, Brown and Co., 1964); Aaron Wildavsky, *Budgeting: A Comparative Theory of Budgetary Processes* (Little, Brown and Co., 1975).

⁵ Wildavsky, *The Politics of the Budgetary Process*.

⁶ R. M. Cyert, and J. G. March, *A Behavioral Theory of the Firm* (Prentice-Hall, 1963); Crecine, *Governmental Problem Solving*; J. G. March and H. A. Simon, *Organizations* (John Wiley and Sons, 1958); Donald Gerwin, *Budgeting Public Funds* (The University of Wisconsin Press, 1969).

⁷ A. Newell and H. A. Simon, *Human Problem Solving* (Prentice-Hall, 1972).

⁸ Cyert and March, *A Behavioral Theory of the Firm*.

of the President's Budget is examined here. While the agencies of the federal government make requests to OMB, OMB is the most influential of Executive Branch actors⁹ and is responsible for the actual preparation of the budget in accordance with the (occasionally) expressed wishes of the President. The Congress then works from the President's budget.¹⁰ Consequently, understanding the behavior of OMB is important to an understanding of the federal budgetary process and central to the task of improving that process.

This paper represents very preliminary work on the evolution of the President's Budget within OMB and can be seen as an exploratory analysis of some questions suggested in the context of a much larger research effort on Federal resource allocation processes and OMB.¹¹ A straightforward model of certain features of the decision process in OMB is presented where a few simple variables are focused on. In general these variables represent the information environment for OMB decision makers and may more appropriately represent environmental influences on those decision processes than the details of the process themselves.¹² Based on the characteristics of OMB's problem and information environment (to be described below), models of the evolution of the President's Budget within OMB will be constructed. These models will be used to explain

⁹ J. P. Crecine, M. S. Kamlet, D. C. Mowery, and M. Winer, "The Role of OMB in Executive Branch Budgetary Decision Making" in J. P. Crecine, ed., *Research in Public Policy and Management* (JAI Press, forthcoming, 1980).

¹⁰ Alice Rivlin, Director, Congressional Budget Office, personal communication, November 1977. For a discussion of the relative proportion of the changes contributed by OMB versus Congress in a budget from year to year, see Crecine, et al., "The Role of OMB in Executive Branch Budgetary Decision Making."

¹¹ Crecine, "Coordination of Federal Fiscal and Budgetary Policy Processes." J. P. Crecine, "Some Dynamic Properties of Bureaucratic Decision Making: Making President's Budgets" (technical report, National Academy of Sciences, 1978). Paper delivered to Scientific Session of the Annual Meetings; J. P. Crecine, and R. Linett, "The Budgetary Argument for a Separate Department of Education" (technical report, Social Science Department, Carnegie-Mellon University, 1978). Crecine, et al., "The Role of the OMB in Executive Branch Budgetary Decision Making."

¹² See John E. Padgett, "Coping With Complexity: Stochastic Models of Budgetary Decision Making in OMB and Domestic Agencies" (Ph.D. thesis, University of Michigan, April 1978), and John F. Padgett, "Bounded Rationality in Budgetary Research" *American Political Science Review* (forthcoming, 1980) for detailed models of budget examiner levels of decision making. The factors examined here would represent "budget climate" parameters in Padgett's "serial-judgement"-style decision processes. See also Crecine, "Coordination of Federal Fiscal and Budgetary Policy Processes" and Crecine, et al., "The Role of the OMB in Executive Branch Budgetary Decision Making."

(statistically), and otherwise reconstruct observations on actual OMB adjustments to, decisions about, and recommendations for Executive Branch budgetary figures. Investigations of the statistical properties of OMB behavior are undertaken to provide insights into the following:

(1) The adequacy of the simplified characterization of the problem and information environment for OMB decision making.

(2) What is the relative importance of the task environment (as seen by OMB) in shaping Budgetary outcomes?

(3) The relative importance of information about the problem environment for the decision processes within OMB. How important are environmental factors in these decision processes?

An extremely simplified version of the OMB budget process is found in this paper, given our limited purpose of examining some aggregate features of the allocational process.¹³ In spite of the limited objectives of this empirical inquiry, the models presented are more detailed than most of the other process models found in the literature.¹⁴

¹³ More detailed process descriptions can be found at the organizational level in Crecine, "The Defense Budget in Fiscal Planning and Management," "The Shape of the Defense Budget, Coordination of Federal Fiscal and Budgetary Policy Processes," and "Some Dynamic Properties of Bureaucratic Decision Making," Crecine, et al, "The Role of OMB in Executive Branch Budgetary Decision Making;" and Lance LeLoup, *Budgetary Politics: Dollars, Deficits, Decisions* (Kings Court, 1977); and at the budget examiner level in Padgett, "Coping With Complexity and Bounded Rationality in Budgetary Research."

¹⁴ For example, Otto A. Davis, M. A. H. Dempster, and Aaron Wildavsky, "A Theory of the Budgetary Process," *American Political Science Review* 60 (September 1966); Davis, Dempster, and Wildavsky, "On the Process of Budgeting II: An Empirical Study of Congressional Appropriations," 292-375, in R. F. Byrne, A. Charnes, W. W. Cooper, O. A. Davis, and D. Gilford, eds., *Studies in Budgeting* (North-Holland Publishing Co., 1971); Davis, Dempster, and Wildavsky, "Toward a Predictive Theory of Government Expenditure: U.S. Domestic Appropriations," *British Journal of Political Science* 4 (October 1974), 419-452; Peter B. Natchez and Irvin C. Bupp, "Policy and Priority in the Budgetary Process," *American Political Science Review* 67 (September 1973), 951-963; John R. Gist, *Mandatory Expenditures and the Defense Sector: Theory of Budgetary Incrementalism*, Sage Professional Papers in American Politics (Sage Publications, 1974); J. R. Gist, "'Increment' and 'Base' in the Congressional Appropriations Process," *American Journal of Political Science* (1977); and John L. Stromberg, *The Internal Mechanisms of the Defense Budgetary Process: Fiscal 1953 to 1968* (technical report RM-6243-PR, The Rand Corporation, 1970).

Basics of the Budget Process in OMB

The budget process in OMB is a continuous activity. Early in the year, after the President sends his budget to Congress, OMB begins its work on the next fiscal year's budget. For example, OMB spends calendar year 1979 working on the Budget for the 1980-81 Fiscal Year, the FY81 Budget. Figure 1 is a rough chronology of the budget year—the actual dates vary from year to year.

