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Financial Planning and Management in Public Organizations

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Preface

A basic responsibility of management in any organization is to reduce uncertainty and to bring risk within tolerable limits to improve the rational bases on which decisions can and should be made. Application of the techniques of financial planning and management provides an important approach to this responsibility.

The materials in this book are organized around three fundamental processes: (1) cash management, including the analysis of revenue sources and expenditures, cash mobilization, forecasting, and investment strategies; (2) financial planning, focusing on cost analysis techniques, budgeting, and capital resource management; and (3) management control, dealing with financial accounting, fund accounting, budgetary accounting, and cost and managerial accounting. Information management and decision-support systems appropriate to sustain these basic processes are also examined.

This book is the product of several years of effort to develop appropriate materials for use in the various courses in public administration, urban planning, and public health administration. Our methodological approach is predicated on the assumption that distinctions between the public and private sectors have become blurred, and emerging techniques to promote more efficient and effective management of financial resources are applicable to all organizations. Many contemporary works in the field of public financial management tend to be descriptive, building on various case studies. These works provide important in-

sights into the various components of public financial management. However, they tend to be fragmented and generally do not present a comprehensive approach to these responsibilities.

Our approach blends the prescriptive with descriptive materials—providing “hands-on” examples to illustrate the various techniques, while offering a comprehensive analysis of issues that a financial manager or public administrator is likely to encounter on a daily basis. The materials are organized according to the procedural steps in the annual financial management cycle.

Martin Gannon has suggested: “Control is the monitoring of plans and the pinpointing of significant deviations from them. Hence planning and control are intimately related and, in fact, represent opposite sides of the same coin. Without planning, there can be no control.” Traditional concepts of planning, however, have frequently been an appendage to, rather than an integral part of, the management process. The framework of a planning-control continuum provides the first major component discussed in this book.

Local revenues have tended to increase at a slower rate than the demands for public services and facilities, creating an ever-widening fiscal gap for many localities. In economic terms, it is said that local government revenues are relatively *inelastic*; that is, most local sources of revenues are not particularly responsive to changes in the overall economy. The revenue structure of local government and the techniques for analyzing patterns of expenditures are outlined in the second chapter.

Local governments and other public organizations can realize considerable financial benefits if their cash flow and investments are managed efficiently. Cash management involves four elements: forecasting, mobilizing the cash flow, maintaining banking relations, and investing surplus cash. The primary focus of cash management is on maintaining sufficient funds on hand to satisfy legal obligations and fiscal commitments while providing opportunities to invest any excess cash in interest-yielding securities. These procedures and strategies are examined in Chapters 3 and 4.

A common denominator among the various resources of any organization is the cost involved in their utilization. Effective budgeting and financial management requires analytical techniques that can accommodate the risk and uncertainty that are inevitably associated with future decisions regarding the commitment of scarce resources. Therefore, techniques available to analyze the costs involved in providing public services and facilities are explored in Chapter 5.

The budget serves as a primary mechanism of both planning and control in public organizations. Various budgeting techniques and formats serve different aspects of the planning-control continuum, however. An examination of the basic approaches to public budgeting provides the focus for Chapters 6 and 7.

Significant economies can be achieved by the provision of public services and facilities for the mutual benefit of all or a majority of citizens. Capital facili-

ties represent very large investments of public resources, usually exert their effects over decades, and, once built, are not easy to modify. The provision of capital facilities must involve planning, programming, financing, and debt administration. Each of these aspects is delineated in Chapters 8 and 9.

Accounting and related financial management systems have traditionally served as the major mechanisms of management control in most organizations. However, students of planning and public administration are often unfamiliar with these important components of the management process. The basic tools of financial accounting, cost accounting, and managerial accounting are examined in Chapters 10 and 11 to provide a fuller understanding of their role as mechanisms of financial planning and control.

Effective planning and control require access to relevant management information. Although vast amounts of facts, numbers, and other data may be processed in any organization, what constitutes management information depends on the problems at hand and the particular frame of reference of the manager. The development of timely information is essential to the understanding and resolution of fiscal issues.

Performance evaluation brings the budgeting and fiscal management process full circle by assessing the effectiveness of programs in achieving agreed-upon goals and objectives and identifying areas needing improvements through program modification (including the possible termination of ineffective programs). An examination of basic approaches to management information and performance evaluation systems is provided in the final chapter.

Responsibility for financial planning and management is assigned to various offices within public organizations. Planners plan; financial analysts prepare budgets; accountants maintain financial records and prepare financial reports; the treasurer's office manages investments; program personnel schedule and control resources for specific activities; and administrators monitor and evaluate performance. However, this "division of labor" established to deal with the complexity of these operations may well become a major impediment to the effective management of financial resources. An underlying premise of this book is that a more comprehensive framework must be created to provide guidance and coordination so that the integrated whole can be more than the sum of its individual parts.

Improved financial planning and management in government is one of this nation's most pressing needs. Therefore, this book is dedicated to those professionals who have committed their knowledge, skills, and talents to meeting this most important challenge.

Alan Walter Steiss
'Emeka O. Cyprian Nwagwu

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1

Financial Management: An Overview

Private and public organizations have experienced significant changes in recent years in both size and complexity. As a consequence, the management process has become more difficult, requiring greater skills in planning, analysis, and control, aimed at guiding the future course of organizations faced with accelerating rates of evolution in technical, social, political, and economic forces. This book examines a major segment of these skills: the theory and practice of financial management in public organizations and, in particular, in local government. The purpose of this initial chapter is to provide a broad overview of the basic components of financial management, building on a planning-control continuum.

1 OBJECTIVES OF FINANCIAL MANAGEMENT

In theory, the objectives of financial management are quite simple—they are difficult only in practice. In theory, one merely has to decide what is wanted (specify goals and objectives), measure these wants (quantify the benefits sought), and then apply the means available to achieve the greatest possible value of the identified wants (maximize benefits). The *means* are the resources of the organization. Therefore, the primary objective of financial management is to *maximize benefits* for any given set of *resource inputs*.

1.1 Managing Public Resources

A basic tenet in financial management is that costs should be incurred only if by so doing, the organization can expect to move toward agreed-upon goals and objectives. Determining whether the commitment of governmental resources improves conditions in the broader community can become complicated, however, particularly when no basis exists for assessing the value of such actions to individuals. Not all members of the community are likely to benefit equally from a given government action. [1] Despite the best efforts to achieve rigor and sophistication, scientific analysis cannot provide definitive answers to many of the questions involved in the allocation of government resources. Many public choices are still open to political decision. Nevertheless, a continuous search must be maintained for more productive ways to operate public organizations and to assess their capacity to meet changing conditions and demands for the delivery of services.

The common denominator among the various resources of any organization is the cost involved in their utilization. The production of public and quasi-public goods and services requires the acquisition and allocation of relatively scarce resources, the values of which are measured and compared in the common unit of dollars. Consequently, the focus of management most often is on *financial resources*.

The essential tools for managing financial resources include techniques for assessing the long-term fiscal needs of the organization, procedures for acquiring and allocating resources and for managing costs, and mechanisms for recording and disseminating relevant financial information. Given the increasing role that government and other not-for-profit organizations play in the economy, the public has a significant stake in the effective performance of these organizations and institutions. In the absence of the verdict of the marketplace, the role and responsibilities of financial management in the public sector are even greater than those in profit-oriented organizations.

1.2 Basic Components of Financial Management

Financial management in the public sector borrows liberally from the tools and concepts of business management. The transfer of these techniques cannot be complete, however, because the basic features of government services include the need to provide for the common welfare and safety of the community and to allocate basic public services on other than the criterion of the ability to pay. Several functions are common to financial management, however, whether in the private or public sector.

Financial management involves the allocation of organizational resources and the tracking of performance resulting from such allocations. In a profit-oriented enterprise, financial statements (profit and loss) form the basis for the

stockholders' assessment of the performance of management. In not-for-profit organizations, management seeks to satisfy the needs and desires of its constituents within a set of financial (budgetary) constraints. In either case, financial resources are the focal point for managerial decision making, action, and accountability. Methods and techniques utilized in the performance of these financial functions are relevant to managers in all types of organizations.

A traditional role for financial management is that of score keeping. Reports of past performance are prepared for internal management as well as for outside groups, such as stockholders, creditors, and the general public. The extent to which these reports can pinpoint responsibility for any deviations from anticipated performances largely depends on the degree of sophistication built into the accounting and related management control mechanisms. If financial control mechanisms become overly rigid and lose sight of their operating objectives, countermeasures and subterfuges will emerge that may destroy the effectiveness of the system (and possibly the organization itself). To remain effective, score keeping functions must achieve organizational compliance by demonstrating their utility to all levels of management.

The allocation of existing resources and the management of costs to derive future benefits are key responsibilities of financial managers. The relationship between current resource allocations and future benefits is asymmetrical, however. Whereas existing resources are expended with certainty, the anticipated stream of benefits often is uncertain. This stream may fall considerably short of the expected results or may exceed initial estimates. This deviation from expected returns provides an important definition of *uncertainty and risk*.

There is a tendency to think of cost strictly in terms of quantifiable inputs—the financial resources required to support personnel, equipment, materials, and so forth. Costs that cannot be conveniently measured in dollars all too often are dismissed as non cost considerations. Future costs may have important implications beyond their measurable monetary value, however. Future costs and benefits must be analyzed to determine the financial feasibility and desirability of resource commitments. In allocating resources, the following question must continually be examined: Are anticipated long-run benefits (adjusted for risk) of a given project commensurate with the long-run costs that must be incurred?

A prime function of financial management is to identify the long-term assets required to attain the overall objectives of the organization. A financial plan is a key ingredient in the long-term strategies of any organization. The main purpose of financial planning is to project resource requirements for specific time periods and to identify the likely sources of the funds needed. It also is essential to identify the political, economic, and environmental conditions that are likely to affect the programs and activities of the organization.

Sound professional judgment is an essential ingredient in the development of financial plans because of the difficulty in predicting future conditions and

events. Financial managers must identify the magnitude of future needs, determine the timing, and negotiate with potential sources of external capital. Decisions of whether to engage in short-term borrowing or long-term bond issues are dependent on cash flow expectations, capital structure determination, and cost-of-capital considerations. The effective discharge of these functions requires a sensitivity to macro-economic developments that may influence the availability and cost of the capital to be acquired.

2 THE PLANNING-CONTROL CONTINUUM

The basic objectives of financial management define a planning-control continuum (Figure 1.1). The principles and techniques of financial management have traditionally been closely linked with and have contributed significantly to the objectives of *organizational control*. However, to be responsive to changing needs of both the organization and the broader environment (e.g., client groups or the general public), financial management procedures must also incorporate a *planning* perspective. As Gannon has observed: “planning and control are intimately related and, in fact, represent opposite sides of the same coin. Without planning, there can be no control.” [2] Without planning, control can do relatively little to reduce the uncertainty that surrounds many organizational activities. While programs may be carried out more efficiently, more important issues of effectiveness—the ability to achieve long-range objectives—will be left largely unresolved.

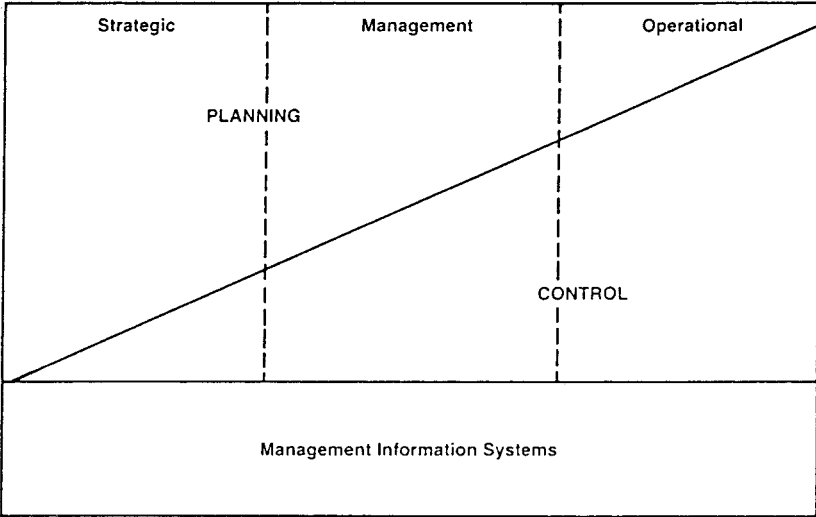


FIGURE 1.1 The planning-control continuum.

2.1 Planning Defined

It has been said, “If you don’t know where you are going, any road will get you there.” There is also truth in the notion that “If you don’t know where you are going, no road will get you there.” In short, planning is a prerequisite for effective financial management, whether in the private or public sector. Kast and Rosenzweig have defined planning as:

... the process of deciding in advance what is to be done and how. It involves determining overall missions, identifying key result areas, and setting specific objectives as well as developing policies, programs, and procedures for achieving them. Planning provides a framework for integrating complex systems of interrelated future decisions. Comprehensive planning is an integrative activity that seeks to maximize the total effectiveness of an organization as a system in accordance with its objectives. [3]

Traditional planning efforts have tended to be “one-shot optimizations,” drawn together periodically, often under conditions of stress. Under such circumstances, problem-solving often takes precedence over the establishment of long-range goals and objectives. Program proposals frequently are based on “anticipated economic and demographic conditions”—a simple extrapolation of the status quo. When the overriding focus is on solutions to more immediate problems, the cumulative process becomes short-range planning, albeit applied to a long time period. The results, benefits, and profits to be gained from such short-range plans cannot be assured in the long run and, in fact, may be lost in the crisis of disjointed problem-solving. A plan is of relatively little value if it does not look far enough into the future to provide a basis on which change can be logically anticipated and rationally accommodated.

It has been said that “Few plans survive contact with the enemy.” And indeed, rarely are policies and programs executed exactly as initially conceived. Random events, environmental disturbances, competitive tactics, and unforeseen circumstances may all conspire to thwart the implementation of plans, policies, and programs. In short, the traditional planning process does not provide an adequate framework for more rational decisions about an uncertain future. Fixed targets, static plans, and repetitive programs are of relatively little value in a dynamic society.

2.2 Strategic Planning

The concept of strategic planning has evolved over the past 25 years as a response to this need for a more dynamic planning process—one which would permit continued efficacy of decisions to be tested against the realities of current conditions and, in turn, corrected and refined as necessary. As applied in govern-

ment, it has been suggested that strategic planning “is the process of identifying public goals and objectives, determining needed changes in those objectives, and deciding on the resources to be used to attain them. It entails the evaluation of alternative courses of action and the formulation of policies that govern the acquisition, use, and disposition of public resources.” [4]

The term “strategic” has been applied to these planning activities to denote the linkage with the goal-setting process, the formulation of more immediate objectives to move the organization toward its goals, and the identification of specific actions (or strategies) required in the deployment of organizational resources to achieve these objectives. The term also was adopted to distinguish the scope of this process from the so-called “planning” that characterized much of the forecasting and other piecemeal efforts undertaken by industry and business concerns.

The emphasis in strategic planning is on an orderly evolution—from a broad mission statement, to statements of more specific goals and objectives consistent with the organization’s mission, to more explicit policies and implementing decisions. This emphasis seeks to establish or reinforce linkages that often are missing in more disjointed, incremental approaches to decision-making.

Strategic planning should be a continuous process that includes performance evaluation and feedback. Alternative courses of action should be examined, and the impacts and consequences that are likely to result from their implementation should be evaluated. Explicit provision should be made for dealing with the uncertainties of probabilistic futures. Major priorities should be identified and ordered, and the activities and functions of the organization integrated into a more cohesive whole.

2.3 Management Planning

The good intentions of a strategic plan are likely to go unrealized unless the planning process is further extended to include the techniques of management planning. The objective of management planning is to organize and deploy resources effectively and efficiently. It involves (1) programming approved goals and objectives into specific projects, programs, and activities, (2) procuring and budgeting necessary resources to implement these activities over some specific time period, and (3) designing and staffing of organizational units to carry out approved programs. Ideally, management planning forms the link between strategic objectives and the actual performance of organizational activities—a mechanism for coordinating the activities that must be performed to complete a given program or achieve an agreed-upon objective.

