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Budgeting and Productivity Revisited: The Local Government Picture

Daniel E. O'Toole, Brian Stipak

Results from a national survey of local government budget practitioners show that local government budgeting practices are more "productivity-friendly" than previous research has suggested.

Public administrators have long recognized budgeting and productivity as important management considerations, and have focused on the relationship between these two elements as a key to improving public agency operations. Budgetary reformists, in particular, have perceived budgeting as a major instrument for enhancing productivity in public organizations. A recent symposium, "Budgeting for Improved Productivity" (Rabin, 1987a), focused on the relationship between budgeting and productivity and considered how the "friendliness" of various budgeting tools and practices might enhance productivity improvement efforts.

This article's purpose is to extend some of the symposium's findings and to counter some of its claims about the compatibility of prevailing budgeting practices with productivity improvement. Based on the results of a recent nationwide survey of local government budget practitioners (O'Toole and Marshall, 1987), this article will:

- Show that the budgeting environment is becoming "friendlier" toward productivity improvement efforts, in contrast to the pessimistic tone of the Spring 1987 symposium
- Explore revenue forecasting practices that may enhance productivity
- Investigate what types of local government organizations are the most productivity-oriented.

Information on budgetary and related practices of local governments was collected in 1985-86 using a mail questionnaire. The questionnaire was sent to a sample of 750 local government budget practitioners drawn from the active membership roster of the Government Finance Officers Association (GFOA). The total number of questionnaires returned was 526, for a response rate of over 70 percent. Respondents included budget officers, finance officers, business managers, clerk-treasurers, and top

Table 1. Characteristics of Responding Local Government Jurisdictions

<i>Type of Jurisdiction</i>		<i>Percentage</i>
Cities	334	63
Counties	83	16
Special districts	20	4
School districts	29	6
Small jurisdictions ^a	54	10
Other ^b	6	1
	Total	526
		100
<i>Region</i>		
Northeast	77	15
North central	147	28
South	172	33
West	130	25
	Total	526
		101
<i>Size of Population</i>		
0-24,999	175	34
25,000-49,999	88	17
50,000-99,999	86	17
100,000-249,999	72	14
250,000-499,999	41	8
500,000-999,999	36	7
1,000,000 up	17	3
	Total	515
		100

^aIncludes townships, towns, municipalities, boroughs, and villages.

^bIncludes regional governments and combined cities and counties.

^cPopulation data were missing for eleven jurisdictions.

Source: O'Toole and Marshall, 1987.

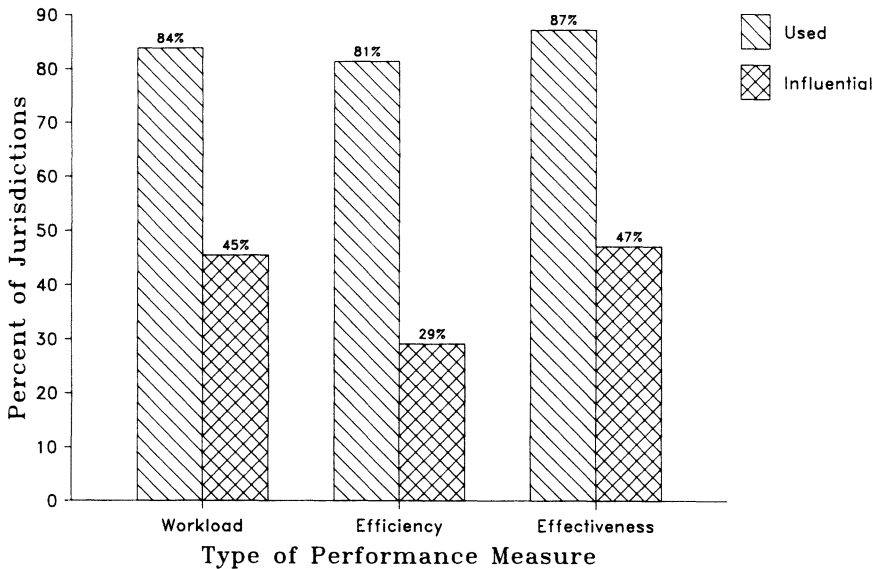
local government managers. Table 1 shows that the reporting jurisdictions were primarily general purpose local governments widely diversified in population, size, and geographical region.

The Use of Performance Measures

A major aspect of the relationship between budgeting and productivity involves the use and role of budget performance information. How extensive is the use of budget performance measures and what impact do they have? The answers to these questions would provide one indicator of how "friendly" the current budgeting environment is toward productivity improvement efforts.

Some recent studies suggest that performance information has, at best, a limited role in local government budget processes. For instance, MacManus (1984) found that eight out of ten Houston area local govern-

Figure 1. Current Use and Influence of Different Performance Measures



ment budget documents did not report efficiency or effectiveness measures. In Moore's (1980) survey, 205 city budget directors identified the lack of information about program performance and effectiveness as the most severe problem they faced. These results led Grizzle (1987) to argue that budget officials perceive performance information as either unavailable to them or inadequate.

Other studies are more encouraging. Cope's (1987) survey of 358 local government finance directors showed that 60 percent of these jurisdictions use performance indicators in their budget process and 93 percent of the respondents believed that performance indicators improved efficiency and productivity in at least some departments.

The results from our own survey complement Cope's findings. Budget practitioners were asked whether their jurisdictions used any of the following "output" measures and, when used, how influential each one was on their jurisdiction's budget decision making:

- Workload measures (measures of the amount of work done)
- Efficiency measures (measures of the amount/cost of output per unit-of-input)
- Effectiveness measures (measures of how successful service goals/objectives are met).

The findings illustrated in Figure 1 indicate that all three types of measures are widely used among the reporting jurisdictions and, where used, are regarded by a considerable number of budget practitioners as

being influential on their decision making. At least 80 percent of the reporting jurisdictions use each type of measure. Forty-five percent of the budget practitioners whose jurisdictions use workload measures believe that such measures influence fiscal allocation decisions (influential was defined as a score of at least four on a five-point influence scale). The corresponding figures for efficiency and effectiveness measures are 29 percent and 47 percent, respectively. These results suggest that the budgeting environment of many local government jurisdictions is "friendly" toward all three types of output measures playing an important role in their fiscal decision making.

Budget Formats and "Productivity Friendliness"

Another indicator of how "friendly" the budgeting environment is to productivity improvement efforts is the type of budget format the organization uses. Budget preparations must determine how to frame budget requests, what data to present, and how to arrange this information. The type of budget format an organization uses and any accompanying "output" measures address these issues and influence how much attention will be paid to productivity concerns during budget decision making. There are five types of general budget formats:

- Line-item (a budget in which all proposed expenditures are listed according to the items for which money would be spent)
- Performance (a budget that focuses on the activities or operations performed, their cost, and the efficiency with which they are performed)
- Program (a budget keyed to a program structure and emphasizing the relationships among expenditures, objectives, and outputs)
- Zero-base/Target-base (a budget consisting of alternative funding levels and involving the ranking of program or decision packages)
- Hybrids (combinations of two or more of the above).

The four "pure" formats plus the hybrid combinations constitute fifteen alternative budget formats. Of these, only the line-item format does not foster the use of performance information in budgeting, since a line-item format focuses on how much the organization is spending rather than why the money is being spent.

The "Budgeting for Improved Productivity" symposium provides recent information on how local governments make use of these various formats. Cope's (1987) survey found that the line-item format predominates among local governments; 78 percent of the responding jurisdictions reported using it either exclusively (34 percent) or in a hybrid arrangement (44 percent). Rabin (1987a) cites this heavy reliance on the line-item format as a major reason for concluding that the budget process does not appear to be "productivity friendly."

Our own survey also included questions on budget format usage. Local government budget practitioners were asked to indicate which of the fifteen alternative formats their jurisdictions used five years ago they use now and expect to use five years from now. The answers to these questions anticipate budget format usage over a ten-year period. They also support an optimistic view of the “productivity-friendliness” of local government budgeting processes.

The profile these survey results provide of the current use of budget formats (see O’Toole and Marshall, 1987) shows that the line-item format is even more prevalent among these jurisdictions than among those in Cope’s (1987) study. Of all the responding jurisdictions, 83 percent now use a line-item format either exclusively (almost 58 percent) or in a hybrid arrangement (over 25 percent).

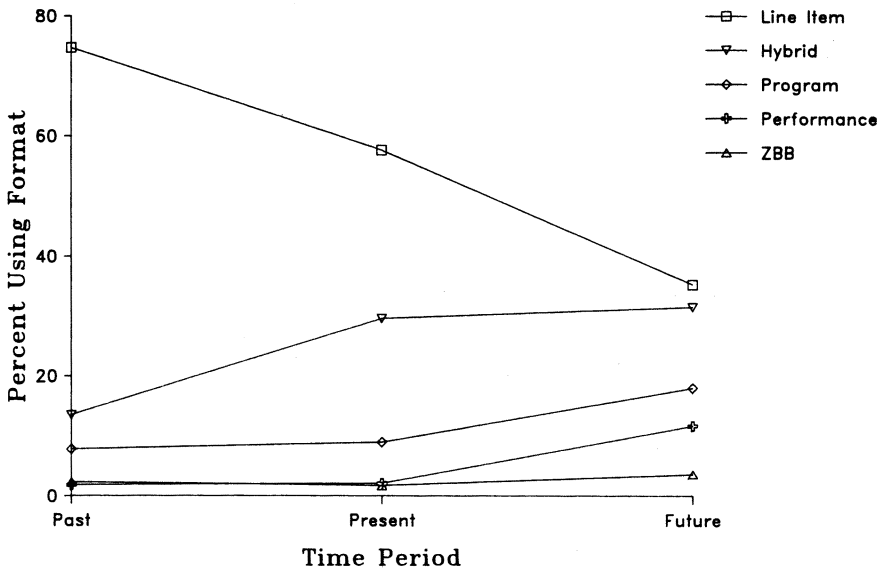
A different picture emerges with the addition of information on past and expected future format usage. Figure 2 presents the results for past, present, and future use of the four “pure” formats and the hybrid formats. These results show a marked trend away from exclusive dependence on the line-item format. While the line-item format still remains the most commonly anticipated format in the future, its share of the total declines from almost 75 percent in the past to approximately 35 percent in the future. Conversely, use of the other three “pure” formats and the hybrids increases from a total of about 25 percent in the past to approximately 65 percent in the future. Particularly noteworthy is the anticipated increase during the next five years in the use of the program format (from 9 to 18 percent) and the performance format (from 2 to 12 percent). This trend is consistent with earlier findings about the use of management tools by municipal governments. Poister and McGowan’s (1984) comparison of the results of a 1976 Internal City Management Organization (ICMA) survey with their 1982 survey of municipal jurisdictions showed a sizeable increase during the intervening six-year period in the use of the program and zero-base/target-base formats.

The picture of format usage depicted by Figure 2 suggests that the exclusive use of the line-item format, a major obstacle to “productivity-friendly” budgets, is diminishing. The increase during this ten-year period in the use of hybrid formats (from almost 14 percent to almost 32 percent) is part of this shift. Although the line-item format is involved in most of these hybrids, such combinations (for example, the program/line-item format) are still likely to be more conducive to productivity improvement efforts than the exclusive use of the line-item format.

Financial Forecasting Methods

Financial forecasting methods play a key role in the budgeting process. The information these methods provide constitutes the budget’s founda-

Figure 2. Changing Use of Budget Formats Over Time



tion and method accuracy determines the budget's reliability as an expenditure plan. In addition, as Rabin (1987b) suggested, the use of more sophisticated and reliable revenue forecasting techniques can enhance productivity improvement, that is, can help governments do "the same with less" or "more with the same."

What use do governments make of these techniques? The symposium provides only limited answers to this question. Cope's (1987) survey found that over 75 percent of local governments collect data on previous years' revenues and expenditures, and over 55 percent do multiyear revenue and expenditure forecasts. While this suggests that many local government financial forecasts involve a multiyear perspective, it does not identify the methods on which their forecasts are based.

Our survey results address this issue. We asked budget practitioners about the following financial forecasting methods:

- Staff judgment founded on expertise, experience with the organization, and intuition
- Trend projection based on historical data
- Commercial computer forecasting packages
- Econometric equations
- Noneconometric modeling methods (for example, demographic methods).

Table 2. Importance of Financial Forecasting Methods Today and Their Predicted Importance During the Next Five Years

<i>Forecasting Method</i>	<i>Importance Today</i>	<i>Predicted Increase</i>
Staff judgment	91%	14%
Trend projection	86%	22%
Commercial computer packages	7%	48%
Econometric equations	9%	26%
Noneconometric modeling	16%	27%

Note: The "Importance Today" column indicates the percentage of budget officers who rated importance of that method as at least four on a five-point scale.

Budget practitioners indicated on a five-point scale each method's importance in helping their jurisdictions prepare revenue and expenditure estimates. Respondents were then asked whether this importance was likely to increase, remain the same, or decrease during the next five years.

The results shown in Table 2 suggest that most local governments rely heavily on the less sophisticated methods for developing their revenue and expenditure forecasts. The budget practitioners indicated that both staff judgment and trend projection based on historical data are currently more important than the other three methods.

The results in Table 2 do show, however, a brighter future for commercial computer packages, econometric equations, and noneconometric modeling. Almost half (48 percent) of all the respondents said commercial computer packages will become more important in their financial forecasting efforts during the next five years. Similarly, over a quarter (26 to 27 percent) said that noneconometric modeling methods will become more important. In most cases, the anticipated future increase for these three methods is mainly in jurisdictions serving populations over 50,000.

Assuming that Rabin's (1987b) assertion about the relationship between sophisticated financial forecasting methods and productivity is correct, the projected future increase in the use of these methods means that many local governments should experience enhanced productivity in the near future.

Characteristics of Productivity-Oriented Agencies

As we have already seen, there is considerable room for optimism in how the "productivity-friendliness" of local government budgeting is viewed. One question this optimism raises is what type of jurisdictions are most vigorously pursuing productivity enhancements? What type of agencies are at the productivity forefront?

To help answer this question, a budgetary analysis scale was created (see Exhibit 1) to measure the current use of techniques for productivity measurement and financial forecasting. This six-item scale was computed from survey items asking about (1) the use of workload measures, (2) efficiency measures, (3) effectiveness measures, (4) commercial computer forecasting packages, (5) econometric equations, and (6) noneconometric modeling methods. A higher scale value indicates the agency reported greater use of these techniques.

Table 3 presents the mean budgetary analysis scale scores for agencies with different characteristics. Townships, boroughs, and other small jurisdictions are shown to have substantially lower scale values than all other jurisdictional types. Counties appear to have slightly higher scale values than cities. Agencies in the Northeast and North Central regions show lower values than agencies from the South and the West. Both operating budget sizes and population size show a strong positive relationship to scale scores. Although little difference appears between agencies having CEO versus non-CEO executives, differences between budget offices and budget formats do look significant. Agencies with a budget office reveal much higher scale scores than those without, and agencies using line-item budgets show lower scale scores than agencies using program budgets and other budget types (also see Exhibit 1).

What do these findings reveal about agencies in the productivity forefront? Not surprisingly, these agencies tend to represent larger jurisdictions, have substantial resources, and be located in expanding geographical regions. But most pertinent is the link between productivity and budget practices. Agencies on the productivity forefront tend to have separate budget offices and to use program budgets and other output-oriented formats, rather than line-item budgets.

Table 4 shows the statistical results of a multiple regression analysis undertaken to help assess the *independent* predictive importance of these different agency characteristics. The line-item budget dummy variable has the largest standardized coefficient and is highly statistically significant. The coefficient estimate indicates that line-item budgets predict to an average of almost one-third of a unit lower on the five-point response format than other budget types for productivity questions. The population variable has the next largest standardized coefficient, and indicates that larger size predicts to higher scores (also see Exhibit 1). The coefficient for the no-budget-office dummy variable is small and not statistically significant, although its negative sign is consistent with the earlier finding that agencies lacking a budget office have less of a productivity orientation. The other variables show generally weak coefficients that correspond roughly to the findings from Table 4 about characteristics related to productivity.

This investigation of productivity-oriented agencies supports the view

Table 3. Comparison of Mean Budgetary Analysis Scale Scores

	<i>Mean</i>	<i>Estimated Standard Error</i>	<i>Number of Cases</i>
<i>Type of Jurisdiction</i>			
Cities	2.37	.05	333
Counties	2.55	.09	83
Special districts	2.54	.17	20
School districts	2.46	.15	29
Small jurisdictions ^a	1.99	.14	54
<i>Region</i>			
Northeast	2.22	.11	77
North central	2.25	.07	147
South	2.42	.07	171
West	2.53	.07	130
<i>Operating Budget</i>			
Below \$10 million	2.18	.08	142
\$10-50 million	2.34	.07	191
Above \$50 million	2.58	.06	182
<i>Population</i>			
Below 25,000	2.19	.07	177
25,000 to 100,000	2.32	.07	171
Above 100,000	2.59	.06	166
<i>Executive Function</i>			
CEO	2.38	.04	465
Non-CEO	2.29	.13	59
<i>Budget Office</i>			
Yes	2.45	.05	352
No	2.22	.07	166
<i>Budget Format</i>			
Line-item	2.20	.06	300
Program	2.69	.12	47
Other ^b	2.58	.06	175

^aIncludes townships, towns, municipalities, boroughs, and villages.

^bIncludes performance budgets, zero-base budgets, and format combinations.

that output-oriented budget formats, as opposed to a line-item format, can enhance “productivity-friendliness.” The survey provides some evidence, although weak, that the existence of a budget office may also enhance productivity efforts.

Conclusion

In contrast to the somewhat pessimistic tone of the “Budgeting for Improved Productivity” symposium, our findings lead us to a more opti-

Exhibit 1. Scale Methodology

The budgetary analysis scale was created by computing the mean of the six component items. Since all six items had a five-point rating scale format, the budgetary analysis scale value retains the five-point metric. A value of one corresponds to "not influential" or "not important," and a value of five corresponds to "highly influential" or "highly important." The estimated scale reliability (Cronbach's alpha) is .72, implying that less than 30 percent of the scale variance results from random measurement error.

Table 3's scores for the differences between the means of small jurisdictions, compared to the other types, are all statistically significant (.05 level two-tail test). The differences between the west, the northeast, and the north central regions are statistically significant (at .05 and .10 levels, respectively). The mean differences between smallest budget versus largest budget agencies and between smallest population versus largest population agencies are both highly (.01 level) statistically significant. The mean differences between agencies with a budget office versus those without, and between those using line-item budgets versus program and other budgets, are all highly (.01 level) statistically significant.

In Table 4, the coefficient for the log population variable is not quite statistically significant, a result of the high colinearity ($r = .87$) between the log population and log operating budget variables, with consequent inflation of standard errors for the coefficients. The unlogged versions of these variables are less highly correlated ($r = .57$); when the unlogged versions are substituted for the logged versions in the equation, the population variable shows a highly statistically significant coefficient. Coefficient estimates for the other independent variables stay about the same regardless of which set of size variables are used. Table 4 reports the results using logged variables; we believe that logged variables make more theoretical sense than unlogged ones. The logged transformation implies that equal changes in the dependent variable result from equal proportional, not equal unit, changes in the independent variable.

mistic view of productivity improvement efforts within local government budgeting practices. Currently, different types of performance measures have widespread use and influence. Performance-oriented budget formats show a strong trend toward replacing exclusive reliance on the line-item format. More sophisticated financial forecasting methods are growing in importance. Moreover, agencies currently at the productivity-forefront—those using output-oriented budget formats, having substantial resources, and located in expanding geographical regions—are the ones becoming more prevalent. Although only a Pollyanna would view prospects for productivity improvement with absolute optimism, these findings do indicate that progress has occurred and that trends point in a positive direction.

Despite our confidence in identifying the direction of these trends, we feel existing research does not adequately explain the underlying causal relationship between budgeting practices and productivity enhancement. Typically, the writings of budgetary reformists focus on how budgeting practices may affect productivity. Indeed, that assumption is implicit in both the symposium and this article. But conversely, efforts to improve productivity may affect budgeting practices. The typical reformist per-

Table 4. Budgetary Analysis Scale Regression Results

<i>Dependent Variable: Budgetary Analysis Scale</i>			
<i>Independent Variables</i>	<i>b^a</i>	<i>t^b</i>	<i>st. b^c</i>
<i>Type of Jurisdiction</i>			
County dummy	.066	.54	.03
District dummy	-.079	-.52	-.02
Town dummy (Reference is City)	-.230	-1.58	-.08
<i>Region</i>			
Northeast dummy	-.172	-1.20	-.07
North central dummy	-.217	-1.95	-.11
South dummy (Reference is West)	-.097	-.91	-.05
Log (base 2) Operating Budget	-.031	-.81	-.08
Log (base 2) Population	.063	1.52	.15
No CEO Dummy	-.085	-.68	-.03
No Budget Office Dummy	-.093	-1.01	-.05
Line-Item Budget Dummy	-.295	-3.39	-.16
Multiple correlation (R)	.30		
% Variance explained (R ²)	.09		
% Nonrandom variance explained (R ² /α)	.13		
Number of cases (N)	489		

^aUnstandardized partial regression coefficient

^bt-statistic for the coefficient

^cStandardized partial regression coefficient

spective is that by instituting an output-oriented budget format, management's control over government production will be enhanced and productivity increased; an alternative perspective is that increased use of performance measures and greater concern with productivity may themselves increase the demand for output-oriented budget formats. Yet a third perspective is that the use of both sophisticated budget formats and productivity enhancement tools springs from a general impetus to develop more professional, productivity-oriented management. Although the underlying causal relationships remain unclear, it does appear that budgeting and productivity practices are moving toward a greater emphasis on managing for productivity enhancement in local government.

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