As the chronology in Figure 1 suggests, the President's Budget isn't decided on, it evolves. Temporally, the planning for the FY81 Budget which occurs during 1979 starts in January of 1979 with the

FIGURE 1

CHRONOLOGY OF OMB BUDGETARY ACTIVITY

Feb.-April, t-2	Develop initial Planning Figures for FY t Budget, based on economic forecasts and FYt-1 Budget (just submitted to the Congress).
May-June, t-2	Preview - Examine long-run cost implications of existing programs, receive/review agency submissions, meet with agency staff.
June-July, t-2	Preview(cont.) - Update prior President's Budget for Congressional changes, supplementals, cost changes, etc. Develop materials for submission to President.
July-August, t-2	Preview(conclusion) - Prepare for meeting with President, obtain guidance from President for preliminary FY t Budget. Obtain Presidential guidance and approval of OMB-recommended figures.
Aug. or Sept., t-2	Send formal Budgetary guidance and "Ceiling Letters" to individual agencies.
October, t-2	Begin Director's Review—Receive formal Agency Budget Requests
Nov.-Dec., t-2	Review- OMB formally reviews agency budget submissions, reconciling them with Fiscal Policy (Total Federal Expenditures), OMB Planning Figures, Agency "Ceilings." Formal Budget Hearings between OMB Director and Agency heads.
December, t-2	Agency Appeals of OMB staff recommendations to OMB Director and, occasionally, to President.
Dec., t-2 - Jan., t-1	Final OMB Director's recommendations to President, final coordination of Budgetary and Fiscal (economic growth and stabilization) policy, President's approved Budget to Printers.
Late Jan., t-1	President's Budget for FY t sent to Congress.

submission of the FY80 Budget to the Congress. In many respects the FY80 President's Budget can be seen as the "first cut" at the FY81 President's Budget. The "second cut" may occur a few weeks later when the President's economic advisors begin to think about fiscal policy for 1980-81. Or the second pass at the FY81 Budget may involve updating the FY80 program for Agriculture by adjusting the Food Stamp program to incorporate new eligibility requirements passed by Congress.

In a very real sense the FY81 Budget will be the cumulative effects of a long series of adjustments made and/or recorded by OMB to the FY80 Budget. And the FY81 Budget will represent OMB's "first cut" at the FY82 Budget.

If one were to take a series of "snapshots" of this evolutionary process—consisting of a set of figures for the principal agencies and the Total Federal Expenditures associated with the set of agency numbers—one would have what we choose to call "Trial Budgets." In planning periods for the FY46 to the FY74 President's Budgets, the number of Trial Budgets recorded in internal OMB files ranges from about 80 to over 250, for any given year.

A "Trial Budget" then consists of a set of OMB-carried figures for each of the major agencies, which we refer to as "Planning Figures," and a Total associated with the sum of these Planning Figures.

This paper examines some of the factors that influence the series of adjustments in agency Planning Figures and hence help shape the overall pattern of year-to-year shifts in the allocation of Federal resources. "Trial Budgets" represent the observations and it is the changes in agency Planning Figures between Trial Budgets that we attempt to understand.¹⁵

As noted in Figure 1, OMB engages in what is termed the Budget Preview during the first part of the year and the Review during the last part. The Preview involves a "sizing up" of the budget—consideration of future cost implications of currently approved programs and budget implications of legislative changes. Agencies may meet with OMB to discuss new initiatives and programs. Following the Preview, OMB usually makes a presentation to the President. The presentation will include the economic policy factors agreed to by the President's principal economic advisors (*viz.*, Treasury and the Council of Economic Advisors) and OMB's pro-

¹⁵ All the references to "agency" mean the budgetary categories which OMB carries as agencies, even though some are technically not separate agencies, *e.g.*, interest on the Federal Debt is a separate category from Treasury.

posed allocations to the major agencies. The proposed economic growth and stabilization policy, by making appropriate assumptions about tax policy, prices and economic activity, implies a Total for Federal Expenditures. OMB's allocational proposals must be consistent with (add up to) this Total. Based on the President's views, OMB sends a policy letter to each of the major agencies, indicating the appropriate target figure for agency budget requests (a ceiling letter) and other policy guidance. Agencies respond in October with formal budget proposals termed Agency Requests. Late in the year, agencies meet with the Director of OMB to discuss the differences between Agency Requests and OMB's figures. Some agencies may appeal OMB's decisions to the President.

It must be noted that there are two separate kinds of Planning Figures. First, there are Outlays or Expenditure figures, corresponding to the amounts of resources the agency will actually be allowed to spend in the particular fiscal year. Second, there are Budget Authority (formerly, New Obligational Authority) numbers, corresponding to commitments to allow the agency to obligate resources for actual spending at some future time. Outlays are the numbers which are most often considered in economic policy matters, which are politically the most salient, and which will be focused on in this study. The actual relationship between New Obligational Budget Authority and Outlays is complex, subject to political influence,¹⁶ but not essential to our discussion.

The Budget Problem

OMB's basic problem is to develop a set of Planning Figures covering all agencies. The Planning Figures (proposed allocations) must (1) meet certain criteria (conformity with Presidential commitments, political acceptability, bureaucratic feasibility); and (2) add up to a total for expenditures that is consistent with the President's economic (fiscal) policy.¹⁷

All presidents are concerned with the economy. All recent presidents have attempted to influence the economy through fiscal policy. A rough indication of fiscal policy is the size of the federal

¹⁶ D. C. Mowery, M. S. Kamlet, and J. P. Crecine, "Presidential Management of Executive Branch Budgetary Processes," *Quarterly Journal of Political Science*, (forthcoming, 1980).

¹⁷ Crecine, "Coordination of Federal Fiscal and Budgetary Policy Processes."

deficit, related to the Planned Total Federal Outlays or expenditures through an accounting Identity.¹⁸

$$\text{Revenues}_{\text{FYt}} + \text{Deficit}_{\text{FYt}} = \text{Total Federal Expenditures}_{\text{FYt}} = \text{Domestic Expenditures}_{\text{FYt}} + \text{Defense Expenditures}_{\text{FYt}} \quad (1)$$

In setting appropriate levels for Deficit, Revenues, and Expenditures, it is important to note that none can be manipulated without consequences for the others. Historically, Revenues have been difficult to adjust in the short run. For example, consider the long delay in passage of the Kennedy tax cut proposals of 1964, the Johnson tax surcharge of 1966, or the fate of the proposed (and then discarded) Carter tax cut of 1977. On the other hand, expenditures are reconsidered every year, and the figures are usually subject to some alteration. Consequently, we argue that the Executive Branch will generally adjust Outlays in response to changes in the economy (tax base) and desired fiscal policy (Deficit) rather than tax rates (hence, Revenues), at least in the short run.¹⁹ It might be also noted that the Total for Outlays has a political relevance quite apart from direct fiscal policy, as evidenced by the number of presidential promises to “control government spending”.

OMB’s “problem environment” is dominated by the Budget problem—developing a series of allocations for the various agencies in the government that add up to the desired Total for Outlays derived from fiscal policy. In doing so, OMB must take into account a variety of factors (e.g., legal requirements for expenditures, presidential commitments, etc.) and must appear to be operating within certain informal rules.²⁰

Information Environment

In our model of OMB’s adjustments to Agency Outlays, OMB concerns itself with three pieces of information: the desired Total for Federal Outlays, the Planning Figures, and Current Expenditure

¹⁸ Crecine, “Defense Budgeting: Organizational Adaptation to External Constraints, Governmental Problem Solving: A Computer Simulation of Municipal Budgeting”; “Some Dynamic Properties of Bureaucratic Decision Making: Making President’s Budgets,” “Coordination of Federal Fiscal and Budgetary Policy Processes.”

¹⁹ Crecine, “Defense Budgeting: Organizational Adaptation to External Constraints,” “Coordination of Federal Fiscal and Budgetary Policy Processes,” “Some Dynamic Properties of Bureaucratic Decision Making: Making President’s Budgets.”

²⁰ Wildavsky, *The Politics of the Budgetary Process*.

Estimates. Having described the Total and Planning Figures previously, "Current Expenditure Estimates" will be discussed.

Current Expenditure Estimates provide a "current estimate" of the cost of maintaining approved programs at the authorized levels. Maintained by OMB, the Current Expenditure Estimates are altered in response to exogenous events which are perceived as altering the previous year's budget. For example, Congressional actions on the budget, passage of new legislation, actual spending experience, and forecasts of conditions later in the year may all influence OMB's Current Expenditure Estimates for an agency. The Current Expenditure Estimates for FY81 Budget planning are essentially adjustments to the FY80 Budget as it winds its way through Congress and as actual spending experience begins to accumulate.

At any point in time, in OMB there exist operative sets of Planning Figures and Current Expenditure Estimates and a desired Outlay Total. These sets of figures or Trial Budgets are often found adjacent to one another in OMB working files. Figure 2 illustrates the form in which the data analyzed here are often found.²¹

For a more complete view of what is meant by "information and problem environment" and how these factors influence the evolution of the President's Budget, the reader is referred to Figure 3. One can see how the Planning Figure carried by OMB for the AEC shifts over time, partly in response to changes in the Current Expenditure Estimates and partly in response to changes in fiscal policy (the Total). The number carried by the AEC for itself (including its formal Agency Request) seems to have less influence. Figure 3 displays the relationships to be modeled, below.

The information displayed graphically, over time, in Figure 3 is routinely generated by OMB and its budget examiners for its own internal decision purposes. As Figure 2 demonstrates, this OMB-generated information provides at least a part of the context or environment for OMB decisions regarding Trial Budget figures. One would expect that the information so generated, and the substantive factors this numerical information captures, would be reflected in subsequent OMB recommendations.

²¹ From the archives of the OMB Records Office. The assistance of Melvin Margerum and Donald Street is gratefully acknowledged. While OMB Records was the primary source of Trial Budget data, this data was supplemented by the President's Office File records on Budget from the Truman, Eisenhower, Kennedy and Johnson Presidential Libraries, through the efforts of J. Creceine, G. Galloway, M. Kamlet, D. Mowery, and C. Stolp.

FIGURE 2

A TRIAL BUDGET

(SOURCE: OMB OFFICE OF BUDGET REVIEW, DATED JULY 15, 1966)

Suggested Planning Figures - 1968 Preview - Expenditures

(Dollars in millions)

1968

	1967		Agency	Division	Suggested planning	
	Budget	Current			Alt. I	Alt. II
Agriculture-CCC	\$3,755	\$3,820	\$5,616	\$5,000	\$4,000	\$4,000
Other	2,043	2,180	3,525	2,905	2,815	2,800
Commerce	923	921	1,638	1,177	1,120	1,080
Corps of Engineers	1,290	1,242	1,588	1,372	1,200	1,180
HEW	10,009	11,194	12,844*	12,525	12,040	11,730
HUD	-414	216	2,395	2,137	2,115	2,085
Interior	1,504	1,439	2,170	1,758	1,570	1,520
Justice	405	401	424	412	390	385
Labor	522	492	849	537	500	490
Post Office	755	740	851	782	745	730
State	405	432	436	424	420	410
Treasury-Interest	12,854	13,000	13,200	13,200	13,200	13,200
Other	1,393	1,362	1,542	1,479	1,400	1,375
AID	2,200	2,297	2,539	2,453	2,450	2,300
AEC	2,300	2,305	2,570	2,370	2,300	2,275
FAA	960	915	1,170	1,085	1,040	900
GSA	633	681	712	662	660	620

NASA	5,300	5,400	5,900	5,300	5,300	4,850
NSF	425	403	565	445	440	425
OEO	1,600	1,700	2,950	1,950	1,850	1,830
Peace Corps	88	92	105	97	100	95
US A	179	178	211	190	190	190
VA	5,718	5,806	6,429	6,414	6,385	6,365
Subtotal	54,847	57,216	70,229	64,674	62,230	60,835
Defense & Military Assistance	58,300	65,000	69,000	69,000	69,000	69,000
Total Preview	113,147	122,216	139,229	133,674	131,230	129,835
Non-Preview	182	889	1,180	1,180	1,180	1,180
Civilian Pay Increase	225	550	550	550	550	550
Military Pay Increase	—	360	360	360	360	360
Contingencies	5	100	350	350	350	350
Interfunds	- 712	- 712	- 765	- 765	- 765	- 765
Total	112,847	123,403	140,904	135,349	132,905	131,510
Legislative Program	—	—	500	500	500	500
Total including legislative program	112,847	123,403	141,404	135,849	133,405	132,010

* Comptrollers unofficial estimate

The Adjustment Process

Given the definition of OMB's organizational problem and its information environment, what insight can one obtain about the manner in which OMB alters the Planning Figures for individual agencies over the course of a year?

When the Total rises or falls, actors in OMB need to allocate the aggregate change among the agencies: who gets or loses the resources necessary to reach the new Total? We suggest that OMB uses information contained in Current Expenditures Estimates to guide adjustments of individual Planning Figures.

Information Content of "Current Estimates." Changing Current Expenditure Estimates for an agency signals at least one of the following conditions to OMB personnel:

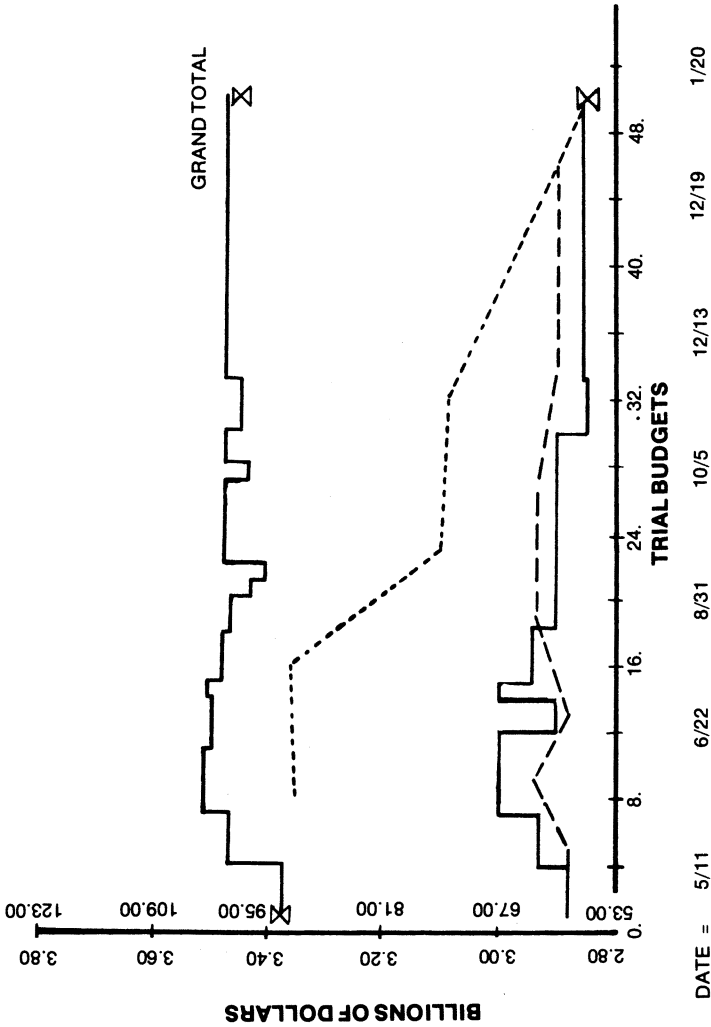
- Better estimates of program parameters—demographic factors— affecting an agency's programs and, hence, an updated estimate of resource needs;
- More current information on actual Congressional actions affecting an agency's programs or better political estimates concerning the fate of pending legislation in the Congress;
- More current information on actual spending experience in the agency and, hence, a better estimate of the financial consequences of existing programs;
- A change in administration policy affecting an agency and the financial implications of those changes.

A Macrostrategy for Budget Adjustments. When the overall Total rises, OMB is stimulated to look for defensible areas in which to increase spending. Agencies having recently experienced an increase in their Current Estimates come equipped with a plausible excuse for an increase in their Planning Figures. Similarly, when the overall Total falls, OMB personnel need not look far for defenses when they choose to adjust downward the Planning Figures of agencies recently experiencing a decline in their Current Estimates.

Assuming changes in the overall Total and in Current Estimates contain the information for OMB that is argued here, it is clear what constitutes a plausible strategy for OMB when both the Total and Current Estimates are changing in the same direction—change the agencies' Planning Figures in a manner consistent with both changes. When the overall Total is moving in a direction different from an agency's Current Estimate, it is not so clear what constitutes

FIGURE 3

ENVIRONMENTAL INFLUENCES ON THE EVOLUTION OF THE FY64 AEC BUDGET



< SOURCE OF FIGURE > SOLID LINE = WHITE HOUSE, BOB/OMB, NEGOTIATIONS SHORT DASHES = AGENCY
 LONG DASHES = CURRENT EST. X = PRESIDENTIAL BUDGET MESSAGE

a plausible strategy for OMB. Given that OMB's most prevalent long run problem, from an organizational perspective, is keeping aggregate spending (the Total) under control, it is reasonable to assume that OMB will tend to take advantage of *any* decrease in Current Expenditures, even if the Total is rising. But if the Total is falling, an increase in Current Expenditures is not likely to lead to an upward adjustment for the agency—OMB would be looking for agencies to cut, not to increase.

Two other sets of factors may alter the adjustment process. First, inter-agency differences exist which affect OMB's treatment of an agency.²² Second, the process and the statistical appearance of the process will vary depending on the time in the budget year. The budget year has two basic periods—the Preview and the Review (See Figure 1). As Crecine has noted,²³ much of the Preview can be considered as “sizing up” the budget—tracing out the implications of past programs and new data. But the Review session, particularly near the end of the Review, is done with the President's budget deadline and target Total (fiscal policy) in sight. More significant agency-OMB interactions may occur in the Review than in the Preview, and OMB may use its “bag of tricks” to “ratchet” the total of Outlays down to the fiscal policy Total. Such “tricks” include excessively optimistic forecasts, selling off assets (such as oil leases, mortgages), and various forms of “cash flow” management. For these reasons, the statistical analysis reported below will consider the two periods separately.

In considering the adjustment process at this level of abstraction, one should remember that these agency-level budget and financial changes must then be translated into actual programmatic decisions by OMB personnel (budget examiners). These higher level (Total dollar) processes act as a coordination mechanism for individual level (budget examiner) decision making. By continually adjusting lower level decisions to the current “best guess” on the higher level

²² As is noted below, a variety of other mechanisms may influence the changes in the Planning Figures. Factors such as “cutability” (see section on inter-agency differences), controllability, presidential saliency, political visibility, and political desirability are all likely to influence the magnitude, if not the direction of changes in Planning Figures.

²³ Crecine, “Coordination of Federal Fiscal and Budgetary Policy Processes,” “The Defense Budget in Fiscal Planning and Management.”

constraints, OMB is assured that current allocations (Planning Figures) are not seriously out of line with economic policy.²⁴

Summary of Hypotheses. To consolidate the argument to this point, the basic hypotheses are as follows:

- The alteration of Planning Figures (agency Outlay figures) is a function of the changes in the Total and the changes in the Current Expenditure Estimates.
- The effects of these two variables will depend on their relative directions.
- When the Total rises, agencies with rising Current Expenditures will get increases.
- When the Total falls, agencies with falling Current Expenditures will get decreases.
- When the Current Expenditure falls, even with a rising Total, Current Expenditure will influence the Planning Figure for that agency.
- When the Total falls, and Current Expenditures rise, the Current Expenditure will not affect the agency's allocation.
- Those agencies with no change in Current Expenditure may get adjustments proportionate to the changes in the Total.
- The impacts of changes in the Total and Current Expenditures early in the year (Preview) will differ from those late in the year (Review).

Formalization of the Model

To test the hypotheses presented, the following is used:

$$\begin{aligned} [(PF_{i,t} - PF_{i,t-1})/PF_{i,t-1}] = & A[(T_t - T_{t-1})/T_{t-1}] \\ & + B[(CE_{i,t} - CE_{i,t-1})/CE_{i,t-1}] + e \end{aligned} \quad (2)$$

Where:

- $PF_{i,t}$ is Planning Figure for Agency "i" in trial budget "t"
 $CE_{i,t}$ is Current Expenditure Estimate for agency "i" in trial budget "t"
 T_t is the Outlay or Expenditure Total associated with trial budget "t"
 e is error term assumed to obey normal assumptions
 $(t-1)$ is trial budget before trial budget "t"
 A and B are constants to be estimated

²⁴ Crecine, "Coordination of Federal Fiscal and Budgetary Policy Processes," "Some Dynamic Properties of Bureaucratic Decision Making: Making President's Budgets," "The Defense Budget in Fiscal Planning and Management."

The basic model says the proportional change in OMB's Planning Figure for an agency from one Trial Budget to another is influenced by the problem and information environment relating to that agency, where

T_t represents the "budget problem" context for all agencies, signaling what agency-level adjustments must aggregate to, and serves indirectly as a measure of fiscal policy and of aggregate economic growth and stabilization factors,
 $CE_{i,t}$ represents agency-specific information about price, operations and demographic patterns.

These influences are represented as a simple, linear function of the proportional change in the overall (fiscal policy) Total and the proportional change in the agency's Current Expenditure Estimate.²⁵

Given our hypotheses about the interaction between the direction of change in the Total and the direction of change in the Current Expenditure Estimates, Planning Figure observations were grouped according to the directions of these changes. The observations were also separated into those occurring during the Preview phase (before agency ceilings are issued) and the Review phase. There are ten categories (Preview (5 categories) and Review (5) Phases, each):

- (1) Change in the Total positive, change in the Current Expenditures positive.
- (2) Change in the Total positive, change in the Current Expenditures negative.
- (3) Change in the Total negative, change in the Current Expenditures positive.
- (4) Change in the Total negative, change in the Current Expenditures negative.
- (5) Any change in the Total, zero change in the Current Expenditures.

Data and Estimation. The data set used in the following work is derived from a computerized data set described in Crecine's "Coordination of Federal Fiscal and Budgetary Processes."²⁶ The data

²⁵ The proportional or percentage change was chosen over the absolute change to provide a more uniform treatment of all the agencies over the time period studied. In an absolute change model, the large agencies and later years would dominate the results disproportionately (since the dollar amounts are larger) and so might obscure the adjustment mechanism.

²⁶ The larger data set was assembled under NSF Project SOC72-05488 and SOC76-01052. Mark S. Kamlet, David C. Mowery and Chandler Stolp were primarily re-

were taken from OMB memos and "Trial Budgets," and then coded and placed in machine-readable form. The Trial Budgets used ranged from 1953 (FY 1955 budget preparation) to 1966 (FY 1969 budget preparation), covering parts of three presidential administrations.²⁷ Data covered fifteen major agencies and averaged 6 pairs of Trial Budgets per year.²⁸ While normally the set of Current Expenditure Estimates was derived from the same documents as the Planning Figures and overall Total, in some cases it was necessary to associate a set of Planning Figures with Current Expenditure Estimates which were produced close to the same date, the Current Estimate in force at the moment. See Figure 3 as an illustration of the "rolling," evolving nature of the information streams.

The change in Planning Figures from FY, President's Budgets to the first OMB Trial Budget for FY₊₁ was not included in the observational set. This OMB adjustment includes the major portion of the annual price-level adjustments and their inclusion would confound the task of calibrating information and problem environment effects.

The data were divided into the ten groups noted in the previous section, and the model was estimated independently on each group using ordinary least squares.²⁹

sponsible for the assembly and skillful coding of the data, under Crecine's general supervision. Douglas Neal, John Padgett, and Mark Winer also contributed to the enterprise. The direct and indirect assistance of these individuals is gratefully acknowledged.

²⁷ Roughly, the period covered in Davis, Dempster, and Wildavsky, "A Theory of the Budgetary Process," "On the Process of Budgeting II: An Empirical Study of Congressional Appropriations," and "Toward a Predictive Theory of Government Expenditure."

²⁸ The agencies included were Atomic Energy Commission, National Aeronautics and Space Administration, Department of Commerce, Department of Justice, Department of the Interior, Department of Labor, General Services Administration, Veteran's Administration, Interest on the Federal Debt, Treasury (excluding interest), Department of State, U. S. Army Corps of Engineers, Commodity Credit Corporation, Department of Agriculture (excluding Commodity Credit Corporation and Soil Bank), and Department of Health, Education and Welfare.

²⁹ Note that (a) these regressions assume that all agencies are treated alike. The parameter estimates may be considered "average" values for OMB's response as an organization to the stylized "environmental" variables. (b) As Wanat has so perceptively noted, John Wanat, "Bases of Budgetary Incrementalism," *American Political Science Review* 68 (September 1974), 1221-1228, using budget totals where there is a long-run trend in the data or where two time series are moving together tends to generate goodness to fit measures that appear extremely high but turn out, in fact, to be mere artifacts of the trend in the data.

TABLE I

REGRESSION RESULTS — ALL AGENCIES TOGETHER

Constraints on Independent Variables	Coefficient for Change in Total ²	Coefficient for Change in Current Expenditures	R ²	Regression F ¹	Number of Cases
EARLY - February to issuance of "Agency Guidance" (Preview)					
#1. T change positive	.280 (.978)	.957** (.192)	.43	16.8**	46
CE change positive	1.98** (.543)	.423** (.190)	.23	6.87**	48
#2. T change positive	1.77** (.524)	.051 (.066)	.17	6.09**	61
CE change negative	.732 (.494)	.934** (.168)	.54	35.7**	63
#3. T change negative	1.42** (.190)	—	.22	55.2**	195
CE change positive					
#4. T change negative					
CE change negative					
#5. Any T change					
CE change zero					
LATE - "Agency Guidance" to President's Budget (Review)					
#6. T change positive	1.31** (.454)	-.119 (.165)	.10	4.60*	85
CE change positive					

#7. T change positive	.437*	.312**	.15	14.1*	158
CE change negative	(.219)	(.059)			
#8. T change negative	-.342	.019	.02	.532	71
CE change positive	(.398)	(.107)			
#9. T change negative	.831*	.476**	.42	26.5**	74
CE change negative	(.333)	(.082)			
#10. Any T change	.140	---	.00	.764	163
CE change zero	(.161)				

¹ Tests all coefficients zero.

² Standard error in brackets under coefficient.

* Significant at .95.

** Significant at .99.

Results

The most prominent feature of the regressions presented in Table 1 is the significant relationship between OMB's "problem and information environment," as characterized in the model, and OMB's Budgetary outcomes. There appear to be only two of the ten circumstances (configurations of CE's, T's and budget phase) in which the characterization of environmental forces does not provide a significant, albeit partial, explanation of OMB's changes in its Planning Figures for the major Federal agencies. All the regressions are significant (F test, $p < .01$), with the exception of group 6 which is significant at the .05 level and groups 8 and 10 which are clearly not significant. Whatever detailed, disaggregate mechanisms are in fact operating in OMB, their outcomes seem to be strongly related in the aggregate to changes in Current Expenditures and the Total. A preliminary look at the coefficients and the R^2 's also indicates that the effects of the variables differ in the various groups. (An F test indicates that the coefficients differ across groups beyond chance, $p < .00001$.) There are also differences between Preview groupings of the data and their Review counterparts in terms of the relative importance of changes in the Total and changes in the Current Estimates under the same environmental conditions during the two periods. For example, compare group 1 to 6, 3 to 8, and 5 to 10.

Early in the year, when the Total and the Current Expenditures are moving in the same direction (Groups 1 and 4), the effect of the Current Expenditures is significant (t test, $p < .01$), and the effects of the Total are in the expected direction, although not statistically significant. It is impossible to reject the hypothesis that the parameter estimates for Total and Current Expenditures in the two groups reflect the same true parameters, i.e., that the effects are the same on increases as decreases (F test, $p < .01$). A decision maker who gave agencies proportional changes in Planning Figures equal to the proportional changes in their Current Expenditure Estimates when the Estimates and Total were moving in the same direction would exhibit these parameter values.

Late in the year, the situation for both variables moving in the same direction is somewhat different. When both the Total and Current Expenditure changes are positive (Group 6), only the parameter estimate for the Total is significant (t test, $p < .01$). The values for the Current Expenditure Estimate (-.119 with a standard error of .165) is consistent with a true value of zero. These values

suggest that late in the year, having rising Current Expenditure Estimates when the Total is rising, will make it possible to share in the increase in the Total, but the actual size of that share will not be affected by the size of the increase in Current Expenditures. However, when both the Total and the Current Expenditures are decreasing late in the year (Group 9), the size of the decrease in an agency's Planning Figure is significantly related to both the size of the decrease in the Current Expenditure Estimate (t test, $p < .01$) and the size of the change in the Total (t test, $p < .05$). Thus the size of the cut will be influenced not only by how tight the situation is (i.e., the size of the drop in the Total), but also on how good a "target" the agency is (i.e., the size of the drop in Current Expenditure Estimates). These parameter values are consistent with a decision maker who equally distributes increases in the Total to the agencies who have increased needs (viz., increasing Current Expenditures), but who takes cuts in agencies with declining Current Expenditures as a function of both the decrease in the Total and the decrease in the agency Current Expenditure Estimate.

When the Total is rising and the Current Expenditures falling, both early and late in the year (Groups 2 and 7), both the Total and Current Expenditures parameter estimates are significant (t test, $p < .05$). It appears that the two factors are working against each other: the rising Total mitigates the tendency to cut the agency because of its declining Current Expenditure Estimate. The parameter estimates for the Current Expenditures are not significantly different from early (Preview) to late (Review), but those for the Total are (t test, $p < .01$). The smaller coefficient for the Total in the later group could be interpreted as an increased tendency to cut later in the year, or as a greater stinginess with the increases.

When the Total is falling, but Current Expenditures rising early in the year (Group 3), only the effect of the Total is significant (t test, $p < .01$). It appears that having an increasing Current Expenditure Estimate is not a significant factor when there is a need to cut as indicated by the decreasing Total. Late in the year, when the Total is decreasing but Current Expenditures increasing (Group 8), our model explains essentially none of the variance in Planning Figures. Whatever changes are occurring in these Planning Figures are not related to the model applied here.

When the change in Current Expenditures is zero early in the year (Group 5), the changes in Planning Figures are significantly related

to changes in the Total (t test, $p < .01$). But late in the year, with zero change in Current Expenditures, our model explains essentially none of the variance in the Planning Figures. The early figure can be interpreted as giving agencies with no change in Current Expenditures their "share" of the changes in the Total. To summarize these results, consider the hypotheses proposed above:

(1) Changes in Planning Figures are clearly related to the changes in the Total and Current Expenditure Estimates. For 8 out of 10 groups of data (730 out of 964 observations) the regressions were statistically significant (F test, $p < .05$).

(2) The relationship between changes in the Current Expenditures and the Total and the resultant changes in Planning Figures clearly varies depending on the relative signs of the two independent variables (F test, $p < .00001$).

(3) The results are consistent with the hypothesis that OMB emphasizes programmatic considerations during the Preview but focuses more specifically on reaching the correct Total during the Review period. When the Total rises, agencies with rising Current Expenditures appear to receive increases, but early in the year the increases are proportional to changes in their Current Expenditures and late in the year proportional to changes in the Total.

(4) When the Total falls, agencies with falling Current Expenditures receive decreases. In both groups (4 and 9) the parameter estimates were substantial (3 out of 4 statistically significant), and all were in the expected direction.

(5) All groups with decreasing Current Expenditures had significant positive parameter estimates for Current Expenditures. Thus whenever the Current Expenditures decline, they influence the Planning Figures. When the Current Expenditures declined while the Total was rising, both variables affected the Planning Figures (groups 2 and 7).

(6) Where the Total is falling and the Current Expenditures rising, the parameter estimated for Current Expenditures is insignificant (and close to zero). For one of the groups of this sort (group 8) the model predicts practically none of the variance, and both parameter estimates are insignificant.

Inter-agency Differences. To this point, our conception of the information environment has been simply the Total, Current Expenditures, and Planning Figures. OMB also must accommodate to a

variety of inter-agency differences, some of which will be termed presidential saliency, cuttability, and uncontrollability.

While the President clearly cannot be deeply concerned with the minute details of all agency allocations, he will very likely have a particular interest in one or two agencies. We call these agencies presidentially salient.³⁰ OMB, as the President's "servant," will treat these agencies differently from the non-salient ones. The manner in which OMB handles a salient agency will depend on the particular circumstances surrounding that agency and the President's behavior concerning that agency. Salient agencies for budget purposes can vary from a President's pet project (e.g., NASA or the US Information Agency under Kennedy) to agencies which are simply important enough to demand attention (e.g., Defense).

Some parts of agencies can be altered more easily than others. Permanent personnel are difficult to eliminate. On the other hand, construction or new hiring can be easily delayed, reducing the cost in any given year. Since agencies differ in composition, we would expect them to exhibit different degrees of cuttability.

Uncontrollability has received considerable attention in recent years. From OMB's view, certain programs are largely uncontrollable in the short run (e.g., interest on the federal debt). Some apparently uncontrollable programs (e.g., social security, unemployment insurance, etc.), may be altered for the purposes of the budget simply by varying the forecasts of demand for a particular program. Totally uncontrollable programs should be immune from our model, and partially uncontrollable ones may be less predictable using our model.

In order to investigate the differences among agencies, it was necessary to aggregate some of the groups presented in the Table 1 regressions. With 15 agencies and 10 groups, few of the regressions would have had sufficient data to be meaningful. An F test could not reject the null hypothesis that the coefficients for groups 1,2,5,6 and 9 were generated by the same relationship (at any standard significance level). Consequently, it was decided to consider the observations in these groups as a single group and to estimate the coefficients for the various agencies using the re-grouped data. The

³⁰ See Padgett, "Coping with Complexity: Stochastic Models of Budgetary Decision Making in OMB and Domestic Agencies" and Mowery, Kamlet, and Crecine, "Presidential Management of Executive Branch Budgetary Processes" for a more complete discussion of presidential attention phenomena.

TABLE 2
REGRESSION RESULTS FOR INDIVIDUAL AGENCIES

Constraints on Independent Variables	Coefficient for Change in Total	Coefficient for Change in Current Expenditures	R ²	Regression F ²	Number of Cases ¹
ATOMIC ENERGY COMMISSION					
Combined Categories (3)	.943** (.224)	.125 (.109)	.47	13.6	33
Any T change	-.270 (.454)	—	.02	.353	18
CE change zero					
Late in year					
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION					
Combined Categories	2.15* (.877)	.030 (.129)	.33	5.56*	25
Any T change					
CE change zero	.000 (.201)	—	.00	.000	12
Late in year					
DEPARTMENT OF COMMERCE					
Combined Categories	2.07** (.446)	.665** (.135)	.75	43.0**	30
T change positive					
CE change negative	-.547 (.659)	-.549 (.328)	.23	1.75	14
Late in year					
Any change in T					
CE change zero	.450 (1.57)	—	.01	.083	10
Late in year					
DEPARTMENT OF LABOR					
Combined Categories	.806 (1.16)	.743** (.179)	.39	10.7**	36

T change positive	.857	.852**	.74	14.0**	12
CE change negative	(.964)	(.162)			
Late in year					
Any T change	-.510	---	.01	.135	10
CE change zero	(1.39)				
Late in year					
GENERAL SERVICES ADMINISTRATION					
Combined	1.88**	.033	.30	5.37*	27
Categories	(.624)	(.309)			
T change positive	.669	.741*	.49	5.39*	13
CE change negative	(.964)	(.251)			
Late in year					
Any T change	-.513	---	.01	.065	10
CE change zero	(2.01)				
Late in year					
INTEREST ON FEDERAL DEBT					
Combined	.414	.176	.11	1.99	34
Categories	(.280)	(.296)			
Any T change	.042	---	.04	.570	14
CE change zero	(.272)				
Late in year					
TREASURY - EXCLUDING INTEREST					
Combined	-.798	1.25**	.36	8.60**	32
Categories	(.704)	(.303)			
T change positive	-.066	-.489*	.45	3.69	11
CE change negative	(.904)	(.190)			
Late in year					
DEPARTMENT OF JUSTICE					
Combined	.374	.579*	.34	8.27	34
Categories	(.275)	(.228)			
Any T change	-.041	---	.00	.028	17
CE change zero	(.242)				
Late in year					

TABLE 2
(CONTINUED)

Constraints on Independent Variables	Coefficient for Change in Total	Coefficient for Change in Current Expenditures	R ²	Regression F ²	Number of Cases ¹ (1)
VETERANS ADMINISTRATION					
Combined Categories	.355* (.162)	.100 (.100)	.25	5.23*	33
T change positive	.289	.153	.10	.699	15
CE change negative	(.251)	(.157)			
Late in year					
DEPARTMENT OF THE INTERIOR					
Combined Categories	.203** (.515)	.520* (.199)	.56	20.0**	33
T change positive	—	—	.27	2.40	15
CE change negative	.810 (.569)	.396* (.181)			
Late in year					
Any change in T	2.40*	—	.43	6.85*	10
CE change zero					
Late in year					
DEPARTMENT OF STATE					
Combined Categories	2.83* (1.14)	.570 (.367)	.38	9.00**	32
T change positive					
CE change negative	-1.02 (1.17)	-8.79 (.602)	.19	1.08	11
Late in year					

U.S. ARMY CORPS OF ENGINEERS					
Combined	.384	.917*	.26	5.15*	32
Categories	(.445)	(.411)			
T change positive	-.231	.203	.15	.686	10
CE change negative	(.924)	(.498)			
Late in year		---			
Any change in T	-.345		.06	.845	15
CE change zero	(.375)				
Late in year					
COMMODITY CREDIT CORPORATION					
Combined	2.19	-.405	.15	1.82	23
Categories	(1.16)	(.340)			
DEPARTMENT OF AGRICULTURE (excluding Commodity Credit Corporation and Soil Bank)					
Combined	2.68**	-.245	.30	4.31*	22
Categories	(.914)	(.169)			
DEPARTMENT OF HEALTH, EDUCATION AND WELFARE					
Combined	2.27***	.491	.68	37.9**	38
Categories	(.440)	(.192)			
T change positive	.766	.167	.23	1.67	13
CE change negative	(.419)	(.226)			
Late in year					

¹ Only reporting where *N* greater than ten.

² Tests all coefficients zero.

³ Includes all changes where CE and T go in same direction, plus any T change early in year with zero CE change.

* Significant at .95.

** Significant at .99.

results for this group, and for all remaining groups which contained 10 or more observations, appear in Table 2.

Both the parameter estimates and the fit of the model vary substantially over the agencies. Considering the combined group only, two agencies have both parameters significant: Commerce and Interior. Seven agencies had significant parameter estimates for the effects of the Total and insignificant parameter estimates for the Current Expenditures (t test, $p < .05$): Atomic Energy Commission, NASA, General Services Administration, Veterans Administration, State Department, Department of Agriculture, and HEW. Four agencies had insignificant parameter estimates for the Total and significant ones for the Current Expenditures: Labor, Treasury (excluding interest), Justice, and the Army Corps of Engineers. Two "agencies" had neither parameter estimate significant and were largely unexplained by our model: Interest on the Federal Debt and Commodity Credit Corporation. Our interviews and memoranda data sources suggest plausible mechanisms for this lack: interest on the debt is "taken off the top" on considering the budget and the Commodity Credit Corporation budget depends on external market forces.

It is quite evident that the treatment of agencies differs substantially: some were quite well explained by the model presented, while others were clearly not explained at all.

Comparisons with Other Models in the Literature. The primary purpose of this exploratory investigation has been to demonstrate, first, the existence of important environmental and informational influences on decision making within OMB and second to estimate the relative importance of two particular factors, changes in Current Expenditure Estimates and changes in fiscal policy or Total Federal Spending, under different conditions. Given these interests, primary attention is placed first, on the significance of the estimated relationships and, second, on the significance and relative magnitudes of the estimated parameters, the A's and B's in equation 2. There are other empirical works in the literature however and it would be useful to compare the results reported here with other results.

The most widely cited results are those of Davis, Dempster and Wildavsky.³¹ Although the time span covered, the level of analysis

³¹ Davis, Dempster, and Wildavsky, "A Theory of the Budgetary Process," "On the Process of Budgeting II: An Empirical Study of Congressional Appropriations," and "Toward a Predictive Theory of Government Expenditure: U. S. Domestic Appropriations."

(bureaus vs. agencies), and concern with dollar allocations found in the Davis, Dempster and Wildavsky models are reasonably similar to those of the models and data reported here, there are important differences that make a direct comparison impossible.³² These differences are two-fold. First is a preoccupation with the amount of variance explained in the dependent variable—with the R^2 's obtained by the equations estimated. As Wanat has so clearly demonstrated, in data like budgetary data with a significant trend component and where one of the “independent” variables is the dependent variable, lagged, it is very easy to obtain very high R^2 's or goodness of fit.³³ Davis, Dempster and Wildavsky obtain R^2 's in the neighborhood of .85 to .98 for models of the form

$$\text{Expenditure}_{\text{FY},t-1} = A [\text{Expenditure}_{\text{FY},t-1}] + B$$

Secondly, the observations used to estimate relationships in this paper are of a quite different nature from those utilized in the Davis, Dempster and Wildavsky work and in other work in the existing literature. Refer back to Figure 3. Oversimplifying somewhat, existing work³⁴ is concerned with budget levels as they move from one year to the next, as if those adjustments occurred all at once. The work reported here is concerned with the influences on the whole series of adjustments, made within OMB during the course of the year-long budget planning cycle (see Figure 1), that cumulate in the next year's budget. In terms of the Planning Figures displayed in Figure 3, existing work in the literature takes the two end points as the relevant observations, the phenomena to be explained, whereas this work takes as its observations the outcomes of a series of intermediate adjustment processes in between those end points. As such, the “end points” or the annual President's Budgets represent aggregations of individual adjustments along the way, further boosting the level of R^2 one would expect from time series data with

³² These observations apply as well to the Gist, “‘Increment’ and ‘Base’ in the Congressional Appropriations Process”; Natchez and Bupp, “Policy and Priority in the Budgetary Process”; Charles W. Ostrom, Jr., “A Reactive Linkage Model of the U. S. Defense Expenditure Policymaking Process,” *American Political Science Review*, 72:3 (September 1978); and “Evaluating Alternative Foreign Policy Decision Making Theories: An Empirical Test Between an Arms Race and an Organizational Politics Model,” *Journal of Conflict Resolution* 21 (1977); Stromberg, *The Internal Mechanisms of the Defense Budgetary Process: Fiscal 1953 to 1968*; and Wanat, “Bases of Budgetary Incrementalism.”

³³ Wanat, “Bases of Budgetary Incrementalism.”

³⁴ Exceptions are Crecine and Linett, “The Budgetary Argument for a Separate Department of Education” and Crecine, et al., “The Role of the OMB in Executive Branch Budgetary Decision Making.”

a strong trend component. While this well-known econometric result³⁵ brings into question the meaningfulness of the results of most existing empirical work on budgeting, that is not the concern here.³⁶ While a precise comparison of our results and Davis-Dempster-Wildavsky style models is impossible, a crude comparison was made to aid the reader.

In particular, two agencies were singled out, Commerce and Interior. Parameters reported in Table 2 were used for each agency. How well do the parameters estimated for Equation 2 explain the year-to-year changes in the President's Budget (the focus of most other models)? Using year-to-year changes in CE's and T's, the independent variables, to generate changes in PF's, then converting changes to total dollar amounts, estimated President's Budgets for Commerce and Interior were calculated and compared to the observed values. Goodness of fit measures were then calculated. How well were year-to-year changes in President's Budgets explained? Very well. The R^2 for Commerce was .9691 and for Interior .9934.

Re-estimating parameters for Equation 2, using only the year-to-year changes as observations rather than the intermediate changes naturally leads to slightly better model fits, with R^2 's of .9926 for Commerce and .9978 for Interior.

While for reasons discussed previously, the meaning of these results is questionable, one can unambiguously conclude that the simple information and problem environment models developed here produce statistical results at least as good as those found in the current literature.

Questions of Causality: "Top Down" or "Bottom Up" Processes? A principal finding of this paper concerns the importance of Total Federal Spending, " T_t ", as a determinant of the budget adjustments, of " PF_t ". The interpretation provided here is that T_t represented an externally-determined fiscal constraint, a "top-down" pressure that OMB Planning Figures and agency budgets had to adapt to. The statistical results reported here, theoretically, are consistent with a "bottom up" explanation as well.³⁷ For example,

³⁵ See, for example, Henri Thiel, *Principles of Econometrics* (New York: John Wiley and Sons, Inc., 1971), 181.

³⁶ The work reported here, by focusing on disaggregate, individual adjustments and "detrending" the data by focusing on changes rather than absolute levels, avoids these statistical pitfalls.

³⁷ A comment offered by M. S. Kamlet.

assume that roughly the same external pressures are affecting each agency, and pushing them all in roughly the same direction; “bottom up” pressures causing similar effects for all agencies. Given the Identity 1, above, Total Federal Expenditures as a simple aggregate of a series of numbers, all moving in the same direction, would show a statistically significant relationship between T_t and PF_t . We interpret this relationship as if it were produced by “top down” fiscal pressures; a consistent pattern of “bottom up,” agency-specific pressures would lead to the same statistical results.

The primary evidence for a “top down” causal relationship between fiscal policy or Total Federal Spending and OMB Planning Figures lies in the difference in the factors affecting aggregate economic conditions and those affecting individual agencies and the radically different impacts of particular economic environments on different agencies. Nevertheless, the question of the direction of causality is a serious one. Further evidence in support of a “top down” interpretation of the T-PF relationship lies in the division of labor in the Executive Branch policy machinery—different groups attend to fiscal policy and budget matters and the considerations employed are different. Finally, there is a great deal of informal evidence that budgetary policy adapts to fiscal policy to a far greater extent than the reverse.

While a definitive response to the “bottom up”/causality issue is beyond the scope of this paper, some empirical evidence can be brought to bear on the topic. One version of the “bottom up” hypothesis is that a common set of factors affects individual agency programs and that the Total for Federal Expenditures that results will be a simple sum of the agency parts. Because of the common factors affecting the individual parts, the resulting total will have a strong, but artificial, statistical relationship to each of the parts.

Recall the informational content of Current Expenditure Estimates, CE's. Among other things, CE's embody the effects of the external program/agency environment on the budget for individual agencies for the current fiscal year. Assuming that environmental pressures on individual agency budgets for a current year are related somewhat to the same pressures for the budget year being planned for, CE's are a reasonable candidate for estimating the individual, “bottom up” pressures. If the Total, T_t , is a simple aggregate of individual Planning Figures, PF_t , moving in similar directions, one should be able to estimate the Total directly from Current Estimates in all but the most volatile external environment.

The following regression was run using data discussed above:

$$[T_t - T_{t-1}] / T_{t-1} = A[(CE_t - CE_{t-1}) / CE_{t-1}] + e \quad (3)$$

No relationship was found. "A" was estimated to be + .003 with a standard error of .01. The Regression "F" statistic was .108 and the R^2 was estimated to be .0001.

While Equation 3 results do not prove the "top down" direction of causality between Totals and agency parts, it does discredit the particular "bottom up" scenario discussed above.

Conclusions

The results presented here are consistent with the proposition that a large part of OMB's behavior can be explained by an extremely simple set of adjustment mechanisms. While OMB personnel are immersed in complexity, there are underlying "tendencies" based on simple response mechanisms which, as demonstrated here, govern much of the outcomes. A few important facets of the information environment (i.e. the Total and the Current Expenditures Estimates) provide the strong cues necessary for coordination of an immense and intricate task.

The data drawn upon in the study are less current than one might desire. Specifically, there is the possibility that significant structural changes in the Executive Branch budgetary process have occurred subsequent to the FY68 Budget. Two categories of such changes exist. First was the shift from an "administrative budget" concept to a "unified" or "cash consolidated" budgetary and accounting concept, beginning with the FY68 President's Budget. These accounting changes brought trust fund, revolving funds, and public enterprise funds into the Budget Total. Second were the several reform movements such as PPBS and ZBB aimed at changing budgetary processes. It is not clear that the shift in accounting concepts changed the macro allocation processes described here in any fundamental way. In addition, most observers would claim PPB, ZBB and the like have had little impact (except, perhaps, to change some of the rhetoric) globally and certainly no impact on allocations to agencies. Indeed, such reforms are aimed at the program rather than at the agency level. Perhaps the most significant change in Federal Budgetary processes has occurred in the Legislative Branch with the creation of the Congressional Budget Office and related reforms. There do not appear to be major changes in the Executive Branch. Although no evidence is presented here, we believe the

problem of balancing fiscal policy against spending pressures has not changed in any fundamental way since FY68 and that neither have Executive Branch decision processes; the findings cited here are likely to apply also to contemporary allocational processes.

Several conceptually simple modifications of the model presented are suggested, although their actual estimation may be technically difficult (due to data availability). While some gross agency-specific regressions were run, clearly it would be desirable to estimate the entire ten group model for each agency. Since things such as presidential saliency may vary from administration to administration, it would be desirable to estimate the entire 10 group model for each agency over each administration. In addition, it might be worthwhile to single out those agencies which are truly uncontrollable, e.g., Interest on the Federal Debt, and not to attempt to explain these with an inappropriate adjustment model based solely on internal variables. Further independent variables (e.g., line item composition of the budget to indicate cuttability) might be added. Without making any specific predictions concerning the improvement in fit, if the kind of extremely simplistic model presented here can explain as well as it does (for some groups and some agencies), these simple modifications could be expected substantially to raise the explanatory power of the model. Even without these modifications, three strong generalizations are evident from the results:

(1) Changes in the Total and the Current Expenditure estimates are clearly associated with changes in Planning Figures in OMB.

(2) As noted in previous non-quantitative work on OMB, OMB evidences a strong cutting orientation: negative changes in Current Expenditures had significant direct effects on Planning Figures regardless of the changes in the Total or time of year. This observation is consistent with the bureaucratic truism that you must spend everything you get, or you'll get less next year.

(3) The timing of changes in the independent variables is important. Since the effects of changes in the Total are influenced by the direction of changes in the Current Expenditures, and vice versa, considering only the final sum of changes in the two variables over the year may be misleading. In addition, the time in the year (early or late) when the changes occur appears to influence the effects. Ignoring the exact timing and sequence of changes is not desirable.

The impacts of timing and the parameter values estimated may be

useful for managers in the budget process. At the margin, one may be able to manipulate part of the information environment, if not the problem environment (the "budget problem" and fiscal policy). Obviously, agency personnel would like *their* Current Expenditures to rise when the Total rises and would like to avoid a decrease in Current Expenditures when the Total falls. Some manipulation of the timing of reporting events which will change Current Expenditure Estimates may be within agency control.

Alternatively, the management of an organization that must somehow adapt to externally-defined fiscal policy and agency-specific (CE's) pressures is substantially different from that which is normally assumed in the prescriptive literature. Finding a set of Planning Figure levels consistent with fiscal policy (T) — solving the "budget problem" — and with the agency-specific information contained in the CE's is a difficult *organizational* task. It is *not* the same task as simultaneously optimizing program levels. At minimum, the output criteria and program "production functions"³⁸ are ambiguous, conflicting, or unknown. PPBS, zero-based budgeting, and their related analytical techniques (e.g., cost-benefit analysis) do not address the organizational problem faced by OMB in coordinating fiscal policy with budgetary expenditure planning; these techniques do not solve the "budget problem."³⁹

While the work presented here has been preliminary in nature, the results support the view of an Executive Branch budgeting process heavily influenced by the need for coordination at an aggregate level between fiscal and budgetary policy while being somewhat responsive to agency-specific conditions.

³⁸ In order to translate program outputs into inputs and, hence, into resource requirements.

³⁹ Crecine, *Defense Budgeting: Organizational Adaptation to External Constraints*; Crecine, "Defense Budgeting," 210-261, in Byrne, Cooper, Davis, Gilford, eds., *Studies in Budgeting* (North-Holland, 1971); Crecine, "The Shape of the Defense Budget: Internal DOD Resource Allocation Processes."