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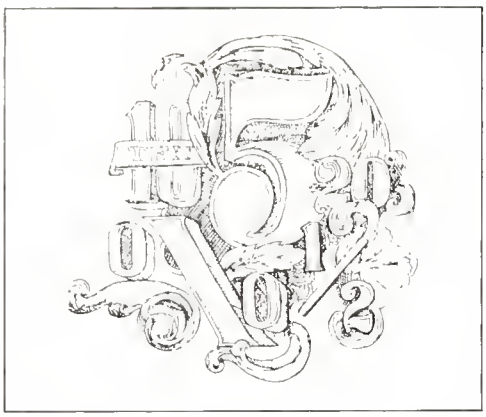

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New Approaches to Budgeting: Are They Worth the Cost?

Malchus L. Watlington and Susan G. Dankel

Picture the manager or finance director of a small- or medium-sized local government. His calendar is filled with notations for meetings, deadlines for budgets and grant applications, and a "things to do" list that might include inspecting the new sewage outfall, preparing specifications for a new garbage packer, and providing a council agenda.

Then imagine the manager's frustration when a newly elected official suggests that the cure for all local ills is the magic of zero-base budgeting. The suggestion could just as well have been program budgeting, performance auditing, management by objectives, program evaluation, or any of the other techniques in vogue in "modern" management.

When this manager or finance director reads about new budget approaches to see whether they can be useful, he gets even more discouraged. Most case studies in this area deal with financing in large cities with sizable staffs and high-priced consultants. Also, most new budgeting approaches seem to require complicated computer systems and years of staff training.

This article is written for the perplexed fellow described above. First, it provides an overview of the new budgeting approaches and describes several management techniques related to budgeting. Then it summarizes three years of experience with a new budget system in a medium-sized city — Wilmington, North Carolina.

Part I. New budgeting approaches

Management and budgeting literature abounds with descriptions of different budget systems and approaches. The overview that follows tries only to define the essentials of the most important of these approaches to show the similarities and differences, and to discuss the pros and cons of each.

Performance budgeting

The basic element of performance budgeting is defining the amount of work to be achieved for the amount of money spent. This involves a shift in emphasis from line-item budgeting, which is detailed listing of items (salaries, supplies, equipment, etc.) for which expenditures are made. Performance budgeting organizes the budget by departmental activity, e.g., street repair or water treatment, and develops and presents performance or workload measures for these activities. Line-item or cost information is also present. It is also organized by activity and accompanies the performance information. For example, a sanitation department requests funds for residential refuse collection. The budget would include performance indicators, such as number of households to be serviced per week and number of cubic yards to be collected per crew, and also estimated cost per work unit, such as the cost per cubic yard collected.

Performance budgeting emphasizes efficiency. Unlike the line-item budget, the performance budget quantifies output in relation to input. By specifying the level of work to be done, the governing body contracts with the executive branch, which, in turn, agrees to provide a given level of services for the amount budgeted. The executive may also use the budget as a means of controlling the performance of its personnel by preparing performance reports that designate actual accomplishments and costs. These reports would also list deviations from original budget expectations, thus monitoring agency activities.

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The emphasis on efficiency is the chief advantage of performance budgeting. However, there are several drawbacks to this type of budgeting. *First*, for the budget to be realistic and useful, much preparatory work has to be done. Departmental administrators must accumulate workload data in order to prepare estimates and costs. This requires analyzing existing activities to identify performance and regularly collecting the workload data as well as cost data. *Second*, some governmental operations

Performance budgeting emphasizes efficiency . . . defining the amount of work to be achieved for the amount of money spent.

are not suited to performance measurement. For instance, how would one specify the output of a personnel office in a way analogous to the workload indicators for refuse collection? *Finally*, performance budgeting focuses on activities. It does not consider the purpose of those activities. Thus, the activities become ends in themselves rather than means to accomplish the goals of the local government.

Objectives budgeting, or management by objectives (MBO)

The basic element of this budget is the objective — stating output in terms of goals. Preparing an objectives budget focuses on the relationship between governmental activities and the attainment of certain objectives. Activities are analyzed in terms of effectiveness rather than efficiency of workload as in a performance budget.

An objectives budget outlines the departmental goals and the cost of achieving these goals. For example: "To bring 200 substandard houses into compliance with the minimum housing code during FY-77 at a cost of $125,000." This specifies the objective and the cost, but does not state how to achieve the goal. In contrast, a performance budget might specify the number of houses to be inspected per day or the number of inspections to be made per house. Performance indicators may be included in an objectives budget, but only as an indication of activities required to meet the goal.

The emphasis in the objectives budget is its concern with service effectiveness. Its purpose is to enable the governing body to hold the executive branch accountable for results, thus adding effectiveness to fiscal control and efficiency. In the hands of a skillful manager, the objectives budget offers a framework for managing the organization. Departmental and employee performance may be judged in terms of results (output) rather than in terms of how busy the employee appears (input).

The limitation in using objectives budgeting must also be acknowledged. The heart of this budgeting process is goal-setting, often a difficult task for a governmental unit. Usually consensus on the purpose of services is stated in broad terms. For example, the objective of "providing an adequate supply of pure water" has the ring of "motherhood and apple pie" and few people would disagree. However, without further elaboration, local decision-makers cannot know whether the water funds requested are justified. Also, concern with input versus concern with output is likely to cause tension in objectives budgeting. How much legislative and management control over inputs or line-items is appropriate? How much leeway in line-item transfer is allowable to department officials if program objectives are specific and results are satisfactory?

Zero-base budgeting (ZBB)

Zero-base budgeting involves preparing and ranking decision packages. A decision package consists of a specific function, such as refuse collection or police patrol, and several methods of performing that function including the present method (if applicable). One of these methods is then recommended and analyzed further.

The program manager also specifies various levels of performance for the package and identifies costs for these levels, usually from 70 or 80 per cent up to approximately 130 per cent of the present performance and funding level.

The completed decision package is passed from the operating manager to a higher level, perhaps a department head. All of the decision packages are then assembled and assigned a priority or ranking. The ranked packages are then sent on to the manager and the governing body, where the final ranking occurs. In theory each package is arrayed against all the others at this top level, and the funding within a package for an existing service can be cut back or eliminated in order to fund a higher-ranked package for a new service or to expand an existing service.

The emphasis in the objectives budget is its concern with service effectiveness.

Preparing a ZBB depends on information of the types described above for both performance and objectives budgeting. Once an objective is specified for a given function, various means of reaching it can be considered. Then, performance and cost data are used to determine levels of effort. Considering alternative means for achieving objectives and various performance levels for one alternative is the

strength of ZBB. This strength is contrasted with "incremental budgeting," in which attention is focused only on requests for additional funds.

(Zero-base budgeting) . . . essentially begins at the lowest management level, and the greatest benefit may be realized there.

There are drawbacks to ZBB in a large organization in which hundreds of decision packages must be ranked at the top level. Evaluating and ranking dissimilar functions is difficult and may result in arbitrary decisions. Sheer volume may force top-level attention to requests for new programs or for additional funds for existing programs, thus causing a lapse into incremental budgeting. This budgeting process essentially begins at the lowest management level, and the greatest benefit may be realized there. Preparing decision packages forces operational managers to seek alternatives, to consider effects of cost reductions, and to develop performance measures.

Program budgeting (PPBS)

When fully implemented, program budgeting involves an entire planning and management system, as indicated by the phrase planning-programming budget system (PPBS). Elements of the three budgeting procedures discussed above are incorporated in this system, but the emphasis is on systematic planning and on assuming a multiyear perspective. The basic elements of PPBS are as follows:

(1) Activities of various agencies or subunits of a governmental unit are analyzed according to objectives, considering the goals of the entire unit.

(2) Activities and functions that relate to a similar objective or set of objectives are grouped into a single program structure, rather than by customary organizational or fiscal structures. For example, all of the activities that a unit undertakes in the area of traffic safety would form one program structure, even though this grouping might include activities carried out by the police, planning, and engineering departments.

(3) Financial and output information is developed within the framework of the program structure. The emphasis is not on performance measurement, although this may be included, but on planning and analysis of expected impacts of various programs. Program budgeting employs formal analytic tools, such as cost/benefit analysis, to determine the best methods of achieving goals.

(4) Developing a program budget includes a multiyear program, usually five to eight years, and a financial plan. This multiyear plan displays program costs and indicators of output for each year of the plan. It integrates capital costs with program-operating costs. When the budget is prepared each year, the approved multiyear plan from the preceding year serves as the base against which new program proposals are considered.

PPBS has several advantages for local governmental units. As in the simpler objectives budget, the emphasis is on classifying activities in terms of objectives; however, PPBS goes beyond MBO in extending objectives across departmental lines to include all activities with similar objectives. This permits a better understanding of the role of each activity in meeting governmental objectives and emphasizes long-range planning, which is the basis of PPBS. Costs and benefits are considered not only for the coming year but also over the life of the program. In order to provide this information, administrative staff members must make formal analytic studies that evaluate alternatives over several years.

The difficulties with PPBS are directly related to its strengths. Program analysis has been called the greatest asset of program budgeting, but preparing these studies requires a large staff of analysts with access to data-processing facilities. Most local governmental units do not have such resources and so must settle for more limited analysis. Also, creating program structures that cross departmental lines poses serious difficulties in recording costs and performance. Most governmental units are not equipped to document cost or performance apart from the traditional account, department, and fund categories. Finally, as with MBO, there is the problem of identifying objectives for a governmental unit. Statements of objectives that appear to restrict or limit the options of a governing board may be unpopular, but statements that receive easy agreement may be too general to be of use.

Related practices

Various other management techniques are not budgeting methods per se but support the budgeting innovations we have discussed. Three such practices, together with their relation to budgeting, are discussed below.

Productivity and efficiency studies. Studies of government operations often reveal ways to reduce costs and/or improve services. These studies are natural allies with performance budgeting, which emphasizes maximizing efficiency. Applicable techniques include work measurement studies, sophisticated analyses that use operations research, and simple reviews of current procedures using

"common sense." Information on productivity improvements in a variety of municipal operations is now available from the International City Management Association and the National Center for Productivity and Quality of Working Life. Also, the North Carolina Local Government Commission is preparing a guide for "performance audits," which includes auditing for both fiscal compliance and efficiency.

Monitoring and evaluation. Most of the budgeting innovations we have discussed so far require information on the quantity, quality, and impact of governmental services. The shift in emphasis from input to output requires systems to measure and assess that output. In addition, federal grants, such as HUD's Community Development block grants, require monitoring and annual reporting on performance. Many large governmental units are establishing evaluation functions closely linked to management, planning, and budgeting. The City of Wilmington now has an Office of Evaluation that both analyzes city programs for efficiency, effectiveness, and impact and monitors compliance with federal requirements.

Citizen participation. A current "buzz word" in municipal government is citizen participation. Public hearings, advisory committees, and citizen surveys are some of the devices by which governments seek the advice, response, and requests of the populace. A budgeting process that emphasizes output provides a means by which both citizens and their representatives can more readily relate services received to dollars expended. This makes government more open to scrutiny and invites public comment on government operations by creating both the atmosphere and the method for public participation. The City of Wilmington seeks citizen input throughout the year through the Community Development Committee (CDC), composed of seventeen representatives elected, one each, from the city's neighborhood assemblies.

VARIOUS ELEMENTS of these new approaches have been used in the budgeting processes recently developed in Wilmington, a city of approximately 51,000 people. Some phases worked well; others did not. The details of Wilmington's progress and problems in financial planning over the last three years are described below.

Part II. Wilmington's new budget process

The pages that follow chronicle the ups and downs of Wilmington's efforts over the past four years to change its budgeting practices in order to assure that municipal funds were being spent to service functions that were most needed. This is a story of both success and failure. We hope that it will be helpful to any other local government officials who may be contemplating a change in budgeting techniques.

Background

In 1973, when the story begins, Wilmington's budget process was in excellent shape from an accounting standpoint. A new computer made it possible to have a central file for all budget expenditures and revenues except for capital projects and special services.

At this point a new city manager arrived who was not satisfied with continuing services simply because they existed; he wanted to verify needs. On the basis of an organizational development study prepared by a consultant, the manager gained the city council's permission to advertise for an assistant city manager to work in budgeting and operations. The major justification for seeking this person was the need to develop a new budget process that would: (1) facilitate organizational change; (2) evaluate current services; and (3) determine the extent of unmet service needs. The new manager was also interested in discovering which segments of the population were not receiving the services.

The operating departments were divided in their reaction to this move: Some department and division heads supported the manager's move; others had misgivings because the new approach did not follow traditional lines.

This latter attitude toward change was apparent when the new budgeting process was introduced. Even the staff departments were uncertain about the new assistant manager's role and their own in the proposed budgeting process. In previous years a budget team composed of the personnel and purchasing director, the finance director, and the manager had made most of the decisions concerning the city budget. That year the manager replaced himself on the team with the assistant manager during the first review of requests, an action that made many staff members wonder who would make the final budget decisions. The manager's explicit delegation of the budget-review function later that year cleared the air, allowing the new budget team to develop a cooperative and clearly defined working relationship before the 1975-76 budget was prepared.

The city council's attitude when the change in the budget process began (November 1974) was also mixed. Some council members wanted a more un-

derstandable, council-directed budget process. Also, the entire council took a dim view of having to wait until June to become involved in the budget process, then having only thirty days to decide on questions that would affect the city's work program for the whole next year. Furthermore, some council members saw their role as being reactive rather than active and preferred merely to review the budget after it had been presented by the manager.

The public was apathetic. If no major tax increases were proposed and the city manager's staff was not to be enlarged, the public generally had no complaints with the city budget. However, by 1974, the CDC's (Community Development Committee) efforts at involving citizens in the community development budget process had generated a new interest in the city's budget.

Implementation: a three-year approach

Year One (FY 1975-76): process. The new budget process was introduced to department and division heads at a workshop held at Harbour House, a state-owned property at Wrightsville Beach. In this relaxed atmosphere, away from interruptions and telephone calls, 65 departmental and staff persons were introduced (in some cases reintroduced) to the concept of setting objectives. The process as outlined at that meeting required participants to:

(1) List all the activities performed by their respective divisions or departments;
(2) Group similar or related activities;
(3) State the objectives on which current activities were predicated;
(4) Estimate the degree to which these objectives addressed public or organizational needs;
(5) Discover areas where those objectives did not address perceived needs;
(6) Recognize the extent of the "gaps" in service — that is, where service needs were not being addressed;
(7) Prepare objectives for the new fiscal year that would address either the same level of needs then being addressed or a greater level, thereby closing some of the gaps;
(8) Prepare a work plan for accomplishing the objectives;
(9) Indicate the level of funding required to accomplish each of the activities that strategies were based on.

For the rest of the day the participants prepared and criticized sample objectives. After the workshop, the assistant city manager met with individual departments that were preparing their first set of objectives. The fire department (which had prepared objectives before), the police department, and traffic engineering understood the concepts involved. However, most departments and city-supported agencies had great difficulty in preparing objectives.

The council was also introduced to a new concept in the budgeting process . . . (it) was asked to take a policy decision-making role rather than duplicating the administration's detailed management.

Two consultants conducted a different type of workshop for city council members in January. The council had already been briefed on the outline of the budget process, including the fact that departments were preparing objectives.

The council was also introduced to a new concept in the budgeting process — that they were to be concerned with *what* departments intended to do as well as *how* they were going to do it. In other words, the council was asked to take a policy decision-making role rather than duplicating the administration's detailed management. The council members were receptive to this new role and said that they were prepared for the next step — reviewing and indicating priorities for department objectives.

The first year's ranking process was more complicated than it should have been. First, objectives submitted by city departments and city-supported agencies were divided among five basic service areas: (1) public safety, which included police, fire, traffic engineering, and inspections; (2) management and administrative services, which included the manager's office, finance department, personnel, and purchasing; (3) human services, which included human relations, services for the aging, and the youth council; (4) leisure-time activities, which included parks and recreation and such city-supported agencies as the Azalea Festival Committee, the Fourth of July Committee, and the Arts Council; and (5) environmental services and utilities, which included most public works, such as public utilities, streets, sanitation, and building maintenance.

Working individually, the council members ranked the objectives in each service area. Each objective received a numerical rating score, with "1" being the highest and the figure that represented the number of objectives in each service area being the lowest (for example, if there were 32 objectives within a service area, the council members would rank the objectives in that area from 1 through 32). After ranking objectives in each service area, each council member picked a "top 25" list of objectives from all service areas. The administration prepared

cumulative scores for each objective, and the council resolved ranking differences so that the administration could use the objective scores in making funding recommendations in the departmental budget hearings.

In February, the administration held a public hearing for comment on the objectives and rankings. The hearing drew a crowd of over 300, but poor visual aids and inadequate prior explanation of the meeting's purpose hampered its effectiveness, and it degenerated into a "gripe session" about city government spending.

After the hearing, the council reconsidered the ranking of objectives at three work sessions. As might have been expected, the council gave high rankings to objectives proposing necessities and low rankings to those items not considered to be essential to the basic services provided by city government.

The Community Development Committee, which ranked objectives in parallel with the council, agreed on many priority items but disagreed on recreation.

The original product of the council work sessions was consensus on 27 top objectives and a general guideline that the overall level of expenditures for the city be held to the current year's level.

The administration returned the ranked objectives to the departments to use in preparing line-item budgets and instructed the departments to designate specific funding in line with the council's ranking. For the first time during informal review sessions, the budget-review team had a basis for accepting or rejecting budget requests other than conflicting opinions of economy versus need, and a budget was prepared that closely reflected council consensus.

The budget was reviewed by the city council in June and the final round of public hearings was smooth, though the administration failed to sell council on a general cost-of-living salary increase for city employees. The council adopted the budget with relatively few revisions and, with a few exceptions, used the objectives rather than the line-item budget for reference.

Year One: progress. The first year of objectives budgeting was not without its small successes: namely, the council's involvement early in the budgeting process and its growing familiarity with the operation of city government.

City departments learned how to prepare basic objectives, but experienced only small gains through the first year's process. However, those departments that prepared objectives well found favorable council reception, with less "nitpicking" than in previous years' hearings. The public, except for the Community Development Committee, did not appear to have a great appreciation for the change in the budget process. However, a few interested groups from the Chamber of Commerce and other civic organizations remarked that the new process was easier to use and understand than previous budgets.

Year One: problems. Perhaps the greatest problem during this process was that the city opened itself up for public criticism. The public was astounded that everyday services could be considered objectives. Some objectives promised low results, which did not impress critics. Also, the technical language of other objectives somewhat confused both the council and the public. Therefore, the public tended to be suspicious.

Departments and divisions gave programs a more exacting review the second year.

Furthermore, the confusion surrounding the ranking process caused an internal problem. Every effort was made to find a method for ranking that did not give unfair advantage to departments that submitted more objectives than others. However, the council's limited time for ranking objectives and its limited understanding of the importance of some objectives tended to favor those departments that listed the most objectives. Many departmental personnel felt that the objectives budget was anything but "objective." Finally, the sheer volume of objectives submitted by departments and agencies (173) made the ranking process hard to understand and monitor.

Year Two (FY 1976-77): process. The first objectives budget process was assessed thoroughly by interviewing department and divisional heads; as a result, the second year's objective process was simplified and redirected.

During the first year, it was difficult for a department to see the extent of community or organizational needs that it was addressing. Department and divisional personnel made unstated assumptions about existing needs, since there was not time enough to get a reaction from residents on this subject. Then the council examined the objective for thoroughness and the need for the service.

Departments and divisions gave programs a more exacting review the second year. This resulted in more coherent, measurable, and meaningful objectives. A good example of a measurable objective is one used by public works' sanitation division: ". . . [t]hat refuse is allowed to accumulate no more than

four days at any location in the corporate limits of the city."

Council members injected their values into the objective-setting process during the second year because a new process — rating objectives — was substituted for ranking objectives. In a rating process objectives are considered individually rather than in comparison with all other objectives. In Wilmington's second-year rating process, the council determined (1) appropriateness of an objective and (2) whether the objective would meet the stated need on the basis of their belief (or disbelief) in the validity of the need assumption that accompanied the objective and then rated the objective. The four ratings that an objective could be given were: I = increased funding; M = maintenance of funding at the current level; R = reduced funding; and A = indicating that the objective should be eliminated from consideration.

Because the rating system entailed decisions on individual objectives rather than decisions that required comparing different objectives, the council could complete the rating process much more quickly than with the ranking process of the previous year.

The needs assumptions and objectives for 1976-77 were published in all three local newspapers. Copies of this ad were used as the agenda for the public hearing on the budget. Attendance at the hearing was lower (less than 100) than in the previous year, but discussion of budget objectives was much more to the point than before.

Very late into the budget process (April) the administration discovered that a considerable revenue shortfall would occur in 1976-77 because the continuance of federal revenue-sharing was uncertain and because there was considerably less surplus available for appropriation than in previous years. The council and the administration agreed on a major reduction of personnel and budgets. Therefore, during the informal hearings, each department was asked to prepare an "A" level budget that was basically 10 per cent less than its level of funding for the 1975-76 fiscal year.

The major problem encountered in preparing an "A" budget was reducing the number of municipal employees. Civil service guidelines complicated reductions in the police and fire departments. However, departments proceeded on the basis of making those cuts that would have the least effect on their service programs in the coming year. Over seventy positions were eliminated a few days before the budget was presented. The personnel reductions, which affected supervisory and management personnel as well as line personnel in all departments and divisions, caused a tremendous public uproar during the June hearings. The council held its ground during the budget hearings, however, and the layoffs were sustained.

Year Two: progress. Any evidence of progress made during the second year of the budget process was obscured by the last-minute personnel reductions. However, the departments presented measurable objectives of a higher caliber than those presented in the first year. Another notable gain was in the council's understanding of the process. The council was concerned with results, and decisions on reduction of positions were preceded by its questioning of department heads: "What difference will the loss of this position mean in terms of your stated objectives?" or "How will one position, more or less, in this area affect your output?"

Year Two: problems. The major problems in preparing this second objectives budget came in making personnel reductions. Many departments felt that they had been betrayed since the departments were not all reduced equally. One incident in particular, the manager's insistence that a new department (Office of Evaluation) be established despite city-wide layoffs, generated a strong negative reaction. Departments felt that they could get high ratings on objectives but might not be funded sufficiently to accomplish their objectives. Many wondered if the departments were ever going to realize "payoffs" from the new budgeting process.

Year Three (FY 1977-78): process. Preparation for the third year's objectives budget began before the 1976-77 fiscal year began. The city had employed a consultant to do a series of leadership training workshops, and department and division heads and staff members discussed problems of the new budget process openly and heatedly during the time. Major problems were: the lack of overall goals on which annual objectives could be based; a feeling that the professional competence of department and division heads was questioned during the informal hearings; the perception that the manager's office was actively restricting departmental interchange with the city council on matters of concern; the fact that departments had no interchange with each other concerning budget requests; and the generally voiced sentiment that the payoffs of the new budget process had not been as great as originally represented to departments.

After the workshops, the administration began to change elements of the budget process in order to address problems that the administration and departments had identified.

The first efforts in the new budget process came

in August with the formation of a planning-budget team composed of the assistant city manager, the assistant director of planning (long-range planner), a community development planner, and the cost/benefit analyst of the Office of Evaluation. The team prepared a detailed design for a planning process using a five-year capital and operating budget and an overall statement of the city's mission.

The biggest gain made during the 1977-78 budget preparation process was in demonstrating that the administration was working with departments rather than against them in their budget requests.

When this plan was presented to department heads at a staff meeting, it was criticized for being (1) too complex, (2) too time-consuming, and (3) unrealistic in terms of expected results during the time allotted. After much consultation, the design team agreed that the time allowed would not permit preparing a five-year budget, and the task force decided to delay the project for one year.

Objectives for 1977-78 were prepared at three alternative funding levels: an increase of 10 per cent over current year's funding ("C" level); maintenance of expenditures for the function at exactly the same level as in the current year with no increase for inflation ("B" level); and a reduction in funding of approximately 10 per cent under the current year's allocation ("A" level). For each funding level a different result was projected in the form of an objective. Departments were also asked to state the consequences of not funding each of the projected levels.

The presentation of variable service-level objectives (i.e., objectives that could be funded at more than one level, each level yielding a different result) was a concept borrowed from the decision-package process of zero-base budgeting. From the format, the council knew the cost involved and could choose the desired level of service for a particular department.

Although many departments felt overworked in having to prepare three objectives rather than one for each requested program, the council made good use of the information. After ranking the objectives individually, the council met in three separate half-day sessions. At these sessions council members reached consensus on objectives for which there was no clear choice.

The council found the new rating method simple and direct. Each objective was judged on its own merits, and the council had an early opportunity to note the consequences that would be entailed in reducing or increasing funding for any separate objective.

Before informal administrative hearings on budget requests, all department and division heads met. In this way, the manager's office, personnel and purchasing, human relations, finance department, and planning, among others, received direct input from the operating departments on the level of funding each would need. One request common to all operating departments was for support from data processing. At the same time, staff departments could spell out their expectations of operating departments. For example, the city manager's office said that it expected operating departments to participate in a five-year capital and operating budget process in the coming year. This meeting proved to be a high point of the budget process: the interchange was open and energetic, and many ideas surfaced that promoted understanding between departments.

Many operating departments felt that they had not been fairly treated during informal administrative hearings in the years before objectives-budgeting. The ill-feelings generated by these hearings usually resulted because staff and operating departments had conflicting evidence about justification of proposed budget expenditures. To counteract this staff/operating polarity, an "impartial" observer from a department other than personnel, finance, or the manager's office was present at each hearing.

The observer helped to clear the air when disputes arose and acted as advocate for a department's budget or staff, depending upon his view of the situation. One result of using an observer was that there was less bickering. Having an additional person also tended to reduce hyperbole in justifying requests, particularly travel and training expenditures, that deviated from established budget limits.

The primary guideline for the informal budget hearings was the alternative funding and service level chosen by the council for each objective. As in previous years some departments openly objected to the council ratings (the primary guidelines for the hearings), stating that their particular projects or programs had not been properly reviewed. However, the council's rating sheets gave the administration a reasonable rationale for making decisions on almost all budget questions raised in the informal hearings.

The third-year budget was presented to the council at the end of May 1977 and passed without controversy in June. During the hearings, the council used the objectives budget exclusively. It made no requests for copies of the line-item budget or the personnel budget except to resolve one or two per-

sonnel matters, indicating that the council has come to trust the objectives budget for decision-making. The council reacted positively to the budget largely because it contained few surprises and reflected the guidelines that had been set earlier in the year. This reaction was reinforced, no doubt, by the fact that no tax increase had been projected.

Year Three: progress. The biggest gain made during the 1977-78 budget preparation process was in demonstrating that the administration was working *with* departments rather than against them in their budget requests. The session in which staff departments and operating departments met to exchange views was an asset in the process.

Council members have said that the process simplifies budget decision-making by alerting them to policy implications and budget choices early in the year.

The payoffs for management also increased this year. The administration feels that departments are preparing objectives that clearly reflect service output levels for 1977-78. Intensive monitoring of progress on these objectives should tell us a great deal about the efficiency and effectiveness of departmental operations.

The objectives also give the administration a way to ask department heads questions about the continued existence of certain traditional departmental functions. Had this type of question been asked before we adopted objectives budgeting, it would have generated defensive behavior. However, the objective-setting process has encouraged many departments to question themselves and, in some cases, to reduce services that were once thought to be absolutely vital.

Finally, the council has grown to appreciate and rely on the objective-setting process as a means for putting together a budget. For the most part, council members have said that the process simplifies budget decision-making by alerting them to policy implications and budget choices early in the year.

Year Three: problems. One problem that continues to reduce the effectiveness of the budget process is that objectives are not, except in limited cases, used by city departments for managing their operations. Many departments still view the objective-setting process as a "hoop" they must jump through before budgets are prepared. Administrative sections have had difficulty preparing objectives, and this tends to undermine the process with the operating sections. The latter, therefore, do not feel high-level management commitment and put a minimum effort into preparing objectives for the budget.

A second group of problems in the budgeting process is that the allocation of funds for achieving objectives still parallels the traditional line-item budget, which allocates funds by department. From the point of view of the operating department, it appears that the administration is speaking out of both sides of its mouth, emphasizing output in objectives budgeting and yet still quibbling over input in line-items. However, from the administration viewpoint, failure to maintain a parallel system would entail a loss of management information because only rarely do departments assign actual expenditures to objectives throughout the year. The data-processing section of the finance department has several needs that must be addressed before an objectives cost-accounting system can be prepared. However, such a system must be developed if departments are to be held accountable for achieving objectives within given costs.

An often-raised question in critical discussions on the budget process is: "Is it really worth the time and effort that has been spent?" This question can be answered affirmatively in the coming year only if the amount of time devoted to preparing objectives is reduced drastically from time spent this year. If, after several years of practice, departments cannot cut the time required to prepare objectives for traditional, ongoing services, there is a serious problem in the budgeting method.

A problem that continues to plague the Wilmington council and the administration is that there is little public involvement in the budget process. The administration tried to encourage attendance at a public hearing on the budget in 1977-78 by advertising the meeting as "The $16,000,000 Questions." A week before the meeting, local newspapers published a list of ten issues developed during the previous month by the administration, citizen representatives of the Community Development Committee, community development staff, and a member of the council.

A problem that still plagues the Wilmington council and the administration is that there is little public involvement in the budget process.

The meeting was to have a "questions and answers" format with a dialogue between citizens and council members. But only 50 or 60 citizens other than city employees showed up. Those who came, however, said that they liked the meeting and asked for more.

Many things — including lack of publicity, conflicting meetings, and poor media coverage — were blamed for the poor turnout. However, the main rea-

son is probably one common to most communities — citizens are not interested in budgets until the tax bills come or until a service near and dear to them is cut. The administration is currently working with the citizen-participation staff of the Community Development Committee to see whether people can be brought to realize, before the budget is adopted, that their lives are affected by budget decisions.

Conclusions

The Wilmington budget system was designed to meet the needs of one city and is not wed to any one of the new budget approaches. Rather, it is a hybrid of many systems and techniques.

In summary, the Wilmington budget uses the following elements:

1. *Objective-setting*, borrowed from management by objectives (MBO), zero-base budgeting (ZBB), and program budgeting (PPBS);
2. *Decision packages*, showing three or more levels of achievement, each with expenditures estimated, borrowed from ZBB;
3. *Functional service areas*, placing all divisions and agencies into five basic groups, regardless of departmental lines, as in PPBS;
4. *Allocation of costs to individual program objectives*, as in PPBS;
5. *Performance monitoring*, as required in performance budgeting;
6. *Evaluation and impact studies*, as needed in objectives budgeting;
7. *Departmental allocation of costs*, retained from line-item budgeting.

Those responsible for developing the budget system considered, but decided against, using:

1. *Decision-package ranking*, as recommended in ZBB. Ranking objectives proved to be a nightmare in Year One (see p. 5).This aspect of ZBB, although it has the advantage of involving all levels of the bureaucracy in ranking programs, is a paperwork-generator beyond comprehension. (See Robert Anthony's article listed in the references.)
2. *Formal program structures.* Apart from a genuine reorganization of city government along functional lines, separate program structures were not established.
3. *Presentations of alternative decision packages* found in ZBB.This approach is too complicated. It might be applicable after departments are thoroughly comfortable with variable-level objectives.
4. *Workload indicators*, as recommended in performance budgeting (e.g., disposal of 20,000 tons of refuse annually). These are not shown in the formal budget document, but are being used by departments that do efficiency studies.

IN SUMMARY, Wilmington does not have a static budgeting system. The process is still undergoing development. It has been, and continues to be, a proving ground for new techniques and concepts, which change as the organization changes and grows. The results in Wilmington have been mixed, and this report has tried to be realistic about both progress and problems associated with implementing the new budget system. For those who remain undiscouraged and contemplate a change in their city or county budget system, a feasibility checklist and a short list of references follow.

CHECKLIST FOR DETERMINING THE FEASIBILITY OF IMPLEMENTING A NEW BUDGET SYSTEM

1. Does the governing body support the changes?
   Reasoning: If not, questions about the legitimacy of the project will prove damaging from the start.
2. Has someone been designated to guide the implementation process, even if this means contributing a key staff person to the project?
   Reasoning: For the project to move at a reasonable pace, someone has to view its success as his first priority objective.
3. Are there at least one or two departments that would welcome and support a change in the existing budget system (and would encourage you when the going gets rough)?
   Reasoning: Some small early successes are extremely important, both to influence those who are skeptical of the change and to encourage those involved in it. Receptive departments will try to make the process work, a factor critical to success.
4. Do you now have a sound, centralized line-item budget process in which all departments participate?
   Reasoning: A new budget process needs to have a sound foundation. The best foundation is a pre-existing budget system, uniformly applied in the organization, that is sound from an accounting standpoint.
5. Are you willing to devote at least three years for conversion to the process, without expecting earth-shaking results?
   Reasoning: In the first few years, results will be largely cosmetic; but as the organization grows more comfortable with the system and begins to

(continued on p. 45)

Operating Revenues of North Carolina Municipal Governments:

Overview and Comparison of Electric and Nonelectric Cities

A. John Vogt

Editor's Note: This issue of *Popular Government* contains two articles on the operating revenues of North Carolina municipal governments. This article examines the relative importance of different sources of operating revenue for North Carolina municipalities. The article on page 21 considers the effect of municipal size on revenues and the revenue distributions of the municipalities studied. Both articles were written by A. John Vogt, an Institute faculty member whose special field is public finance. Loris Colcough, deputy comptroller of the City of Durham, helped plan the study for this article. Dale H. Ralston, formerly a research assistant at the Institute of Government and now assistant town manager in Garner, North Carolina, helped collect data.

This article examines the relative importance of different sources of "operating revenue" for North Carolina municipalities. Operating revenue refers to revenue that recurs each year or is available to fund current expenditures. The property tax and the local-option sales tax are operating revenues that recur each year with the available amount stable, or changing at a stable rate, from year to year. Revenues from these sources usually fund current expenditures or annually recurring capital outlays, but some may occasionally be allocated to major capital projects. Operating revenue also includes federal and state grants that are available to finance current expenditures. Such grants seldom recur annually but because they are for current rather than capital expenditures, this study counts them as operating revenue. Federal and state grants received for capital projects and bond and note proceeds are not regarded as operating revenue here.

This article also distinguishes between municipalities that own electric and gas distribution systems ("electric cities")[1] and those that do not ("nonelectric cities") and compares the distribution of operating revenue by source for these two types of municipalities. Operating receipts exceed costs (including operating expenses, interest on electric-system debt, and depreciation) for all or nearly all municipal electric utilities in North Carolina, and the intent here is to look at the magnitude of electric-system net receipts in relation to other municipal operating revenue sources and consider the effects of such receipts on the other sources.

Finally, the article considers how much variation there is among North Carolina municipalities on specific operating revenue sources.

Based on a study of revenue sources for sixty-two North Carolina municipalities, the data used in this article were taken from the annual audit reports, fiscal year 1974-75, of these municipalities.

Municipalities studied

The sixty-two cities were selected randomly within seven population classes for the study. Table 1 shows these cities, together with all North Carolina municipalities from which the sample was drawn, by population class and type of municipality.[2]

The municipalities were selected by population class to assure that municipalities of different sizes, particularly cities above 10,000 in population, would be included in the sample. Because North Carolina has only 41 municipalities with over 10,000 people, if the sample had been selected completely at random, probably not enough of the larger municipalities would have been con-

1. All North Carolina cities that have municipal gas systems also operate their own electric systems. Thus each of them is both an electric city and a gas city. For simplicity's sake, however, all cities with an electric and gas system are called simply electric cities in this article.

2. The municipal population data used in the study are estimates of 1974 average permanent resident population prepared by the Office of State Planning, North Carolina Department of Administration, September 12, 1975.

sidered. The study therefore includes all North Carolina cities above 100,000 in population; all cities from 50,000 to 99,999; about half the cities between 10,000 to 49,999; and only about 10 per cent of those with 500 to 9,999 people. (It totally excluded municipalities with fewer than 500 people in order to hold down the sample size.) This article will therefore more strongly reflect the revenue experiences of the medium-sized to larger municipalities than those of the smaller ones. Municipalities were also selected by population class to permit a comparison of the distribution of revenues by source for municipalities of different size (which the next article does).

Electric and nonelectric municipalities have about the same ratio in the samples as they do among all North Carolina municipalities above 500 in population. This is true for each population class as well as for the sample as a whole.

Table 2 lists the individual municipalities by population class and from high to low population within each class.

Table 1

North Carolina Electric and Nonelectric Municipalities[1] by Population Class

Population Class[2]	All Municipalities		Nonelectric Municipalities		Electric Municipalities	
	State	Sample	State	Sample	State	Sample
100,000 or more	5	5	5	5	0	0
50,000-99,000	5	5	2	2	3	3
25,000-49,000	8	4	4	2	4	2
10,000-24,999	23	13	12	7	11	6
2,500-9,999	91	13	64	10	27	3
1,000-2,499	105	11	91	9	14	2
500-999	108	11	99	10	9	1
Total	345	62	277	45	68	17

1. Inactive municipalities are not included.

2. These population classes follow the U.S. Census division of municipalities by population. The 2,500-9,999 class combines two census groups, i.e., 2,500-4,999 and 5,000-9,999. The North Carolina Local Government Commission also uses the combined 2,500-9,999 in its "Cash Investments and Tax Collections" report.

Sources of operating revenue

The different sources of operating revenue identified and used in the study are listed below. State-shared revenues and miscellaneous revenue and charges are each subdivided into specific revenue sources.

Property taxes. These are taxes on real and tangible personal property.[3] Most of the revenue from this source is from current-year property taxes. Also included are property taxes levied in prior years but collected in 1974-75, penalties and interest on property taxes, and payments in lieu of property taxes made by public authorities and other organizations.

State-shared revenues. These are taxes and revenues collected by the state and shared with local units. They include the:

Local-option sales tax.[4] This is a 1 per cent tax levied by the county on the sale of items subject to the state's 3 per cent sales tax. The state collects the tax and returns the proceeds quarterly to the local units in those counties that impose it.

Intangibles tax.[5] This tax is levied by the state on money on deposit in banks and insurance companies, accounts receivable in excess of accounts payable, evidences of debt owned minus debt owed, stocks, and beneficial interests in foreign trusts. Proceeds from the intangibles tax less collection costs are returned to localities once a year after the close of the fiscal year.

Franchise tax.[6] This is a 6 per cent tax levied by the state on the gross receipts of electric power and light, gas, freight transportation, and telephone companies. Half the franchise tax revenue resulting from the sales by these companies in each municipality is shared with the municipality. The distribution is made quarterly.

Beer and wine taxes.[7] The state levies excise taxes on beer and unfortified wine and distributes almost half the proceeds to local units that authorize the sale of beer and wine in their jurisdictions. The distribution is made once a year about November 30.

Gasoline tax.[8] The state distributes an amount equal to 1 cent of the state's 9-cent gasoline tax to municipalities on or before October 1 each year.

Other state aid and grants. Other than shared revenues, per se, the state makes some grants and aid available to municipalities for specific operating purposes. They are counted here.

Water-sewer system gross receipts. These result from charges for municipal water and for use of a municipality's sewer system, plus fees for water or sewer tap-ons and other minor water-sewer system service fees.[9] Water-sewer system receipts are shown on a gross basis; the charges reflect total receipts with no deductions made for operating or other expenses. Gross receipts are used to show the total magnitude of water-sewer system revenues in relation to other revenue sources. Moreover, many municipal water-sewer systems are not self-supporting, and if their receipts were shown on a net basis, the study would show no revenues for them.

Electric/gas net receipts.[10] Seventy-two North Carolina municipalities operate electric utility distribution systems, and seven operate gas dis-

3. N.C. GEN. STAT. § 105-274.

4. This tax is authorized by N.C. GEN. STAT. §§ 105-463 through -474.

5. This tax is authorized by N.C. GEN. STAT. §§ 105-198 through -217.

6. See N.C. GEN STAT. §§ 105-116 and -120.

7. See N.C. GEN. STAT. § 105-113.86.

8. See N.C. GEN. STAT. §§ 136-41.1 and -41.2.

9. Municipalities are authorized to operate water and sewer systems and charge for the services of such systems by N.C. GEN. STAT. §§ 160A-311 through -314.

10. Municipalities are authorized to operate electric and gas utility systems and charge for the services of such systems under N.C. GEN. STAT. §§ 160A-311 through -314.

tribution systems. All of the cities with gas systems also have electric systems. The electric and gas municipalities buy power or gas wholesale from private utility companies (sometimes from other electric cities) and then sell it retail to households and businesses within and sometimes beyond the municipal boundaries. Electric/gas system receipts, unlike water-sewer receipts, are counted on a net basis — that is, deductions are made from gross electric/gas system receipts for operating expenses, interest on electric debt, and depreciation. The principal interest of this study is not to show the total magnitude of electric/gas system revenues but to see how much net revenue these systems yield and how this net revenue compares with general municipal revenue sources. Moreover, all seventeen of the study's municipal electric/gas systems are self-supporting, and counting their revenue on a net basis does not disregard electric/gas system receipts altogether for any of the municipalities.

Federal revenue-sharing. Federal revenue-sharing funds are available to all general-purpose local governmental units and can be spent for any governmental function.[11] Revenues are distributed to local units quarterly. Though many municipalities have chosen to use revenue-sharing for capital purposes, these funds can be used for operating purposes as well; because revenue-sharing is an annually recurring revenue source, it is counted as an operating revenue in this study.

Other federal aid. Unlike federal revenue-sharing, most revenue from this source comes to municipal units on a grant basis. Federal grant moneys available to municipalities for capital projects are not counted in this study. Only such money awarded for operating needs is included here.

Table 2

Municipalities Included in Study
(E = Electric City)

100,000 or more	50,000 — 99,999	25,000 — 49,999	10,000 — 24,999
Charlotte	High Point E	Burlington	Jacksonville
Greensboro	Asheville	Greenville E	Lexington E
Raleigh	Fayetteville E	Goldsboro	New Bern E
Winston-Salem	Wilmington	Kinston E[2]	Shelby E
Durham	Gastonia E[1]		Morganton E
			Lenoir
			Thomasville
2,500 — 9,999	1,000 — 2,499	500 — 999	Elizabeth City E
Tarboro E	Stanley	Banner Elk	Roanoke Rapids
Dunn	Elon College	Aulander	Henderson
Kings Mountain E	Windsor E	Salemburg	Reidsville
Graham	Tryon	Lilesville	Monroe E
Mount Airy	Norwood	Brookford	Sanford
Edenton E	Rose Hill	Lawndale	
Havelock	Snow Hill	Oak City E	
Marion	Pittsboro	Jamesville	
Valdese	Cornelius E	Faith	
Fairmont	Pilot Mountain	Gibson	
Hudson	Lillington	Indian Trail	
Wallace			
Troy			

[1]Gastonia is included in the 50,000 to 99,999 class because its population of 49,630 is very close to 50,000 and far above that for the next largest city — Burlington with 38,570 people.

[2]Kinston is included in the 25,000 to 49,999 class because its population of 24,790 is close to 25,000 and well above that of the next largest city — Hickory with 21,860.

Distributed ABC profits. Many municipalities share in the profits of county ABC stores or operate their own ABC stores. ABC profits equal the gross sales of alcoholic beverages plus miscellaneous income (e.g., investment earnings) minus the purchase cost of the merchandise, operating expenses, state taxes, and rehabilitation and other legally required contributions. Some of these profits are kept by the local ABC boards as working capital, but most are distributed to the counties and municipalities that operate stores.[12]

Investment earnings. Municipalities can deposit at interest or invest all or any part of the cash balance of any fund.[13] Municipalities usually invest in bank or savings and loan passbook accounts and certificates of deposit. Money received from cashing in investments is not counted as investment earnings or as a revenue at all; such money is simply a transfer from one asset account to another. Investment earnings on cash in capital project funds is also not counted as operating revenues.

Miscellaneous revenue and charges. As Table 3 shows, this category consists of many specific revenue sources. They are:

Auto and taxi licenses. This includes revenue for the license taxes that municipalities levy on resident motor vehicles and taxicabs.[14]

Privilege licenses. Privilege license fees are imposed by municipalities on businesses, occupations, trades, or professions except as restricted by state statute.[15]

Building permits. These are fees that municipalities charge for building, plumbing, heating, and electrical permits.[16]

Solid waste fees. Municipalities may charge fees for the collection of solid waste or for solid waste disposal.[17]

11. The federal revenue-sharing law was revised and renewed on January 1, 1977. The original law prohibited the use of revenue-sharing funds by local units for certain purposes, e.g., school operating expenses. The revised law allows these moneys to be used by local units for any purposes authorized under state law. See REVENUE SHARING BULLETIN IV, No. 12 (October 1976).

12. See LAWRENCE, SOURCES OF REVENUE FOR NORTH CAROLINA COUNTIES AND CITIES (Chapel Hill: Institute of Government, 1975). Also see N.C. GEN. STAT. § 18A-18.

13. N.C. GEN. STAT. § 159-30.

14. N.C. GEN. STAT. § 20-97; N.C. GEN. STAT. § 160A-304 (a).

15. See N.C. GEN. STAT. § 160A-211 and Schedule B of the Revenue Act, beginning at N.C. GEN. STAT. § 105-33.

16. N.C. GEN. STAT. § 160A-414.

17. See N.C. GEN. STAT. §§ 160A-311 through -314.

Parking fees. Municipalities may charge monthly rentals or hourly metered rates in municipal off-street parking facilities,[18] and they may receive revenue from parking meters on city streets.[19]

Airport fees. A municipality may operate an airport, either alone or with another local jurisdiction, and may impose charges on aircraft that use the facility or rent space in the terminal or other airport buildings.[20]

Cemetery fees. These revenues include the prices charged by municipalities for grave sites at municipally owned cemeteries and fees for opening and closing graves and maintaining the cemeteries.[21]

Mass transit fees. Municipalities may operate bus or mass transit systems and set ridership and other fees for the systems.[22] (If the system is operated as an independent public authority, as in Wilmington, the fees are not municipal revenues.)

Recreation fees. These include admission charges for municipal recreational and cultural facilities like swimming pools, golf courses, and museums and instructional charges or entry fees for a variety of municipal recreational programs.[23]

Coliseum fees. Municipalities may operate coliseums, auditoriums, and convention centers and may charge fees, rentals, or concessions for the use of these facilities.[24]

Special assessments. These include special assessments for street-paving and curb and gutter as well as for extending water and sewer lines.[25] Although special assessments are levied for capital improvements, the assessments themselves are usually paid in equal annual installments over a period of years. Thus, special assessments are counted as an operating revenue.

Revenues from county. This includes all revenues that municipalities receive from county governments — for example, municipal charges for outside fire protection or for joint municipal-county activities that are administered by the municipality.[26]

Other revenue and charges. Included here are animal taxes, penalties for parking meter violations, sales and gasoline tax refunds, revenue from the sale of assets, and a wide variety of other revenue sources.

Not counted as operating revenues in the study are bond and note proceeds, interfund transfers, and intragovernmental service charges. Bond and note proceeds finance capital projects rather than operating needs. Interfund transfers and intragovernmental service charges represent transfers of revenue in one fund or account to another. To include them would result in double-counting. In some municipalities expenditures exceeded revenues for some of the municipal funds. When this happened, fund balance probably made up the difference. However, since fund balance is accumulated from revenues received in previous years, it was not counted as an operating revenue.

Sources of data and data collection

Fiscal year 1974-75 was the most recent year for which revenue data were available for the sixty-two municipalities when data collection began.[27] The data came from the municipalities' 1974-75 audit reports. These reports are prepared annually at the end of each fiscal year and summarize the results of financial operations for the year. The accuracy and comparability of data in these reports are considered reliable because the reports are prepared according to uniform standards that are established for governmental audits by the accounting profession and are also enforced in North Carolina by the Local Government Commission.[28]

The data were tabulated in two ways. The first tabulation was the amount of revenue *per capita* from each source. For a particular municipality, this was the revenue from each source divided by the municipality's 1974 population. The second tabulation was the amount of revenue from each source expressed as *a percentage of total operating revenue from all sources*. For a particular municipality, it was calculated by dividing total operating revenue for the municipality into operating revenue from each specific source.

Per capita and percentage operating revenue figures, by source, for individual municipalities were summarized into a single tabulation for all 62 municipalities, tabulations for electric vis-à-vis nonelectric cities, and tabulations for municipalities of different sizes. This was done by calculating *average* per capita and percentage distributions. In other words, each per capita or percentage distribution in Table 3 is an average of the individual municipal distributions for all 62 municipalities, the 45 nonelectric municipalities, or the 17 electric municipalities. This means, for example, that the per capita property tax figure for all 62 municipalities in Table 3 was calculated by summing the individual per capita property tax amounts for 62 municipalities and then dividing by 62, instead of adding up total property tax revenue for all 62 municipalities and dividing by the aggregate population of these municipalities. Similarly, the percentage property tax figure for all 62 municipalities in Table 3 is the sum of the property tax percentages for the 62 municipalities divided by 62, rather than the sum of property tax revenue for all of the municipalities divided by 62. All of the per capita

18. *Id.*, N.C. GEN. STAT. § 160A-302.
19. N.C. GEN. STAT. § 160A-301 (a).
20. N.C. GEN STAT. §§ 63-2 through -4.
21. See N.C. GEN. STAT. §§ 160A-341 and -347.
22. N.C. GEN. STAT. §§ 160A-311 through -314.
23. The authority of municipalities to charge recreation fees is implied under N.C. GEN. STAT. § 160A-353.
24. See N.C. GEN. STAT. § 160A-489.
25. See N.C. GEN. STAT. § 160A-216.
26. Joint municipal-county undertakings or services performed by a municipality on behalf of a county are authorized by N.C. GEN. STAT. §§ 160A-460 through -465.
27. Data collection began in early fall, 1976, and many of the 1975-76 audit reports for the study's 62 municipalities were not completed and available then.
28. The North Carolina Local Government Commission is a state agency that assists and supervises local governments in North Carolina in financial matters. See STEPHEN N. DENNIS, THE NORTH CAROLINA LOCAL GOVERNMENT COMMISSION: A DESCRIPTIVE AND INTERPRETIVE ANALYSIS (Institute of Government, 1976).

Table 3

Sources of Operating Revenue of 62 Selected North Carolina Municipalities, Average Per Capita and Percentage Distributions of Revenue by Source and Type of Municipality Fiscal Year 1974-75

Revenue Sources	All 62 Municipalities		45 Nonelectric Municipalities		17 Electric Municipalities	
	Average Per Capita Distribution	Average Percentage Distribution	Average Per Capita Distribution	Average Percentage Distribution	Average Per Capita Distribution	Average Percentage Distribution
Property taxes	$65.73	29.3 %	$70.66	31.6 %	$52.66	22.7%
State-shared revenues	42.48	20.7	44.25	22.2	37.82	16.9
Local-option sales tax	(12.92)	(6.2)	(13.40)	(6.6)	(11.65)	(5.1)
Intangibles tax	(3.22)	(1.4)	(3.51)	(1.5)	(2.42)	(1.1)
Franchise tax	(10.16)	(5.0)	(11.04)	(5.6)	(7.84)	(3.4)
Beer and wine taxes	(2.19)	(1.1)	(2.15)	(1.1)	(2.36)	(1.1)
Gasoline tax	(12.53)	(6.4)	(12.64)	(6.8)	(12.22)	(5.7)
Other state aid and grants	(1.46)	(.6)	(1.51)	(.6)	(1.33)	(.5)
Water-sewer system gross receipts	47.40	21.0	46.51	20.8	49.75	21.5
Electric/gas system net receipts	10.66	4.6	—	—	38.88	17.1
Federal revenue-sharing	20.01	9.6	20.98	10.3	17.43	7.8
Other federal aid	4.81	2.1	5.89	2.6	1.96	.9
Distributed ABC profits	4.37	1.9	4.90	2.0	2.97	1.4
Investment earnings	8.93	3.8	8.93	3.8	8.92	3.8
Miscellaneous revenue/ charges	15.91	7.0	14.78	6.7	18.87	7.9
Auto and taxi licenses	(.31)	(.1)	(.31)	(.2)	(.32)	(.1)
Privilege licenses	(1.32)	(.6)	(1.30)	(.5)	(1.37)	(.6)
Building permits	(.48)	(.2)	(.49)	(.2)	(.44)	(.2)
Solid waste fees	(1.93)	(.9)	(1.71)	(.9)	(2.50)	(.9)
Parking fees	(.59)	(.3)	(.55)	(.3)	(.70)	(.3)
Airport fees	(.35)	(.1)	(.31)	(.1)	(.46)	(.1)
Cemetery fees	(.73)	(.4)	(.79)	(.4)	(.66)	(.3)
Mass transit fees	(.18)	(.1)	(.25)	(.1)	—	—
Recreation fees	(.95)	(.4)	(.50)	(.2)	(2.13)	(.9)
Coliseum fees	(.35)	(.1)	(.48)	(.2)	(.02)	(.0)
Special assessments	(1.35)	(.5)	(1.34)	(.5)	(1.38)	(.6)
Revenue from county	(.98)	(.4)	(.94)	(.4)	1.07	.5
Other revenue and charges	(6.37)	(2.9)	(5.81)	(2.7)	7.82	3.4
Total from all sources	$220.30	100.0%	$216.90	100.0%	$229.26	100.0%

and percentage figures in Table 3 and the following tables are averages of individual municipal per capita or percentage amounts, and the distributions in the tables are average per capita or percentage distributions. By using the average of individual municipal per capita and percentage amounts, Charlotte, with 290,590 people, is weighted the same as Durham, with 104,100 people, and the same as Kings Mountain, with 8,860 people.

Findings

All 62 municipalities. Table 3 shows that the *property tax* accounts for about 30 per cent of operating revenue for the study's typical municipality. Property taxes are $65.73 per person on the average per capita distribution for all 62 municipalities, which is 29.8 per cent of that distribution's total, and 29.3 per cent of operating revenue on the average percentage distribution for all municipalities.

We could compare the study's per capita property tax amount for the 62 municipalities with per capita property tax figures for all North Carolina municipalities in the 1966-67 and 1971-72 U.S. Census of Governments. However, the census calculation weights municipalities according to population while the study's calculation weights municipalities the same regardless of population. Per capita property tax revenue for North Carolina municipalities was $45.28 in the 1966-67 Census[29] and $69.56 in the 1971-72 Census.[30] This compares with $65.73 per capita for all 62 municipalities in Table 3. Could this mean that growth in prop-

29. U.S. DEPARTMENT OF COMMERCE. BUREAU OF THE CENSUS. 1967 CENSUS OF GOVERNMENTS. STATE REPORTS. NORTH CAROLINA 67 (1967). The figure for the total population for all North Carolina municipalities (1,915,437) in the 1967 Census of Governments was as of 1960 and taken from the 1960 U.S. Census of Population.

30. U.S. DEPARTMENT OF COMMERCE. BUREAU OF THE CENSUS. 1972 CENSUS OF GOVERNMENTS. GOVERNMENT FINANCES. FINANCES OF MUNICIPALITIES AND TOWNSHIP GOVERNMENTS 105 (1972). The total population for all North Carolina municipalities (2,195,462) in the 1972 Census of Governments was as of 1970 and was taken from the 1970 U.S. Census of Population.

erty tax revenue per capita has leveled off and has actually been reversed in the last few years? Not so. This study's per capita property tax figure is understated in comparison with the corresponding census figures for two reasons: (1) By weighting each municipality the same regardless of size, the per capita revenue experiences of the larger North Carolina cities are underrepresented in the study in terms of their population. (2) As the next article will show, property taxes per capita are higher for the state's larger cities than for the smaller cities, towns, and villages. If we had used the same calculation method as the census used the per capita property tax amount for the study's 62 municipalities would have been $93.40.[31] suggesting accelerated reliance on the property tax between 1971-72 and 1974-75. However, the U.S. Census figures for 1966-67 and 1971-72 are for all North Carolina municipalities, while the study's results pertain to only 62 of the state's municipalities. Moreover, the study's municipalities have more representation from the state's larger and medium-sized municipalities than from the smaller ones. Since larger municipalities have higher per capita property taxes than smaller ones, property taxes per capita for the study's 62 municipalities should be greater than for all North Carolina municipalities. And indeed they are. Property taxes per capita for all North Carolina municipalities in 1974-75, calculated according to the census method, are $77.84[32] This represents only an $8.28 per capita increase in three years, which suggests that growth in property tax revenue in relation to population has leveled off for North Carolina municipalities in the mid-seventies.

State-shared revenues make up one-fifth of operating revenue for the study's typical municipality. On the average per capita distribution, $42.48 per person is attributable to this set of revenues, which is 19.3 per cent of the total; on the average percentage distribution, state-shared revenues account for 20.7 per cent of operating revenue. State-shared revenues can be divided into two groups. The first consists of the sales, franchise, and gasoline taxes, each of which, on the distribution for all cities, yields $10 to $13 per capita and 5 per cent or more of operating revenue. The second group consists of the intangibles, beer, and wine taxes and other state aid and grants, each of which yields only a few dollars per capita and .5 to 1.5 per cent of operating revenue.

Water-sewer system gross receipts account for slightly more than one-fifth of operating revenue for the study's typical municipality: 21 per cent on the average percentage distribution and $47.40 per person on the average per capita distribution. Such receipts are second in relative magnitude only to the property tax. However, if such receipts were counted on a net basis after deducting operating expenses, interest on water-sewer debt,[33] and depreciation, the water-sewer systems in the study would cease to be revenue producers. Water-sewer system gross receipts for the 59 municipalities with such systems amount to $72.5 million and total costs (operating expenses, interest, and depreciation) are $75.8 million, leaving a negative balance of $3.3 million.[34] Of the 59 water-sewer systems, 29 are self-supporting and 30 are not.

Of the study's 62 municipalities, only 17 have *electric/gas systems.* Unlike the water-sewer systems, receipts from the charges of these systems are large enough that, after deducting operating expenses, interest on electric/gas debt, and depreciation, the charges on a net basis still yield $10.66 per person on the average per capita distribution and 4.6 per cent on the average percentage distribution for all municipalities. On the same distributions for just the 17 electric municipalities, the electric/gas system net receipts amount to $38.88 per capita and 17.1 per cent of operating revenue. All 17 of the electric systems and all five of the gas systems of the 17 electric municipalities are self-supporting.[35] Total electric/gas system receipts for these systems are $102.1 million, while total costs, including operating expenses, interest, and depreciation, are $86.8 million, leaving a positive balance of $15.3 million.[36]

Federal revenue-sharing is more important as a revenue source than was anticipated when the study began. For the study's typical municipality, federal revenue-sharing is the third most important single source of operating revenue, after the property tax and water-sewer system gross receipts. Revenue-sharing accounts for

31. This was calculated by dividing total 1974-75 property tax collections of $144,787,746 for the study's 62 cities by the total population for these cities — 1,550,165.

32. This calculation uses a total municipal population figure of 2,452,458 and total municipal property tax collections of $190,901,076. The population figure is an estimate of the Office of State Planning of the North Carolina Department of Administration for 1974, and the property tax collection figure is based on total municipal property tax levies of $198,029,202 for 1974-75, taken from the NORTH CAROLINA DEPARTMENT of REVENUE, STATISTICS OF TAXATION 129 (1976); and uncollected 1974-75 property taxes of $7,128,126 as of June 30, 1975, taken from the North Carolina Local Government Commission's report on "Cash, Investments, and Tax Collections at June 30, 1975" (Raleigh, N.C.).

33. Most revenue and expense summaries for municipal water-sewer systems deduct operating expenses, depreciation, and interest on outstanding debt from operating receipts to arrive at net income for the system. See, for example, the ANNUAL FINANCIAL REPORT OF THE CITY OF GREENSBORO, NORTH CAROLINA, FISCAL YEAR ENDED JUNE 30, 1975, p. 124.

34. These figures were calculated from the revenue and expense summaries of water-sewer utilities in the 1974-75 audit reports of the study's 59 municipalities with such utilities. If principal retirement on outstanding water-sewer debt is substituted for depreciation on the cost side in making the calculations, total water-sewer costs — including principal retirement, operating expenses, and interest on outstanding debt — are $74.9 million, leaving a negative balance of $2.4 million for the 59 systems. Moreover, 31 of the systems are self-supporting and 28 are not, with retirement of principal rather than depreciation counted on the cost side.

35. As with the study's water-sewer systems, "self-supporting" in connection with electric/gas systems means that operating receipts exceed operating expenses, interest on outstanding debt, and depreciation.

36. These figures were calculated from the revenue and expense summaries of electric/gas utilities in 1974-75 audit reports.

$20.01 per person on the average per capita distribution and 9.6 per cent on the average percentage distribution for all municipalities.

Other federal aid and *distributed ABC profits* both account for $4 to $5 per person and about 2 per cent of operating revenue for the study's typical municipality.

Investment earnings contribute almost 4 per cent of operating revenue and $8.93 per person for the typical municipality. (Interest rates that localities were able to earn on their investments in 1974-75 were above historical rates.)[37]

Miscellaneous charges and revenue provide $15.91 per person and 7 per cent of operating revenue for the study's typical municipality.

Electric versus nonelectric municipalities. Table 3 also compares the average per capita and percentage distributions of operating revenue for the study's nonelectric and electric municipalities.

Electric/gas system net earnings rank behind only the property tax and water-sewer system gross receipts for electric municipalities. These earnings are available to finance operating expenditures for general government activities, though a significant portion are used to finance capital improvements for the electric utilities themseves, thereby avoiding the need to borrow for such improvements..

Property taxes per capita and as a percentage of operating revenue are significantly less for the study's typical electric city than for the typical nonelectric city. On the average per capita distribution, property taxes are $70.66 for nonelectric municipalities and $52.66 for electric municipalities; and on the average percentage distribution, they are 31.6 per cent and 22.7 per cent, respectively, of operating revenue for nonelectric and electric municipalities. This suggests that the study's electric municipalities, or at least several of them, are using earnings from their electric/gas systems to hold down property taxes. Most electric cities charge for electric service at commercial retail rates — that is, at the same rates that private power companies in their areas charge to retail customers. But unlike private power companies, the municipal systems do not have to pay federal and state taxes or local property taxes. This leaves a positive balance between receipts from the retail sale of electricity and electric/gas system costs, and part of this balance is apparently transferred as a contribution in lieu of taxes to the general fund and used to reduce property taxes.[38]

Since none of the five largest North Carolina cities are electric cities and because per capita property taxes are higher in these cities than in the other 57 cities, the question arises whether the difference between electric and nonelectric cities in per capita property taxes is due more to size than to any difference between electric and nonelectric cities. However, if we drop the five largest cities from the sample and calculate per capita property taxes for the 40 remaining nonelectric cities, the result is $66.19 per capita and 30.8 per cent of operating revenue for the property tax. These amounts are still well above corresponding amounts of $52.66 and 22.7 per cent for the electric cities.

Do the net revenues that electric/gas systems yield increase or decrease reliance by municipalities on revenue sources besides the property tax? Water-sewer system gross receipts do not differ significantly between the electric and nonelectric cities of the study. This suggests that electric municipalities are not subsidizing water-sewer operations with electric/gas system net receipts or other sources of revenue — e.g., the property tax — any more than the nonelectric cities are doing with strictly general revenue sources.

We might be tempted to draw a second conclusion — namely, that electric/gas system net earnings are not being used to subsidize water-sewer operations in the study's electric cities. At first glance, this seems plausible, since water-sewer gross receipts per capita and as a percentage of operating revenue are roughly the same for the study's typical electric and nonelectric cities. Moreover, if a local unit runs its electric/gas system at a profit, would it not also operate its water-sewer system on a self-supporting basis? Not necessarily. Of the study's 17 electric municipalities, all of which are self-supporting, only eight have self-supporting water-sewer systems. And of the study's nonelectric municipalities, 21 have self-supporting water-sewer systems and 21 do not (three do not operate water-sewer systems). This fact suggests that the water-sewer systems of the study's electric municipalities, at least in relative terms, are not any more self-supporting than those of the nonelectric municipalities. It also allows for the possibility that electric/gas system earnings are being used to subsidize water-sewer operations in a good many of the electric municipalities, perhaps as much as other revenues are used to subsidize water/sewer operations in the nonelectric cities.

However, the difference in property taxes of electric and nonelectric municipalities and the lack of difference in water-sewer receipts in these cities (see Table 3) suggests — and this is not contradicted by any underlying data — that electric/gas system net receipts in the study's electric cities are being used to subsidize the general fund and hold down property taxes more than they are being used to subsidize water-sewer operations.

Among the *state-shared revenues*, the *franchise tax* is notably lower for the study's electric than nonelectric municipalities on the average per capita and percentage distributions (see Table 3). Nearly 60 per cent of franchise tax revenue results from levies on the gross receipts of private power and light companies.[39] If a municipality owns the electric system that distributes power and light to its citizens, the system does not pay the franchise tax. However, to

37. See U.S. Department of Commerce, Bureau of Census, Statistical Abstract of the United States 1976, p. 494.

38. The findings here confirm the results of previous study. See Strauss & Wertz, *The Impact of Municipal Electric Profits on Local Public Finance*, National Tax Journal 22-25 (March, 1976).

39. North Carolina Department of Revenue, Statistics of Taxation, 1976, p. 36.

date, municipal electric systems in North Carolina only distribute electricity. They have to buy the electric power wholesale from private power companies, and the franchise tax is levied on the gross receipts resulting from wholesale purchases of power. Wholesale electric power sales are made about 30 per cent below retail sales.[40] Thus, one would expect franchise tax revenue also to be 30 per cent less on wholesale than retail sales of power. This is at least one reason why franchise tax revenue per capita and as a percentage of operating revenue is less for the study's electric than nonelectric municipalities.

The study's electric and nonelectric municipalities also differ in *sales tax revenue* per capita and as a percentage of operating revenue. The study's typical nonelectric municipality receives $1.75 more on the average per capita distribution and 1.5 per cent more on the percentage distribution than the typical electric municipality. In some counties, local sales tax revenue is divided among individual governmental units in proportion to the property tax levy of each unit. The fact that the study's electric cities have lower property taxes than the nonelectric cities may partly explain why sales tax revenue is also somewhat lower in the electric cities than in the nonelectric cities.

For the *intangibles tax*, the difference between the study's electric and nonelectric municipalities is $1.09 on the average per capita distributions and .4 of 1 per cent on the percentage distributions. These differences are not large in themselves, but they are a third larger than the electric city per capita and percentage figures on the distributions. Chance variation may account for some of this, but at least one other factor is active. Once intangibles tax revenue is returned by the state to a county area, it is divided among the county government and individual municipal governments in proportion to the property taxes levied by each.[41] Because such taxes are lower in the study's electric than nonelectric municipalities, the intangibles tax revenue received by the electric municipalities is also reduced.

Table 3 indicates no significant differences between the study's electric and nonelectric municipalities for beer and wine taxes, the gasoline tax, and other state aid and grants. *State beer and wine tax* collections are distributed to cities and counties solely on a population or per person basis.[42] Three-quarters of *gasoline tax* revenue is distributed among municipalities on a population basis and one-quarter according to the number of street miles maintained by a municipality.[43] As with the beer and wine tax, the per person basis (although partial) for distributing the gasoline tax accounts for the very similar amounts for electric and nonelectric municipalities on this source. *Other state aid and grants* consist for the most part of categorical money secured by municipalities for specific purposes, and whether a municipality has its own electric/gas system makes little difference in the amount of revenue it receives from this source.

Federal revenue-sharing is lower for the study's electric municipalities than for the nonelectric municipalities on both the average per capita and average percentage distributions. Revenue-sharing funds are distributed to municipalities according to a multistaged formula that considers population, general tax effort, adjusted taxes, and per capita income.[44] Electric/gas system net receipts are not counted in tax effort or adjusted taxes, and to the extent that these receipts reduce reliance on property taxes or other tax sources, they tend to reduce federal revenue-sharing funds to the municipality.

We expected a greater difference between the two types of municipalities on federal revenue-sharing. The difference is significant but not large — $3.55 on the average per capita distributions and 2.5 per cent on the percentage distributions. One study on the impact of electric profits on municipal finance in North Carolina calculated that electric cities could increase their revenue-sharing allotment by 41 per cent if electric system profits were raised instead from property taxes.[45] But what this study's calculation did not consider was that not all municipal electric-system net receipts are transferred to the general fund to hold down property taxes or tax effort. The net receipts transferred to the general fund are often used to improve services rather than hold down taxes, and a significant portion of such receipts stays in the electric fund to finance electric capital improvements there. Thus, electric municipalities are probably reducing tax effort and general taxes with electric/gas system net earnings less than the above-mentioned study suggests.

Table 3 points to a major difference between the study's electric and nonelectric municipalities for *other federal aid*. However, this difference is largely due to municipal size. The great bulk of "other federal aid" for the study's 62 municipalities for operating purposes was in fact received by the five largest cities, none of which are electric municipalities.

Table 3 also shows a relatively large difference between the study's electric and nonelectric municipalities for *distributed ABC profits*. But the difference between the two types of municipalities in distributed ABC profits appears to be due to factors specific to ABC operations, location, and profit-sharing agreements and have nothing to do with the fact that some of the municipalities have electric/gas utility systems and others do not.

Table 3 shows no difference at all between the study's electric and nonelectric municipalities for *investment earnings*. This finding is somewhat surprising. We had thought that electric/gas system net receipts would provide the electric

40. This estimate was provided by the Director of Tax Research, North Carolina Department of Revenue.

41. See LAWRENCE, *op. cit. supra* note 12, at 10.

42. *Id.* at 8.

43. *Id.* at 9.

44. GOVERNOR'S REVENUE SHARING ADVISORY COMMITTEE, GENERAL REVENUE SHARING: A GUIDE FOR LOCAL GOVERNMENTS IN NORTH CAROLINA 1-10. (Institute of Government, 1973).

45. Strauss & Wertz, *op. cit. supra* note 38, at 27-29.

cities with idle cash balances not available to the nonelectric cities and that these would be invested to make investment earnings relatively greater in the electric cities than in the nonelectric cities. However, the findings do not support this hypothesis. One explanation could be that the nonelectric cities have sources of investment funds that the electric cities do not have. This explantation is plausible considering that total revenue per capita for the study's electric cities is not much above that for the nonelectric cities, and property tax revenue is greater in the nonelectric cities than in the electric cities. Most property taxes are collected in November and December and are not fully spent until the end of the fiscal year. This means that a large portion of property tax receipts can be invested until they are needed for expenditure later in the fiscal year.

Finally, *miscellaneous revenue and charges* are higher in the electric cities than in nonelectric municipalities. Such revenues and charges are $14.78 on the per capita distribution and 6.7 per cent on the percentage distribution for the nonelectric municipalities and are $18.87 and 7.9 per cent on these distributions for the electric municipalities. This difference could be explained on the basis that because electric municipalities charge to cover electric/gas system costs, they are more likely than the nonelectric cities also to charge fees for other governmental services.

Revenue sources not common to all 62 municipalities. Several revenue sources in the study are not possessed by all 62 municipalities. Electric/gas system net receipts are one such source, and we have already dealt with its effects. The others are the local-option sales tax (59 cities have this source); beer and wine taxes (47 had this source in 1974-75); other state aid and grants (31 cities received such aid and grants); water-sewer system gross receipts (59 have such systems); other federal aid (42 municipalities); and ABC profits (40 had counted revenue from this source in 1974-75). Table 4 shows the average per capita and percentage municipal amounts for each of these revenue sources; however, only those municipalities that received revenue from a source were included in calculating the average amount or percentage for the source.[46]

Table 4

Averages of Per Capita and Percentage Municipal Amounts for Revenue Sources Not Common to All 62 Municipalities Fiscal Year 1974-75

Revenue Sources	All Municipalities	Nonelectric Municipalities	Electric Municipalities
Local-option sales tax	N = 59	N = 43	N = 16
Per capita average	$13.57	$14.01	$12.38
Percentage average	6.5%	6.9%	5.4%
Beer and wine taxes	N = 47	N = 33	N = 14
Per capita average	$2.91	$2.93	$2.86
Percentage average	1.4%	1.5%	1.3%
Other state aid and grants	N = 31	N = 23	N = 8
Per capita average	$2.92	$2.96	$2.83
Percentage average	1.2%	1.2%	1.3%
Water-sewer system gross receipts	N = 59	N = 42	N = 17
Per capita average	$49.81	$49.83	$49.75
Percentage average	21.9%	22.0%	21.7%
Other federal aid	N = 42	N = 32	N = 10
Per capita average	$7.10	$8.28	$3.33
Percentage average	3.1%	3.7%	1.4%
ABC profits	N= 40	N = 28	N = 12
Per capita average	$6.78	$7.88	$4.21
Percentage average	2.9%	3.3%	2.0%

Variation in revenue sources. Tables 3 and 4 and the accompanying comments refer to the study's typical (electric or nonelectric) municipality. These tables contain averages of individual municipal per capita or percentage amounts by revenue source. Another very important question concerns how much the municipalities vary on each revenue source. The measure of variation used for any revenue source here is the average difference of individual municipal scores from the mean for the source, expressed as a percentage of the mean. This measure was calculated for each revenue source on the average per capita distribution for all 62 municipalities and for the 17 electric and 45 nonelectric municipalities of the study. (See Table 5.)

The average variation among the municipalities for operating revenue from all sources on the average per capita distribution is 26 per cent. However, it is twice as great, relatively speaking, for the study's nonelectric municipalities (31 per cent) than for the electric municipalities (16 per cent). This is largely a function of municipal size. As the next article will show, total per capita operating revenue among the municipalities is lowest among those with 1,000 or fewer people and highest among those with 100,000 or more people, and there are many more nonelectric cities in these two population classes than there are electric cities. Only one electric city is in either of these two population classes, while 15 of the 45 nonelectric cities are in either of the two classes.

The average variation among the study's municipalities for individual revenue sources on the average per capita distribution is relatively low — less than 30 per cent for the gasoline tax (10%), federal revenue-sharing (24%), and the local-option sales tax (29%). Table 5 shows these percentages in the distribution for all 62 municipalities. All of these revenue sources are distributed to municipalities partly on a population or per

46. In other words, rather than an N of 62, a reduced N is used to calculate the average per capita amount or percentage for each source — 40 for ABC profits, 42 for other federal aid, etc.

capita basis, which contributes to the limited variation among municipalities in the per capita revenue received by each from these sources.

The average variation among the study's municipalities on the per capita distribution is in a middle range — 30 to 60 per cent for the franchise tax (33 per cent), water-sewer system gross receipts (36 per cent), property taxes (40 per cent), intangibles tax (49 per cent), miscellaneous revenues and charges (52 per cent), beer and wine taxes (53 per cent), and investment earnings (60 per cent). Again Table 5 shows these percentages in the distribution for all 62 municipalities.

Average variation for the *franchise tax* is somewhat low because all 62 municipalities are served by corporations subject to the tax, and the business conducted and gross receipts received by these companies is partly a function of municipal population.

The average variation in municipal *water-sewer system gross receipts* is in a low to middle percentage range partly because 59 of the 62 municipalities have this source of revenue. Also, many of these municipalities try to set water-sewer rates so that system charges or receipts roughly match costs. In the ones that do not make this effort, water-sewer system receipts diverge significantly above or below costs.

Variation among the study's municipalities on the *property tax* is partly due to the differences between electric and nonelectric municipalities for this source. It is also a function of size, with larger municipalities receiving more property tax revenue per capita than smaller ones.

Variation among the study's municipalities on per capita *intangibles tax revenue* occurs because the basis of the intangibles tax — stocks, bonds, etc. — varies widely among counties, and the state returns about three-quarters of these revenues to the county of collection.[47] The other quarter of intangibles tax revenue — that from money on deposit in banks and insurance companies — is distributed among county areas on a population basis,[48] which holds down variation among municipalities in per capita revenue for this source.

Variation among the study's municipalities for *miscellaneous revenue and charges* and investment earnings is partly due to size, with larger municipalities making greater use of these sources, on a per capita basis, than smaller municipalities. However, such variation also results from the fact that some of the municipalities, regardless of size, make great efforts to put these sources to work for them.

Variation among the municipalities for *beer and wine taxes* in Table 5 is much higher than would be expected, because state revenue from this source is distributed to localities that sell beer and wine solely on a per capita basis. However, the variation percentages for this source in Table 5 were calculated with an N of 62. Only 47 of the 62 municipalities had beer and wine revenue in 1974-75; when N is reduced to this number, the variation percentages in Table 5 for this source drop to 9 per cent for all cities, 11 per cent for the nonelectric cities, and 3 per cent for electric cities.

Variation among the municipalities on the average per capita distribution is very high for other federal aid (96 per cent), other state aid and grants (102 per cent), ABC profits (112 per cent), and electric/gas net receipts (146 per cent). Again, these percentages are taken from the all-cities column of Table 5. Much of the variation among the municipal per capita amounts on each of these sources results from the fact that not all of the municipalities had these sources. Another reason for variation among municipalities in distributed ABC profits is that some of the ABC systems in the cities studied make unusually large profits. High variation for other federal aid and for other state aid and grants arises partly because these revenue sources are not stable recurring sources. Size is also a contributing factor; the largest cities are able to secure much more state and particularly federal aid than the smaller municipalities. □

Table 5

Percentage Variation from Average Per Capita Mean for Each Revenue Source
All 62 Municipalities and Nonelectric and Electric Municipalities

Revenue Sources	All 62 Municipalities	45 Nonelectric Municipalities	17 Electric Municipalities
Property taxes	40%	44%	28%
State-shared revenues			
Local-option sales tax	29	29	27
Intangibles tax	49	51	30
Franchise tax	33	26	43
Beer and wine tax	53	59	39
Gasoline tax	10	11	8
Other state aid/grants	102	114	134
Water-sewer system gross receipts	36	39	30
Electric/gas system net receipts	146	—	47
Federal revenue-sharing	24	25	27
Other federal aid	96	94	90
ABC profits	112	112	106
Investment earnings	60	64	51
Miscellaneous revenue/charges	52	55	43
Percentage variation, total per capita from all sources	26%	31%	16%

47. LAWRENCE, *op. cit. supra* note 12, at 10; and NORTH CAROLINA DEPARTMENT OF REVENUE, DISTRIBUTION REPORT OF INTANGIBLE PERSONAL PROPERTY TAX COLLECTIONS, FOR FISCAL YEAR ENDING JUNE 30, 1975.

48. *Id.*

Operating Revenues of North Carolina Municipal Governments:

Effect of Municipal Size

A. John Vogt

With a population of 290,590, Charlotte does not have the same distribution of revenues by source as either Gastonia (population 49,630) or Goldsboro (population 29,160), and neither Gastonia nor Goldsboro has the same distribution of revenues as Tarboro (population 9,850) or Brookford (population 630).[1] This article looks at operating revenues in North Carolina municipalities of different size. It compares the distribution of revenues by source in very small towns with distribution of revenues in medium-sized municipalities and in the state's largest cities. The article also considers whether individual revenue sources grow or diminish in relative importance as municipal size increases and examines what size-related and other factors contribute to variation among municipalities in the importance of specific sources.

This article is a follow-up to the article on page 11 and is based on the same study of operating revenue in 62 North Carolina municipalities. Operating revenues refer to revenues that recur each year or can be used to fund current expenditures. The municipalities included in the study differ in size, and they are divided among seven municipal population classes, ranging from 500-999 to 100,000 or more in population. The manner in which the 62 municipalities were selected, the definitions of revenue sources, and the methods used in the study are explained in the preceding article.[2]

The author is an Institute faculty member who specializes in public finance. See his article comparing the operating revenues of North Carolina electric and nonelectric cities, which appears on page 11.

1. The population figures for these municipalities are taken from POPULATION ESTIMATES FOR NORTH CAROLINA COUNTIES AND MUNICIPALITIES: 1974 AVERAGE PERMANENT RESIDENT POPULATION (Office of State Planning, North Carolina Department of Administration, 1975).

Note on data tabulation

The principal data for the article are presented in Tables 1 and 2. Table 1 contains the *average per capita distributions* of revenues by source for the seven municipal population classes. Each per capita distribution in Table 1 is an average of the individual municipal distributions of the cities and towns in that class. Table 2 presents the *average percentage distributions* of revenues by source for the seven municipal population classes, and each percentage distribution is an average of the individual municipal distributions for the municipalities in a particular class. One effect of this method of tabulation is that the study's individual municipalities are weighted the same regardless of population.

2. See pp. 11-15 of this issue.

Revenue distribution in municipalities of different size

This section focuses on the study's seven municipal population classes and comments on the major features of the revenue distribution for each class.

Municipalities with 500 to 999 people. North Carolina has 108 municipalities with 500 to 999 people, and they have a combined population of 75,800.[3]

A key feature of the average revenue distribution for the study's 11 municipalities in this class is the importance of state-shared revenues. Such revenues are the largest revenue source for the class, accounting for 30.1 per cent of operating revenue on the average percentage distribution and $34.87 on the average per capita distribution. This suggests that state-shared revenues serve as an initial or start-up source of revenue for very small towns. The state distributes the sales, intangibles, franchise, and gasoline taxes to a municipality

3. POPULATION ESTIMATES FOR NORTH CAROLINA COUNTIES AND MUNICIPALITIES, and NORTH CAROLINA LEAGUE OF MUNICIPALITIES, 1975-76 DIRECTORY OF NORTH CAROLINA MUNICIPAL OFFICIALS 77-79 (Raleigh, N.C., 1976).

Table 1

Sources of Operating Revenue, Selected North Carolina Municipalities
Average Per Capita Distributions of Revenue by Source for Municipalities of Different Size
Fiscal Year 1974-75

Revenue Sources	Municipalities by Size						
	500 to 999 N=11	1,000 to 2,499 N=11	2,500 to 9,999 N=13	10,000 to 24,999 N=13	25,000 to 49,999 N=4	50,000 to 99,999 N=5	100,000 or More N=5
Property taxes	$33.02	$54.89	$77.46	$69.17	$64.07	$82.70	$106.39
State-shared revenues — totals	34.87	41.93	43.78	42.05	44.47	50.35	48.91
Local-option sales tax	(9.35)	(12.40)	(12.95)	(12.90)	(14.88)	(16.86)	(16.39)
Intangibles tax	(1.54)	(3.27)	(3.37)	(3.50)	(2.85)	(4.01)	(5.17)
Franchise tax	(8.64)	(9.85)	(11.20)	(10.71)	(9.67)	(9.58)	(11.03)
Beer and wine taxes	(1.61)	(2.28)	(2.06)	(2.05)	(2.89)	(2.90)	(2.89)
Gasoline tax	(12.75)	(13.25)	(13.08)	(12.07)	(11.55)	(12.31)	(11.23)
Other state aid and grants	(0.98)	(0.88)	(1.12)	(0.82)	(2.63)	(4.69)	(2.20)
Water-sewer system gross receipts	22.07	53.23	58.70	53.36	40.53	47.73	45.37
Electric/gas system net receipts	2.88	3.31	5.55	23.46	21.37	26.05	—
Federal revenue-sharing	14.54	19.19	23.47	20.96	21.71	21.89	19.18
Other federal aid	2.48	6.12	4.45	1.76	1.57	2.74	20.61
Distributed ABC profits	0.84	11.87	3.38	2.93	2.27	3.94	4.14
Investment earnings	3.63	5.44	10.86	9.28	10.42	12.93	17.12
Miscellaneous revenue/charges	6.91	9.86	17.11	15.82	18.83	29.65	29.95
Auto and taxi licenses	(0.19)	(0.32)	(0.28)	(0.33)	(0.41)	(0.34)	(0.50)
Privilege licenses	(0.17)	(0.79)	(1.54)	(1.27)	(2.08)	(2.30)	(2.97)
Building permits	(0.02)	(0.14)	(0.60)	(0.49)	(0.68)	(0.93)	(1.28)
Solid waste fees	(1.01)	(2.42)	(1.04)	(2.38)	(2.91)	(4.82)	(0.33)
Parking fees	—	(0.33)	(0.38)	(0.72)	(0.23)	(1.72)	(1.84)
Airport fees	—	—	—	(0.40)	—	(1.78)	(1.47)
Cemetery fees	(0.78)	(0.84)	(0.92)	(0.68)	(0.89)	(0.25)	(0.66)
Mass transit fees	—	—	—	—	—	—	(2.26)
Recreation fees	—	(0.08)	(0.68)	(2.28)	(0.74)	(2.12)	(1.15)
Coliseum fees	—	—	—	—	—	(0.96)	(3.40)
Special assessments	(0.07)	(0.70)	(2.48)	(0.82)	(3.27)	(2.09)	(1.75)
From county	(0.31)	(0.34)	(1.16)	(0.57)	(2.03)	(2.10)	(2.45)
Other	(4.36)	(3.90)	(8.03)	(5.88)	(5.59)	(10.24)	(9.89)
Total from all sources	$121.24	$205.84	$244.76	$238.79	$225.24	$277.98	$291.67

almost as soon as it incorporates, and a town need not undertake a major effort to secure revenue from these taxes. On the other hand, revenue sources like water-sewer receipts, investment earnings, miscellaneous revenue and charges, and the property tax require significant decisions and effort by local officials to develop and collect.

When property taxes are added to the state-shared revenues, these two sources account for almost 60 per cent of operating revenue on the average percentage distribution for the study's towns with 500 to 999 people. And when water-sewer gross receipts and federal revenue-sharing are added to the first two sources, the four sources combined make up 86.5 per cent of operating revenue for these towns.

Municipalities with 1,000 to 2,499 people. North Carolina has 105 municipalities with 1,000 to 2,499 people, and they have a combined population of 172,310.[4]

The most striking feature about the revenue distribution of the study's 11 municipalities in this class is the average per capita total of revenue from all sources — $205.84. This amount is $84.60 more than the per capita total of $121.24 for the towns with 500 to 999 people. Most of this increase comes from the property tax and water-sewer gross receipts. ABC profits are also dramatically higher for this population class than for the smaller one. An important underlying reason why average per capita revenue from all sources is so much higher for the municipalities in this class has to do with the range of operations for the towns in each class. The municipalities in the 1,000-2,499 class provide a full or nearly full range of municipal services, while the towns with 500 to 999 people do not provide all of these services. For example, two of the towns in the 500-999 class have no public water systems, and six have no municipal sewer systems. All of the towns in the 1,000-2,499 class have both public water and sewer systems.

The most important individual revenue sources for the municipalities with 1,000 to 2,499 people are the property tax and water-sewer gross receipts. Together they account for 52.1 per cent of operating revenue on the average percentage distribution. State-shared revenues and federal revenue-sharing add another 30.7 per cent on this distribution. When these

4. *Id.*, at 75-77.

Table 2

Sources of Operating Revenue, Selected North Carolina Municipalities
Average Percentage Distributions of Revenue by Source for Municipalities of Different Size
Fiscal Year 1974-75

Revenue Sources	Municipalities by Size						
	500 to 999 N=11	1,000 to 2,499 N=11	2,500 to 9,999 N=13	10,000 to 24,999 N=13	25,000 to 49,999 N=4	50,000 to 99,999 N=5	100,000 Or More N=5
Property taxes	27.0 %	26.2 %	31.3 %	28.7 %	28.3 %	29.3 %	36.5 %
State-shared revenues — totals	30.1	20.9	18.9	18.1	19.7	17.9	16.8
Local-option sales tax	(7.7)	(6.3)	(5.8)	(5.6)	(6.6)	(6.0)	(5.6)
Intangibles tax	(1.3)	(1.4)	(1.4)	(1.4)	(1.3)	(1.4)	(1.8)
Franchise tax	(7.8)	(4.8)	(4.6)	(4.6)	(4.3)	(3.5)	(3.7)
Beer and wine taxes	(1.3)	(1.2)	(1.0)	(0.9)	(1.3)	(1.0)	(1.0)
Gasoline tax	(11.4)	(6.8)	(5.8)	(5.2)	(5.0)	(4.5)	(3.9)
Other state aid and grants	(0.6)	(0.4)	(0.3)	(0.4)	(1.2)	(1.5)	(0.8)
Water-sewer system gross receipts	17.3	25.9	22.7	22.6	18.0	17.8	15.6
Electric/gas system net receipts	2.5	1.6	2.4	9.2	9.7	10.0	—
Federal revenue-sharing	12.1	9.8	9.9	9.1	9.6	7.8	6.6
Other federal aid	1.9	3.0	1.9	.7	.7	1.0	7.1
Distributed ABC profits	.8	5.3	1.4	1.2	1.0	1.5	1.4
Investment earnings	2.9	2.5	4.2	3.7	4.6	4.5	5.9
Miscellaneous revenue/charges	5.4	4.8	7.3	6.7	8.4	10.2	10.1
Auto and taxi licenses	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)
Privilege licenses	(0.1)	(0.4)	(0.7)	(0.6)	(0.9)	(0.8)	(1.0)
Building permits	(0.0)	(0.1)	(0.2)	(0.2)	(0.3)	(0.3)	(0.4)
Solid waste fees	(0.8)	(1.0)	(0.1)	(0.9)	(1.3)	(1.7)	(0.1)
Parking fees	—	(0.1)	(0.5)	(0.3)	(0.1)	(0.6)	(0.6)
Airport fees	—	—	—	(0.2)	—	(0.6)	(0.5)
Cemetery fees	(0.7)	(0.5)	(0.3)	(0.3)	(0.4)	(0.1)	(0.2)
Mass transit fees	—	—	—	—	—	—	(0.8)
Recreation fees	—	(0.1)	(0.3)	(0.9)	(0.3)	(0.7)	(0.4)
Coliseum fees	—	—	—	—	—	(0.3)	(1.1)
Special assessments	(0.1)	(0.4)	(1.0)	(0.4)	(1.4)	(0.7)	(0.6)
From county	(0.1)	(0.2)	(0.5)	(0.2)	(0.9)	(0.7)	(0.8)
Other	(3.4)	(1.8)	(3.6)	(2.6)	(2.6)	(3.5)	(3.4)
Total from all sources	100 %	100 %	100 %	100 %	100 %	100 %	100 %

four sources are combined, they contribute 82.8 per cent of operating revenue.

Municipalities with 2,500 to 9,999 people. North Carolina has 91 municipalities with 2,500 to 9,999 people, and their combined population is 432,630.[5]

The average per capita total of operating revenue from all sources for the study's municipalities in this class is $244.76. This is above each of the corresponding totals for the two lower and two higher population classes. Just as significant is the fact that the property tax is the dominant revenue source for the municipalities in this class. The property tax provides 31.3 per cent of operating revenue on the average percentage distribution and $77.46 on the average per capita distribution, which is nearly a third higher than the second most important revenue source, i.e., water-sewer receipts. When water-sewer receipts, state-shared revenue, and federal revenue-sharing are added to the property tax, these four sources make up 82.8 per cent of operating revenues on the average percentage distribution.

Investment earnings and miscellaneous revenue and charges are also relatively more important for the study's municipalities in the 2,500-9,999 population class than the two lower population classes. The study's municipalities in this class are apparently able to conduct more profitable investment programs than the smaller towns. The major part of the overall increase for miscellaneous revenue and charges comes from fees for privilege licenses and building permits, recreation fees, special assessments, contributions from the county, and other revenue.

Municipalities with 10,000 to 24,999 people. North Carolina has 23 towns and cities with 10,000 to 24,999 people, and they have a combined population of 362,960.[6]

Net receipts from electric/gas systems emerge as an important revenue source for the study's municipalities in this population class. Such receipts are $23.46 on the average per capita distribution and 9.2 per cent on the average percentage distribution. The large proportion of electric cities in this class, 6 of 13, and the fact that the electric/gas systems of these cities are significant net revenue producers lead these cities to rely relatively less on

5. *Id.*, at 73-75.

6. *Id.*, at 72-73. Kinston (population 24,790) is not included in this class. It is included in the 25,000-49,999 class.

other revenue sources than municipalities in the 2,500-9,999 population class.

On the average percentage distribution, the property tax, water-sewer gross receipts, state-shared revenues, and federal revenue-sharing make up 78.5 per cent of operating revenue for the municipalities in this class. This is down somewhat from the 82.8 per cent level from these four sources for the municipalities in the next two lower population classes. However, when electric/gas system net receipts are added to the four other sources, the five sources combined account for 87.7 per cent of operating revenue for the municipalities in this class.

Municipalities with 25,000 to 49,999 people. North Carolina has eight cities in this population class, and together they have 254,090 people.[7]

The most important source of operating revenue of the study's four cities in this class is the property tax. It accounts for $64.07 on the average per capita distribution and 28.3 per cent on the average percentage distribution. When state-shared revenues, water-sewer system gross receipts, electric/gas net earnings, and federal revenue-sharing are added to the property tax, these five sources make up 85.3 per cent of operating revenue.

Water-sewer gross receipts are notably lower on the average per capita distribution for this population class than for any of the three classes with lower populations or the two with higher populations. Part of this results from the fact that two of the four cities in the 25,000-49,999 class do not have self-supporting water-sewer systems and these systems fall short of being self supporting by a significant margin. As a result, water-sewer gross receipts for the class are lower than they otherwise would be.

Municipalities with 50,000 to 99,999 people. North Carolina has five cities in this population class, and they have a combined population of 286,350.[8] All of them are included in the study.

The average per capita total of operating revenue from all sources for the cities in this population class is $277.98. This sum represents an increase of $52.74 over the average per capita total of $225.24 for municipalities with 25,000 to 49,999 people. The major sources or components of this increase are the property tax, miscellaneous revenue and charges, water-sewer system gross receipts, and state-shared revenues. Despite the differences in average per capita operating revenue between the cities in this class and those in the next lower class, the average percentage distribution of operating revenue by source for the class is very similar to the percentage distribution for the 25,000-49,999 class.

Municipalities with more than 100,000 people. North Carolina has five cities with more than 100,000 people, and they have a total population of 835,600.[9] This is about a third of the total municipal population of the state.

These five North Carolina cities (all of which are in the study) rely much more on the property tax than do the cities in any other population class. On the average percentage distribution, property taxes account for 36.5 per cent of operating revenue of these five cities, which is more than the 25 to 30 per cent levels for the other population classes. On the average per capita distribution, property taxes contribute $106.39, which is $23.69 more than the $82.70 level for cities in the 50,000-99,999 population class.

Property taxes are also twice as large as any other revenue source for this class. This is true on both the average per capita and percentage distributions. The next largest individual revenue source for the class is water-sewer gross receipts, which are $45.37 per capita and 15.6 per cent on the average distributions for this class.

Other federal aid contributes 7.1 per cent and $20.61 on the average percentage and per capita distributions respectively for the cities above 100,000 in population. These percentage and per capita amounts represent six- to sevenfold increases over the corresponding amounts of other federal aid for the cities with 50,000-99,000 people.

The increases in other federal aid and property tax revenue for the cities above 100,000 partly offset their lack of electric/gas net receipts. Another part of the increase in both other federal aid and property taxes goes toward raising average per capita operating revenue from all sources to $291.67.

Effect of municipal size on individual revenue sources

We now look more closely at individual revenue sources and see how revenue from each varies among the study's seven municipal population classes. We also trace this variation to underlying, size-related factors and to other factors that cause individual municipalities or groups of municipalities to receive particularly high or low revenue amounts from specific sources.

Property taxes. That per capita property taxes increase with municipal size is evident from the average per capita distributions shown in Table 1. The relationship between the property tax and municipal size on the average percentage distributions is less evident. (See Table 2.) The noteworthy point about the percentage property tax data in Table 2 is that cities above 100,000 in population stand apart from the municipalities in all other population classes.

Why are property taxes per capita higher in the larger municipalities of the study? To begin to answer this question we must look at assessed property valuation per person, tax rates per $100 of value, and property tax collection percentages. Table 3 presents data on these three factors for each of the study's seven municipal population classes.

The variation in average per capita assessed valuation by municipal population class shown in Table 3

7. *Id.*, at 72. Gastonia (population 49,630) is not included in this class. It is counted in the 50,000-99,999 class.

8. *Id.* This class includes the four cities with 50,000 to 99,999 in population and Gastonia.

9. *Id.*

Table 3

Average Assessed Valuation Per Person, Tax Rates Per $100 of Value and Collection Percentages as of June 30, 1975, for 62 Selected North Carolina Municipalities Organized by Population Class Fiscal Year 1974-75

Population Class	Average Assessed Property Valuation per Person	Average Property Tax Rate per $100 of Value	Average Percentage of Collection at June 30, 1975
500-999	$ 5,770	$ .64	95.3%
1,000-2,499	7,924	.75	94.4
2,500-9,999	10,332	.78	95.5
10,000-24,999	10,360	.74	96.6
25,000-49,999	8,818	.76	96.5
50,000-99,999	11,315	.84	95.8
100,000 or more	12,371	.98	97.6

Sources:

1. Average assessed property valuation per person is calculated with the 1974 population estimates of the Office of State Planning, North Carolina Department of Administration, and the January 1974 assessed valuation figures contained in tax and investment reports submitted by North Carolina local units to the North Carolina Local Government Commission.
2. Average property tax rates per $100 of value were calculated from individual municipal tax rates in the Local Government Commission's "Cash, Investments, and Tax Collections as of December 31, 1974."
3. Average percentages of collection at June 30, 1975, were calculated from individual municipal collection percentages in the Local Government Commission's "Cash, Investments, and Tax Collections at June 30, 1975."

parallels the variation of per capita property tax revenue by class shown in Table 1. This indicates that per capita assessed valuation increases with municipal size and that the study's larger municipalities have a greater tax base on which to draw than the smaller ones. However, note that the average assessed valuation per person is the same for the 2,500-9,999 and 10,000-24,999 population classes — a little over $10,300 — and then it drops to $8,818 for the 25,000-49,999 class. Nevertheless, the overall positive relationship between municipal size and assessed valuation per person is apparent in the data of Table 3.

Average property tax rates per $100 of value also vary by population class. As Table 3 shows, the cities fall into four broad groupings for this variable: municipalities with 500 to 999 people, which have an average tax rate of 64 cents; municipalities in the population classes between 1,000 and 49,999 people, which have average rates close to 75 cents; cities with 50,000 to 99,999 people, which have an average rate of 84 cents; and the five largest cities, which have an average rate of 98 cents. Thus, the study's larger cities not only have greater property tax bases on which to draw but also tax the base at a higher rate than the medium-sized and small municipalities.

The average property tax collection percentages shown in Table 3 are all very high. All percentages except one are 95 or above, and that one is 94.4. The five largest cities, which have an average collection of 97.6 per cent, do slightly better in percentage of property taxes collected by the end of the fiscal year than the municipalities in the other population classes.

Factors other than size also contribute to high or low per capita and percentage property taxes among the study's municipalities. One factor is industrialization. One city in the 10,000 to 24,999 population class, which ranks first among the study's 62 municipalities in percentage of revenue from the property tax and fourth in property taxes per capita, also has a very large industrial base.[10] This base provides property tax revenue out of proportion to the city's population and considerably above what would otherwise be yielded by the tax rate.[11]

Municipal subsidy of water-sewer operations with general revenue also causes property taxes per capita to be higher than average. For example, one small city, which ranks second among the study's municipalities both in property taxes per capita and in property tax as a percentage of operating revenue, has a water-sewer system for which operating receipts fell far short of covering operating costs in 1974-75.[12] As a result, other revenues in the city's general fund, most notably the property tax, were set at higher than usual levels — the city had the sixth highest tax rate among the study's municipalities — to help support the water-sewer system.

If a municipality receives neither ABC profits nor beer and wine tax revenue and also gets little money from miscellaneous revenue and charges, it may rely more heavily on the property tax than it otherwise would do. Similarly, the absence of sales tax revenues in one of the study's nonelectric cities causes it to rely more heavily on the property tax.

A large amount of tax-exempt property in a municipality can reduce property tax revenue per capita and the percentage of operating revenue derived from the property tax. In one of the study's small towns, which ranks fourth from the bottom in property tax revenue per capita, 65 per cent of the property is tax exempt.[13] As a result, assessed value per capita in that town is only $3,129, which is second lowest among the study's 62 municipalities, and the town is forced to hold down expenditures and rely on other revenue sources.

Finally, reliance on the property tax is often reduced when a municipality can turn to another important revenue source. We have already talked about electric/gas system net earnings in this regard. Several towns

10. According to the city's finance officer, about 65 per cent of the city's taxable base consists of industrial and commercial property.

11. The city has the twelfth highest tax rate among the study's municipalities, but the rate alone is not high enough to account for the unusually large amount of property tax revenue received by the city. The size of the city's industrial base is the major factor that accounts for the high property tax yield.

12. This is evident from the water-sewer revenue and expense summary in the city's 1974-75 audit report.

13. This information was supplied by the town's finance officer. It was based on a survey done by the town.

in the study have very profitable ABC systems, and ABC profits in at least one of these towns is large enough to hold its property taxes and property tax rate at a very low level. The town is third highest among the study's municipalities in average percentage of revenue from ABC profits and second lowest in average percentage of revenue from the property tax.

State-shared revenues. To examine variation in state-shared revenues by municipal size, we must look at each individual state-shared revenue. However, one comment should be made about the state-shared totals in Tables 1 and 2. Such revenues constitute a *smaller percentage* of operating revenue as we move from the study's small-city population classes to the large-city population classes. On the other hand, the state-shared totals, when expressed on a *per capita basis*, increase slightly with municipal size as we move from the small to large population classes.

1. *Sales Tax.* Average per capita revenue from the sales tax is related positively to municipal size among the study's municipalities. However, sales tax revenue as a percentage of operating revenue does not appear to vary with municipal size among these municipalities.

The local sales tax is collected by the state and returned to the county of collection. It is then divided among governmental jurisdiction in the county in proportion to either the population or amount of ad valorem taxes of each jurisdiction. Among the 59 municipalities of the study that receive sales tax revenue, 42 get their share of county sales tax revenue in the proportion that their population bears to the sum of county population and the population of all municipalities in the county; 15 municipalities receive their share of county sales tax revenue in proportion to the amount that their ad valorem taxes bear to such taxes for county government and all municipalities in the county. Cornelius and Charlotte receive sales tax revenue according to a special sharing arrangement established by local act for Mecklenburg County. The question raised by the existence of these two methods of intracounty distribution is whether the method used affects per capita sales tax revenue received by the study's municipalities, both overall and by municipal population class. (See Table 4.)

Table 4

Average Per Capita Sales Tax Revenue by Method of Intracounty Distribution and Municipal Population Class, 57 Selected North Carolina Municipalities Fiscal Year 1974-75

	Basis of Distribution			
Population Class	N	Population	N	Ad Valorem Tax Levy
500 to 999	7	$13.00	3	$ 3.97
1,000 to 2,499	8	12.96	2	13.38
2,500 to 9,999	10	14.28	2	12.76
10,000 to 24,999	8	13.29	4	15.33
25,000 to 49,999	2	14.97	2	14.79
50,000 to 99,999	3	14.75	2	20.02
100,000 or more	4	16.73	0	—
Average per capita amount for all municipalities by basis of distribution	42	$13.93	15	$13.01

Note: Cornelius and Charlotte in Mecklenburg County are excluded from the calculations for this table.

Whether county sales tax revenue is divided among individual governments in a county on the basis of population or ad valorem tax levy appears to make little difference in the average per capita sales tax amounts for all of the study's municipalities. But while this conclusion applies generally, it is not fully accurate for particular municipal population classes. Most small municipalities in the study — those with fewer than 2,500 people — receive less sales tax revenue per capita when it is distributed in proportion to the ad valorem tax levy rather than in proportion to the population of each governmental unit in the county. This happens because ad valorem tax levies relative to population are lower in the very small municipalities than for county government or the larger municipalities in the county. Of course, if a small town has a high property tax levy, an ad valorem-based formula is likely to bring it at least as much sales tax revenue per capita as the population-based formula. On the other hand, most of the larger cities in the study either receive or would receive slightly more sales tax revenue per capita when it is distributed in proportion to the amount of ad valorem taxes rather than population. The reason for this is that property tax levies relative to population are relatively higher in these cities than for county government and the smaller municipal governments in their respective counties.

County size is another factor that affects municipal per capita sales tax revenue. Gross retail sales are the basis of the sales tax, and such sales on a per capita basis vary with county size. For example, Mecklenburg County (Charlotte) with 373,700 people had $6,701 of gross retail sales per person in 1974-75; New Hanover County (Wilmington) with 95,100 people had $4,571 of gross retail sales per person that year; and Craven County (New Bern) with 65,000 people had $3,171 of gross retail sales per person in 1974-75.[14]

Several factors unrelated to municipal or county population also affect sales tax revenues per capita among the study's municipalities. As with the property tax, these factors are evident in the experiences of several individual municipalities. For exam-

14. Gross retail sales per person here were calculated with "1974 Population Estimates for North Carolina Counties and Municipalities," and county gross retail sales data for 1974-75 taken from the North Carolina Department of Revenue, Statistics of Taxation — 1976, pp. 76-77 (Raleigh, North Carolina, 1977).

ple, Asheville ranks third among the study's municipalities in per capita sales tax revenue. This is due to at least two factors: (1) Asheville is a regional shopping and trading center for the western part of the state; and (2) it is in the center of a resort and tourist area, and purchases by vacationers in Buncombe County add to Asheville's sales tax revenue. Sanford also does quite well on the sales tax. Although it has only 12,140 people, it ranks fourth among the study's municipalities in sales tax revenue per capita. Most of this is attributable to the fact that it is a regional trading center. Another city of comparable size ranks very low in its sales tax revenue per capita. This city is close to a larger city in a different county that has several major shopping centers and is accessible by a four-lane highway. Consequently, much retail business and sales tax revenue is pulled from the first city and county to the second.

2. *Intangibles tax.* What the data in Tables 1 and 2 show for the intangibles tax is that the five largest cities receive more revenue from this source than do the municipalities in any other population class.

The five largest cities do well on the intangibles tax because their size makes them important financial centers. For example, Greensboro, which receives more per capita revenue from the intangibles tax than any other of the five largest cities and ranks fourth overall among the study's 62 municipalities on this source, is the home of several large insurance corporations. Moreover, Greensboro has many individuals and commercial organizations with large holdings of stocks and bonds.

This points to a factor other than municipal size that causes intangibles tax revenue per capita to vary among the study's municipalities. It is wealth in the form of stock and bond holdings. One town in the 1,000-2,499 population class receives more intangibles tax revenue per capita than any other of the study's municipalities. Many wealthy retired people live there, and they own large amounts of stock. Sixty-eight per cent of the intangibles tax base for the town is attributable to ownership of stock, compared with 40 per cent state-wide.[15]

Once the state allocates net intangibles tax revenue among the counties, the amount for a county is divided among its county and municipal governments in proportion to the ad valorem tax levy of each jurisdiction. This means that cities and towns with high property taxes will tend to receive more intangibles tax revenue than those with low property taxes. The data of the study confirm this. Of the 15 municipalities in the study that rank highest in per capita intangibles tax revenue, 12 also rank among the top fifteen in per capita property tax revenue. So the same factors that contribute to high per capita property taxes — e.g., city size, industry, subsidy of water-sewer operations — also contribute to high intangibles tax revenue per capita.

3. *Franchise tax.* Franchise tax revenue is not related to municipal size on the average per capita distributions of Table 1. However, the very smallest municipalities, those with 500 to 999 people, receive about $1 less per capita from this source than the municipalities in the other population classes. The average percentage distributions of franchise tax revenue in Table 2 show an inverse relation to municipal size.

As the preceding article noted, nearly 60 per cent of the franchise tax collected by the state comes from the gross receipts of electric power and light and gas companies.[16] This means that municipalities with industries that use large amounts of electric power or gas are also likely to receive much franchise tax revenue per capita. For example, Morganton, which ranks second in franchise tax revenue per capita, has the single largest user of electricity from Duke Power in North Carolina — Great Lakes Carbon Company. Duke Power, rather than the city itself, supplies the company with electric power.[17] This probably explains why the study's very small towns receive somewhat less franchise tax revenue per capita; they have relatively fewer industrial users of electric power and gas than the medium-sized and larger municipalities.

4. *Beer and wine tax.* On the average per capita distributions shown in Table 1, beer and wine tax revenue is about $2.90 for the municipal population classes above 25,000 and considerably below this for the classes below 25,000 in population. Since the state distributes beer and wine tax revenue to localities strictly on a population basis, what accounts for this difference? The reason is that this revenue is distributed only to local units that authorize the sale of beer and unfortified wine in their jurisdictions. All of the study's cities above 25,000 permit such sales. Therefore, the per capita averages for the three population classes above 25,000 are virtually the same, i.e., $2.90. On the other hand, 15 of the study's 48 municipalities below 25,000 people do not permit the sale of beer and wine in their jurisdictions, which causes per capita beer and wine tax revenue for the classes below 25,000 to be much less than $2.90.[18]

5. *Gasoline tax.* The gasoline tax as a percentage of operating revenue is related inversely to municipal size among the study's municipalities.

The relationship between municipal size and gasoline tax revenue on the average per capita distributions in Table 1 is not so clear. However, two broad groups can be distinguished in that table: municipalities in the population classes below 10,000, which receive $13 per capita on average from the gasoline tax; and municipalities in the population classes above 10,000, which receive an average of $11 to $12 from this source. Still, this difference is slight.

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15. This information is for 1975-76 and was supplied by the Intangibles Tax Division, North Carolina Department of Revenue, Raleigh, North Carolina.

16. North Carolina Department of Revenue, Statistics of Taxation — 1976, p. 36 (Raleigh, North Carolina, 1977).

17. This information was supplied by the assistant city manager of Morganton.

18. Other minor factors also contribute to this. For instance, Sanford received only $1.49 per capita from beer and wine taxes in 1974-75. This unusually low amount is due to a special sharing arrangement for beer and wine tax revenue between Lee County and the city of Sanford.

The reason is that three-quarters of local gasoline tax revenue is distributed by the state on a population basis. Thus, whatever variation there is by municipal size is due to the fact that the other quarter of such revenue is divided among municipalities in proportion to nonstate (local) street mileage in each municipality. (See Table 5.)

Table 5 shows that the study's smaller municipalities have fewer residents per mile of local streets on the average than the larger ones, and this no doubt contributes to the slightly higher per capita averages for gasoline tax revenue for the study's smaller-sized population classes. This is also evident by comparing individual cities of different size. For example, Lillington, with 1,210 people, had 90 residents per mile of locally maintained streets and $16.62 per capita from the gasoline tax in 1974-75. This placed it first among the study's municipalities in revenue per person from the gasoline tax. On the other hand, Charlotte, with almost 300,000 people, had 304 residents per mile of locally maintained streets and received only $11.54 per capita from the gasoline tax. It ranked fiftieth among the study's municipalities on this source. Thus, unlike the state formulas for distributing the sales and intangibles taxes, which favor the larger municipalities on a per capita revenue basis, the formula for distributing the gasoline tax slightly favors the state's smaller towns.

Table 5

Average Number of Residents per Certified Mile of Nonstate System Streets in 62 Selected North Carolina Municipalities Organized by Population Class Fiscal Year 1974-75

Population Class	Average Number Residents
500-999	162
1,000-2,499	173
2,500-9,999	198
10,000-24,999	228
25,000-49,999	280
50,000-99,999	244
100,000 or more	294

Source: The data in this table were calculated from population estimates taken from the North Carolina Department of Transportation's *Incorporated Municipalities, Municipal Officials, and State Street Allocations* (Raleigh, North Carolina, 1974), and from gasoline tax amounts in the 1974-75 audit reports of the study's municipalities.

6. *Other state aid and grants.* The per capita and percentage amounts for other state aid and grants in Tables 1 and 2 point to a break at 25,000 in population for this revenue source.

The phenomenon of grantsmanship explains why the study's municipalities above 25,000 in population receive more state aid and grants for operating purposes than the smaller municipalities. A grantsmanship effort must be mounted to get such aid and grants, which often requires expertise and resources that the larger cities can afford but the smaller ones often cannot.

However, a few of the study's small cities and towns received a significant per capita amount in other state aid and grants in 1974-75. For example, Wallace, with only 3,020 people, ranked second on this source. Wallace did well largely because local officials there actively sought outside funding for specific purposes.

Water-sewer gross receipts. On the average percentage distributions shown in Table 2, water-sewer gross receipts show an inverse relation to municipal size among the population classes above 1,000 population. On the average per capita distributions shown in Table 1, there is a much less pronounced inverse relationship between municipal size and water-sewer gross receipts. For municipalities in each population class from 1,000 to 24,999 people, water-sewer gross receipts are above $50 per capita. However, such receipts drop to $40.53 per capita for cities with 25,000 to 49,999 people and then return to a $45+ level for the two population classes above 50,000.

Municipal size seems to have little relation to whether a town's water-sewer system is self-supporting. Again, a self-supporting system is defined as one in which water-sewer system gross receipts exceed operating expenses, interest on outstanding debt, and depreciation.[19] (See Table 6.)

The data in Table 6 make it clear that the proportion of self-supporting water-sewer systems does not vary among the study's municipal population classes. This proportion is approximately a half in each class, except for the towns with 500 to 999 people. In this class, six of the nine towns have self-supporting water-sewer systems. Although the study's data are not presented here, the *extent* to which the study's municipal water-sewer systems are or are not self-supporting also does not vary consistently with municipal size. Finally, whether a water-sewer system is self-supporting bears no relationship to the level of per capita water-sewer systems gross receipts among the study's municipalities. Of the study's 15 municipalities with the highest per capita water-sewer gross receipts, six are self-supporting. And of the study's 15 municipalities with the lowest per capita water-sewer gross receipts, seven are self-supporting.

One factor that affects water-sewer gross receipts per capita and as a percentage of operating revenue is the presence of industries that use a lot of water. For example, Valdese, which ranks first among the study's municipalities in per capita water-sewer gross receipts, has several textile plants that use large amounts of water.

A factor that underlies low water-sewer gross receipts is the absence of a municipal sewer system. Since sewer charges are usually set at some percentage of water charges (typically close to 100 per cent), the absence of a sewer system can halve water-sewer gross receipts. One of the study's small municipalities did not have a public sewer system in 1974-75. Residents used privately owned septic systems. As a result, this municipality ranked fourth from the bottom among the study's municipalities in per capita water-sewer gross receipts.

Economies of scale also no doubt affect per capita water-sewer gross receipts. This may be why such receipts average $10 lower for the population classes above 25,000 than for

19. Calculation of whether the water-sewer systems of the study's cities are self-supporting was based on the revenue and expense summaries for the water-sewer utilities in the 1974-75 annual audit reports of these cities.

the population classes between 1,000 and 24,999. Assuming that water-sewer rates are set to bring in receipts at or near costs (which includes operating expenses, depreciation, and interest on water-sewer debt), which is true in two-thirds of the study's municipalities, economies of scale may permit the cities above 25,000 in population to cover water-sewer operating costs with per capita gross receipts well below the per capita gross receipts needed to cover such costs in the towns with less than 25,000 people.

Electric/gas systems net receipts. These receipts are notably less on the per capita and percentage distributions for the study's municipalities below 10,000 in population than for those above this population level.

Part of this difference arises from the fact that electric cities make up a smaller portion of the sample in the population classes below 10,000 than in those above 10,000. Table 7 shows the number of electric cities in each population class and average electric/gas net receipts per capita and as a percentage of operating revenue by class for the study's 17 electric cities.

Although the split at 10,000 in population for electric/gas net receipts is reduced by looking at only the 17 electric cities, it is still there. Except for the percentage for the single city in the 500-999 class, the study's electric cities below 10,000 have lower electric/gas net receipts per capita and as a percentage of operating revenue on average than the study's electric cities above 10,000. The average per capita electric/gas net receipts for the six cities below 10,000 is $23.38. This average for the municipalities above 10,000 is $47.70. The six municipalities with less than 10,000 people receive an average of 13.8 per cent of operating revenue from electric/gas net receipts, while the 11 cities above 10,000 in population get an average of 18.2 per cent of operating revenue from such receipts.

Why do the study's municipalities above 10,000 have electric/gas systems that yield higher net receipts per capita and as a percentage of operating revenue than municipalities below 10,000? Economies of scale are one explanation. The electric/gas systems in the medium-sized and large municipalities serve more customers and can spread the fixed costs involved in operating an electric/gas system over a greater number of units of output than the electric/gas systems in smaller municipalities. Thus, as we move from the smaller to the larger electric/gas systems, the cost per unit of output declines; the spread between electric/gas system total operating costs and gross receipts widens — assuming that retail customer charges are set at prevailing commercial rates for electric power and gas. The final result is that electric/gas system net receipts both per capita and as a percentage of operating revenue increase as we move from the smaller to the larger electric/gas systems.

Of course, pricing or rate policy also affects electric/gas system net receipts. Of the study's 17 electric cities, 12 set their electric and gas rates at the same levels as the rates of private power and gas companies operating in their areas. Four set their rates slightly below those charged by the private companies, and one charges at levels slightly above the private utility rates. Whether a city sets its rates equal to, slightly below, or a little above private utility company rates has no significant effect on per capita electric gas net receipts among the study's electric cities. Nevertheless, it is only reasonable to expect that when an electric city sets its retail rates *well* above or below those charged by private utility companies (and other electric cities), electric gas net receipts per capita and as a percentage of operating revenue will be lower or higher for that city in comparison with such receipts in other electric cities. Similarly, if an electric city decides not to raise its rates to recoup increases in the price it pays for

Table 6

Number of Self-Supporting Water-Sewer Systems
59 Selected North Carolina Municipalities
Organized by Population Class
Fiscal Year 1974-75

Population Class	Number of Municipalities		
	Total	Self-supporting	Not Self-supporting
500-999	9	6	3
1,000-2,499	11	5	6
2,500-9,999	13	6	7
10,000-24,999	12	5	7
25,000-49,999	4	2	2
50,000-99,999	5	3	2
100,000 or more	5	2	3
Totals	59	29	30

Table 7

Average Per Capita and Percentage Electric/Gas System Net Receipts
17 Selected North Carolina Municipalities
Organized by Population Class
Fiscal Year 1974-75

Population Class	Number of Municipalities	Average Per Capita Amount	Average Percentage Amount
500-999	N=1	$31.73	28.8%
1,000-2,499	N=2	18.21	11.0
2,500-9,999	N=3	24.06	10.4
10,000-24,999	N=6	50.83	19.8
25,000-49,999	N=2	42.73	19.4
50,000-99,999	N=3	43.42	16.8

Note: None of the five cities above 100,000 in population has an electric or gas distribution system.

power, electric/gas net receipts for the city will be reduced. This occurred in one of the study's larger electric systems in 1974-75.

Federal revenue-sharing. Federal revenue-sharing bears an inverse relationship to municipal size on the average percentage distributions of Table 2. It is 12.1 per cent of operating revenue for the 500-999 population class; 9.0 to 10.0 per cent for the 1,000-49,999 classes; and less than 8 per cent for each of the two classes above 50,000 in population. On the average per capita distributions shown in Table 1, federal revenue does not vary with municipal size. It stays near $20 per capita, except for the 500-999 municipalities, where it is $14.54 per capita.

The lower per capita average of revenue-sharing for the 500-999 population class is due partly to low per capita property taxes for the towns in this class. Because of low property taxes, relative to population, the index of tax effort is reduced. Since tax effort is an important factor in the federal revenue-sharing formula, the towns in that class receive relatively less revenue-sharing on the average than municipalities in the other classes.

Tax effort includes the property tax, local-option sales tax, and certain miscellaneous local revenues.[20] The importance of tax effort in determining per capita federal revenue-sharing is evident in the revenue experiences of two individual municipalities. Asheville ranks first among the study's 62 municipalities in per capita federal revenue-sharing; and among some of the sources that comprise tax effort, it ranks eleventh in per capita property taxes; third in per capita sales tax revenue; and third in per capita miscellaneous revenue and charges. Sanford ranks second among the study's municipalities in per capita federal revenue-sharing, and it ranks twelfth in per capita property taxes and fourth in per capita sales tax revenue. Of course, tax effort is not the only variable in the revenue-sharing formula. Per capita income is another key variable, and it no doubt contributes to variation among the study's municipalities in per capita federal revenue-sharing.

Other federal aid. Tables 1 and 2 show that the cities above 100,000 in population have much more of other federal aid for operating purposes on the average than municipalities in any of the study's other population classes. One reason for this is that only the largest cities could qualify for the major federal aid programs that were available for operating purposes in 1974-75. For example, in Winston-Salem, which ranks first among the study's municipalities in other federal aid per capita, the lion's share of this aid was comprehensive employment and training act money, which was available only to the largest cities of the state in 1974-75. Another reason is that the largest cities are able to afford a major grantsmanship effort. As with "other state aid and grants" the smaller cities and towns are less able to do this.

Distributed ABC profits. Tables 1 and 2 show no clear or consistent relationship between municipal size and distributed ABC profits. The N for each population class in these tables equals the number of municipalities in the class regardless of whether particular municipalities received ABC profits. When the N in each class is reduced to include only municipalities with ABC systems or those that participate in county systems, the average per capita and percentage ABC amounts in Tables 1 and 2 change. The changed amounts are presented in Table 8.

Table 8

Average Per Capita ABC Profits for
40 Selected North Carolina Municipalities
Organized by Population Class
Fiscal Year 1974-75

Population Class	Municipalities		
	Number in Study	Number with ABC Profits	Average Per Capita ABC Profits
500-999	11	4	$ 2.30
1,000-2,499	11	7	18.64
2,500-9,999	13	7	6.28
10,000-24,999	15	9	4.23
25,000-49,999	4	4	2.27
50,000-99,999	5	4	4.93
100,000 or more	5	5	4.14

Like Tables 1 and 2, Table 8 shows no consistent or continuous relationship between distributed ABC profits and municipal size. But it does suggest that the larger a town is, the more likely it is to receive distributed ABC profits.

The study's municipalities in the 1,000-2,499 population class have very high per capita and percentage averages for ABC profits. The reason is that this class has several municipalities with very profitable ABC systems. For example, Pittsboro's ABC system, which yields $30.33 per capita, places that town first among the study's municipalities for this source. The reason Pittsboro's ABC system is so profitable is that it serves not only the municipality but also a wide surrounding dry area.

One other factor that affects distributed ABC profits among the study's municipalities is whether the municipality has it own ABC system or participates in a county system. Of the study's 15 top-ranking municipalities in amount of ABC profits per capita, 14 have their own systems.[21] Cornelius is the only town in the top 15 that shares in the profits of a county system. Moreover, among the five largest cities, Greensboro and Winston-Salem have their own ABC systems, and they earn $6.74 and $8.00

20. See GOVERNOR'S REVENUE SHARING ADVISORY COMMITTEE, GENERAL REVENUE SHARING: A GUIDE FOR LOCAL GOVERNMENTS IN NORTH CAROLINA (Institute of Government, 1973).

21. NORTH CAROLINA STATE BOARD OF ALCOHOLIC CONTROL, PUBLIC REVENUES FROM ALCOHOLIC BEVERAGES — NORTH CAROLINA ABC BOARDS — JULY 1, 1974 TO JUNE 30, 1975.

per capita respectively from their systems. On the other hand, Charlotte, Raleigh, and Durham participate in county systems, and they each receive $3 or less per capita in distributed ABC profits.

Investment earnings. A positive relationship exists between investment earnings and municipal size among the study's municipal population classes on the average per capita distributions of Table 1. On the average percentage distributions, shown in Table 2, investment earnings account for less than 3 per cent of operating revenue in the under-2,500 population classes; 3.7 to 4.6 per cent of operating revenue for the classes between 2,500 and 99,999; and 5.9 per cent of such revenue for the cities above 100,000.

The positive relation between investment earnings and municipal size is also reflected in the data shown in Table 9. That table shows the average percentage of total cash invested as of June 30, 1975, and the average equivalent tax rate earned by investments in 1974-75 for each municipal population class. The percentage invested and equivalent tax rate figures in Table 9 pertain to all municipal funds, including bond proceeds and federal grants for capital construction, as well as operating revenues.

Table 9 shows that the percentage of total cash invested increases as we move from the smaller to the larger population classes. The average equivalent tax rate earned through investments also tends to be greater in the population classes for the larger cities than in those for smaller municipalities.

What factors enable the study's larger cities to make relatively greater earnings by investing idle operating cash than the smaller municipalities? Greater cash flow enables the larger cities to accumulate relatively higher cash operating balances for investment than the smaller cities. Moreover, because the larger municipalities accumulate greater sums for investment, they can buy investments in larger denominations, and these investments bring a higher interest rate than the smaller ones. The larger municipalities also have more staff to plan and supervise the investment program than the smaller municipalities.

Miscellaneous charges and revenue. Miscellaneous charges and revenue tend to increase with municipal size among the study's municipalities. This is true on both the average per capita and percentage distributions of Tables 1 and 2.

The study's larger cities receive more revenue per capita and more revenue as a percentage of operating revenue from miscellaneous sources and charges partly because they have more businesses, occupations, and activities for which fees can be charged than the smaller cities. The larger cities also have the staff and resources needed to monitor and collect a wide range of miscellaneous fees and charges. Beyond this we must look at several individual sources that make up miscellaneous revenue and charges.

1. *Privilege licenses.* Average per capita revenue from this source tends to increase as we move up from the study's smallest-size population class. One contributing factor is that the North Carolina General Statutes set dollar limits on privilege license charges, and for some licenses these vary with municipal size. For example, Durham can charge $100 for an undertaker's privilege license, while Tarboro can charge only $10 for such a license.[22]

2. *Solid waste fees.* Although average per capita revenue from this source varies considerably among the municipal population classes, this variation depends not on size but rather on whether particular municipalities impose such fees and the nature of the fees. A little over half of the study's municipalities impose solid waste fees, but in most, the fees are for special collections and are not fiscally significant — less than 1 per cent of operating revenue. However, a few municipalities — like Wilmington, Monroe, and Wallace — impose solid waste fees for regular garbage collection, and the fees there amount to as much as 4 or 5 per cent of operating revenue.

3. *Parking fees.* Average per capita revenue from this source is much greater in the study's two largest population classes than in the other population classes. Two factors account for this. First, many of the study's smaller municipalities charge no parking fees at all. Second, most of the small and medium-sized municipalities that do charge such fees do so only on street-metered parking. On the other hand, the cities above 50,000 (and some cities below 50,000) charge fees for street metered parking and also operate parking lots and decks. For example, Winston-Salem, which ranks third among the study's municipalities in per capita revenue from parking fees, has three parking decks and numerous parking lots.

(continued on p. 45)

Table 9

Average Percentage of Total Cash Invested and Equivalent Tax Rate Earned Through Investments in 62 Selected North Carolina Municipalities Organized by Municipal Size
Fiscal Year 1974-75

Population Class	Average % Invested	Equivalent Tax Rate Earnings
500-999	74.3%	7 cents per $100
1,000-2,499	84.8	9 cents per $100
2,500-9,999	83.4	12 cents per $100
10,000-24,999	87.3	10 cents per $100
25,000-49,999	96.1	17 cents per $100
50,000-99,999	93.1	13 cents per $100
100,000 or more	99.7	19 cents per $100

Source: The average percentage invested and tax rate equivalent earnings by population class were calculated from data in the North Carolina Local Government Commission's "Cash, Investments and Tax Collections at June 30, 1975" (Raleigh, North Carolina: State Treasurer, October 1975).

22. N.C. GEN. STAT. § 105-46.

Projecting Local Government Revenue

Charles D. Liner

We cannot foresee changes in the many economic, political, and administrative factors that affect local government revenue. Nor can we expect statistical methods, techniques, or computers to do the impossible. Still, certain methods, techniques, and approaches can aid local governments in estimating future revenue. By analyzing current trends and the forces that underlie them, we can make a projection of future revenue.

> Projection: An estimate of future possibilities based on current trends.
>
> Webster's Dictionary

The key to good projections is good analysis. Good analysis requires understanding the revenue system and the forces or events that have affected past revenues, having adequate and timely information, and exercising good judgment. This article presents an introduction to one approach — time-series analysis. Although this approach incorporates certain statistical methods that may be helpful, the value of the approach lies in its emphasis on analyzing current trends by dividing the past record of collections (the time series) into its component parts and using this analysis as the basis for making projections.

For a revenue projection method to be useful to local governments, it must meet certain criteria:

- It must be straightforward and uncomplicated so that local officials untrained in mathematics, statistics, or economics can use it during the budgeting process.
- It must require only information or data that are easily obtainable on a timely basis from local government administrative records or from the state government.
- Finally, it must be possible for the required calculations to be performed manually rather than by computer, since many local governments do not have computers.

Some methods proposed for local government revenue projections — for example, multivariate-regression analysis — do not meet these criteria. Time-series analysis, on the other hand, is a method that can be understood easily and requires only simple computations that can be performed on a hand-held calculator. It does not require projections or current data on population, per capita income, retail sales, gross national product, or other variables. Instead, it involves analysis of data readily available from internal records or recent state government reports. Even when a computer is available, manual computations and graphing techniques are preferable to use because they give the analyst a better "feel" for factors that affect revenues. Finally, the projections can be understood by members of governing boards, who are responsible for the budget and for making long-range plans.

The first step in making a time-series analysis is to separate total revenue into its major components — funds, local revenues, state-shared and state-collected revenues, and individual revenue sources. This break-down is necessary because different sources are affected by different variables and because budgeting requires some separation of revenue sources. Once total revenue is separated into its components, the analyst must decide whether to analyze *actual* revenues or the *base* of the revenue source. For example, property tax revenue is the result of several factors — the total assessed value of taxable property (the base), the tax rate, and the collection rate; therefore, the base should be projected separately from the tax rate and the collection rate. It may be necessary to divide the property tax base into its components — real versus personal property or residential versus commercial property. For other revenue sources it may be infeasible or unnecessary to analyze the base. For example, it is usually sufficient to analyze retail sales tax collections rather than retail sales, which is the base, because the tax rate is not expected to change and because the

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The reader who wishes to know more about time-series analysis and other methods of forecasting and projecting should see Frederick E. Croxton and Dudley J. Cowden, *Applied General Statistics*, 2d ed. (New York: Prentice-Hall, Inc., 1955), and Steven C. Wheelwright and Spyros Makridakis, *Forecasting Methods for Management*, 2d ed. (New York: John Wiley and Sons, 1977).

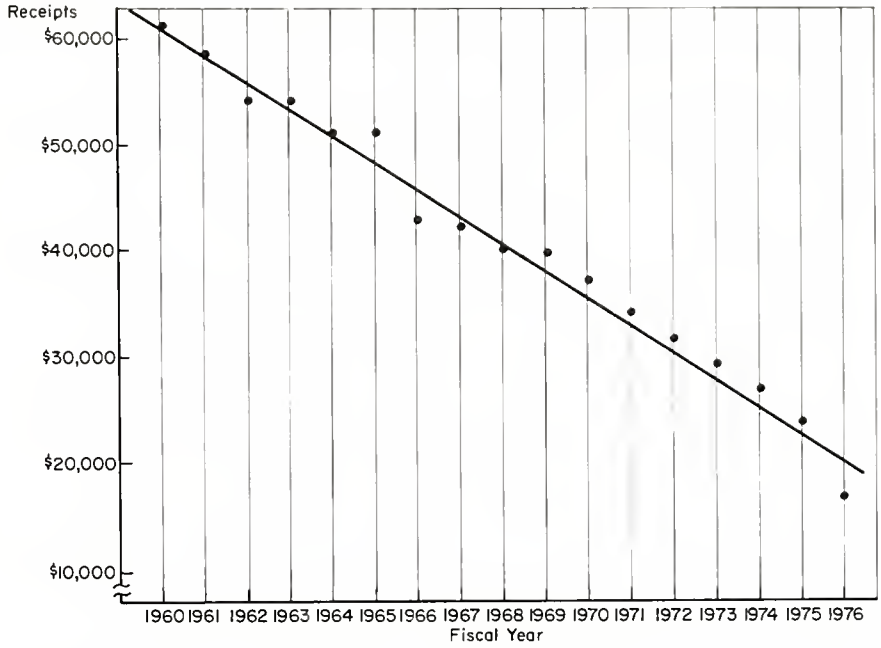
composition of the base is not likely to change in a way that will affect revenues significantly.

Once the analyst has broken down the revenues into components, he must decide how to allocate his time. Usually it does not pay to spend much time on minor revenue sources. These sources can be projected by using the previous year's collections or by using the department heads' judgment. The analyst should devote most of his attention to important revenue sources.

The next step is to collect the historical record of actual collections or the tax base for each year. This chronological series of data is a "time series." A time-series component is a factor that causes the time series to change over time. The object of time-series analysis is to break the time series down into its components in order to analyze the components separately. Four types of components will concern us — trend, cyclical, seasonal, and irregular. These are discussed below.

Figure 1

Parking Meter Receipts, City of Durham



Time-series components

Trend. A trend is a continuing direction of movement in the time series. The trend is the most important type of time-series component for use in projecting local government revenue because many revenue sources are affected by long-term trends in underlying economic and demographic variables. Communities with growing population and increased economic activity are likely to have an upward trend in their property tax base and in retail sales tax collections. A dramatic example of a downward trend appears in Figure 1, which shows the time series of parking fee revenue in Durham. The downward trend in revenue is due to the long-term downward trend in shopping and commercial activity in Durham's central business district.

Underlying trends in population and economic activity that are stable over time can be used to project revenue if we can assume that the same trends will continue or if we can forecast future changes that may occur in the trends. Population trends are not entirely stable over time because they depend on changes in birth, death, and migration rates. But these rates do not change dramatically or unexpectedly over short periods of time, and we are generally aware of changes that are occurring. In fact, past changes in birth rates, such as the "baby boom" after World War II and recent declines in birth rates, provide good clues to future changes in family formations, school enrollments, age distribution, and other factors that will affect local governments.

Similarly, although economic activity is very susceptible to business cycle influences, economic growth or decline in local areas is usually based on fundamental trends that can be expected to continue for several years. For example, in the 1960s and early 1970s the southern states have had economic growth rates higher than those in other regions of the country, and the basic economic and social factors that contributed to these growth rates should continue in the near future. One of the most pervasive causes of population and economic change in recent decades has been the long-term downward trend in the rural farm population and the large increase in urban and nonfarm rural population. Another basic trend that has had important implications for local governments is the decentralization of economic activity within communities. Growth has tended to occur outside or at the edge of municipal boundaries, and as a result many central business districts have declined and changed in character.

Thus a key to analyzing local government revenue is to analyze basic trends that affect the local revenue base. Current trends are the best indication of future trends, providing the basis for making assumptions about the future and alerting us to those factors that may change in the future and thus affect future revenue.

Cyclical factors. Revenues may be affected by cyclical, or wavelike, movements that occur irregularly over a period of several years. Three types of cycles may affect revenues: business cycles, interest-rate cycles, and stock-market cycles. Although related, they must be analyzed separately.

The most important cyclical influence on local revenues is the business cycle, wavelike fluctuations in the general level of economic activity. Business cycles tend to affect almost all economic activities and are characteristic of modern industrial economies in which economic decisions are largely decentralized.

Production, employment, income, retail sales, property values, and prices affect local revenues either directly or indirectly and are affected by the phases of the business cycle — expansion, downturn, contraction, and recovery. Business cycles do not occur regularly, and it is difficult to foresee their occurrence or their size.

In projecting revenues, it is important to have some appreciation of the current state of the economy and the current phase of the business cycle. Although the analyst cannot be expected to make sophisticated economic forecasts, he should be aware of current analyses and forecasts of economic conditions, which are reported frequently in newspapers, news magazines, financial publications, and government publications.

If revenue projections are to be based on past trends in revenue collections, it is essential to analyze the effects of previous business cycles. The historical pattern of business cycles can be seen in time series of gross national product, industrial production indexes, employment, or unemployment rates. Figure 2 shows the Federal Reserve Board index of industrial production from 1950 to mid-1977. The major downturns, or recessions, are readily apparent. The most recent recession began in 1973 as a "business slowdown" that in the fall of 1974 turned unexpectedly into the most severe recession of the postwar period. In the few months between November 1974 and April 1975, when the index bottomed out, the index fell from 121.7 to 109.9, a drop of over 9 per cent. The North Carolina economy suffered immediate effects and fared worse than most states. Massive layoffs occurred throughout the state, and 11.6 per cent of those eligible were drawing unemployment compensation by March 1975. After spring 1975, however, the economy recovered steadily, and by mid-1977 the industrial production index was above 138.

The effect of business cycles on tax revenues is usually not as dramatic as the effects on such economic variables as production, income, and employment. Tax revenues may not fall precipitously during recessions, and they may not increase proportionately during expansions. People who become unemployed during recessions must still buy food, utilities, and housing. Unemployment compensation and personal savings permit many families to maintain their standard of living. Since property is usually assessed only every eight years, normally the property tax base would not fall even if property values fall, but growth in the property tax base may lessen and some collections may be delayed. Sales tax collections, franchise tax revenues, and privilege license tax collections should not reflect the full extent of economic recessions.

Cyclical fluctuations in interest rates have two effects on local government revenue: they affect the cost — and therefore the desirability or feasibility — of government borrowing, and they affect the property tax by influencing the amount of new construction, which is sensitive to changes in mortgage rates.

A final but less important cyclical effect in North Carolina comes from stock-market cycles. Since the value of stocks owned by residents is part of the base of the intangible property tax, revenue from this tax may respond somewhat to fluctuations in stock prices.

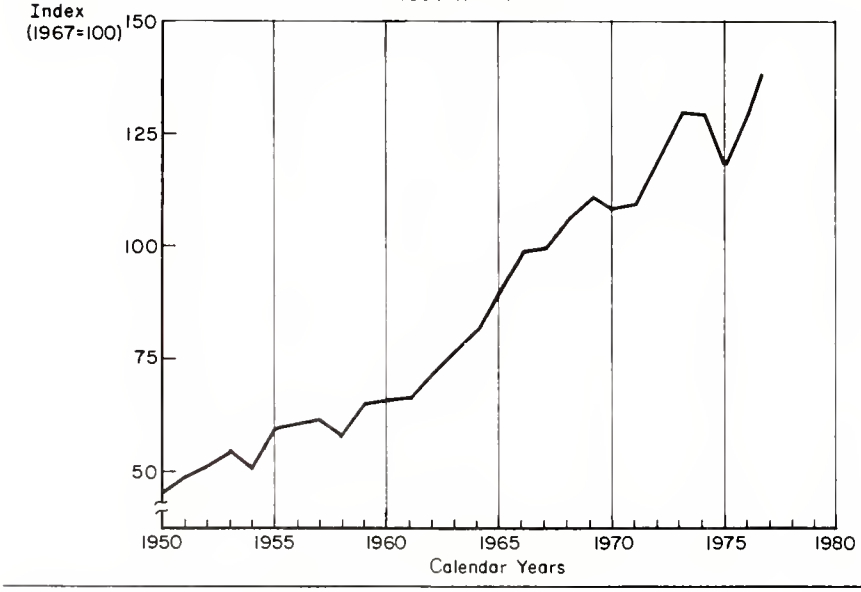
Seasonal components. Revenue collections during the course of a year may vary according to seasonal influences. For example, parking fee revenues and retail sales tax collections will vary with seasonal patterns of shopping. Utility franchise tax collections, which depend on consumption of electricity and gas, will also vary with the season. Recreational fee revenues will usually be much higher in summer than in winter. In these cases revenue collections vary seasonally because the base varies seasonally. Legal and administrative provisions of revenue sources are another important cause of seasonal variations. For example: most property tax collections occur in the late fall; local governments receive their share of state-shared and state-collected taxes quarterly.

In analyzing and projecting revenues it is usually necessary to examine both annual and monthly time series. Normally, one analyzes annual data to study long-term trends and cyclical influences, but in making projections for the coming fiscal year it is often necessary to examine monthly data for the most recent years. Annual data will not reflect seasonal variations — the only components will be the trend, cyclical, and irregular components; but in a monthly time series, the seasonal component may have the strongest influence on variations.

Figure 3 demonstrates seasonal variation in retail sales tax collections. Sales tax collections increase dramatically in December because of Christ-

Figure 2

Federal Reserve Board Index of Total Industrial Production, 1950 to mid-1977

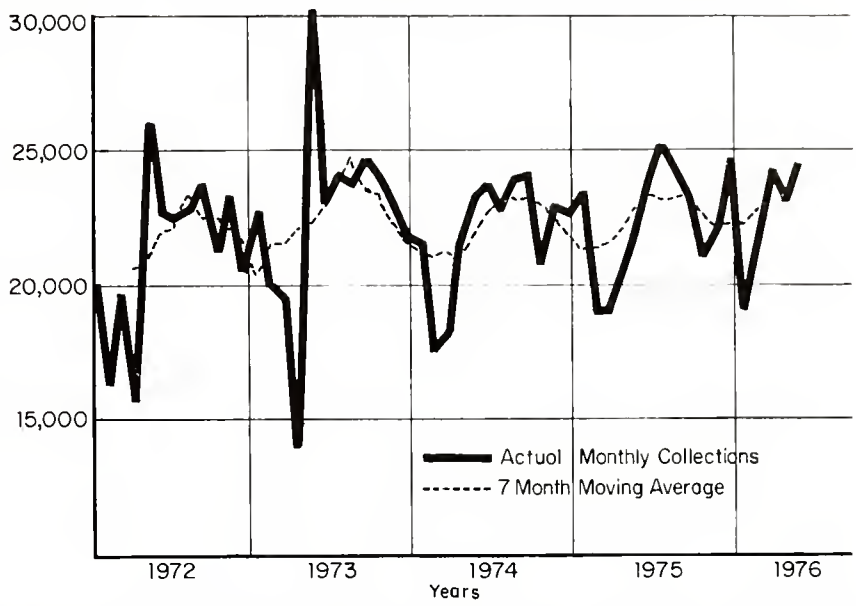


mas shopping. Since we are interested in the long-term trend underlying the monthly data, we must smooth out the seasonal variation to establish the trend. This can be done by calculating a twelve-month moving average and plotting the average in the seventh month. (The box on page 36 shows how to calculate a moving average.) The twelve-month moving average eliminates the seasonal variation and also smooths variations due to irregular and cyclical influences; the plotted average indicates the underlying trend, although cyclical influence may also be revealed. For example, in Figure 3 retail sales tax collections exhibit a strong upward trend, but the dip in the moving average during 1974 and 1975 reflects the cyclical effect of the recession that occurred in those years.

During the course of a year it may be useful to analyze monthly collections from some local or state sources to see whether collections are in line with previous estimates and to detect cyclical or other changes that may be affecting collections. But it is often very difficult to analyze weekly or monthly collection data because of seasonal or irregular influences. For example, unusually large collections may occur in one period or differences in the number of business days in each month may affect collections. A good example is provided by the record of monthly gasoline tax collections shown in Figure 4. It shows a seemingly erratic pattern of collections. Calculating and plotting a seven-month moving average, as shown in Figure 4, reveals a regularly occurring seasonal pattern.

Figure 4

North Carolina Gasoline Tax Monthly Collections

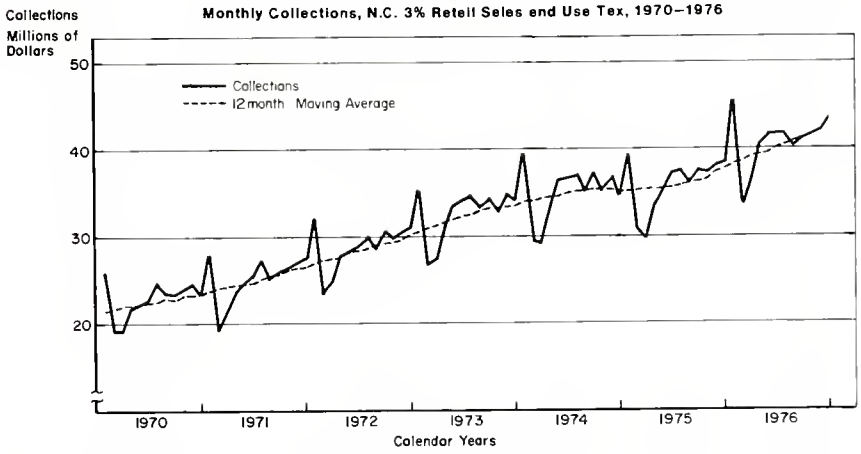


Monthly collections of gasoline taxes fall in the winter months and then increase during the spring and summer as the number of miles driven increases. The seven-month moving average also smooths out unusual variations in collections. For example, collections were unusually low in April 1973 and unusually high in the following month, presumably because some collections that normally would have occurred in April were collected in May. The seven-month moving average smooths these large variations and shows them to be in line with the normal pattern of collections.

A moving average of less than twelve months also gives an indication of trend and cyclical effects without completely eliminating the seasonal component. The seven-month moving average plotted in Figure 4 permits the trend of collections from year to year to be evaluated. For years before 1973, the seven-month moving average would reveal a continuing increase in the level of seasonal collections. The moving average for 1973 is similar to that of 1972 but at a higher level. However, the sharp increase in gasoline prices late in 1973 and early 1974 had an important effect on gasoline consumption and therefore on revenue collections, which are based on the number of gallons sold. This effect is not immediately apparent from actual collections but is readily apparent from the moving averages. The moving average for 1974 shows the same seasonal pattern but at a lower level, while the moving average for 1975 appears to be roughly at the same level. This pattern is confirmed by total collections for calendar years — collections increased 6 per cent in 1973, declined 2.6 per cent in 1974, and increased only 1.4 per cent in 1975.

Figure 3

Monthly Collections, N.C. 3% Retail Sales and Use Tax, 1970–1976



Irregular components. Irregular components of time series include a multitude of possible events, legal and administrative changes, or other factors unrelated to trend, cyclical, or

seasonal components. Irregular components show up as deviations from the trend or from cyclical patterns. We should devote our time and efforts to analyzing the trend and cyclical components and those irregular components that can be explained easily or have had significant effects on revenues. Since so many factors or variables can affect revenues, and since these factors or variables change constantly, almost every number in a time series will be affected by irregular or erratic components. We have neither enough information nor enough time to investigate each variation from the trend or cyclical pattern.

For some revenue sources the irregular components may have such an important effect on revenues that no trend or cyclical components are apparent. This may be true, for example, of a time series of water tap charges. These charges are assessed when a home or building is connected to a public water system, not necessarily when the structure is built. The amount of water tap charges may depend on such irregular events as the extension of sewer line to an existing neighborhood, annexation, the construction of a new industrial plant, additions to water system capacity, or construction of new homes near existing water lines. Revenue from parking fines may vary with administrative policies regarding enforcement. Other revenue sources that are likely to have strong irregular components are the municipal property tax (due to annexations or revaluations), sewer assessments, sewer charges, street cut revenues, and interest on investments of idle cash.

For some of these sources, analysis of trend and cyclical components may not be very helpful in projecting revenues; for others, such as the property tax, the analysis must account explicitly for irregular components such as annexations and revaluations as well as trend and cyclical components. It may be possible to discover some pattern or causative factor associated with variations and to use this information in estimating future revenue. Sometimes it may be appropriate merely to use some rough average or an informed guess to estimate future revenues, especially if the amount is not large relative to total revenue. In any event, the time-series analysis methods discussed below will be of little value when the irregular component overwhelms trend, cyclical, or other components.

For revenue sources that are not overwhelmingly affected by irregular components and have important trend or cyclical components, two types of irregular components are very important in analyzing local revenues: tax-rate and tax-law changes (including enactment of new taxes), and specific occasional factors that significantly affect revenue.

Revenue projections must, of course, take into account expected changes in tax rates and in the tax laws, but past changes must also be taken into account in order to analyze past trends in revenues. For example, a time series for municipal franchise tax revenues from fiscal years 1968-69 through 1971-72 would seem to indicate a very strong upward trend. However, much of this increase was due to the legislated increase in the municipal share from three-fourths of 1 per cent to 2 per cent of gross receipts in fiscal year 1969-70 and to 3 per cent of gross receipts in fiscal year 1971-72. Analysis of property tax revenue requires distinguishing between tax-rate changes and tax-base changes.

Revenue projections and analysis of past trends must also take into account specific events and developments that have had or are expected to have an effect on revenues. One example, previously mentioned, is the sharp rise in gasoline prices in 1974, which caused a decrease in gallons of gasoline purchased and, therefore, of funds available for municipal street improvements under the Powell Bill. Revaluations of property is another important example. The opening of a new shopping center may affect sales tax revenue if it draws customers from outside the county. A new industrial firm or the closing of an existing firm may have a significant effect on revenue.

Analysis of trend

For many local revenue sources the trend component will have a strong influence; therefore analysis of the trend component will be the basis for making projections. Once the trend is estimated, the influence of cyclical

Calculating a Moving Average

For a three-month moving average, add the amounts for the first, second, and third time periods and divide by three to obtain the moving average, which should be centered in the second time period. Then add the amounts for the second, third, and fourth time periods and divide by three. And so on. Thus:

Month	Collections	Moving Average (rounded)
1	$21	
2	16	(21+16+20) ÷ 3 = 19
3	20	(16+20+15) ÷ 3 = 17
4	15	(20+15+16) ÷ 3 = 17
5	16	(15+16+22) ÷ 3 = 18
6	22	(16+22+22) ÷ 3 = 20
7	22	(22+22+23) ÷ 3 = 22
8	23	(22+23+21) ÷ 3 = 22
9	21	(23+21+23) ÷ 3 = 22
10	23	(21+23+20) ÷ 3 = 21
11	20	(23+20+22) ÷ 3 = 22
12	22	

For a seven-month moving average, add the amounts for the first seven time periods, divide by seven, and center it at the fourth time period. Then add the amounts for the second seven time periods, divide by seven, and so on. A moving average for an even number of time periods must be placed off-center (e.g., the seventh month for a twelve-month moving average). Reference: F. E. Croxton and D. J. Cowden, *Applied General Statistics*, 2d ed. (New York: Prentice-Hall, Inc., 1955).

and irregular components can be analyzed, since they will show up as deviations from the trend. The trend in time series can be estimated by "fitting" a straight line to the time series so that the line approximates the trend.

Graphing the time series and the trend line. Although it is preferable to calculate trend lines from the actual data in the time series rather than to fit a trend line visually, it is important to plot the time series on graph paper. In fact, graphing each time series may be the single most important part of the analysis. A graph gives a picture of the basic pattern of each revenue source. It immediately calls to attention major variations in the time series, and it forces the analyst to explain the revealed patterns. The graph can also be used to plot the calculated trend line so that variations from the trend line can be analyzed and so that the trend line can be projected to future periods. Figure 1 is an interesting example of such a graph, which shows the pattern of parking meter collections in Durham. As stated previously, the graph reveals a consistent downward trend in parking meter receipts in a city that has experienced a decentralization of shopping and other economic activity from the central business district. Variations from the calculated trend line are relatively small, suggesting that the underlying trend is very important in determining collections and that cyclical and irregular components have had relatively little influence on collections. The calculated trend line can therefore be expected to serve well as the basis for projecting future collections. (Rate changes, of course, will have to be taken into account.)

Calculating the trend line. The trend line can be calculated quickly and simply from the time series by using a short-cut "least-squares" method (see the material on page 38 for instructions on how to use this method). The least-squares method produces a straight line that minimizes the sum of deviations from the line and the actual data. It provides an estimate of the slope and level of the trend and allows us to calculate and plot future trend values. But this method must be used with judgment and discretion since the calculated line does not necessarily produce a good fit with the data and does not necessarily reflect a true trend. The actual trend in the time series may be a curve rather than a straight line, or irregular influences may produce such large variations from the calculated trend that the calculated trend is meaningless.

A trend line is defined by its level and slope. The level is represented by the calculated value of the trend line in a given year. The slope represents the change in the time series for each period of time. The slope may be negative or positive, depending on whether the trend is down or up. The slope is the change in the calculated value of the trend line for each period. The change will be the same for each period. In the short-cut least-squares method the trend values for each year of the time series are calculated according to the following formula:

Calculated trend value = level in central year + (slope x number of years from central year)

To calculate the trend line, we must (1) calculate the "level in central year," and (2) calculate the slope of the trend line (as explained in the box on page 38). Calculation of the trend values is simplest when the time series has an odd number of years. The middle year then is the "central" year. For an even number of years, the "central" year is between the two central years, and the calculations must be adjusted accordingly. The slope will be a positive (+) number for upward trends and a negative (-) number for downward trends. After the level in the central year and the slope are calculated, one can calculate the values of the trend line for each year in the time series and project the trend line to future years.

Adjusting for trend. The least-squares trend line can be used to project revenues into the near future as long as there is no reason to believe that the trend will change. Before using the trend line for this purpose, however, we will need to know how much confidence we can place in the trend as a predictor of future revenues. We also will need to analyze the contribution of cyclical and irregular components to the behavior of the time series in order to adjust the projections according to our assumptions about future cyclical and irregular influences. One method that can be used for both purposes is to "adjust the data for trend."

To adjust the data for trend, the actual data for each year are divided by the calculated trend value for that year and multiplied by 100 to produce the "percentage of trend." The formula is as follows:

$$\frac{\text{Actual collections}}{\text{Calculated trend value}} \times 100 = \text{Percentage of trend}$$

The calculation is illustrated in the box on this page.

The percentage of trend is a useful measure of the relative variation of the actual data from the trend line. If the percentage-of-trend values are all close to 100 per cent, this suggests that most of the variation in actual collections is due to the underlying trend, and we can have more confidence in projections based on the trend. On the other hand, if the percentage-of-trend values vary significantly above or below 100 per cent, the actual data are clearly being influenced importantly by cyclical or

Calculation of Percentage of Trend

Fiscal Year	Actual Collections (thousands)		Calculated Trend Value		Percentage of Trend
1971-72	($142.8	÷	$118.6)	x 100 =	120.4%
1972-73	(105.8	÷	139.6)	x 100 =	75.8
1973-74	(166.5	÷	160.4)	x 100 =	103.8
1974-75	(173.0	÷	181.3)	x 100 =	95.4
1975-76	(213.9	÷	202.2)	x 100 =	105.8

Calculating and Plotting a Least-Squares Trend Line

The object is to calculate a trend line for the time series for fiscal years 1972-73 to 1976-77 (in actual practice a longer period would normally be used), plot the trend line along with the actual data, and project the trend line for fiscal years 1977-78 and 1978-79. The first step is to calculate the slope and level in the central year.

Column (a) Fiscal Year	Column (b) Collections (thousands)	Column (c) Years from Central Year	Column (d) Cross-products (b) x (c)	Column (e) Years-squared (c) x (c)
1972-73	$142.8	−2	−285.6	4
1973-74	105.8	−1	−105.8	1
1974-75	166.5	0	0	0
1975-76	173.0	+1	+173.0	1
1976-77	213.9	+2	+427.8	4
Total	802.0		+209.4	10

Calculate the slope:

$$\text{Slope} = \frac{\text{cross-products total}}{\text{years-squared total}} = \frac{209.4}{10} = +\ 20.9$$

Calculate the level in the central year:

$$\text{Level in central year} = \frac{\text{total collections}}{\text{number of years}} = \frac{802.0}{5} = 160.4$$

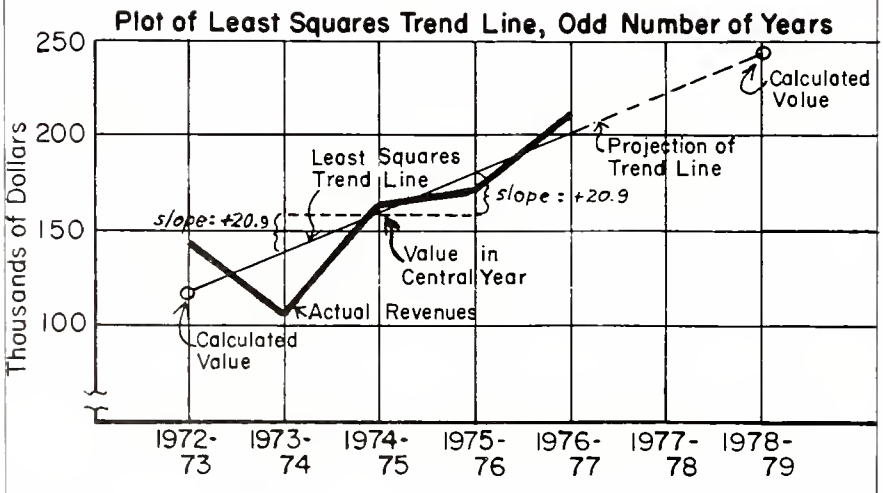
Calculate the trend line and project the trend line to fiscal years 1977-78 and 1978-79:

Fiscal Year	Level in Central Year		Number of Years from Central Year		Slope		Trend Line Value
1972-73	160.4	+	(− 2	x	20.9)	=	118.6
1973-74	160.4	+	(− 1	x	20.9)	=	139.5
1974-75	160.4	+	(0	x	20.9)	=	160.4
1975-76	160.4	+	(+ 1	x	20.9)	=	181.3
1976-77	160.4	+	(+ 2	x	20.9)	=	202.2
1977-78	160.4	+	(+ 3	x	20.9)	=	223.1
1978-79	160.4	+	(+ 4	x	20.9)	=	244.0

Graph the time series and the trend line:

1. Plot actual revenues.
2. Plot the trend-line values for 1972-73 and 1978-79 and connect with a straight line.

Calculating a trend line for an even number of years is similar except that the "central year" is between the two central years. For these two central years, the trend-line values are calculated by adding or subtracting half the value of the calculated slope to or from the calculated "level in the central year."



irregular components in addition to, or instead of, a trend, and the trend line will not give us a means for making trend-line projections with confidence.

Adjusting for trend may be helpful in analyzing cyclical and irregular components. Besides analyzing the percentage-of-trend values for each year, it may be helpful to graph them. Cyclical components will show up as high or low percentage-of-trend values during years of expansion and contraction, respectively. Major irregular components may show up as one-time deviations.

Projecting revenues

Time-series analysis provides an approach to understanding the trend, cyclical, seasonal, and irregular influences on local government revenues. The knowledge that we gain from time-series analysis can serve as the basis for projecting revenues into the future. But a word of caution is in order. Time-series analysis is a method for analyzing revenues, and the analysis can serve *as the basis* for making revenue projections. But simply calculating a trend line and projecting the trend line into the future does not necessarily produce reliable estimates of future revenue. Time-series analysis must be used with good judgment and discretion.

Analysis of trend is the starting point for projecting revenues when trend is found to be an important influence. If it is apparent that the trend is an important component of the time series, a study should be made of the factors that account for the trend. For example, the property tax base should be analyzed by looking at the record of changes in components of the base in past years. Trends in commercial, residential, and apartment construction should be understood. Local population and economic trends should be analyzed. After the basic trend is analyzed, deviations from the trend should be analyzed. Are the deviations due to cyclical influences, to changes in tax law, or to special events? How sensitive are local revenue sources to the business cycle? Do current collec-

(continued on p. 45)

Financial Reporting and Auditing in Local Governmental Units

C. Paul Brubaker, Jr.

Historically, the public accounting profession has given minimal attention to accounting practices used in the governmental area. There have been few, if any, references to governmental accounting practices in the profession's official pronouncements. On the contrary, there were statements that the Generally Accepted Accounting Principles (GAAP) were directed primarily to business enterprises organized for profit.

However, the Municipal Finance Officers Association (MFOA) has been actively interested in the particular problems of governmental accounting since 1934. The MFOA and its companion organization, the National Council on Governmental Accounting (NCGA), have spelled out detailed accounting procedures that government accountants should follow in order to meet various legal requirements. Financial reports that are prepared in accordance with NCGA guidelines include a large volume of financial data designed to meet legal reporting requirements rather than the needs of external users such as security investors and taxpayers.

In recent years more public attention has been focused on governmental financial reporting. Two reasons for this are: First, more and more resources have been required by local government each year, with resulting increases in local taxes. Total expenditures of state and local government increased from $151 billion in 1960 to $433 billion in 1973. Second, recent unfavorable publicity has surrounded the financial problems of several large cities. At the national level this has led members of the U.S. Senate to introduce two bills to amend the Securities Acts. S 2969 (Williams-Tower Bill) would amend the Securities Act of 1934 to require issuers of municipal securities to prepare annual reports and distribution statements, and S 2574 (Eagleton Bill) would amend the Securities Act of 1933 to provide for the registration of securities issued by state and local government. Committees (the Subcommittee on Securities of the Senate Banking Committee and the Housing and Urban Affairs Committee) held extensive hearings on the two bills and a number of witnesses testified; however, neither bill passed during 1977.

The author, a former staff member of the Institute of Government, is a CPA with over 20 years of experience in state and local government accounting and auditing. He was finance director for Winston-Salem, North Carolina, and DeKalb County, Georgia. He has been Deputy Auditor General for the Commonwealth of Pennsylvania and is now Associate Professor of Management at Bucknell University, Lewisburg, Pennsylvania.

Current principles and practices

The NCGA summarized its financial reporting guidelines in its 1968 publication titled *Governmental Accounting, Auditing and Financial Reporting* (GAAFR), sometimes referred to as the "blue book." It enumerates thirteen basic principles on the basis of fund accounting (see box on p. 41). (A fund is defined as an independent accounting entity with a self-balancing set of accounts that is used to record transactions.)

Because of the diverse nature of governmental operations, GAAFR, the "blue book," does not recommend a single, unified set of accounts for recording and summarizing the financial transactions of a governmental unit. Instead, it recommended eight types of "funds" and two account groups for municipalities:

General fund: to account for general government operations and all financial transactions not accounted for in another fund.
Special revenue funds: to account for the proceeds of specific revenues or to finance specific activities as required by law or administrative regulation.
Debt service funds: to account for the payment of interest and principal on long-term debt.
Capital projects funds: to account for acquisition of capital facilities.
Enterprise funds: to finance governmental services, the costs of which are paid from charges to users, e.g., water-sewer systems.
Trust and agency funds: to account for assets held as trustee or agent for other governments, organizations, or persons.
Intragovernmental service funds: to finance internal government services such as garages or motor pools.
Special assessment funds: to finance assessments for streets, etc.
General fixed assets: to provide a record of land, buildings, and equipment owned by the unit.
General long-term debt: to provide a record of long-term debt owed by the unit.

Each fund and account group has its own set of self-balancing accounts, and a report is generated for each separate fund and account group. Financial reporting under GAAFR requires that each fund have a balance sheet, a statement of operations, and statement of changes in fund balance. Consolidated statements are not recommended because each fund is a completely independent entity. As a result of the proliferation of funds, the required financial statements and supplementary information for a large city may exceed a hundred pages.

Before 1974, the American Institute of Certified Public Accountants (AICPA), which sets standards for the public accounting profession, had promulgated few, if any, formalized principles or practices in the field of governmental accounting. After several years of study, the AICPA's Committee on Governmental Accounting and Auditing in 1974 published *Audits of State and Local Governmental Units* (ASLGU) as an industry audit guide for independent public accountants. This guide incorporated GAAFR by reference, and, not surprisingly, some of the people who had drafted GAAFR were also on the AICPA committee.

ASLGU adopted the thirteen basic principles of GAAFR by restating them into seven combined principles dealing with:

(1) Fund accounting — as discussed above;
(2) Budgets and budgetary accounting — first mention in AICPA literature;
(3) Legal compliance — see paragraph below;
(4) Bases of accounting — see discussion below;
(5) Fixed asset accounting;
(6) Long-term liabilities;
(7) Financial statements.

Thus, on the one hand we have GAAFR, directed primarily to governmental finance officers, and on the other hand ASLGU, written for independent public accountants who audit local government accounting practices and financial reports. Since the ASLGU adapted the governmental accounting principles from GAAFR, there are only minor differences between the two. For example, ASLGU states that when objectives of reporting legal compliance conflict with presentation in accordance with generally accepted accounting principles, generally accepted accounting principles are to take precedence in financial reporting and that legal compliance can be met by using supplemental statements or schedules. GAAFR, on the other hand, gives precedence to legal compliance.

In governmental accounting, different bases of accounting are suggested for the different funds. The term "modified accrual basis," according to GAAFR, means, in general, that expenditures are recorded when liabilities are incurred and revenues are recorded when received in cash (except for material revenues such as property taxes). ASLGU states that "revenues are recorded as received in cash except for (a) revenues susceptible (further defined as both measurable and available) to accrual; and (b) revenues of a material amount that have not been received at the normal time of receipt, and expenditures are accrued as goods or services are received as on a full accrual basis." ASLGU also provides alternative treatment for inventory types of items, which may be considered as expenditures either when the item is purchased or when it is used.

Other minor differences between the two publications can be attributed to the difference in the readers being addressed. Since GAAFR was written for finance officers, much supplementary information is listed as desirable for financial reporting. ASLGU, written for auditors, incorporates the basic statements but considers the supplementary information as optional. In addition, ASLGU includes an appendix that relates other accounting pronouncements to governmental accounting. In other words, the same basic principles are discussed and illustrated from two slightly different points of view.

Whereas GAAFR requires a proliferation of statements in the financial report to portray the

Basic Principles of Government Accounting, Financial Reporting, and Auditing

National Council on Government Accounting

1. A governmental accounting system must make it possible:
   (a) to show that all applicable legal provisions have been complied with; and
   (b) to determine fairly and with full disclosure the financial position and results of financial operations of the constituent funds and self-balancing account groups of the governmental unit.
2. If there is a conflict between legal provisions and generally accepted accounting principles applicable to governmental units, legal provisions must take precedence. Insofar as possible, however, the governmental accounting system should make possible the full disclosure and fair presentation of financial position and operating results in accordance with generally accepted principles of accounting applicable to governmental units.
3. An annual budget should be adopted by every governmental unit, whether required by law or not, and the accounting system should provide budgetary control over general governmental revenues and expenditures.
4. Governmental accounting systems should be organized and operated on a fund basis. A fund is defined as an independent fiscal and accounting entity with a self-balancing set of accounts recording cash and/or other resources together with all related liabilities, obligations, reserves, and equities which are segregated for the purpose of carrying on specific activities or attaining certain objectives in accordance with special regulations, restrictions, or limitations.
5. The following types of funds are recognized and should be used in accounting for governmental operations: General Fund, Special Revenue Funds, Debt Service Funds, Capital Project Funds, Enterprise Funds, Trust and Agency Funds, Intragovernmental Service Funds and Special Assessment Funds. In addition, separate groups of accounts should be maintained for general fixed assets and long-term liabilities.
6. Every governmental unit should establish and maintain those funds required by law and sound financial administration. Since numerous funds make for inflexibility, undue complexity, and unnecessary expense in both the accounting system and the over-all financial administration, however, only the minimum number of funds consistent with legal and operating requirements should be established.
7. A complete self-balancing group of accounts should be established and maintained for each fund. This group should include all general ledger accounts and subsidiary records necessary to reflect compliance with legal provisions and to set forth the financial position and the results of financial operations of the fund. A clear distinction should be made between the accounts relating to current assets and liabilities and those relating to fixed assets and liabilities.
8. The fixed asset accounts should be maintained on the basis of original cost, or the estimated cost if the original cost is not available, or, in the case of gifts, the appraised value at the time received.
9. Depreciation on general fixed assets should not be recorded in the general accounting records. Depreciation charges on such assets may be computed for unit cost purposes, provided such charges are recorded only in memorandum form and do not appear in the fund accounts.
10. The accrual basis of accounting is recommended for Enterprise, Trust, Capital Projects, Special Assessment, and Intragovernmental Service Funds. For the General, Special Revenue, and Debt Service Funds, the modified accrual basis of accounting is recommended. The modified accrual basis of accounting is defined as that method of accounting in which expenditures other than accrued interest on general long-term debt are recorded at the time liabilities are incurred and revenues are recorded when received in cash, except for material or available revenues which should be accrued to reflect properly the taxes levied and the revenues earned.
11. Governmental revenues should be classified by fund and source. Expenditures should be classified by fund, function, organization unit, activity, character, and principal classes of objects in accordance with standard recognized classification.
12. A common terminology and classification should be used consistently throughout the budget, the accounts, and the financial reports.
13. Financial statements and reports showing the current condition of budgetary and proprietary accounts should be prepared periodically to control financial operations. At the close of each fiscal year, a comprehensive annual financial report covering all funds and financial operations of the governmental unit should be prepared and published.

legal differences among funds, commercial financial reports are more concise, understandable, and similar regardless of industry or size of the organization. For example, the financial reports of a large city might show the following:

	Gross Revenue	Employees	Pages in Report
Large city	$ 1 billion	50,000	225
Large corporation	$31 billion	734,000	24

A corporation might use only 24 pages to tell the financial story for its large, complex organization; a city's financial report would be more detailed and force the reader to wade through many more pages, even though its operation is smaller. Nonetheless, it is possible for government financial reports to be more brief and more understandable for decision-makers, investors in government securities, and the public at large.

Financial statements are the representations of the finance officer and the executive arm of government. Still, the independent auditor can serve a useful role in simplifying and clarifying government financial statements and reports. Consequently the profession is at last giving attention to governmental financial-reporting practices. This attention has been illustrated by the AICPA audit guide and other recent publications and by the expansion of government services staffs in large CPA firms.

Suggested changes in reporting practices

Beginning with the proposed consolidated financial statements for the federal government on through other government publications, the accounting profession seems to favor major changes in municipal financial reporting. There is not agreement on the extent of changes, but some frequent suggestions include:

(1) Full accrual accounting: adopting the basis of accounting used by industry for all government funds. According to full accrual accounting, revenue is recorded in the accounts when earned and expenses are recorded when liabilities are incurred.

(2) Integrated or consolidated financial statements: combining all the activities of government into one set of statements rather than having a statement for each fund.

(3) Depreciation accounting: many assets owned by cities are not being depreciated, and the true cost of services is therefore understated in most years and overstated in years when equipment is replaced.

(4) Realistic reporting of pension costs: many cities reflect only current annual costs for pension funds, overlooking the past service costs to be funded and the effect of changes in pension benefits.

(5) Interim reporting: some cities issue financial statements only annually, whereas most commercial organizations issue periodic statements throughout the year.

We can expect that the accounting profession and others will be discussing the concepts, and further changes in governmental financial reporting are no doubt forthcoming.

A primary reason for an audit is that it gives the governing board an *independent* review of the unit's financial condition and an outside opinion of the unit's accounting practices. Some jurisdictions require an independent audit by law. For example, in North Carolina, each unit of local government must have its accounts audited each fiscal year by a certified public accountant or an accountant certified by the Local Government Commission. The 1976 Federal Revenue Sharing Act requires units of local government that receive revenue-sharing funds after January 1, 1977, to have an independent audit at least every three years.

Opinion on financial statements

The independent auditor's traditional role has been to examine the financial statements and accompanying accounts and records prepared by the governmental unit and to ascertain whether these statements clearly reflect the unit's financial condition. Also, the auditor is to determine whether the financial statements have been prepared in accordance with Generally Accepted Accounting Principles (GAAP) as promulgated by the public accounting profession.

Using Generally Accepted Auditing Standards (GAAS), the auditor reviews the financial statements and accounting data. These auditing standards fall into three categories:

General standards: covering the required training, independence, and professional care of the auditor;

Standards of field work: covering the auditor's actual work of inspection, observation, inquiry, and confirmation of financial information;

Standards of reporting: specifying an outline of what the financial reports should contain.

When his examination is complete, the independent auditor is in a position to express his opinion on the fairness with which the statements present financial position, results of operations, and

changes in financial position in accordance with accounting principles consistently applied from year to year. The standard format for the auditor's opinion, which is part of the financial report, follows below:

> We have examined the financial statements of the various funds and account groups of the City of X for the year ending December 31, 19XX. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.
>
> In our opinion, the aforementioned financial statements present fairly the financial position of the various funds and account groups of the City of X at December 31, 19XX, and the results of operations of such funds and the changes in financial position for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

The opinion presented above is also known as the *unqualified opinion.* In some instances the auditor may give a *qualified opinion* for certain reasons, such as financial statements that do not list certain necessary items. In these cases the exceptions should be cited in the opinion.

An *adverse opinion* is an opinion that the financial statements *do not* present fairly the financial position, results of operations, or changes in financial position in conformity with generally accepted accounting principles. This form of opinion must be used when exceptions are too great to be covered by a qualified opinion.

When the independent auditor finds too little evidence to form an opinion on the financial statements taken as a whole, he should say in his report that he is unable to form an opinion on the statements.

Expanded auditing

The publication of *Standards for Audit of Governmental Organizations, Programs, Activities and Functions* by the U.S. General Accounting Office in 1972, focused attention on elements of auditing that are in addition to the traditional reporting on financial conditions. Many governmental audits included legal compliance checks before 1972, but the concepts of economy, efficiency, and program auditing were new to most auditors.

The independent auditor, by virtue of his training and by using standard audit procedures, already has extensive background to determine whether operations are effective and whether resources are being used efficiently. He also can review the results of programs to determine whether results meet the objectives of government programs.

The purpose of an efficiency and economy audit is to find out whether the audited unit is using more resources than it really needs to accomplish work or objectives. Economy refers to accomplishment of a task at least cost, or with the least consumption of resources — for example, the use of two men rather than three to do a job, the use of 200 square feet of space rather than 400 square feet, or the use of one motor vehicle rather than two.

Efficiency, on the other hand, is the measure of benefits attained with corresponding costs. Efficiency cannot exist if ineffective procedures are used, if effort is duplicated, or if equipment is not used to its greatest capacity. Efficiency and economy are both relative terms, and maximum potential is difficult to determine. Still, the goal should be to improve from present levels to higher levels of productivity.

In conducting an efficiency and economy audit, the auditor needs to use an orderly method similar to the one he is accustomed to using, but with additional features. Generally, there is a desired goal for the program to be audited. Against this criterion, the auditor can measure results that have been achieved using existing methods. If results fall short of the goal, then the auditor should determine the reasons why this has happened. Once the causes have been determined, the auditor makes recommendations for corrective action.

In conducting the efficiency and economy audit, the auditor must first identify the data available. He uses the same data that government managers use to do their job. By using interview and observation techniques, the auditor can enlist the support of the organization to select areas where operating results are less than satisfactory. (Audit findings can be developed in conjunction with management and should be discussed with management.)

Expanded auditing is not really new but merely a useful by-product of regular financial auditing. The auditor's review of financial information and controls usually will suggest areas for expansion into questions of economy and efficiency. At first the auditor must use his imagination and try different approaches. Later certain patterns will emerge for further audit areas.

Since independent auditors are trained primarily in accounting and auditing, we could conclude that their efforts should encompass only financial records, but this is not necessarily the case. An audit cannot be covered by rigid specifications; rather, it is a professional service requiring independence, skill, and

judgment. An independent auditor should have the latitude necessary to assure himself that the records are in order and that systems are functioning properly. When he examines systems and the functioning of systems, the independent auditor is in an excellent position to observe and report management inefficiencies and suggest corrective actions.

Review of legislation

Before he audits a governmental unit, the auditor needs to become familiar with the general statutes governing the state's local governments as well as the provisions of charter, ordinance, resolutions, minutes of the governing body, budgets and appropriations, bond indentures, and other authority for the unit's actions. He then is in a position to offer constructive comments concerning government compliance with these legal sources — their intent versus results achieved.

Special services and studies

The independent auditor can provide services to management that are unique to the problems of governmental administration. For example, he can review available sources of revenue and decide whether all of these are being used. He can then project the effect of new or increased sources to help government officials in seeking additional funds and evaluating alternative revenue sources.

The auditor can help the governmental unit determine whether the official charged with collecting revenue is using efficient procedures to collect all revenue that is due. Often the revenue collection procedures are overlooked in favor of tightening up on expenditures. Obviously, if the revenue is not collected, the unit will not need to worry about how it is spent.

The auditor can assist in identifying federal and state grant revenues and the procedures and filings necessary to secure them. In order to recover indirect overhead costs chargeable to federal grants, the unit must develop an indirect cost-allocation plan, which might be a by-product of the audit.

Another service can be performed in the area of studying rate structures for government utilities and services for which user charges are made. If a unit is to qualify for certain federal funds for wastewater treatment, it must develop user costs and industrial cost rates. Proper allocation of costs and revenues will result in more equitable charges for the various classes of utility customers. A review of budget controls can help government managers identify weaknesses that would permit wasteful expenditures. Measurement of cost of service versus revenues will help management decide on appropriate levels of services compared with the cost of performing them.

In specialized areas such as electronic data processing and actuarial studies, some independent public accounting firms have this expertise within their organization while others refer to appropriate professionals. Some firms also provide services in personnel recruitment and training.

Conclusion

This article has set out to review the basic principles of governmental financial reporting and to give an overview of the varied services now available to local governmental units by independent professional auditors. The profession appears eager to make up for lost time in the expanded area of governmental accounting and auditing. Active competition is under way to serve government clients. Finance directors and city managers should investigate the auditing services available to them and review copies of the various recent publications in the field of governmental accounting for further information about current discussions on municipal financial reporting and auditing. □

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Budgeting

(continued from p. 10)

use it as an accepted method of getting desired results, benefits can be considerable.

6. Can you stand to make mistakes and recover from them to try again?
   Reasoning: No new system will work well without some modifications to fit the existing situation. Therefore, some old practices will have to be abandoned during the implementation process in exchange for better methods. The willingness to try a technique, honestly admit that it is a failure if no desired results occur, and then try other techniques to seek the result is an essential element of the innovative process.
7. Are you willing to abide by the rules you set for others in implementing the process?
   Reasoning: If a new budget system is set up, *all* officers should participate and have their results subject to the same type of criteria. No one should be *above* the system if it is a valid one.

If the answer to any of these questions is negative, any plans to make a major change in a budget system should be seriously reconsidered. □

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Operating Revenues

(continued from p. 31)

4. *Mass transit and coliseum fees.* Only a few large cities, those above 100,000 in population for mass transit fees and those above 50,000 in population for coliseum fees, receive revenue from these sources. Coliseum complexes are practical only in the very largest cities of the state, while mass transit systems are feasible in the medium-sized and larger municipalities. Federal money is now available to finance mass transit systems, and some of the study's municipalities, that had no mass transit system in 1974-75 now do.

5. *Special assessments.* Average per capita revenue from this source is very minor for towns in the 500-999 population class. It grows to 70 cents per capita for municipalities between 1,000 and 2,499 in population and rises to about $1 to $3 per capita for the population classes above 2,500. Development in municipalities above 2,500 probably requires more street-paving and more extensions of water-sewer lines for which assessments are charged than development in municipalities below 2,500 in population.

6. *Revenue from county.* Average per capita revenue from this source is notably greater in the population classes above 2,500 than in the two below this level. This difference partly results from the fact that medium-sized and larger municipalities provide services to surrounding county areas, for which they are reimbursed, while the smaller municipalities do not. □

Projecting Revenue

(continued from p. 38)

tions suggest any changes from the trend?

After the time-series components have been analyzed, assumptions must be made about the future. Projecting a trend line into the future involves the implicit assumption that the underlying trend will not change and that cyclical or irregular factors will not cause future revenue to depart significantly from the trend. The assumptions should be explicit. For example, explicit assumptions should be made about population growth, the level of economic activity, the business cycle (e.g., "the national economy will continue to recover from the recession," or "there will be no recession during the next two years"), interest rates, new major industrial firms, annexations, and so forth. It may be advisable to have alternative assumptions — pessimistic and optimistic, high and low, for example — and to make different projections according to the alternative assumptions. Analysis of each major revenue source enables us to know what assumptions are necessary or important. The projections then follow according to the assumptions.

Summary

The reader may be disappointed to find that no mathematical, statistical, or mechanical methods have been presented that would enable him to produce precise projections for each revenue source. Unfortunately, such techniques do not exist. We cannot produce adequate projections by feeding data into a computer. Rather, good projections must rest on thorough analysis, good judgment, realistic assumptions, and a sound approach. □

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