2.4 Operational Planning

Operational planning focuses on setting standards for the use of specific resources and on performance tactics to achieve the overall goals and objectives of

the strategic and management plans. Operational planning is concerned primarily with the scheduling of detailed program activities—determining the calendar dates or times that resources will be utilized according to the total resource capacity assigned to the program. A schedule can be developed only after the management plan is complete. Resource availability, task or job sequence, resource requirements, and possible starting times for the project or program activities must then be taken into account in order to produce a schedule.

Effective and comprehensive *strategic planning* may mean the difference between success and failure in the delivery of vital services. Successful *management planning* can mean the difference between the effective utilization of scarce resources and waste. Effective and efficient *operational planning* can mean the difference between “on time” and “late” in the achievement of a specific project.

2.5 Organizational Control Defined

Some form of control has been exercised for as long as formal organizations have existed. However, increased emphasis on accountability, efficiency, and effectiveness in both the public and private sectors has made the adoption of more effective control techniques even more imperative.

The control system can provide tools for determining whether an organization is proceeding toward established objectives and can alert decision makers when actual performance deviates from the planned performance. These procedures also can help to measure the magnitude of the deviations and to identify appropriate corrective actions to bring the activities back on course. Control involves six interrelated activities, as shown in Figure 1.2.

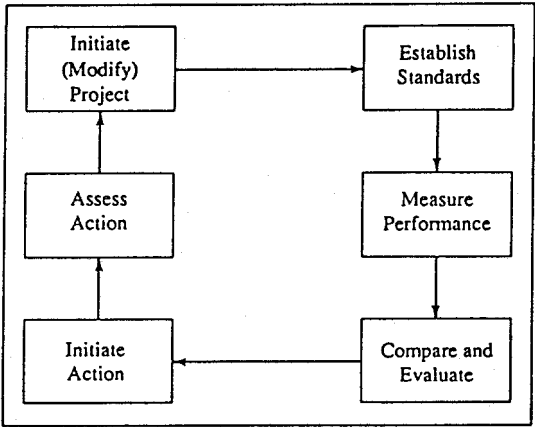


FIGURE 1.2 The management control cycle.

2.6 Strategic Controls

Strategic controls are used to evaluate the overall performance of an organization or a significant part thereof. In the private sector, standards such as profitability, ratio of assets to liabilities, and sales growth provide a broad basis on which to assess the overall performance of an organization. In recent years, standards applicable to public sector activities have been detailed in terms of *measures of effectiveness*.

When organizations fail to meet such broad standards, the remedies may have to be equally broad. They may include the recasting of goals and objectives, reformulating plans and programs, changes in organizational structure, improved internal and external communications, and so forth. Strategic controls assist decision makers in determining appropriate corrective actions when unanticipated changes occur in the broader environment of the organization. A strategic control system provides a basis by which goals and objectives and the methods of control can be modified. Since large amounts of data may be required to achieve effective strategic control, continuous monitoring of activities through the application of management controls may be more appropriate to ensure that corrective action is taken on a timely basis.

2.7 Management Controls

Management control involves the measurement and evaluation of program activities to determine if policies and objectives are being accomplished as efficiently and effectively as possible. Management control provides the basic structure for coordinating the day-to-day activities of an organization, encompassing all those activities involved in ensuring that the organization's resources are appropriately used in the pursuit of goals and objectives.

Accounting and finance departments traditionally have served as the primary locus of the management control functions in most organizations. Information provided by an accounting system is designed to serve the needs of internal decision making as well as external financial reporting. This information can also provide a significant component in contemporary management control systems. Output from the accounting system, for example, can provide managers with important performance measurement information as decisions are made and actions taken that are expected to lead to desired results.

Management controls are often designed to anticipate and identify problems before they happen. An obvious approach is to try to anticipate possible deviations from some established standards or criteria of performance—primary objective of statistical quality control. This approach also can be applied as a budgetary control. The possibility that a major proposed expenditure might exceed the budget, for example, should be ascertained ahead of time rather than after the fact. Such controls involve various forecasting and projection techniques.

2.8 Operational Controls

Operational controls seek to assure that specific tasks or programs are carried out efficiently and in compliance with established policies. These processes involve determining requirements for program resources and their necessary order of commitment to achieve specific program objectives. It often is difficult to distinguish between management control and operational control. Techniques used initially for management control may become even more significant when converted to operational control purposes.

Operational controls focus on specific responsibilities for carrying out those tasks identified at the strategic and management control levels. These control techniques must provide management with the ability to (1) consider the costs of other program alternatives in dollars and time, (2) establish criteria for resource allocation and scheduling, (3) provide a basis for evaluating the accuracy of estimates and the effects of change, and (4) assimilate and communicate data regarding program activities and revise/update operational plans.

Operational controls often are very specific and situation-oriented. They measure day-to-day performance by providing comparisons with various criteria to determine areas that require more immediate corrective actions. Productivity ratios, workload measures, and unit costs are examples of such performance measures. Such measures are concerned most frequently with issues of efficiency and economy.

2.9 Efficiency Versus Effectiveness

The term *effectiveness* relates to the accomplishment of an organization's goals and objectives. An organization is effective when its goals and objectives are accomplished; it is ineffective when they are not. The concept of *efficiency*, on the other hand, is linked to the use of organizational resources. When fewer resources are used to accomplish the same results, or when additional results are attained using the same resources, then a program or set of activities is said to be more efficient. Both efficiency and effectiveness are paramount objectives of the planning-control continuum.

Managers make use of goals, objectives, plans, programs, budgets, and various types of organizational, operational, and financial controls in carrying out their responsibilities. Thus, while planning and control form a continuum, the relative mix may be determined by management styles and the complexity of organizational structure. The planning-control continuum will be applied in the following sections to further delineate the basic components of the three cycles of financial management: cash management, financial planning, and management control (see Figure 1.3).

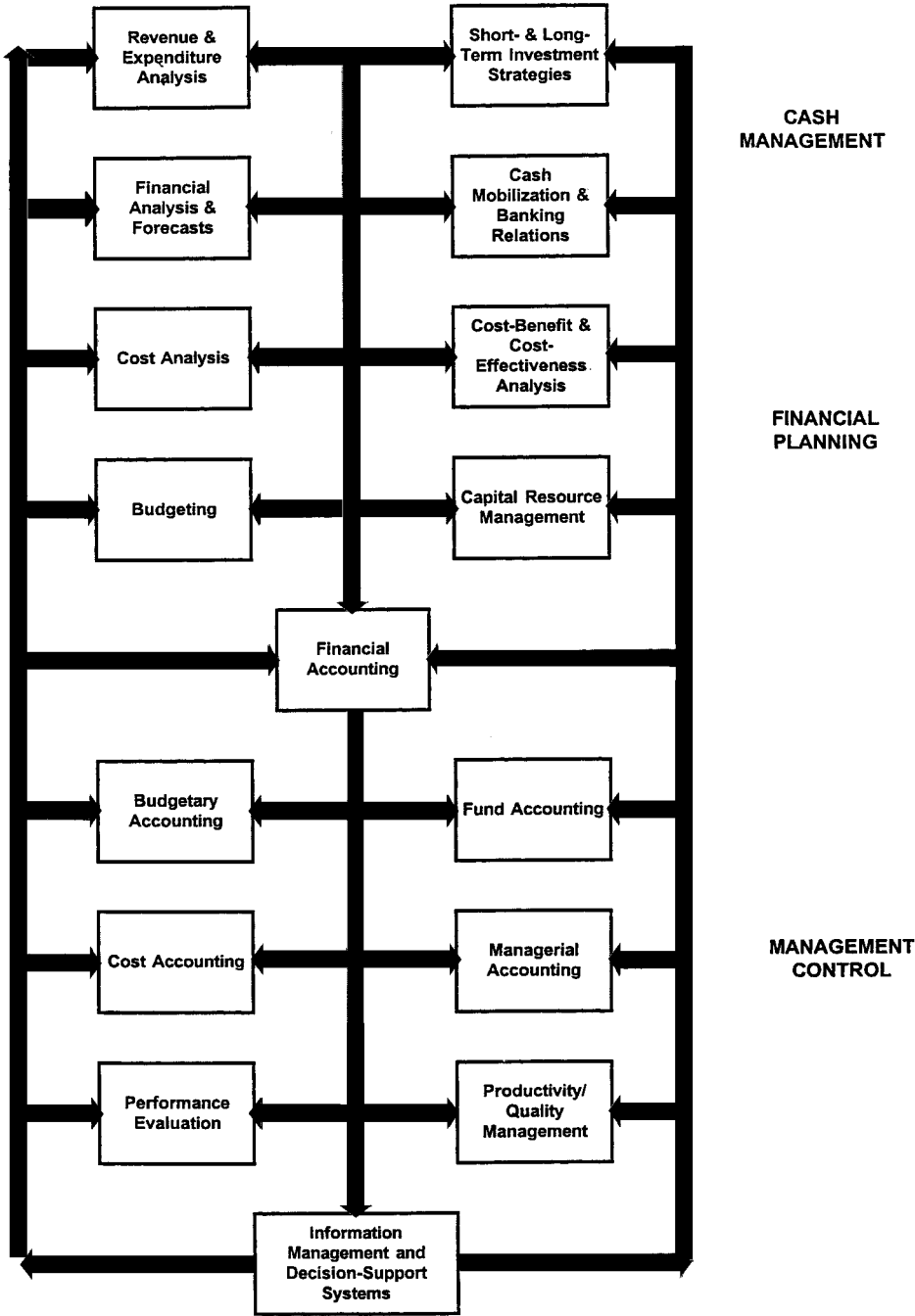


FIGURE 1.3 Linkages among the financial management cycles.

3 CASH MANAGEMENT CYCLE

The basic objectives of cash management are to maximize the effective use of resources and minimize opportunity costs while maintaining a sufficient cash balance to meet the organization's day-to-day needs. Cash management involves (1) analyses of current and anticipated revenues and expenditures, (2) short- and long-range forecasts of resource needs, (3) cash mobilization techniques, (4) formulation of sound investment strategies; and (5) financial analyses of the use of assets.

3.1 Analysis of Revenue and Expenditure

The demand for public services and facilities changes as a function of growth and the social and economic characteristics of the community. Local revenues have tended to increase at a rate slower than demand, however, creating an ever-widening "fiscal gap" for many localities. Local governments rely heavily on property taxes, which have proven to be relatively unresponsive in meeting increasing demands for public services and facilities. Therefore, local governments are continually challenged to find innovative ways to augment local revenue sources through the levy of non-property taxes and fees. Various forms of non-property taxes, identified in Table 1.1 are discussed in further detail in Chapter 2.

Many localities have become increasingly dependent on *intergovernmental transfers* to offset the slower growth of local revenue sources. Intergovernmental revenues may be derived from the federal or the state government and may be given in the form of grants-in-aid, shared taxes, or revenue sharing. These sources of support have also been adversely affected in recent years by shifts in federal policies.

Techniques for making revenue and expenditures projections, with few exceptions, have remained virtually unchanged over the past 50 years. Expectations for the coming year are determined by applying observed percentage changes in revenue collections and expenses incurred between the previous and current fiscal years. Alternatively, a trend line may be developed by fitting a series of historical data which is then extrapolated to obtain projections of revenue and expenditures. While these approaches have the advantage of simplicity, they leave many problems unresolved. Allowance seldom is made for any contingencies in such projections. Procedural steps for the preparation of more comprehensive estimates of revenue and expenditures are outlined in Chapter 2.

3.2 Forecasting

A forecast is an approximation of what will likely occur in the foreseeable future. The objective of forecasting is to provide a basis on which to measure differences between actual events and the programs that were implemented to

TABLE 1.1 Local Nonproperty Taxes

<i>Local sales taxes</i> are levied on retail sales of tangible personal property. Sales taxes are not inelastic but vary less widely during business fluctuations than do the yields of net income taxes.
<i>Gross receipts taxes</i> are imposed on businesses and occupations and are measured by the gross income of the undertaking and, in some areas, have replaced former flat-rate business licenses.
<i>Selective Sales Taxes</i> may be levied on specific commodities or services in lieu of a general retail sales tax: public utility taxes; admission and amusement taxes; motor fuel and motor vehicle license taxes; business license taxes; and local taxes on alcoholic beverages and tobacco.
<i>Income taxes</i> have been applied at the local level to (1) gross income from salaries and wages of residents earned both within and outside the jurisdiction, (2) gross income from salaries and wages of nonresidents earned within the jurisdiction, (3) net profits of professions and businesses of residents from activities wherever conducted, and (4) net profits of professions and businesses of nonresidents and of corporations from activities conducted within the jurisdiction.
<i>Service charges</i> are amounts received from the public for performance of specific services benefiting the person charged and from sales of commodities and services—except by city utilities—and generally bear a direct relation to the cost of providing the service.
<i>Licenses and permits</i> involve charges that are less than, or equal to, the cost of the administration of a government activity.
<i>Interest earnings</i> consist of earnings on deposits and securities, other than the earnings of insurance trust funds or employee retirement systems.
<i>Sale of property</i> involves receipts from the sale of real property and improvements thereon, but excludes receipts from the disposition of commodities, equipment, and other personal property and from the sale of securities.
<i>Special assessments</i> , while imposed on a property, differ from taxes in that they are related to a specific benefit, need not be uniform throughout the jurisdiction, and generally allow no exemptions.

achieve certain objectives. Forecasts provide management with a sound basis for action as the future unfolds and events begin to diverge from the predictions. Problems can be identified quickly and the required corrective actions can be more clearly defined.

Public organizations must develop reliable forecasts of their cash flow positions in order to maximize returns on their financial assets. Decisions that can affect the flow of cash, summarized in Table 1.2, are discussed in further detail in Chapter 3. Forecasts form the basis for a *cash budget*, which is used to monitor how much money will be available for investment, when it will become available, and for how long. A cash budget tracks the movement of cash in and out of

TABLE 1.2 Decisions Affecting the Flow of Cash

<p><i>Operating decisions</i> stem from the policies of the organization—such as the creation or elimination of a service unit or department, increases in the charges for services or in the tax rate in the case of local government, changes in the salaries and fringe benefits extended to staff, and so forth—and result in adjustments in the inflow and outflow of cash.</p> <p><i>Capital expenditure decisions</i> that affect the infrastructure of the organization give rise to the outward flow of cash. An organization’s infrastructure involves the construction, repair, and maintenance of fixed, physical assets.</p> <p><i>Credit decisions</i> involve the length of time an organization takes to make payments to its vendors for goods and services provided, as well as the length of time a client/customer may take to make payment to the organization without penalty.</p> <p><i>Investment decisions</i> result in the use of inactive cash to purchase financial assets or the liberation of funds by the sale of such assets.</p> <p><i>Financing decisions</i> involve the acquisition of new money by selling bonds, borrowing, or increasing revenues (e.g., by raising user charges or prices, or by increasing taxes).</p>

the treasury. It can be used to identify early signs of an impending cash problem and to indicate appropriate steps to avert the problem. A cash budget provides the basis for a long-term view of cash flow patterns and, therefore, serves as a foundation upon which to plan future cash requirements. The investment strategy of any organization must also be strongly correlated with the accuracy and timeliness of its cash budget.

3.3 Cash Mobilization

Cash mobilization techniques involve (1) the acceleration of receivables and (2) the control of disbursements. *Receivables* are those funds that come into the organization’s treasury. Cash flow can be expedited by collection systems that provide for advance billing and payment on or before receipt of goods and services. *Disbursements* are funds paid out to vendors and others who have provided services to the organization. Delaying cash outflows enables an organization to optimize earnings on available funds. Good cash management practices generally dictate that disbursements are made only when due. Public organizations may find unacceptable some of these cash mobilization techniques discussed in Chapter 3. A local government, for example, must evaluate the possible effects on its taxpayers and clients of aggressive collection and disbursement practices. The objectives of cash management must be artfully blended with the need to maintain good public relations with vendors and the community at large.

Adequate credit must be available if any public organization is to survive in the short term. Lines of credit are commitments by banks to make loans available subject to certain mutually agreed upon conditions and are important hedges

against unanticipated contingencies, such as temporary financing needs and short-term cash flow shortages.

Keeping a tight rein on bank balances has become an increasingly popular cash management principle. Money not needed to meet operating costs or for compensating balances required by banks should be invested in interest-yielding securities. All receipts—checks, money orders, and cash—should be deposited as soon as possible. Idle funds, such as checks sitting in safes, cash registers, or desk drawers overnight, could earn income for the organization if invested in short-term securities.

3.4 Investments

The ideal investment is one that yields a high return at no risk, offers promise of substantial growth, and is instantly convertible into cash if money is needed for other purposes. Unfortunately, this ideal does not exist in reality. Each form of investment has its own special virtues and shortcomings.

Investment strategies for local governments and other public organizations are outlined in Chapter 4. Primary determinants in selecting a specific security include (1) safety/risk, (2) liquidity and marketability, (3) maturity, (4) yield, and (5) price stability. The money market instruments most widely used by local governments are arrayed against these basic characteristics in Table 1.3. Local governments and other public organizations often invest in securities that can be readily converted into cash (have high liquidity) either through the market or through maturity. Several exogenous considerations influence the yield on any investment, including interest rates, minimum investment requirements, and the maturation dates of investments.

In general, securities characterized by low risk, high liquidity, and short maturities will also produce low yields. For a security to provide high yields, one or more of the other criteria must be compromised. Although some localities are beginning to invest in high-grade, high-yield securities, many local officials still rank yield as the least important of all the criteria in selecting an investment instrument.

Federal obligations, such as Treasury bills and federal agency securities, are practically riskless, because they are backed by the full faith and credit of the federal government. In addition, Treasury bills usually mature before new market conditions alter the assumptions on which the investment was based. Other securities carry varying degrees of risk and, therefore, must offer higher interest rates. In many states, however, local governments are prohibited from investing in banker's acceptances and commercial paper, which generally earn higher rates of return.

In seeking to improve or expand public services, local governments face (1) the need to expand revenues, (2) already heavily burdened taxpayers, and (3)

TABLE 1.3 Money Market Instruments Used by Local Governments

Investment Instrument	Obligation Issuer	Denominations	Maturities	Marketability
United States Treasury Bills	U.S. government obligations	\$10,000 to \$ 1 million	3, 6, 9 & 12 months	Excellent secondary market
U.S. Agency Securities	Various Federal Agencies	\$1,000 to \$25,000	30 days; 270 days; 1 year	Good secondary market
Negotiable Certificates of Deposit	Commercial Banks	\$500,000 to \$1 million	Unlimited; 30-day minimum	Active secondary market
Non-Negotiable Certificates of Deposit	Commercial Banks & Savings and Loans Assoc	\$1,000 minimum (usually \$100,000)	30-day minimum	Limited secondary market
Repurchase Agreements	Commercial Banks	\$100,000 minimum	Overnight minimum 1–21 days common	No secondary market
Banker’s Acceptances	Commercial Banks	\$25,000 to \$1 million	Up to 6 months	Good secondary market
Commercial Paper	Promissory Notes of Finance Companies	\$100,000 to \$5 million	5–270 days	No secondary market

narrow restrictions on their ability to borrow to finance public expenditures. Under these circumstances, public officials can be expected to respond enthusiastically to any source of additional revenue that does not involve increased taxation or additional debt. The net return on investments can be an especially important source of revenue.

3.5 Financial Asset Analysis

A primary objective of financial analysis is to identify how new programs and strategies might be implemented. *Baseline funds* support ongoing operations—cover current operating expenses, provide adequate working capital, and maintain current plant and equipment. *Strategic funds* are used (1) to purchase new assets, such as equipment, facilities, and inventory, (2) to increase working capital, (3) to support research and development, marketing, advertising, and promotions in the private sector, and (4) for mergers, acquisitions, and market development. The strategic funds available can be determined by subtracting baseline funds from total assets (revenue or appropriations). Strategic funds

should be allocated to each program in priority order according to its potential contribution to the achievement of identified goals and objectives.

Various analytical models can be used to project financial assets, to determine cash flow requirements, to optimize financial leverage, to compare lease versus purchase options for difference depreciation schedules, to evaluate the impacts of proposed acquisitions, and to assess the impacts of risk and uncertainty on financial decisions. Many of these models can be consolidated or combined so that different managers can use the same assumptions to design models to meet their particular needs.

4 FINANCIAL PLANNING CYCLE

Effective financial planning requires the application of analytical techniques to accommodate the risk and uncertainty that are inevitable in future-oriented decisions. Risk is taken no matter what the decision—even the decision to do nothing involves the risk of lost opportunity. An effective financial manager must be aware of how opportunity, innovation, and risk are interrelated and must be willing to take risks appropriate to his or her level of responsibility.

4.1 Cost Analysis

An organization is likely to encounter many different costs in choosing among alternate approaches to achieve its objectives. Costs include not only the expenditure of money but also the consumption of physical resources, the employment of human resources, and the use of time. Factors that influence cost (identified in Table 1.4) should be considered throughout the financial management process (1) in developing plans and programs, (2) in preparing budget requests, and (3) after commitments have been authorized, in implementing programs or projects.

Costs can be measured in various ways, depending on the information requirements of management. Whatever the basis of measurement, costs must be weighed against anticipated benefits. The basic concepts of cost, summarized in Table 1.5, are discussed in Chapter 5. Some costs are *fixed*, that is, they are the same regardless of the size or duration of the program. Other costs are *variable*

TABLE 1.4 Factors Influencing Future Costs

Scope and quality of the services or products to be delivered
Volume of activity required to deliver these services or products
Methods, facilities, and organizational structure required to perform these activities
Qualities and types of labor, materials, equipment, and other cost elements required by these programs
Price levels of the various cost elements

TABLE 1.5 Basic Concepts of Cost

Cost can be defined as a release of value required to accomplish some goal, objective, or purpose.
Fixed costs do not change in total as the volume of activity increases but become progressively smaller on a per unit basis.
Variable costs are more or less uniform per unit, but their total fluctuates in direct proportion to the total volume of activity.
Costs also may be semi-fixed, described as a step-function, or semi-variable, whereby both fixed and variable components are included in the related costs.
Overhead usually is defined as all costs other than direct labor and materials that are associated with the production process.
Direct costs represent costs incurred for a specific purpose that are uniquely associated with that purpose.
Indirect costs are costs associated with more than one activity or program that cannot be traced directly to any of the individual activities.
Controllable costs are defined as those costs subject to the influence of a given manager for a given time.
Noncontrollable costs include all costs that do not meet this test of “significant influence” by a given manager.
Marginal or incremental costs represent the cost of providing one additional unit of service (or product) over some previous level of activity.

and may change significantly as the scope of the project or program is increased. Total costs are often difficult to predict, particularly if the project has a relatively long duration. Therefore, it is important to consider the *marginal* or incremental costs of increasing the size or scope of a program.

Research and development costs, investment costs, the cost of operating, maintaining, and replacing programs and facilities are commonly reflected in cost analyses. At times, it may be necessary to look beyond these monetary costs to what economists call opportunity costs, associated costs, and social costs (see Table 1.6).

The first step in controlling costs is to determine how costs function under various conditions. This process—called *cost approximation* or *cost estimation*—involves an attempt to find predictable relationships between a dependent variable (cost) and an independent variable (some relevant activity or program), so that costs can be estimated over time based on the behavior of the independent variable. Formulation of sound cost approximations in the financial planning cycle is a primary responsibility of financial managers.

Traditional methods for cost analyses distribute costs by one of the following methods: (1) organizational units/elements, (2) budgetary accounts, or (3) traditional cost accounting with direct and indirect cost allocation. With the recent advent of *activity-based costing*, however, it has become apparent

TABLE 1.6 Monetary and Economic Costs

Research and development costs incurred explicitly for a given project should be included as a project expense. General R&D costs that benefit more than one project, however, are considered to be sunk costs.
Investment costs are incurred beyond the “start-up” phase to obtain future benefits. Frequently in the form of expenditures for construction or capital equipment, investment costs may be a function of the number of units planned (the greater the number, the higher the investment costs).
Sunk costs can become an inheritable asset if previous investments can be used to the particular advantage of one alternative over another.
Recurring costs include operating and maintenance costs that vary with both the size and duration of the program; they include salaries and wages, employee benefits, maintenance and repair of equipment, miscellaneous materials and supplies, transfer payments, insurance, and direct overhead costs.
Opportunity costs occur if the commitment of resources to one program preempts the use of these resources elsewhere.
Associated costs are any costs involved in utilizing facilities or services; for example, the cost that users must pay to travel to public recreational facilities, or the cost that government incurs to provide highway access to such facilities.
Social costs may be defined as the subsidies that would have to be paid to compensate persons adversely affected by a project or program for their suffering or “disbenefits.” Rarely is such compensation actually paid (except perhaps when affected individuals enter into litigation and are awarded damages). Social costs often carry emotional overtones and, therefore, may be difficult to evaluate.

that traditional methods for analyzing costs can create significant differences in output cost because of the manner in which overhead costs are allocated to output on a pro rata basis rather than traced to production processes. This difference in distribution can skew the ultimate price of the output and lead to poor management decisions.

4.2 Cost-Benefit and Cost-Effectiveness Analysis

The techniques of cost-benefit and cost-effectiveness analysis can be used (1) to determine if proposed programs are justified, (2) to rank alternative approaches relative to a given set of objectives, and (3) to ascertain optimal courses of action to attain these objectives. Such analyses are conducted within an extended time horizon and, insofar as possible, consider both the direct and indirect factors involved in the allocation of resources. The basic components of cost-benefit analysis are outlined in Table 1.7.

Cost-effectiveness analysis can be viewed as an application of the economic concept of *marginal analysis*. The effectiveness of a program is measured

TABLE 1.7 Basic Components of Cost-Benefit Analysis

Selection of an objective function involves the quantification (in dollar terms, to the extent possible) of costs and benefits to facilitate the comparison of alternatives.
Constraints are the “rules of the game”—that is, the limitations within which a solution must be sought. Frequently, solutions that are otherwise optimal must be discarded because they do not conform to these imposed rules.
Externalities are side effects, or unintended consequences that may be beneficial or detrimental. Often difficult to identify and measure, they may be excluded from the analysis initially in order to make the problem statement more manageable.
In examining the time dimensions of various alternatives, it is necessary to delineate life-cycle costs and benefits. Costs are not incurred on a uniform basis. A time lag often occurs between the initiation of a project and the realization of the first increment of benefits.
The present value of both costs and benefits must be determined by multiplying each by an appropriate discount factor. Benefits that accrue in the present are usually worth more to their recipients than benefits that may occur in the more distant future. Funds invested today cost more than funds invested in the future because one alternative would be to invest such funds at some rate of return that would increase their value.

by the extent to which, if implemented, some desired objective will be achieved. The analysis must be built on some base that represents existing capabilities and existing resource commitments. The analytical task usually is to determine the alternative that will either (1) produce a desired level of performance for the minimum cost or (2) achieve the maximum level of effectiveness possible for a given level of cost. The supporting analyses required under the cost-effectiveness approach are summarized in Table 1.8.

Cost-benefit and cost-effectiveness analysis can be applied at pivotal points in the financial management process. In the planning stage, such analyses may be undertaken on the basis of anticipated costs and benefits. After a program or project has been implemented, cost-benefit and cost-effectiveness analyses may be applied to assess whether the continued costs of the program can be justified by the magnitude of net outcomes. And after a program has completed critical phases in its implementation, these analytical techniques can be used to evaluate the overall program performance in terms of the resource commitments. The techniques of cost-benefit and cost-effectiveness analysis are discussed in further detail in Chapter 5.

4.3 Budgeting

A budget is a *control mechanism* to assure accountability, financial integrity, and legal compliance; a *management tool* to achieve operating economies and performance efficiencies; and a *planning component* to assess the overall effectiveness

TABLE 1.8 Three Supporting Analyses Under the Cost-Effectiveness Approach

<p>Cost-goal studies are concerned with the identification of feasible levels of achievement. Cost curves are developed for each program alternative, approximating the sensitivity of costs (inputs) to changes in the desired level of achievement (outputs). Outputs are usually represented by nonmonetary indices, or measures of effectiveness.</p>
<p>Cost-effectiveness comparisons assist in the identification of the most effective program alternative by defining the optimum envelope formed by the cost curves. A desired level of effectiveness may be specified and cost minimized for that effectiveness level—or effectiveness may be maximized for some level of resource allocation.</p>
<p>Cost-constraint assessments determine the cost of not adopting the most effective programs available. The impact of such factors as legal constraints, limits in technical capacity, employee rights, union rules, and so forth are examined by comparing the cost of programs that might be adopted if these constraints were not present.</p>

of government programs in meeting public service needs. Fiscal authority and responsibility can be delegated through the budget process, while appropriate central control can be maintained. These basic objectives of the public budget process are detailed in Chapter 6.

The budget process involves (1) executive preparation, (2) legislative review, modification, and enactment, (3) budget administration, and (4) post-audit and evaluation. The budget document should provide a clear and concise picture of both the programs to be carried out and the fiscal basis to support these activities. On the basis of public hearings, the governing body may amend the budget and the proposed revenue measures and then approve the budget by resolution or by an appropriation ordinance. Steps in budget administration include appropriation, allocation and allotment, expenditure control, and budget adjustment. Sufficient information should be maintained to anticipate requirements for budget amendments during the fiscal year.

Alternative budget formats developed over the years to meet the broad objectives of financial management include (1) line-item/object-of-expenditure budgets, (2) performance budgets, (3) program budgets, and (4) zero-base (or service level) budgets. Each of these budget formats, discussed in further detail in Chapter 7, arose from the financial management needs at a particular point in time; each reflects varying decision-making capacities; and each has varying management information needs and output capacities (see Table 1.9). Budgets are inevitably affected by past commitments, established standards of service, existing organizational structures, and current methods of operation.

A *line-item/object-of-expenditure budget* has two distinct advantages: (1) a pattern of accounts that can be documented, controlled, and audited and (2) control mechanisms for enforcing allocation and allotment limits through such devices as line-item allocations, periodic budget reports, and independent year-end

TABLE 1.9 Basic Differences Among Budget Orientations

Characteristic	Objects of Expenditure	Performance Budget	PPBS/Program Budget	Zero-Base Budget
Control	Central	Operating	Operating	Operating
Management	Dispersed	Central	Supervisory	Dispersed
Planning	Dispersed	Dispersed	Central	Central
Role of Budget Agency	Fiduciary	Efficiency	Policy	Effectiveness
Information	Bottom-Up	Bottom-Up	Top-Down	Iterative
Decision Flow	Aggregative	Aggregative	Disaggregative	
Information Focus	Objects	Activities	Programs	Decision Packages
Decision Basis	Incremental	Incremental	Programmatic	Programmatic
Key Budget Stage	Execution	Preparation	Analysis	Analysis
Personnel Skills	Accounting	Administrative	Economics	Management
Appropriation/ Organization Linkages	Direct	Activity-Based	“Across-the-Board”	Budget Units

Adapted from: Allan Schick, “The Road to PPB: The Stages of Budget Reform,” in *Planning Programming Budgeting: A Systems Approach to Management*, ed. Fremont J. Lyden and Ernest G. Miller (Chicago, Ill.: Markham Publishers, 1968), p. 50.

audits. Since personnel requirements are closely linked with other budgetary requirements, the management of positions can be used to control the whole budget. Controls may also be applied to the use of specific funds and prior approval may be required for proposed transfers between major budget items.

Although seldom practiced today in its pure form, many characteristics of *performance budgeting* have survived. Performance measures—workload and unit cost measures—and the concept of levels of service have been incorporated into many contemporary financial planning and management applications. The focus on cost-efficiency—a hallmark of performance budgeting—has its parallel emphasis in current budgeting and accounting formats. Cost accounting systems also are being used more widely in government and nonprofit organizations.

Program budgeting combines a planning framework with the basic functions of management and control. Under this approach, multi-year program plans are developed to identify anticipated outputs of services and facilities according to the program objectives. Program objectives describe how and where specific resources will be used: (1) to eliminate, contain, or prevent a problem; (2) to create, improve, or maintain conditions affecting the organization or its clientele; or (3) to support or control other identifiable programs. Program objectives must be consistent with available (or anticipated) resources. The “output” of many organizational activities may be difficult to define and measure, however. Therefore,

secondary measures often must be used to test alternative approaches and evaluate costs.

The basic objective of *zero-base budgeting* is to circumvent the shortcomings of incremental approaches to budgeting. Current applications have taken a somewhat more modest and more realistic approach as compared to earlier efforts in the mid-1960s. The detailed analysis of programs “to the zero base” has been replaced by the concept of levels of effort (or service levels).

Service level analysis seeks to identify essential service levels so that a jurisdiction can maintain and deliver—and be held accountable for—such services in a more efficient and effective manner. Labeling a service as “essential” is not the same as defining its supporting expenditures as “fixed.” Essential services can be provided more efficiently (at less cost) or more effectively (with greater benefits). This analytical approach is applicable to all programs in which some discretion can be exercised as to the course of action pursued.

4.4 Capital Facilities Planning and Programming

The term *capital facility* refers to any project having a long life (usually a minimum of 15 to 20 years), involving a relatively large investment of resources, and yielding a fixed asset for the community or organization. Decisions affecting capital facilities are not easily altered or adjusted. Once resources have been committed, the location of a public health clinic, an elementary school, or a firehouse, for example, can be changed only at considerable public expense. As discussed in Chapter 8, a comprehensive approach is required in the planning, programming, and financing of capital facilities.

Capital facilities planning should build upon a continuous assessment of community/client preferences, demographic estimates, economic forecasts, and projections of development expectations. Demographic data and other vital statistics must be analyzed to determine changes in client groups. Assumptions concerning population growth or decline are correlated with expected economic activities. Information concerning future economic conditions is also essential in determining the financial capacity of a community to pay for capital improvements.

In all likelihood, for any given budget period, the overall cost of capital projects proposed will exceed the available fiscal resources. Therefore, proposed projects must be evaluated and ranked in some manner and should be rated against an explicit set of evaluation criteria.

When all proposed projects have been examined and analyzed, a composite capital improvements program (CIP) should be prepared, usually spanning a five- to six-year period. This time frame provides sufficient lead time for the design and other preliminary work required by such projects. Projects included in the CIP should be arrayed according to their priority ranking.

4.5 Debt Financing and Administration

Capital facilities can be financed in a number of ways, as summarized in Table 1.10. These financing methods must be evaluated in terms of overall fiscal policies and in the light of the particular capital facility involved. A sound long-range revenue program seeks to develop an appropriate mix among these three financing methods.

“Pay-as-you-go” financing encourages a community or organization to live within its income, minimizes premature commitment of funds and conserves the capacity to borrow for times of emergency when ample credit may be vital. The pay-as-you-go approach also avoids the added cost of interest payments, making it less costly than borrowing.

On the other hand, the burden of financing a facility may have to be spread over the life of the improvement to achieve *user-benefit equity*. The general assumption is that future economic and population growth will offset the increased liability and make the payment of debt service (principal and interest) more feasible. A sound borrowing policy is one that seeks to conserve rather than exhaust credit. The ability to borrow when necessary on the most favorable market terms is an objective that applies to governments just as it does in business and industry.

A *bond* is a promissory note ensuring that the lender will receive (1) periodic payments at some predetermined interest rate and (2) at the due date, repayment of the original sum invested (see Table 1.11 for a listing of various types of municipal bonds). Interest earned on municipal bonds is exempt from federal taxes, and usually from state taxes in the state in which the bond is issued.

TABLE 1.10 Methods for Financing Capital Facilities

Financing capital projects from current revenues —on a “pay-as-you-go” basis—is more feasible when capital expenditures are recurrent, either as to purpose or as to amount, as for example, the paving of streets or the acquisition of neighborhood recreation areas. It may be easier to finance required public improvements out of current taxes once the infrastructure of the community has been established.
Reserve funds (sometimes called a capital reserve) involve the investment of a portion of current revenue each year in order to accumulate sufficient funds to initiate some particular project in the future.
Long-term borrowing may be appropriate under the following conditions: (1) the project will not require replacement for many years (e.g., major health facility or sewage disposal plant), (2) the project can be financed by service charges to pay off revenue bonds, (3) needs are urgent for public health, safety, or other emergency reasons, (4) special assessment bonds are the only feasible means of financing improvements, (5) intergovernmental revenues may be available to guarantee the security of the bonds, and (6) for financing projects in areas of rapid expansion, where the resource demands are comparatively large and unforeseen.

Table 1.11 Categories of Municipal Bonds

General obligation bonds are backed by the “full faith, credit, and taxing power” of the issuing government.

Revenue bonds are backed by a pledge of revenues to be generated by the facility that is being financed.

Municipal bonds can also be classified according to the method of redemption.

Term bonds become due in a lump sum at the end of the term of the loan; all bonds in the issue reach maturity and must be paid off at the same time. The lump sum principal payment is met by making annual payments to a sinking fund.

Serial bonds are retired by annual installments directly from tax revenues or, in the case of revenue bonds, from earned income. Serial bonds have simpler retirement requirements and offer greater flexibility in marketing and in arranging the debt structure of the community.

With annuity serial bonds, the debt service payment is approximately the same each year (as with a home mortgage). The portion of the annual payment that covers interest is higher in the early years of the issue but declines as payments toward principal are made (that is, as the outstanding principal is retired).

Straight serial bonds require annual payments of principal of approximately equal amounts. Interest payments are large in the early years and decline gradually as the bonds approach maturity.

Stepped coupon bonds use a serial maturity schedule, with coupon rates that start at lower levels and progressively increase to higher levels, even though all the bonds in the issue are sold at par.

Zero coupon bonds sell at a discount and take advantage of federal tax laws which entitle bondholders who forego tax-free income over the life of their investment to receive tax-exempt capital gains upon maturity.

Compound interest bonds return to the investor at maturity the principal plus interest compounded at a specified rate.

Tender option bonds offer the investor the option of submitting the bond for redemption before maturity. Investors usually may redeem a bond (or “tender their option”) five years after the date of issue or on any anniversary date thereafter.

Flexible interest bonds The yield changes over the life of the bond, based on some interest index printed on the bond itself—most often used is the average weekly rate of Treasury bills or bonds issued during the preceding interest period.

Private activity bonds are used either entirely or partially for private purposes and must meet the test of qualification outlined within federal tax law to obtain tax-exempt status.

Debt administration refers to the management of funds for the construction or acquisition of fixed assets. *Capital project funds* account for the resources used to build or buy specific capital facilities. These resources come from the issuance of bonds or other long-term obligations, from intergovernmental grants, or from fund transfers within the government unit. The capital project fund is terminated when the project is completed, and the accounting results are transferred

to other fund or account groups—the *debt service fund* and the general long-term debt and fixed assets accounting groups. The resources from which principal and interest are paid and the investment and expenditure of those resources are accounted for in the debt service fund. A *sinking fund* spreads the cost of repayment over the life of the bond issue to avoid large, irregular demands on the organization's annual budget. The administration of these debt-related funds is examined in Chapter 9.

Maintaining accurate debt records is vital to short- and long-term financial operations. Auditable ledgers should record the identity, purpose, and amount of debt commitments associated with capital projects and the principal and interest payments made. Accurate reporting develops confidence on the part of investors and the general public as to the management of the financial affairs of the jurisdiction or public organization. The investment of effort in preparing such reports may be repaid many times over through lower interest rates.

5 MANAGEMENT CONTROL CYCLE

Accounting has always been an important component of the management control functions of governmental organizations. These control systems, for the most part, are based on double-entry accounting practices developed in the private sector. The role of accounting in the public sector is expanding, however, as a consequence of the increased attention in recent years to the need for greater economy, efficiency, and effectiveness in the operations of government. There is growing recognition that, in addition to the functions of financial record keeping and external reporting, accounting can and should serve as a tool for planning, decision making, and management control.

5.1 Financial Accounting

Accounting data form the basis for much of the financial analysis conducted in complex organizations. Although accounting data may be used as a basis for future plans (e.g., for budget building), financial accounting is concerned primarily with the historical results of fiscal transactions and the financial position of some organizational entity.

The basic financial accounting equation can be expressed as follows:

$$\text{Assets} = \text{Liabilities} + \text{Fund Equity} + \text{Revenue} - \text{Expense}$$

Whereas for-profit entities seek to generate net income, not-for-profit organizations strive to “break even”—that is, to balance revenues and expenses. Key concepts in financial accounting for public organizations, defined in Table 1.12, are discussed in further detail in Chapter 10.

TABLE 1.12 Basic Accounting Vocabulary

A fund is an independent fiscal, accounting, and often legal entity to which all resources and related liabilities, obligations, reserves, and equities are assigned. Transactions are made between funds.
Separate financial statements are prepared for each of the major funds, and combined statements of funds with similar purposes often are distributed.
An income statement reflects the profit performance of an entity for some specific period of time.
Revenue represents an inflow of money and/or other representations of value in return for selling goods or providing some type of service.
Expense represents an outflow of resources, or incurring of obligations, for goods and services required to generate revenues.
Net income is simply the excess of revenue over expense.
A balance sheet shows the financial position of an entity at a particular time—resources available (assets) and liabilities outstanding (obligations and debts).
Owner’s equity —sometimes called net worth, capital, or proprietorship—represents the residual interest in the entity after various obligations have been deducted. In governmental accounting, the concept of fund equity is substituted for owner’s equity.
Equity is equal to the assets minus the liabilities of an entity. Claims for amounts due to creditors and employees (such as salaries payable) have legal priority.
A trial balance offers proof that a ledger is in balance, but it does not verify that transactions have been correctly analyzed and recorded in the proper accounts.

5.2 Fund Accounting

The primary mechanisms for the control of governmental activities are provided through fund accounting. Standard fund designations frequently applied in local governments are shown in Table 1.13. Revenues are controlled through the appropriation process, whereby public agencies are authorized to incur financial commitments based on estimated revenues to be collected. Proposed expenditures are controlled through budget line items. Expenditures for any line item—such as salaries, supplies and materials, equipment, contractual services, or travel—cannot exceed the dollar amount that has been appropriated or allocated to that particular line item.

A new “model” for state and local government financial reporting has been developed by the Governmental Accounting Standards Board (GASB) in an effort to make annual financial statement easier to understand and more useful to those who rely on this information to make decisions. The new GASB guidelines, released in June 1999, change the way financial information is communicated to legislative oversight bodies, creditors, citizens, bond rating organizations, the media, and anyone else interested in how a government is doing financially. Annual financial statements must include an analysis, in narrative form, of the jurisdic-

TABLE 1.13 Standard Fund Designations

General fund	is used to account for all financial resources, and activities financed by them, that are not accounted for in some special fund.
Special revenue funds	are used to account for taxes and other revenues (except special assessments) that are legally restricted for a particular purpose.
Debt service funds	account for the financing of interest and the retirement of principal of general long-term debt.
Capital project funds	account for those capital projects that are financed either on a “pay-as-you-go” basis or out of capital reserves, grants-in-aid, or transfers from other funds.
Special assessment funds	are established to account for special assessments levied to finance improvements or services deemed to benefit properties or individuals against which the assessments are levied.
Enterprise funds	are established to account for the financing of services rendered primarily to the general public for compensation.
Internal service funds	(working capital funds) are established to account for the financing of activities or services carried on by one department for other departments of the same governmental unit.
Trust and agency funds	account for cash and other assets held by a governmental unit as trustee or agent (for example, employee pension funds).

tion’s financial activities during the fiscal year, including information about the full cost of providing government services and supporting public buildings, bridges and roads. The guidelines require that *full accrual accounting* be used to prepare financial statements for all government activities—not just those for which costs are covered by charging a fee for services, as was previously required. Accrual accounting also reports all of the revenues and costs of providing services each year, not just those received or paid in the current year. This new approach to financial reporting will give much more useful information to those interested in the “big picture.”

5.3 Budgetary Accounting

The emphasis on budgetary control is a major distinction between governmental accounting and for-profit accounting. When the concern is primarily with financial reporting and accountability, public activities are controlled through the *line-item/object-of-expenditure budget*.

The adoption of a budget by the legislative body represents the legal authority to spend. In most cases, actual expenditures should closely coincide with budgetary appropriations—the budget should serve as both a mandate for and a limitation on spending. Appropriations may be subdivided according

to agencies, programs, and classes of expenditures. These subdivisions, known as *allocations*, become the first accounting entries for the new fiscal period. Allocations may be made to specific line items or object codes, and specific limitations may be imposed as to the deviations permitted within these expenditure categories.

Provision also may be made for an *allotment system* through which allocations are further subdivided into time elements—for example, monthly allotments for personal services (salaries and wages and fringe benefits). Allotments are particularly useful where expenditures are contingent on future events, such as the availability of grants or the anticipated opening of a new capital facility. Allotment procedures that require monthly approvals by the governing body, however, can become cumbersome, generate operational uncertainties, and may result in false economies.

Good budgetary accounting provides for *encumbrances* to record the placement of purchase orders or the letting of contracts as an obligation against the agency's allocation. By reserving a part of the allocation (or appropriation), the agency is prevented from overspending funds available during any fiscal period. In some cases, specific allocations are encumbered and liquidated on an "as-billed" basis.

5.4 Cost and Managerial Accounting

Cost accounting procedures ensure the proper recording of cost flow by assembling and recording all elements of expense incurred to attain a purpose, to carry out an activity, operation, or program, to complete a unit of work or project, or to do a specific job. Cost accounting encompasses a body of concepts and techniques applicable in both financial accounting and managerial accounting. Basic terminology used in cost accounting is summarized in Table 1.14.

Cost accounting seeks to assign accountability to those sectors of an organization in which day-to-day influence can be exercised over the costs in question. Passing the buck is an all-too-pervasive tendency in large organizations; this tendency can be minimized when responsibility is firmly fixed. Nevertheless, a delicate balance must be maintained between the careful delineation of responsibility, on the one hand, and a too rigid separation of responsibility, on the other.

Significant features of managerial accounting are outlined in Table 1.15. Managerial accounting involves formulations of estimates of future financial performance and analyses of actual performance in relation to these estimates (for example, through performance auditing techniques). Managerial accounting provides information to support decisions about program costs. Cost accounting and managerial accounting procedures are discussed in some detail in Chapter 11.

Table 1.14 Cost Accounting Terminology

Absorption or full costing considers all the fixed and variable costs associated with the provision of the goods or services in question.
Unit costs are often determined simply by dividing the current budget allocation for a given activity by the number of performance units.
Overhead includes the cost of various items that cannot conveniently be charged directly to those jobs or operations that are benefited.
Responsibility costing assigns to an operating department only those costs that its managers can control or at least influence.
Direct costing considers only the variable or incremental costs of a particular operation.
Job order costing is used by companies in which products are readily identifiable by individual units or batches.
Process costing is most often found in industries characterized by the mass production of like units, which usually pass in continuous fashion through a series of uniform production steps called operations or processes.
Standard costs relate the cost of production to some predetermined indices of operational efficiency to provide a means of cost control through the application of variance analysis.
Average unit costs may be determined by dividing accumulated costs by the quantities produced during the period. Unit costs for various operations can then be multiplied by the number of units transferred to obtain applicable total costs.
Workload measures focus on time-and-effort indices such as number of persons served per hour, yards of dirt moved per day, or more generally, volume of activity per unit of time.
Actual overhead costs incurred by an organizational unit typically are recorded by means of an overhead clearing account and some type of subsidiary record, such as a departmental expense analysis or overhead cost sheet.
Allocated or applied overhead (indirect costs) is distributed through the use of predetermined rates.

TABLE 1.15 Significant Features of Managerial Accounting

Greater emphasis on the generation of information for planning and programming purposes, seeking to establish a balance with the control function of accounting.
Performance standards (workload and unit cost data) added to traditional control mechanisms based on legal compliance and fiscal accountability.
Experimentation and innovation in the types of information supplied to management at various levels.
Greater cost consciousness generated among operating units through the identification of cost and responsibility centers and the use of performance standards.
Linkage among management control, program budgeting, and performance auditing facilitated by cost analyses.

6 MANAGEMENT INFORMATION AND PERFORMANCE EVALUATION

Effective financial planning and management requires timely and relevant information to understand the circumstances surrounding any issue and to evaluate alternative courses of action to resolve any problem. Information is incremental knowledge that reduces the degree of uncertainty in a particular problem situation. Although vast amounts of facts, numbers, and other data may be processed in any organization, what constitutes management information depends on the problem at hand and the particular frame of reference of the manager. The fundamental objective should be to enhance the attributes of good decision making by providing *quality* of information rather than *quantity* of data.

6.1 Management Information Systems

Management information systems (MIS) are composed of (1) *databases*—collections of structured and related information stored in the computer, (2) *database management systems* (DBMS)—software packages that provide the means for representing data, (3) procedures for making changes in these data (adding to, subtracting from, and modifying/ enhancing), (4) methods for processing raw data to produce information, and (5) the necessary internal management functions to minimize the user effort to make the system responsive. In designing a management information system, computer hardware should be the last matter to be considered. It first is necessary to decide what kind of information is needed—how much, how soon, and how often.

A management information system must be flexible and adaptive and must have the capacity to accommodate deficiencies as the system evolves. Many managerial decisions require explicit attention to non-quantifiable inputs, as well as to data that may result from computerized applications. The specific objective of an MIS should be to communicate information in a synergistic fashion—in which the whole becomes greater than the sum of the individual parts.

Contemporary financial planning and management activities are both information-producing and information-demanding. Important managerial feedback—soundings, scannings, and evaluations of changing conditions that result from previous program decisions and actions—must be available to facilitate timely and effective decision making. Financial procedures generate information that feeds forward to provide a basis for more informed decisions and actions over a range of time periods, locations, and perspectives. “Feed forward” information emerges from projections and forecasts; goals, objectives, and targets to be achieved; program analyses and evaluations; and the projection of outcomes and impacts of alternative programs. The objective is to satisfy the increasingly voracious appetite for management information applicable to strate-

gic decisions, while reducing the cost of management in relation to total organizational costs.

6.2 Performance Evaluation

For purposes of this discussion, evaluation can be defined as (1) an assessment of the effectiveness of ongoing and proposed programs in achieving goals and objectives and (2) an identification of areas needing improvement through program modification (including the termination of ineffective programs), which (3) takes into account the possible influence of external and internal organizational factors. An evaluation can focus on *process*—the extent to which programs are implemented according to predetermined guidelines—or on *impact*—the extent to which a program produces change in the intended direction.

The purpose of many evaluations has generally been to improve efficiency. Questions of efficiency often are defined and answered strictly in *least-cost* terms, with minimal consideration of priorities or of the relative worth of the programs pursued. It is possible to do things very efficiently, but if they are the wrong things to do, they will have little positive impact on the problems to which a public program is directed. Improving efficiency may not require any drastic changes in program strategies. Increasing effectiveness, however, often entails radical program adjustments—one reason why evaluations that focus on effectiveness may not be fully utilized.

Evaluations often provide the information necessary to design and/or modify service delivery systems. The final products of the formative evaluation process should be (1) a service delivery plan, based on an understanding of the causal relations between the activities to be performed and the desired results, (2) a set of goal statements, outlining a course of action in broad terms, and (3) supporting objectives, which provide for the quantification of progress toward goal achievement.

The most comprehensive evaluations are little more than academic exercises if their findings have no impact on the processes by which programs are developed and policies are made. Sunset legislation, management and performance audits, and program reconstruction are mechanisms for the further application of findings of evaluations. *Sunset legislation* requires periodic evaluations of programs and the termination of those programs for which continuance cannot be justified. *Management audits* involve an assessment of resource utilization practices, including the adequacy of management information systems, administrative procedures, and organizational structure. A *performance audit* extends the focus of a management audit to include an examination of program result to determine if (a) desired benefits were achieved, (b) program objectives were met, and (c) alternatives were considered that might yield the desired results at a lower cost. *Program reconstruction* is based on the feedback stage of the model, wherein initial program outputs are modified in response to the reactions of affected groups and sources of support.

7 ORGANIZING FOR FINANCIAL MANAGEMENT

It is important to have a competent, well-organized management staff to carry out these financial responsibilities. Although good results are not necessarily guaranteed by sound organizational arrangements, past history has demonstrated that inappropriate assignments of financial management functions can create serious problems and impede effective leadership.

7.1 Executive and Legislative Responsibilities

Financial management responsibilities of any public organization should be under the general supervision of the chief executive so as to promote full consideration of these vital functions. The chief executive has overall responsibility for (1) formulating long-range plans for the entire organization, (2) preparing and administering the annual and capital budget, (3) maintaining financial reporting activities, and (4) developing related systems for measuring program accomplishments. Most public organizations also have a governing body—a board of directors, city council, board of commissioners. The governing body (1) determines over-all fiscal policy, (2) approves the budget for the organization, (3) adopts revenue and expenditure authorization measures, and (4) holds the chief executive accountable for the effectiveness of fiscal procedures and program results. Both the chief executive and the governing body must exercise financial stewardship in the conduct of these important fiscal affairs.

7.2 Agency Responsibilities

The distribution of financial management responsibilities within local government may vary considerably, depending on the size and form of government, existing legal parameters in state and local laws and ordinances, past practices and traditions, and the management styles of those individuals with overall executive responsibility. A model organization for the financial operations of local government was first recommended by the National Municipal League in 1941, as part of its Model City Charter. The model has remained fairly stable over the past sixty years, as evidenced by its inclusion in a recent publication on municipal finance of the International City/County Management Association (ICMA). This model reflects an emphasis on the strong mayor or manager-council form of government, with its increased centralization of management responsibilities.

Except for the independent audit function, all financial operations under this model are grouped into a single organization—a Department of Finance—directly responsible through its director to the chief executive (see Figure 1.4). Financial management responsibilities are distributed among five offices: Controller, Treasurer, Assessor, Purchasing Agent, and Budget Officer. The Budget Office may operate as one of the divisions of the Department of Finance or as a

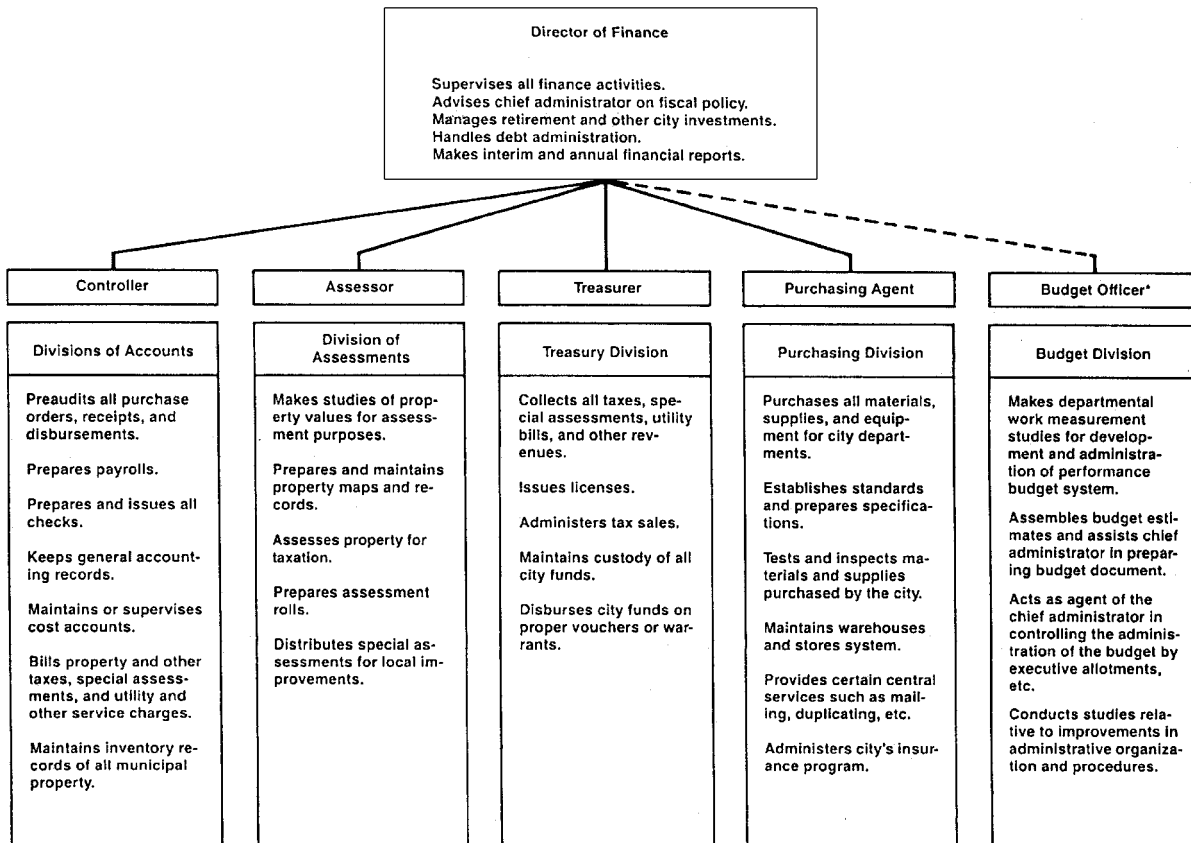


FIGURE 1.4 Department of Finance organization chart.

separate unit directly responsible to the chief executive. This latter arrangement reflects the policy emphasis of the budget as contrasted to the line emphasis of the other divisions.

8 SUMMARY AND CONCLUSIONS

Essential tools for financial management must include techniques for assessing the long-term needs of an organization and its clientele, rational procedures for acquiring and allocating the resources necessary to meet these needs, and appropriate mechanisms for managing costs, maintaining accountability, and disseminating relevant financial information.

This initial chapter has attempted to provide a broad perspective of financial management in the public sector, building on the basic cycles of cash management, financial planning, and management control. It was designed to provide a road map to the more in-depth discussions that follow. While some of the sign posts offered may have passed by too quickly and may have contained more information than could be fully absorbed, the “map” is available for further reference as the specific components are detailed.

ENDNOTES

1. The Pareto criterion suggests that the welfare of a community is improved if some members are made better off while no one is made worse off. While this criterion has no logical flaws and does not require interpersonal comparisons of utility, it does not resolve the political dilemma that arises in may public sector decisions.
2. Martin J. Gannon, *Management: An Organizational Perspective* (Boston: Little, Brown, 1977), p. 140.
3. Fremont E. Kast and James E. Rosenzweig, *Organization and Management* (New York: McGraw-Hill, 1979), pp. 416–417.
4. Alan Walter Steiss, *Public Budgeting and Management* (Lexington, Mass.: Lexington Books, 1972), p. 148.

2

Revenues and Expenditures in the Public Sector

Historically, the United States has relied on a mixed private-public economic system. The national economy is built primarily on the private sector—on the “invisible hand” of supply and demand in the marketplace—with the public economy invoked when the market system fails to satisfy significant social goals.

1 RATIONALE FOR PUBLIC SECTOR ECONOMICS

Economic activities in the public sector include (1) the provision of public goods and services (e.g., parks and recreational facilities, primary and secondary education, public health facilities and programs), (2) the allocation and distribution of resources (public welfare, differential incidence in the costs and benefits of public programs), (3) correction of market imperfections, including natural monopolies and externalities, and (4) the provision of collective risk (including public safety, national security and defense). Each of these factors plays a role in defining the fiscal responsibilities of local government.

1.1 Provision of Public Goods and Services

Public goods and services are generally those that cannot be effectively supplied by the marketplace because private entities cannot exact a price for each unit of benefit sufficient to cover the costs. The costs of public goods must be subsidized

through other sources of revenues. Direct payments are largely voluntary (as with “contributions” in support of some public service), and some consumers are “free riders.” Government assumes production of public goods or services when they are undersupplied or unsupplied, and exacts a price from consumers in the form of taxation. Once supplied, no one can be excluded from accessing the benefits of a public good.

1.2 Allocation of Resources

Public sector policies address the allocation of resources—the distribution of wealth, stabilization, and growth. In addition to directly producing and supplying public goods and services, governments may encourage or discourage the production and consumption of certain goods and services via the regulation of economic behavior (for example, through tax incentives or tax levies, performance standards, inspections, codes).

Policies impacting the distribution of wealth are primarily the responsibility of the federal government and, to a somewhat lesser extent, of state governments. However, such policies are affected by the incidence of the tax burden at the local level and by local program costs and benefits. Stabilization and growth of the economy are concerns of local governments in terms of maintaining an adequate tax base, an adequate level of public service, an appropriate level of capital investments, and reasonable stability of public revenue. These concerns have resulted in a “scramble for rateables,” that is, efforts to attract economic activities (industry and commercial developments) into a community. It is assumed that the tax revenues to be derived from such development will exceed the cost of providing essential public services.

1.3 Correction of Market Imperfections

The provision of certain goods and services can benefit from economies of scale (lower costs, greater efficiencies). Such situations in the private sector, however, may lead to monopolistic pricing. When such economies of scale have social benefit, government may assume ownership of these natural monopolies (for example, a public utility) and/or regulate the pricing of these goods and services.

The allocation of resources at the local level is achieved through the budget process and other legislative and administrative constraints on economic behavior. Fiscal management and budgeting at the local level is complicated by the complexity of economic interrelationships produced by over 78,000 units of local government, often with functional and/or geographic overlapping responsibilities. This multiplicity of jurisdictions and balkanization of responsibilities makes it very difficult to achieve appropriate economies of scale in the delivery of public services.

1.4 Collective Risk

The demand for public services and facilities changes as a function of growth and the social and economic characteristics of the community. Governmental responsibilities have expanded in recent years—in the provision of social services, in dealing with environmental matters, and in many other areas. This expansion has come about in some areas because of citizens at the local level demanding more services. In other instances, the pressure for an expanded local role has come largely from mandates and requirements imposed by state and federal government.

In most cases, private enterprise will not undertake the provision of these services or will do so only at a price that precludes all citizens from participating in the benefits. Therefore, government supplies the good or service “free,” via financing from a general tax source.

Local revenues have tended to increase at a slower rate, however, creating an ever widening fiscal gap for many localities. In economic terms, it is said that local government revenues are relatively *inelastic*, that is, most local sources of revenues are not particularly responsive to changes in the overall economy. This inelasticity is attributable, in part, to the tax structure which forces local governments to rely heavily on local property taxes. Under fiscal pressures, property taxes have proven to be relatively unresponsive in meeting increasing demands for public services and facilities.

There is a growing body of evidence to indicate that the deterioration of urban infrastructure in the United States is a serious problem of national scope. Articles in the popular press, research sponsored by various federal agencies, and congressional hearings have contributed to increased national concern and debate as to the status of water and sewer systems, health and educational facilities, streets, bridges, and so forth in our cities and towns. What was once viewed as a “big city problem” is now recognized to be a much more widespread concern.

Unfortunately, recognition of the seriousness and magnitude of the problem has come at a time when resources are constrained at all levels of government. A pronounced decline in aggregate local spending for capital improvements have been evident since the 1960s. During periods of fiscal pressures, many local governments also have deferred maintenance spending as a “temporary measure” to ease their financial burdens. Such spending deferrals, however, have only multiplied future repair needs and investment requirements. Therefore, public officials and administrators have had to confront a number of difficult, complex, and often politically sensitive financial decisions.

2 PROPERTY TAXES

Although the property tax is under considerable criticism especially as the mainstay of local support for public education, the stubborn fact is that this tax has for cen-

turies demonstrated its capacity to withstand severe and protracted attacks. More research, political controversy, and literature is generated each year on this tax than any other local government revenue source because of its past and present importance and because of its almost universal use as the principal element of income of local governments. The valuation of the property subject to taxation also continues to be the primary base upon which debt limits of local governments are constructed.

2.1 Property Taxes in the Local Revenue Structure

While American local governments have traditionally relied heavily on the property tax for the greater part of their revenues, this reliance is gradually diminishing. In the 50-year period from 1922 to 1972, the relative importance of property taxes as a source of support for state and local government was cut in half—from 72% to 36%. And over the next 20 years, the relative contribution of property taxes was cut in half again—to only 18% of total general revenue available to state and local governments in 1992. Currently (1999), it is estimated that property taxes continue to account for 18% of general revenues for states and local governments (1.2% for state governments and 29.5% for local governments).

The absolute amounts derived from the property tax rose from about \$3.0 billion in 1922 to \$40.9 billion in 1972. Moreover, in 1972, it was still the largest single source of income for local government. By 1980, however, intergovernmental transfers from state sources (\$81.3 billion) surpassed property taxes (\$68.6 billion) as the prime source of income for local governments. In 1992, property taxes accounted for \$178.5 billion of the \$555.6 billion in local tax revenue sources (see Table 2.1).

The property tax has widely differing degrees of importance in both the entire revenue structure and the tax structure of local government. The availability of state and federal aid and the use of non-property taxes, such as income taxes and sales taxes, necessarily results in a lessened dependence on the property tax. Property taxes are more significant in counties and smaller municipalities than in large cities, which have a greater diversity of taxing sources available to them (see Table 2.2). Independent school districts rely on property taxes to a greater extent than any other type of local government. Although school districts receive substantial intergovernmental aid (mostly from the states), they still account for more than 40 percent of all property tax collected, and in the vast majority of states, property taxes account for nearly 100 percent of the tax revenue collected by school districts. Special districts, on the other hand, depend very heavily on service charges for their revenue

2.2 General Description

The term *property tax* is ordinarily used to describe a group of taxes that are levied on the value of different kinds of property determined by the individual

TABLE 2.1 State and Local Government Revenue (in millions)

	1980	1990	1992	1996
General Revenue	299,293	712,700	793,399	987,930
Taxes	223,463	501,619	555,610	689,038
Property	68,499	155,613	178,536	209,440
Sales & Gross Receipts	79,927	177,885	196,112	248,993
Individual Income	42,080	105,640	115,170	146,844
Corporate Income	13,321	23,566	23,595	32,009
Other	19,636	38,915	42,197	51,753
Charges and Miscellaneous	75,830	211,081	237,789	298,892
Utility Revenue	25,560	58,642	62,540	71,593
Insurance Trust Revenue	43,656	123,970	150,067	215,487
Federal Intergovern. Transfers	83,029	136,802	179,184	234,891
TOTAL REVENUE	451,537	1,032,115	1,185,191	1,509,901

TABLE 2.2 City Government Revenue (in millions)

	1980	1990	1992	1993
General Revenue	47,786	112,995	123,466	128,010
Taxes	31,256	68,788	75,486	78,895
Property	16,859	35,024	39,706	41,525
Sales & Gross Receipts	8,208	19,190	20,190	21,053
Income, Licenses & Other	6,189	14,574	15,590	16,316
Charges and Miscellaneous	16,530	44,207	47,980	49,115
Utility Revenue	15,719	33,266	35,460	36,446
Insurance Trust Revenue	3,088	10,827	12,969	13,018
Intergovernmental Transfers	28,270	45,306	48,152	50,592
State	15,939	34,243	36,222	37,666
Federal	12,331	11,063	11,930	12,926
TOTAL REVENUE	94,862	202,393	220,048	228,067

states to be subject to taxation—usually on an *ad valorem* basis (i.e., according to value). The primary justification for the use of the property tax in financing government has been that, inasmuch as the ownership of property constituted a fair index of wealth, it was appropriate to require contributions in support of public services in proportion to the accepted measures of wealth. Property taxes represent the closest approximation to an annual wealth tax currently levied in

the United States. However, property taxes are applied to gross and not net wealth (e.g., the debt against a property seldom is completely subtracted from its taxable value). Further, some types of wealth typically are excluded from property taxes (e.g., certain categories of personal property). Property taxes are not based on the value derived from current transactions (as is the usual case for income and sales taxes), but require a value-estimation procedure (i.e., property assessment), considered to be a primary weakness of property taxation.

Local property taxes usually take two forms:

1. **Real Property Tax:** The tax levied on the assessed valuation of taxable land and improvements thereupon.
2. **Personal Property Tax:** A tax which is, or has been at one time or another, applicable to the assessed value of taxable tangible personal property (e.g., furniture and equipment, automotive equipment, animals, and inventories) and taxable intangible personal property (e.g., money, stocks, bonds, and other assets representing a property right that is not tangible in character).

In early America, it was customary for almost all real and personal property to be subject to taxation. The list of exemptions was very small. As municipalities grew, however, it became increasingly difficult to secure realistic appraisals of household effects and intangible wealth. By the end of the 1920s, exemptions had been extended in most states to very large portions of tangible personal property. In addition to the traditional categories of churches, cemeteries, schools, and public property, exemptions to real property taxes in several states currently include the elderly, veterans, “homesteads” (southern tier states), new industry (South), mining enterprises (West), and nonprofit organizations.

While the list of taxable tangible personal property in some states may be quite extensive, many states exempt personal property entirely from the property tax base. Intangible personal property (e.g., stocks, bonds) often can be readily valued. However, such assets may be difficult to locate in terms of the taxing jurisdiction, and therefore, are also excluded from local taxation. As a consequence, personal property taxes account for only about 10 percent of the total local taxable property base.

2.3 Tax Assessment

In the assessment process, the assessors prepare a listing of all properties to which the governing body has applied a tax rate. Real property is classified as to use; personal property is classified on the basis of its tangible and intangible characteristics.

The principal functions of the assessment process are:

1. To assure that all properties appear on the tax roll, with a proper notation as to the taxable status of each property.
2. To ascertain values under which each taxable property can be made to bear its equitable share of the tax load.

The first of these elements requires the development and maintenance of comprehensive, accurate sets of assessment records.

For decades, the assessed valuation of both real property and personal property relied largely on the periodic reporting by owners of lists of the property that they owned that was subject to taxation. Personal reporting is still the primary method by which personal property is taxed, because the local tax assessors have few alternate sources of information—or, if assessors have access to this information (e.g., from federal personal income tapes), they may be reluctant to use these sources.

The basic objective of the assessment process should be to determine values that are internally consistent in order that taxpayers can be subject to the same effective *millage rates*. If a reasonable degree of internal consistency is achieved, it matters little in terms of tax equity whether the assessment process results in a typical pattern of 30%, 50%, or 100% of true market value.

True market value represents the price at which a willing buyer and a willing seller would reach agreement on the sale of a property. As a general rule, applying 100% of true market value helps to increase equity among taxpayers. When assessed values are only a small percentage of market value, the coefficient of dispersion (a measure of the difference from uniformity) tends to be high. However, when the ratio of assessed to market value is high, the coefficient of dispersion tends to be low.

Appraisal techniques used by realtors, banks, and others seeking to estimate the value of real property provide three general approaches to assessment:

1. The *comparative sales or market data approach* estimates the value of a given property by comparing it to similar properties that have recently been sold. Because a number of actual transactions are required to achieve meaningful comparisons, this approach is relatively ineffective for unique “one-of-a-kind” properties.
2. The *income approach* converts future returns to be derived from a given property (e.g., office building, apartment building, commercial facility) into their present value equivalent in order to estimate the amount that a knowledgeable investor would be willing to pay for the future income stream.
3. The *cost approach* estimates value by adding the depreciated cost of improvements on a property to the estimated land value. Land value is usually estimated by either the comparative sales or the income capitalization approach, while the cost of improvements may be estimated

by determining (1) the cost of constructing a replica of the building at current prices for materials, labor, workmanship, construction standards, and so forth., or (2) the current cost of replacing the building with a structure having equivalent utility.

The comparative sales approach is most often applied to residential property when there is a sufficient number of reliable transactions. The income approach is appropriately used for properties bought and sold largely on the basis of income production. The cost approach is especially applicable for special or unique properties that are seldom exchanged on the market and generate no income.

The amount of revenue generated from property taxes is a function of two variables: the tax or *millage rate* and the *ratio* of assessed value to true market value. Millage rates usually are expressed in terms of dollars per \$1000 (or \$100) of net assessed value. If the millage rate is \$20 per \$1,000, the property tax on a parcel with a true market value of \$250,000 and an assessed value of \$150,000 would be \$3,000 ($\$150,000/\$1000 \times \$20$). If the millage rate in an adjacent community is \$15 per \$1,000, it cannot be assumed that the tax yield on an equivalent property would be only \$2,250. To draw comparisons between jurisdictions, it is necessary to know the ratio of assessed value to true market value. In the example, the ratio in the first jurisdiction is 60% (i.e., the assessed value—\$150,000—is 60% of the true market value—\$250,000). If the ratio in the second jurisdiction is 80%, then the assessed value of a parcel with a true market value of \$250,000 would be \$200,000, and the tax yield from a \$15 per \$1,000 millage rate would be \$3,000.

The frequency with which property assessments are conducted will also impact the revenue yield from property taxes. An *annual assessment* updates the values for all real property each year. While computer-based information systems make annual assessments possible, a complete physical inspection each year of the total inventory of real property within a jurisdiction is unlikely as it would be a major undertaking. If annual assessments are required (or desired), weighted values are often applied to physical characteristics identified in previous inspections, with changing market conditions accommodated on a neighborhood basis.

Mass cyclical assessments are an alternative to annual assessments, whereby all properties in the taxing jurisdiction are assessed in a particular year and the determined values do not change until the next scheduled assessment, except for new construction, demolition, or change in use. States prescribe mass cyclical assessments at intervals ranging from two years (e.g., Iowa) to ten years (e.g., Connecticut).

Between these two extremes is the procedure whereby a *specific fraction* of the real property inventory in a jurisdiction is reassessed each year. For example, if a three-year cycle is applied, one-third of the properties

would be reassessed each year, with all properties being reassessed over a three year period.

Property tax rates typically are set as part of the annual budget process after it has been determined (1) how much the government will likely spend in the coming fiscal year and (2) how much revenue will likely be generated by other non-property tax sources and intergovernmental transfers. Many local governments operate under legal restraints as to the tax rate, however. In those circumstances, the general ratio of assessed valuation to market value becomes very important as it provides a second variable in determining the yield from property taxes.

The *debt limit* of the jurisdiction is typically expressed in terms of a percentage of taxable property values. Failure to adjust borrowing limits to a realistic basis may result in various circumventions, including the creation of “debt authorities”—special districts established in order to avoid either tax or debt limits—or the development of various types of subsidiary debt.

Suggested improvements in property assessment practices include (1) a workable assessment law that lends itself to efficient administration, (2) large assessment districts, (3) a competent, professionally trained staff with a well-structured internal organization, adequate pay, protection against dismissal for doing a good job, and (4) adequate financial support. State supervision is frequently cited as a necessity in achieving substantive equity between taxpayers both within a taxing district and also between taxing districts.

2.4 Advantages and Disadvantages

The property tax has proven to be very durable in spite of the predictions by experts of its demise. It remains the mainstay of local government revenues because of the ability to adapt its structure to the preferences of different groups in society. For example, local officials can target tax relief to deserving groups or can shift the tax burden to segments of the community with greater ability to pay. Local property taxes can also be structured as an incentive to attract business investments.

The principal advantages claimed for the property tax are:

1. *Degree of stability.* Especially in periods of economic adversity, the property tax continues to be a consistently high producer of income—with lesser amounts of downward adjustments than would be the case for income, sales, or gross receipts taxes.
2. *Benefit principle.* The property tax provides a manner in which contributions can be required of the owners and/or occupants of property in some degree proportionate to the benefits (services) being rendered (e.g., police protection, fire protection, refuse collection and disposal).
3. *Index of wealth.* Ownership of property is an index of a person's wealth and, therefore, property taxes fall more heavily upon the

- wealthy family with large holdings than on the poor person who owns property or occupies only small amounts of taxable property
4. *Equity of coverage.* Absentee property owners who benefit from local services are required to pay their “fair share.”
 5. *Ease of administration.* Property taxation is difficult to evade, facilitating collection and enforcement by local governments.
 6. *Local autonomy.* Property taxes have enabled local governments to maintain relative autonomy from state and federal control, thereby countering the tendency toward the centralization of power at higher levels of government.
 7. *Social objectives.* The property tax has a valuable social effect in that the owners of properties that are nonproductive or of marginal value are encouraged to develop the properties or to sell them to others. Thus, a married couple or a widow who occupies a house suitable for a large family may be encouraged to vacate the house, which can then serve a broader social purpose through occupancy by a large family.

Despite its longevity, the property tax is unpopular with many taxpayers because it represents a tax on unrealized gains—a tax on wealth rather than on income. [1] The property tax is particularly onerous for those who are “property rich” but “cash poor,” such as elderly residents living on a fixed income.

Among the other disadvantages frequently cited are:

1. The tax is regressive in that it tends to absorb (in the case of residential property) a greater proportion of the income of low income families than higher income families.
2. The increasing list of exemptions tends to accentuate the inequities inherent in the tax.
3. The yield is not as flexible as some other kinds of taxation. As a result, in periods of inflation, assessments fail to rise in relation to actual changes in value.
4. The problems of administration are very substantial. Concerns about inequitable appraisals and reappraisal give rise to taxpayer anxieties. Where efforts are made to perform assessments on a current and more equitable basis, administration tends to become rather expensive in relation to yield.
5. The tax tends to discourage improvements because in the process of making improvements, or even of careful current maintenance, values are held above levels that would otherwise exist and these, in turn, require higher tax payments.
6. Differentials between adjacent taxing districts result in unnatural competition both for the location of new residential developments and for

the location, or relocation, of economic activities necessary to the sustenance of the entire economic/social community.

7. The lump sum payment requirements (annual or semiannual) are a burden on some residents.

2.5 Improvements and Alternatives

Improvements are needed in the administration of the local property tax. Taxpayers in many states are demanding better equalization. Court decisions are affecting the levy of property taxes. Some state governments are renewing their interest in property tax administration. Tax assessors are reassessing their own procedures.

Changes in property tax laws are continually being made during the various state legislative sessions. The majority of these laws are concerned primarily with clarifying existing laws and providing various types of property tax relief. Equalization has received much attention within the general area of clarifying existing laws. Georgia, Arizona, Nebraska, and New Mexico, for example, are striving for greater uniformity through statewide reassessment programs.

The state courts also have been active in the area of equalization, primarily regarding the use of fractional valuations among various classes of property within a state and those valuations in use that differ from what is specified in state statutes. Although 23 states had adopted full-value assessment by the early 1970s, there was a time lag in the conversion, and only three states had actually made the conversion by the mid-1970s. Since that time, ten additional states have made the conversion, and ten more states have adopted full-value assessment practices.

Increased use of state and federal levels in the performance of governmental functions is a first alternative to use of the property tax. A closely related alternative is increased state and federal financing of local governments. The downside to this dependency on state and federal funding is the loss of local autonomy in determining and setting priorities. There is a tendency to structure grant programs in such a way that local authority regarding the use of these funds is severely regulated.

Another remedy might be the imposition of user charges to finance certain public services—for example, recreational activities, transportation improvements, parking facilities—rather than general taxes. User charges and fees are the most rapidly growing source of local revenues. The shift to such charges has occurred, in part, because of taxpayer resistance against higher tax burdens, particularly in terms of increased property taxes, and, in part, because of the decline in federal assistance to local governments. [2] The luster and political appeal of user charges may soon be tarnished, however, because of equity considerations—the concern for low-income consumers who may be deprived of certain

services if user charges are levied. A related consideration is the possible reductions in staffing of these facilities that inevitably accompanies declines in the use of services.

Another alternative is a tax on the value of land alone or heavier tax rates on land values than on buildings, because land value is a consequence of collective investment, community development, and population growth. This type of tax: (1) does not interfere with decisions as to how the land is used, (2) encourages improvements since these would not result in increased taxation, and (3) turns back the ever increasing tide toward negative land use, particularly in core cities. There are administrative problems, however, as to how land and buildings are to be valued separately, and revenues under this system might not adequately replace current property tax earnings. A tax on land value increments would permit the government to recoup what is an unearned increment to an individual owner. This type of taxation has the same pros and cons as land value taxation, however.

3 LOCAL NONPROPERTY TAXES

Tax levies on nonproperty items provide alternate source of local revenue. Some nonproperty items are more difficult to evaluate and equitably assess for tax purposes, however, making this alternative more costly for local governments to administer. Significant reliance on nonproperty taxes by local government is a relatively recent phenomenon, having its genesis in the 1930s when property owners frequently were confronted with property taxes well beyond their capacity to pay—with consequent tax sales, and so forth. In some important ways, the shift to nonproperty taxes accompanied a basic shift from a rural to an urban economy and from an economy characterized by individual family ownership of small manufacturing plants to systems of national corporations. In a rural-agricultural society, the ownership of property was long understood to be a major indicator of wealth and, therefore, of an ability to pay taxes. Today, evidence of ability-to-pay is represented to a much greater degree by money income than by title to real property.

3.1 General Retail Sales Tax

The sales tax, known in some form since the nineteenth century, was introduced into the states—originally by Mississippi in 1932—in the depression of the 1930s as traditional sources of revenue declined and expenditure needs (particularly in the welfare field) increased. The major use of new taxes also originated in the larger cities in the 1930s. Under permissive state legislation beginning in 1934, New York City adopted taxes on retail sales, on the gross receipts of business, and on the gross income of utilities. Initially, these nonproperty taxes were

a temporary emergency measure for financing the city's public welfare program. They later became an important part of the city's regular revenue system, however. In 1938, New Orleans became the second large city to levy a general retail sales tax. In 1939, after a year's unsatisfactory experiment with a two percent sales tax, Philadelphia pioneered in the levy of an earned income tax under local taxing powers granted by the state in 1932.

By 1969, all but five states levied some form of sales tax. Alaska, Delaware, Montana, New Hampshire, and Oregon still do not levy a general retail sales tax (although restaurant meals are taxed in New Hampshire at 8%). Mississippi and Rhode Island have the highest state sales tax (7%), followed by Minnesota, Nevada, and Washington (6.5%) and Illinois and Texas (6.25%). Ten states collect a 6 percent sales tax. Many cities and counties "piggyback" their own sales tax on the state levies (localities have been authorized in 33 states to apply this add-on to the state sales tax). The 8.25 percent rate in New York City, for example, combines a 4 percent state rate, a 4 percent city rate, and a 0.25 percent rate for the Metropolitan Commuter Transportation District. Sales taxes account for over 20% of all general revenue and nearly 35% of all tax revenue collected by state and local governments.

Local sales taxes, like their state counterparts, are primarily taxes on retail sales of tangible personal property. However, the tax base may include one or more specific services, such as public utilities. The consolidated administration of state and local sales taxes requires that the base for the taxes imposed by both levels of government be either identical or nearly so.

The theory that what a consumer spends is a good measure of his or her taxpaying ability has obvious limitations. Thus, the tax is harshly regressive unless food for off-premises consumption is exempt.

Exemptions are dictated by various considerations and, thus, follow no uniform pattern. In some instances, there are exemptions for food, or food and drugs, in order to lighten the burden on the poor. This complicates administration and may substantially reduce yield. However, it goes far toward eliminating the regressiveness of the tax and gives more flexibility for using higher rates.

Seven states use tax *credits* or *rebates* in an effort to counter the regressivity of the sales tax. Rather than provide exemption for selected commodities, a fixed sum is returned to taxpayers at the end of the year, usually equal to the estimated payment of sales tax on specified categories of purchases by individuals in the lowest income class. The rebate or credit (applied to state income tax calculations) is a fixed amount for all taxpayers and, therefore, benefits lower income taxpayers to a greater extent (since it represents a larger percentage of total income) than it does higher income taxpayers. This approach has a further advantage in those states with significant retail sales to nonresidents because the out-of-state taxpayers are not eligible to receive rebates or credits.

The sales tax is not inelastic but varies less widely during business fluctuations (especially inflation) than do the yields of net income taxes. The tax also has the virtue of creating wide tax consciousness. It needs safeguards, however, against inequity, maladministration, and damaging economic effects.

For efficient and equitable administration of the tax, there are requirements that are beyond the reasonable capacity of small municipalities and are frequently not adequately met by larger jurisdictions. For administrative purposes, the retailers are the taxpayers. The success of what is, in effect, a self-assessed tax depends on their making complete and accurate collections, keeping acceptable records, and making satisfactory returns. Attaining such results requires professional sales tax administrators backed by unambiguous regulations and equipped with competent staffs that include well-trained technicians to do thorough, periodic audits of all large taxpayers and a representative sampling of small taxpayers. The administrator must treat the taxpayers with consideration and provide good informational programs, but be able to detect and penalize carelessness and dishonesty. A fair arrangement, not always provided, is to allow the retailers to retain a small percentage of collections as compensation for costs.

When sales taxes are imposed in one jurisdiction and not in others in the same local trade area, they tend to disturb intercommunity economic relations. A good enforcement program, including audits of taxpayer records, is essential and somewhat costly. Experience indicates that these administrative and economic weaknesses can be mitigated by making the local tax a supplement to the state tax (where there is a well-administered one).

3.2 Gross Receipts Taxes

Gross receipts taxes are imposed on businesses and occupations and are measured by the gross income of the undertaking. This method of taxing business, or the privilege of engaging in business, is used by many municipalities. In some jurisdictions, gross receipts taxes have replaced former flat-rate business licenses; in others, this tax has been the product of new, permissive legislation. In reporting municipal revenue, the Census groups these taxes with general sales taxes.

In a few instances, this tax is a broad-based, general business tax. More often, it is imposed only on some kinds of businesses. For example, localities in Pennsylvania impose a mercantile tax on wholesale and retail businesses. Usually, gross receipts tax rates are low and often uniform for businesses within the same class. When levied at uniform rates on all kinds of enterprises, the gross receipts tax bears no relationship to the profitability of the entity being taxed. The tax is on gross receipts and, therefore, hits low-profit businesses relatively harder than those with a high profit margin.

3.3 Selective Sales Taxes

Numerous municipalities levy excise taxes on specific commodities or services in lieu of applying a general retail sales tax. Some use both the general sales tax and separate special excises. *Public utility taxes* have the advantage of being good revenue producers, without requiring heavy administrative expense. The legal, and frequently political basis for a utility tax is that the levy is imposed for the privilege of exercising a franchise. The tax is almost always passed on to the consumer, however. *Tobacco taxes* have been used by state governments since the original enactment of a cigarette tax in Iowa in 1921. In 1969, North Carolina became the 50th state to enact such a selective sales tax. Local taxes on tobacco are limited to a relatively few states but often this taxation, where authorized, is used extensively. (The tobacco tax in New York City yields over \$200 million annually.) *Admission and amusement taxes* have been regarded as particularly well-suited for local use. They are readily administrable; they tax so-called nonessential expenditures; they obtain revenue from nonresidents using local facilities; and they are, to some extent, benefit taxes—recouping some of the expense of such special services as police, fire protection, traffic regulation, and inspection. They are a minor source of local revenue, however.

The levy of *highway user taxes*—motor fuel tax and motor vehicle license tax—give wide recognition to the benefit principle in taxation. The theory is that each highway user should pay a tax that (1) results in collections that are at least roughly related to the cost of providing the user with highway service; (2) covers, in the aggregate, the overall cost of highway service less some imprecisely determined allowance for collective benefits; and (3) allows all such revenue to be applied to highway purposes. This theory applied so literally that most states provide tax exemption for fuel not used in highway transportation (e.g., farm use), and the federal government and the great majority of state governments follow the practice of earmarking highway user taxes.

In most states, there is a remission to the local governments of considerable portions of the state-collected motor fuel taxes—based on the amount collected within the county or municipality. The local levy of motor fuel taxes was prevalent in many states in the 1920s and 1930s, but today only a few counties and municipalities are involved in locally administered fuel taxes. The preference is to share in the state collected tax on a formula basis. *Motor vehicle license taxes* are widely used as a local nonproperty tax, however; some localities require such licenses of nonresidents as well as residents.

Business license taxes, unless they have received systematic and frequent revisions, are likely to be discriminatory and bear little relation to benefits received or the ability to pay. *Alcoholic beverage taxes* provide the base for large amounts of public revenue at the state level. The local share is relatively small, however. At the local level, alcoholic beverages may be taxed by either selective

sales or excise taxes or license permits or fees. Only nine states have authorized the levy of a local tax on alcoholic beverages.

3.4 Income Taxes

Individual and corporate income taxes accounted for 17.5% of all general revenue and 25% of all tax revenue collected by state and local governments in 1992. Forty-one states and the District of Columbia levy income taxes on individuals (the exceptions are Alaska, Florida, Nevada, New Hampshire, South Dakota, Tennessee, Texas, Washington, and Wyoming), and forty-four states and the District of Columbia levy corporate income taxes (the exceptions are Nevada, New Hampshire, Michigan, South Dakota, Texas, Washington, and Wyoming). [3] In a number of states, the revenue received from income taxes is greater than any other source. State tax authorities rely heavily on federal enforcement efforts, often requiring information to be copied directly from the federal return in computing the state tax liability.

Localities in sixteen states have been authorized to levy income taxes on individuals, and six states have authorized local corporate income taxes. About 3,500 local governments levy local income taxes (for the most part on employee payrolls). However, only 900 of these localities are outside of the State of Pennsylvania.

In its broadest application, a local income tax applies to (1) the gross income from salaries and wages of residents earned both within and outside the city; (2) the gross income from salaries and wages of nonresidents earned within the city; (3) the net profits of professions and unincorporated businesses of residents from activities wherever conducted; (4) the net profits of professions and unincorporated businesses of nonresidents from activities conducted within the city; and (5) the net profits of corporations from activities conducted within the city.

Local income taxes have created problems of double taxation through (1) levies by overlapping governments and (2) application to personal income both at the place of origin of the income and at the domicile of the taxpayer; i.e., a person may live in City A and work in City B and be subject to the tax in both places. Tax credits are sometimes specified in the case of overlapping jurisdictions or nonresidents, however. In Pennsylvania, there are numerous instances of income taxes being levied by both the municipality and school district serving an area. A statutory rate limitation of one percent is maintained by a required sharing of the rate where there is tax duplication—either equally, by mutual agreement, or on some other basis. To avoid the potential for double taxation, Pennsylvania municipalities, other than Philadelphia, provide for tax crediting that gives priority to the place of residence. Under this arrangement, the municipality of residence imposes the tax. In Louisville, Kentucky and overlapping Jef-

erson County, both of which levy a 1.75 percent tax, the county allows taxpayers subject to the city tax a credit against the county tax. In Ohio, the cities have worked out various tax crediting or reciprocity arrangements that give priority to the place of employment.

3.5 Licenses, Permits and Service Charges

Most local governments have broad responsibilities in the supervision of various kinds of business and other activity within the community. For example, building construction is regulated by building codes with part of the enforcement consisting of the examination of plans and issuance of building permits, along with varying degrees of inspection to see that the construction is basically in accordance with the plans. In like manner, licenses are issued for food vendors and permits are required for parades, circuses, and a host of other activities.

In most situations, a fee is charged in conjunction with the issuance of the license or permit. If the fee charged is less than, or generally in the magnitude of, the cost of the administration of the government's activities in the field, the payment is entitled to be classified as a license or permit.

Service charges, based on the benefit principle, generally bear a direct relation to the cost of providing the service, thus freeing tax funds for other applications. As defined by the Bureau of the Census, service charges are amounts received from the public for performance of specific services benefiting the person charged and from sales of commodities and services—except by city utilities. They include fees, assessments, and other disbursements for current services, rents and sales derived from commodities or services furnished incident to the performance of particular functions, the gross income of commercial activities and the like—such as parking lots and school lunch programs.

3.6 Miscellaneous General Revenue

Investment revenue consists of earnings on deposits and securities, other than the earnings of insurance trust funds or employee retirement systems. Local governments accumulate cash balances for a number of reasons and often are able to meet current obligations and, at the same time, have some noncommitted cash left over to invest in interest-yielding securities. Such investments offer a source of additional revenue without increasing taxation, using funds that otherwise are temporarily unproductive. The *sale of property* involves receipts from the sale of real property and improvements thereon, but excludes receipts from the disposition of commodities, equipment, and other personal property and from the sale of securities. *Special assessments*, like taxes, are imposed on a property. They are compulsory, for public purposes, and require formal assessment. They differ from taxes in that they are related to a specific benefit, need not be uniform throughout the jurisdiction, and generally allow no exemptions.

While no one of these sources is very large, taken together charges and miscellaneous revenues account for nearly 30% of all general revenue received by state and local government. Further, these sources of local revenue increased by over 213% in the period for 1980 to 1992, outpacing the growth in all other sources of general revenue.

3.7 Intergovernmental Revenues

Intergovernmental revenues can be categorized as to source and function. Local revenues in this category may be derived from either the federal or the state government. The reporting system of the Census Bureau does not provide data as to the amount of state aid to local governments, which in fact is flow-through federal funds conveyed to the state and then passed on to local governments. Therefore, the fact that state intergovernmental transfers often are 3 to 4 times that of the federal government is somewhat misleading.

Intergovernmental revenues may be given in the form of grants-in-aid or shared revenues. The function of *grants-in-aid* is twofold: (1) to assist disadvantaged municipalities in the provision of needed public services in an attempt to effect stabilization, equalization, and support of such governments and (2) to provide impetus for the expansion of particular functions. Such grants usually are provided for specific purposes, and the receiving government is required to meet a set of minimum standards. Such *categorical grants* often seek to encourage local government units to shift expenditures to particular functions or to provide certain public services in a manner and at a level consistent with national/state interests.

Direct federal aid to local governments began in the 1930s with relief programs and was extended to low-income housing construction and payments in lieu of taxes. During World War II, federal aid centered on public works and services and on government-financed housing projects. Two important post-war aid programs were the Federal Highway Act of 1944 and the Federal Aid Airport Act of 1949. In 1960, 46 federal aid programs to local governments were under way and by 1970, Congress was dangling almost 500 large and small conditional aid carrots before state and local governments, collectively worth about \$25 billion a year. With the 1972 budget, the emphasis shifted to revenue sharing away from the categorical grants.

General revenue sharing was adopted by the federal government to apportion part of federal revenues to local governments with few, if any restrictions as to project or purpose. Such revenues increased as the personal income tax base of the federal government grew. In 1974, Congress enacted *special revenue sharing* legislation in the field of urban renewal, model cities, and certain other programs. This marked the beginning of a return to the array of *categorical grants* by the federal government to state and local governments.

On February 18, 1981, in a document entitled *America's New Beginning: A Program of Economic Recovery*, President Reagan proposed the elimination of most direct federal support for local government, with other federal programs folded into block grants or receiving severe cuts in funding levels. Although Congress made a number of changes in the format of the block grants and provided somewhat more transitional funding than Reagan proposed, most of the president's proposals were enacted. Except for some support for urban transportation planning, area-wide aging funds, and some transition funding from HUD, EDA, and DHHS, the federal government, in effect, withdrew its financial support from local governments that took over thirty years to build. Federal revenue sharing programs were finally abolished in 1986.

Federal aid to state and local governments shrank significantly during the Reagan and Bush administrations, both as a percentage of the gross domestic product and as a percentage of state and local government expenditures. The recession of 1990-91 pushed many state and local governments to near crisis conditions. In 1992, for example, the state of California confronted a budget deficit in the range of \$12 billion, resulting in significant cutbacks in services, layoffs of public employees, and reductions in formula funded programs for local governments. The Clinton administration evidenced little interest in across-the-board increases in aid to state and local governments. It appears that most local governments will continue to operate under considerable fiscal pressures for some time to come.

Shared taxes represent a proportional allocation to localities of a tax collected or imposed by a higher level of government, usually the state but in some cases, a regional taxing authority. Except for motor fuel taxes, which usually are dedicated to road improvements, there generally are no requirements specified, and shared taxes may be used for any purpose. The sources of these shared taxes may include a state sales tax (usually allocated by the locus of the retail activities), a state income tax (which may be allocated by the locus of economic activities or by residence of the income earners), or even a state property tax.

With the ever-increasing gap between local ability to provide services and the cost of such services, states have stepped in with grants-in-aid and shared tax programs. Other alternatives to direct state assistance include (1) state assumption of performance of services, thus obviating the need for local financing and (2) increased state technical assistance in areas such as investment and marketing. When distributed on the basis of need, state aid should consider relative economic capacity, local tax effort, legal restrictions on taxing ability, and fixed service costs. This basis of distribution, however, can perpetuate inefficient units of local government. Nonetheless, the state should accept some measure of responsibility because (1) the state uses local units as vehicles of administration; (2) the state sets minimum standards and procedures with regard to selected functions or activities; (3) the state sets legal limits on local borrowing

and taxation; (4) the state has a greater economic capacity; and (5) in some instances, the state acts to channel federal funds.

A mismatch still exists among governmental levels in the financial responsibility for provision of public services. This imbalance is caused by (1) the widespread practice of forcing the local property tax to serve as the primary underwriter of both local general government and the local school system and (2) the heavy burden that welfare expenditures have placed on state and local governments. With the major exception of public education, state aid distribution formulas generally fail to recognize variations in local fiscal capacity to support public services. Few if any states have a state aid program that constitutes a “system.”

3.8 State Aid for Education

The responsibility for primary and secondary education in the United States has traditionally been at the local level—either vested with independent school districts or, in larger cities, the city government—permitting local decision-making and control. However, state governments have the ultimate responsibility for the provision of public education, spelled out in state constitutional provisions. In an effort to reconcile this apparent contradiction between mandated uniformity/consistency at the state level and the freedom of local choice, state aid programs for education have expanded significantly in the past two decades. Although state shares vary widely (from under 8% in New Hampshire to over 90% in Hawaii), the national average places state funds at par with local support for education (each contributing approximately 47%, with the balance of 6% coming from federal sources). Local revenues in support of education are almost exclusively from property taxes, whereas state funds come from sales and income taxes, with state lotteries, in some cases, playing an increasing role.

Three general systems have been developed to distribute state aid for education:

1. *Flat grants.* In a few states, general and categorical grants are provided to every school district at the same dollar amount per pupil, with no distinction made between high- and low-affluence districts.
2. *Target tax rates.* In about three-fourths of the states, aid per pupil equals the difference between a base-level of local support (the minimum acceptable amount determined by the state) and the per pupil revenue that would be collected from a statewide target tax rate applied to the district tax base. The district usually is required to spend at least the base-level amount to receive the state aid.
3. *Percentage equalizing.* Various state formulas have been developed to ensure that all districts will raise the same tax per pupil from a given tax rate. The district tax rate is applied to actual tax base of the district and to a state-established guaranteed tax base. The state aid provides

the difference between these two levies. Other factors may be added to the state formula, such as adjustments for operating cost differences, special education service requirements, capital construction initiatives, and so forth.

Efforts to achieve an appropriate balance between state responsibility and local control have resulted in complex state aid formula, the elements of which often are subject to change as legislators seek to establish hybrids that meet diverse requirements and expectations. The result, in large measure, are systems of state aid with which no one is fully satisfied.

4 ESTIMATING LOCAL REVENUES AND EXPENDITURES

State and local government expenditures have been increasing at phenomenal rates over the past four decades, often outstripping the overall growth of the national economy as measured by the Gross Domestic Product (GDP). Since 1960, state and local government expenditures financed from all sources have increased at a compound rate of 9.1% per year, while the GDP rose at an annual average rate of 7.7%. While the annual growth rate of state and local government spending slowed in the 1990s, averaging 6.1% per year, this annual increase still exceeded the 4.7% annual growth rate of the GDP.

4.1 THE ELASTICITY OF LOCAL REVENUES AND EXPENDITURES

The relationship between changes in local government expenditures and the Gross Domestic Product can be examined by a useful measure suggested by James Heilbrun. [4] This index, which Heilbrun calls the elasticity of local spending, is defined by the following ratio:

$$\text{ELS} = \frac{\text{Percentage Change in Local Government Expenditures}}{\text{Percentage Change in GDP}}$$

When local government expenditures are increasing at a faster rate than the GDP, the value of ELS will be greater than one. Between 1960 and 1990, the ELS for all local governments had a value of 1.17 (i.e., 9.73% divided by 8.29%). The ELS in the 1990s was 1.29 (6.1% divided by 4.7%).

Heilbrun also suggests that it is possible to define the elasticity of local revenue sources in a similar fashion, i.e., by dividing the percentage change in local tax revenues by the percentage change in GDP. If the value of the elasticity of local revenue sources is equal to the value of the elasticity of local spending,

and if all expenditures are paid out of local sources, then local government could finance the growth of expenditures year-by-year with no increase in tax rates. The growth of the GDP would induce just enough expansion in the local tax base to provide the revenues needed to pay for growing expenditures. However, since the end of World War II, the elasticity of local revenues has been far below that of local spending, thus contributing to the persistent financial problems encountered by most local governments.

Estimates of the elasticity of property taxes throughout the United States vary from a low of 0.8 to a high of 1.3, with the majority of such estimates placing the value in the range between 0.8 and 1.0. On a national basis, the general sales tax collected by local governments is estimated to have an elasticity of between 1.0 and 1.27, with the majority of estimates falling at 1.0. In other words, the growth of revenues from the general sales taxes closely parallels the growth of the GDP. Other sources of general revenue (excluding intergovernmental aid), such as taxes on particular commodities and miscellaneous fees and charges, tend to have elasticities well below 1.0. When these parts are added together, it appears that the elasticity for the aggregate of local taxes and charges, at best, is about 1.0 and perhaps somewhat lower. With an expenditure elasticity of about 1.29 and a revenue elasticity of 1.0 or less, it should be clear why local governments are under continual pressure to raise tax rates or to adopt new revenue sources if they are to finance anticipated increases in local expenditures.

Efforts of local governments during the past forty years to develop other tax sources have been successful in only a limited number of larger cities. The dependence of local governments on the property tax stems from one inescapable fact—the lack of viable options. No other form of taxation is readily available for productive use at the local level. Unilateral taxation of income, sales, or business receipts by local governments may prove dysfunctional to the financial well-being of such municipalities. That is, if one municipality in a region introduces such taxes, new economic activities tend to locate beyond its taxing jurisdiction.

Real property, however, is quite immobile. Differential taxes seldom induce migration out of a local geographic area. Workers must reside close to their work; retail outlets tend to locate close to consumers; manufacturing establishments, once committed, tend to stay put, since property taxes are a modest part of their total cost (although such taxes may play an important role in initial location decisions). In short, real property offers a reliable base upon which local governments can safely levy taxes.

These discrepancies in the elasticity of local expenditures and revenues have an important bearing on the capacity of local governments to finance capital facilities. A community's ability to accumulate capital reserves or to borrow to finance long-term capital investments is conditioned, in large measure, by its

overall “financial solvency.” Any capital improvements program must be formulated within the financial capacity of government to pay for its needs and desires. A community that cannot meet its short-term public expenditure demands from existing (and projected) sources of revenue will have great difficulty in securing willing investors for its long-term bonds. Under such circumstances, investors are likely to demand higher interest rates to offset the risk. To propose improvements that the government cannot afford, or to propose improvements without a clear notion of how they will be paid for, is to invite unrealistic programs that, from the beginning, are destined to prove unsuccessful.

4.2 Current Projection Practices

Techniques for making revenue and expenditures projections, with few exceptions, have remained virtually unchanged over the past fifty years. Some public officials and administrators simply make “best guesses” about future levels of revenues and expenditures. The common tendency is to allow prior patterns to influence projections. Revenue and expenditure expectations for the coming year are determined by applying the observed percentage changes between the previous and current fiscal years. Alternatively, a trend line may be developed by fitting a series of historical data and then extrapolating these “trends” to obtain the projection. As John Mikesell observes:

Revenue forecasts are made using several different approaches; seldom will all revenues collected by a government be forecast by the same technique. The more important formal approaches in current use include (1) extrapolation or projection, (2) deterministic models, (3) multiple regression equations, (3) econometric equation systems, and (4) microsimulation from taxpayer files. All methods but the first are “cause-and-effect” approaches that try to link economic, demographic, or other causes to revenue sources, then exploit that linkage to forecast revenue. [5]

Mikesell observes that “Some forecasts will be almost entirely *judgmental* or near-subjective, based on . . . personal experience, intuition, and guesswork. . . .” [6]

The current “state of the art” may be illustrated by a publication of the Management Information Service of the International City Management Association. The projection process advocated in this report consists of dividing revenue and expenditures into “readily definable major categories” and then projecting these categories for five or six years “on the basis of past trends.” These projections are then compared to provide some notion of “future free fiscal capacity,” that is, the uncommitted moneys that can be used to assume new program initiatives, for capital expenditures, to establish capital reserves, or for debt service.

This approach has the advantage of simplicity, but it leaves many problems unresolved. Advocates of this approach may stress that such things as the tax base and tax rates are likely to change and that local governmental officials should be consulted to determine possible deviations from historical trends. Allowance is seldom made, however, for such contingencies in the projections. On the contrary, the population and the economy often are treated as if they will remain stable regardless of recent rates of growth. And the rate of salary increases of public employees and changes in other major cost factors are treated as if they will remain constant.

Even when the goal of local government is to provide the same level of service over a period of years, disruptions in service delivery may result unless likely changes in the demand for such services are anticipated with sufficient lead time to make necessary adjustments. Increases in population receiving a particular service may necessitate added personnel and often additional capital equipment and facilities. A new school, for example, should be available when the need exists. A five- to six-year lead time is required to ensure the availability of such public facilities at the time the demand becomes critical. Therefore, forecasting is required simply to prevent current services from rapidly becoming inadequate. Furthermore, uncertainties surrounding programs of intergovernmental assistance give rise to the need for long-range forecasting both to justify requests for such funds and to map out contingency plans in the event that these funds are not forthcoming.

4.3 Financial Analysis: Estimating Local Revenues

The fundamental purpose of a financial analysis was stated some years ago in a report of the National Resources Planning Board.

... (to) determine approximately the present and future ability ... to pay for the construction and maintenance of public improvements, by estimating the present availability of funds, by research into the probable future trends of municipal revenues and expenditures, by appraisal of all factors related to the administration and operation of the program, and by determining what limitations are imposed, by statutes or prior commitments, upon the freedom of the municipality to act. [7]

The analysis of revenues is a three-step process that involves:

1. An estimate of available revenues under existing fiscal policies;
2. An exploration of alternative fiscal policies
3. Selection of a general fiscal policy that will best fit the future public service and capital expenditure needs in light of the limitations placed on the jurisdiction's financial capacity.

The first step in revenue analysis is to determine whether any modifications in existing policies will be required to finance the desired service programs and related capital expenditures. An analysis of available revenues under existing fiscal policies will provide a basis for determining the most advantageous and realistic means by which revenues and expenditures can be brought into equilibrium, i.e., by increasing the former or reducing the latter.

The probable amounts to be received from present rates of taxes and miscellaneous charges must be estimated after thorough analysis of collection trends and conditions affecting the yield from each source. The rates of all service charges (user fees) must be compared to changes anticipated in the cost of rendering the services at the same level and/or increasing the level of service. Consideration must be given to possible adjustments in the rate schedule. In order to accomplish these objectives, it may be desirable to have *unit cost* data available through the application of cost accounting procedures.

It is necessary to thoroughly understand the revenue source, how its collection is administered, and the procedures that generate the data regarding its collection. A number of problems may have to be dealt with in order to obtain a clean and consistent data series (e.g., inconsistent accounting procedures, changes in filing schedules, tax structure redefinitions).

Each source of revenue may require a different formula in order to forecast a reliable budget figure. Each source should be tabulated over a sufficiently long period to establish valid trend lines that take into account both boom and recession periods. It is also necessary to develop and project appropriate indices (independent variables or "causes") against which various sources of revenue can be matched in order to make future estimations. Some revenue sources may produce essentially the same yield from year to year, whereas other revenues may fluctuate significantly and cannot be relied upon to produce the same amount from one year to the next. Some sources are dependent upon the fiscal policies of other levels of government (e.g., federal and state aid programs); other sources are directly or indirectly related to the level of service and capital expenditures provided by government.

For each revenue source, there is a rate or charge and an item subject to the levy of a tax, license, or charge. The yield must be estimated by determining how frequently the item subject to tax (or charge) will occur. No source of revenue should be estimated solely on collections of the previous year. Some revenue sources are more stable than others; however, a high level of stability should not lull the administrator into the pitfall of routine estimating.

The following procedural steps are suggested as a basis for sound revenue estimates:

1. A file should be prepared for each source of revenue, containing the following information:
 - a. a summary of the legal background, including date of adoption and reference to ordinances or legislation establishing the charges;

- b. a summary schedule of rates or charges; and
- c. a list of factors which influence the revenue yield.
2. A data sheet on each revenue source should be prepared, showing collection information by months and totals by years.
3. The percentages collected each month should be compared to annual totals for the past three to five years to indicate seasonal influences and to establish monthly or quarterly revenue estimates for budget control purposes.
4. Up-to-date information should be maintained indicating local economic conditions and trends; of particular value are data on building construction activity, real estate turnover, retail sales, employment and payrolls, and other common indices of business activities.
5. The advice should be sought of department heads administering public service for which special charges are made.
6. Before the budget process is begun for any given fiscal period, preliminary revenue projections should be prepared based on trend factors; these predictions can serve as a guide to the determination of fiscal policy.
7. Final estimates—based on trends, economic projections, departmental estimates, and other related factors—should be prepared immediately prior to the transmission of the budget document to the governing body.

In developing this analysis, all assumptions concerning methodology and current fiscal policies should be carefully recorded. However, it is inappropriate to place too much reliance upon statistical formula for computing future trends. Rather, a careful analysis should be made of the various possible factors that may alter past trends or establish new ones.

The second step in the financial analysis is to explore the ramifications of *alternative fiscal policies*. This step should include an analysis of (1) ways by which the income derived from existing revenue sources might be increased or decreased, (2) the availability and/or feasibility of new sources of revenue, and (3) the effect of varying borrowing policies on available resources. This analysis must be a continuous process, particularly in the light of the ever increasing demands being placed on local governments for services and facilities.

Information on the availability of revenues under existing fiscal policies and analysis of alternative methods of financing must be brought together to focus on recommendations regarding future fiscal policies. This comparison should provide the chief executive and the governing body with the basis for a clear, explicit series of policy statements regarding the following points:

1. The total amount of funds to be expended annually in order to achieve and maintain some desirable level of public service
2. Policies with regards to new sources of revenues

3. The role of state and federal assistance
4. The relationship between the capital and operating budgets
5. Fiscal policies with regards to current outstanding debt
6. The ratio to be applied among the various methods of financing capital improvements, i.e., what portion of the required allocation will be available from annual revenues and how much must be financed through borrowing or other methods of financing
7. The types and maturities of bonds to be issued for the financing of capital improvements
8. The relationship between self-supporting and tax-supported public improvements and the terms and conditions under which self-liquidating facilities are feasible

Capital expenditures must be carefully scheduled to ensure a reasonable outstanding debt structure in relation to the general level of the economy, the sources of revenue available, and the overall ability to pay for these improvements. Every effort should be made to level off and reduce the outstanding debt at the earliest possible date. Bond issues should have a limited life period to minimize the debt service charges. In terms of the ratio among the various methods of financing capital improvements, a general rule of thumb is that at least 20 percent should be financed from current revenues. While this level will vary from area to area and from year to year, as a matter of fiscal policy an effort should be made to establish a clearly defined range within which these adjustments can be made. In accordance with recognized finance principles, annual debt service charges payable from general revenues should not exceed 25 percent of the total funds available.

Selection of the forecasting method(s) to provide revenue estimates that will satisfy the requirements for formulating and administering the annual budget will depend on several factors. While the software and hardware necessary to make reasonable cause-and-effect estimates are now accessible to nearly all local governments, the one resource that may not be readily available is sufficient *time* to develop and apply the more complex estimating formats. