
Capital Budgeting Practices Among Tennessee Municipal Governments

This article examines the extent to which Tennessee local governments use a separate capital budget or capital improvement program to record capital expenditures and investments.

By Alex Sekwat

Capital budgeting is a fundamental part of the budgetary process at the municipal level. Municipalities employ it as a tool for planning, control, and allocation of scarce resources among competing demands. In the past two decades, efforts to improve efficiency in government have spurred interest in tools that help public officials make better capital investment decisions. As a result, the capital budgeting process is becoming a vital part of financial planning and decision-making, especially in regard to development, construction, and/or acquisition of new capital facilities as well as maintenance of existing capital facilities.

Municipal governments are responsible for providing and maintaining basic capital facilities within their jurisdictions. They also administer a wide array of capital programs that are associated with urbanization and local economic development (e.g., construction of roads, schools, water and sewer systems, jails, and recreation facilities).

Role of Capital Spending

Municipalities must commit a large amount of resources to maintain their capital facilities. Government fiscal data show that local governments spend hundreds of millions of dollars on capital investments each fiscal year. During the past decade, direct capital expenditures accounted for about 20 percent of total annual spending at the local level compared to 13 percent at the state level. Thus, capital expenditures constitute a significant component of total annual municipal spending.

Because of the large amount of resources allocated for capital expenditures,

capital budgeting is a crucial process. To prudently manage resources allocated for capital investments, local government decision-makers have increasingly relied on capital budgeting to define the strategic needs for their communities and match their long-term plans with their infrastructure priorities. Since the aftermath of World War II, the capital budgeting process has become a vital element of decision-making with respect to planning, managing, acquiring, and financing costly and long-lasting capital assets.

A separate capital budget may prevent a bias against capital investments during budget deliberations. Capital investments often are at a disadvantage during budget deliberations because they are politically easier to postpone or cut compared to consumption-type items featured in the operating budget. These disincentives toward capital expenditures often result in neglect of costly yet indispensable local infrastructure needs.

Research Objectives

This article examines the capital budgeting practices of Tennessee municipal governments. Specifically, the article attempts to answer the following capital budgeting questions.

1) What percent of Tennessee municipalities use a separate capital budget and a capital improvement program? Are municipal population size and capital expenditure size determinants of a separate capital budget and capital improvement program use?

2) What factors influence the use of a separate capital budget? To what degree does each factor influence the use of a

separate capital budget?

3) How frequently do Tennessee municipalities use the major methods of capital financing commonly associated with financing capital facilities at the local level?

4) What percentage of Tennessee municipalities use each of the major capital budgeting decision techniques normally used by private-sector companies?

Method

The data for this study were obtained by administering a cross-sectional survey to Tennessee municipal governments in the summer and fall of 1997. The survey instrument was mailed to finance officers in all of the 321 municipal governments with a population of 1,000 or more. The survey instrument contained a variety of questions pertaining to capital budgeting practices commonly used by municipal governments.

Valid responses were received from 166 (52 percent of the total sample) governments. (Exhibit 1). The response rate by population size and type of municipality does not indicate a self-selection bias, although a small variation in the response rate is noticeable between cities and counties and among the population groups summarized.

Demographic Characteristics. To ensure that the municipal officials who completed the questionnaire understood the survey, education achievement and academic training information was solicited. These two characteristics are important to assess the respondents' familiarity with the subject matter. The summary of the responses shows that 86 percent of the respondents earned college degrees (Ex-

**Exhibit 1
RESPONSE RATE BY TYPE OF JURISDICTION AND POPULATION SIZE**

A. Response rate by jurisdiction type

Jurisdiction Type	Sample	Response	Response Rate
Counties	95	55	57.9%
Cities	226	111	49.1
Total	321	166	51.7

B. Response rate by population size

Population Size	Sample	Response	Response Rate
Over 50,000	28	16	57.1%
25,000 – 49,999	36	19	52.8
10,000 – 24,999	61	23	35.7
5,000 – 9,999	45	32	71.1
1,000 – 4,999	151	76	50.3

**Exhibit 2
RESPONDENT CHARACTERISTICS**

Educational Achievement	Frequency	Percent
Graduate degree	85	52.8%
Undergraduate degree	54	33.5
Other	15	9.3
Missing	7	4.4

Academic Training	Frequency	Percent
Business Administration	84	56.0%
Public Administration	30	20.0
Economics	13	8.7
Other	23	15.3

hibit 2). About 53 percent of the respondents had earned graduate degrees, and 33 percent had earned at least baccalaureate degrees. Only 9 percent checked “other,” implying that they did not complete a formal college education. Four percent of the respondents did not answer the demographic questions completely.

The fields of business (56 percent) and public administration (20 percent) constituted the major areas of academic training for the majority of the respondents. About 9 percent cited economics as their main area of academic training and 15 percent checked “other.” Further examination of the responses in the “other” category revealed that majority of the respondents specified accounting as their main area of academic training. Overall, the profile of respondents suggests that they were familiar with their jurisdiction’s capital budgeting practices.

Use of CIP

This study examines the extent to which Tennessee local governments use a separate capital budget and/or capital im-

provement program based on population size and capital expenditures. The survey defines a separate capital budget as a budget distinct from the operating budget or unified budget where only expenditures for long-term capital are recorded. The study defines a capital improvement program as a multi-year capital planning program that shows capital expenditures for a period ranging from 3 to 6 years and in which proposed projects and their projected annual costs are recorded.

Municipalities generally divide their budgets into two components: 1) the operating budget and 2) the capital budget. The operating budget is the spending plan that shows revenue and expenditure estimates for a particular fiscal year. The capital budget records large expenditures for development and procurement of capital items that are normally financed by debt. Some municipalities use a unified budget—a budget structure that does not make a systematic distinction between outlays for current operations and capital investments. Like an operating budget, a unified budget system fails to take into account that current expenditures typically reduce the resources base of govern-

ment, while capital investments tend to produce a stream of benefits to the public for many years.

Concerning the extent to which Tennessee municipalities use a separate capital budget and a capital improvement program, the results indicate that the practice of both capital budgeting tools is not widespread. Only 30 percent of the respondents indicated that their municipality uses a separate capital budget, and 37 percent reported using a capital improvement program. As shown in Exhibit 3, the use of a separate capital budget and a capital improvement program varied only modestly by type of municipality (i.e., county and city).

Further analysis of the data indicates that population size and size of annual capital expenditures are plausible indicators of both separate capital budget and capital improvement program utilization. In Exhibit 3, the percent distribution of the responses suggests that municipalities with populations greater than 50,000 were more likely to utilize a separate capital budget (56 percent) and a capital improvement program (81 percent) compared to those with smaller populations. Furthermore, the data suggest that the size of municipal capital expenditures is a good predictor of both the use of a separate capital budget and a capital improvement program. Specifically, municipalities with annual capital expenditures greater than \$50 million appear more likely to use a separate capital budget and a capital improvement program compared to those with capital expenditures under \$50 million. Because few municipalities in Tennessee have large populations (greater than 50,000) and large annual capital expenditures (greater than \$10 million), these findings support the general proposition that jurisdictions with smaller population size and capital expenditure size are less likely to use a separate capital budget and a capital improvement program.

Separate Capital Budget

This study examined reasons that account for the use of a separate capital budget by Tennessee municipalities. The current public budgeting and finance literature has identified 11 factors that account for use of a separate capital budget by municipalities (see Exhibit 4). Local governments separate capital expen-

**Exhibit 3
MUNICIPAL USE OF A CAPITAL BUDGET (CB) AND
CAPITAL IMPROVEMENT PROGRAM (CIP)**

Jurisdiction Type	Frequency	Percent with CB	Percent with CIP
County	55	30.9%	40.0%
City	111	29.7	35.8
Population Size	Frequency	Percent with CB	Percent with CIP
Over 50,000	16	56.3%	81.3%
25,000 – 49,999	19	15.8	21.1
10,000 – 24,999	23	43.5	39.1
5,000 – 9,999	32	40.6	56.3
1,000 – 4,999	76	19.4	23.0
Size of Capital Expenditures	Frequency	Percent with CB	Percent with CIP
\$50,000,000 or greater	11	63.6%	72.3%
\$10,000,000 – \$49,999,999	18	55.6	66.8
\$1,000,000 – \$9,999,999	40	42.5	52.5
Less than \$1,000,000	85	21.2	23.5

**Exhibit 4
REASONS TO JUSTIFY PREPARATION OF A CAPITAL BUDGET**

	Always	Often	Sometimes	Rarely	Never
Balance operating budget	47.8	13.0	23.9	8.7	6.5
Guide development of new capital projects	45.8	35.4	12.5	6.3	0.0
Guide maintenance/repair of existing facilities	31.3	39.6	22.9	6.3	0.0
Stimulate economic development	10.9	28.3	37.0	15.2	8.7
Identify essential capital projects	67.3	26.5	6.1	0.0	0.0
Attract new business investments	8.3	20.8	43.8	18.8	8.3
State mandate	21.3	14.9	17.0	17.0	29.0
Local ordinance	23.4	4.3	23.4	19.1	29.8
Obtain federal grants	6.1	14.3	53.1	20.4	6.1
Obtain state grants	6.1	14.3	49.0	26.5	4.1
Achieve equity in debt financing	17.0	21.3	25.5	23.4	12.8

ditures from operating expenditures to balance the operating budget, identify essential capital projects, systematically develop new capital projects, or achieve equity in debt financing. Other reasons that may necessitate use of a separate capital budget are to comply with state requirements, obtain intergovernmental grants for capital improvements, and/or to attract new businesses to enhance economic development in the community.

Municipal officials were asked to indicate on a five-point scale the reasons for using a separate capital budget. According to the results, the need to “identify essential capital projects” greatly influenced the decision to use a separate capital budget in most jurisdictions. Specifically, 93 percent of the respondents said their municipalities always or often take into consideration the identification of essential capital projects in deciding to use a separate

capital budget. The second and third most frequently cited reasons by municipalities for adoption of a separate capital budget system are that it serves as a “guide for development of new capital projects” and “maintenance or repair of existing capital facilities,” respectively. The results also show that a majority of the respondents consider a separate capital budget as a device that helps their jurisdiction maintain constitutionally mandated balanced operating budgets without increasing (or decreasing) their current revenues and expenditures. At least 60 percent of the respondents said their municipalities always or often use a separate capital budget as a strategy to maintain a balanced operating budget. By recording capital investment costs in a capital budget, municipal governments can avoid deficits in their annual operating budgets since capital expenditures are typically repaid by taxpayers who benefit from the services of the assets.

Further, the survey results suggest that local ordinances, state mandates, and intergovernmental grants play only limited roles in deciding to use a separate capital budget. In addition, the survey results do not support a direct link between the use of a capital budget and increased business investments or economic development in majority of the jurisdictions that responded to the survey. A greater percentage of the respondents said they rarely or sometimes take into account attraction of new business investments when reaching the decision to prepare a separate capital budget.

Although financing of long-term projects through debt fosters intergenerational equity in repayment of the debt, 36 percent of the respondents said their jurisdictions either never or rarely take into account achieving debt equity to justify preparation of a separate capital budget. A plausible explanation for this paradox is that smaller jurisdictions typically face statutory debt limitations imposed by the state and thus rely more on the pay-as-you-go approach to pay for a greater portion of their capital investments.

Capital Financing Methods

To cope with the financial constraints of capital improvements, municipalities have diversified their methods of capital financing during the past three decades. Today municipal governments employ a variety of alternative methods of financing to pay for their capital investments. The alternative financing methods are broadly categorized as “traditional” and “non-traditional.” The traditional methods of capital financing are generally associated with the municipal bond market and include general obligation bonds, revenue bonds, special assessment bonds, and tax increment bonds. Other traditional financing methods are lease-purchase agreements, current revenues backed by general sales taxes, user fees, income taxes, impact fees, and user fees.

The non-traditional capital financing methods used by municipalities include creative bond approaches such as zero-coupon bonds, variable-rate bonds, and put-option bonds; federal grants; state grants; and public-private approaches such as tax-exempt lease purchases or sales and lease-backs, and privatization. Shortfalls in current revenues coupled with volatility

Exhibit 5
FREQUENCY OF MUNICIPAL USE OF CAPITAL FINANCING METHODS

Financing Method	Very Frequently (%)	Frequently (%)	Occasionally (%)	Rarely (%)	Never (%)
Traditional Methods					
General Obligation Bonds					
backed by property taxes	32.2	17.8	30.8	6.8	12.3
backed by sales taxes	9.8	10.7	22.3	10.7	46.4
Current Revenues					
from general taxes	30.0	36.9	16.9	5.4	10.8
from sales taxes	26.3	20.2	21.2	8.5	23.7
from user fees	14.3	17.0	13.4	13.4	42.0
from impact fees	6.8	6.8	5.8	11.7	68.9
Revenue bonds	9.8	15.4	25.2	18.7	30.1
Lease Purchase agreements	4.9	8.9	24.4	19.5	42.3
Special Revenue bonds	1.7	4.3	19.1	26.1	48.7
Tax increment financing	0.0	1.8	3.6	12.6	82.0
Nontraditional Methods					
Reserve funds	11.3	18.5	37.9	15.3	16.9
Federal grants	9.4	21.6	41.0	15.1	12.0
State grants	8.6	24.5	42.4	12.4	11.5
Zero-coupon bonds	0.9	2.7	3.6	9.9	82.9
Put-option bonds	0.0	1.8	0.9	9.1	88.2
Variable-rate bonds	1.7	11.8	18.5	16.8	51.3

in the municipal bond market in the late 1970s and the 1980s made the non-traditional methods of capital financing attractive to municipal governments.

To determine the degree of utilization of each capital financing method by Tennessee municipal governments, respondents were asked to indicate on a five-point scale the level of frequency their municipalities used each method of capital financing (Exhibit 5). As Exhibit 5 shows, current revenues backed by general taxes and sales taxes are the most frequently used methods of capital financing followed by general obligation bonds backed by property taxes. Approximately 50 percent of the respondents said they used current revenues backed by property taxes on a very frequent or frequent basis.

On the other extreme, tax increment financing, special revenue bonds, and lease purchase agreements are the least popular traditional methods used by municipalities in Tennessee. The survey indicated that more than 82 percent of the respondents said their jurisdictions never used tax increment financing, while nearly 75 percent and 62 percent, respectively, said they either never or rarely used special revenues and lease purchase agreements. Among the non-traditional methods, reserve funds, federal grants and state grants are utilized occasionally by a fairly large percentage of municipalities, while put-option bonds and zero-coupon bonds are either never or rarely used to defray

capital costs.

Overall, these findings suggest that municipalities in Tennessee rely on a combination of a few "pay-as-you-go" and "pay-as-you-use" capital financing approaches to finance their capital assets. The most widely used capital financing methods are current revenues backed by property taxes and general obligation bonds backed by general taxes and property taxes. Debt limitations imposed by local statutes or by the state government may explain why current revenues are popular among many Tennessee municipalities. In addition, a majority of the Tennessee municipalities have smaller populations and fewer resources that in some ways constrain their ability to issue or market municipal bonds. The results further show that reserve funds and federal and state grants are fairly popular methods of capital financing.

Capital Budgeting Techniques

Capital budgeting techniques provide decision makers with the financial analysis needed to justify selection of specific capital projects or capital assets among competing alternatives slated for inclusion in the capital budget. These techniques also enhance the ability to arrive at sound investment decisions since they provide the necessary guidance to improve the process of resource allocation. The capital

budgeting techniques range from simple to sophisticated methods. The most commonly prescribed capital budgeting techniques in the public finance literature include net present value (NPV), internal rate of return (IRR), benefit-cost ratio (BCR), payback period (PBP), and accounting rate of return (ARR). Although these techniques are rooted in the corporate world, the use of these methods has increased in the public sector as governments search for more efficient and rational ways to allocate scarce resources.

Respondents were asked to identify the techniques used by their municipality in the capital budgeting process. According to the results (Exhibit 6), a large percentage of municipalities in Tennessee rely on the benefit-cost ratio and the payback period approach when evaluating capital investment decisions. Nearly 63 percent of the municipalities use the benefit-cost ratio, and 62 percent prefer the payback period. The data, however, indicate that the majority of the municipalities do not use the discounted cash-flow methods, notably the net present value and the internal rate of return. Eighty-four percent and 77 percent of the respondents say their municipalities do not use internal rate of return and net present value, respectively. Similarly, the accounting rate of return figured less prominently as a capital investment decision making tool. Only 17 percent of the respondents said that they use the accounting rate of return.

**Exhibit 6
MUNICIPAL USE OF CAPITAL BUDGETING TECHNIQUES**

Technique	Use Techniques		Do Not Use Techniques	
	#	%	#	%
Accounting rate of return	22	17.7%	102	82.3%
Benefit-cost ratio	85	62.5	50	36.5
Internal rate of return	20	16.0	105	84.0
Net present value	27	21.4	98	77.8
Payback period	80	61.5	50	38.5

A plausible explanation for the preference for the benefit-cost ratio and payback period is that both of these techniques are simple, versatile, and flexible to use. In other words, they can be used in conjunction with other qualitative factors that municipal officials deem necessary such as ethical, legal, or political considerations. On the other hand, the lack of popularity for the discounted cash-flow methods may be attributed to their relative complexity and narrow analytical focus on evaluating and ranking capital investment projects. Because the accounting rate of return is used to measure the average rate of return of a specific capital investment, its limited use probably suggests there are few municipal capital assets that warrant evaluation of their financial positions (in

terms of profits and losses).

Although the study limited the inquiry to five capital budgeting techniques, a sizable number of municipal officials who completed the questionnaire noted that their municipality used subjective judgment in making capital investment decisions in light of political considerations that often play a critical role in funding of capital projects.

Summary

This article reports the survey results of capital budgeting practices of Tennessee municipal governments. The survey data indicate that Tennessee local governments apply capital budgeting practices infre-

quently. The use of both a separate capital budget and a capital improvement program are not widespread, especially among municipalities with populations under 50,000 and annual capital expenditures below one million dollars. Among those municipalities using separate capital budgets, respondents cited the need to identify essential capital projects as the most compelling reason for producing a separate capital budget.

When asked how capital assets are financed, the responses varied. However, a greater percentage said that they rely on current revenues generated from general sales tax and general obligation bonds backed by property taxes to finance their capital facilities needs. Concerning the use of capital budgeting decision techniques, the results suggest that most municipalities use simple and versatile approaches such as cost-benefit ratio and payback-period analysis, whereas the sophisticated discounted cash-flow techniques (i.e., net present value and internal rate of return) have limited appeal. □

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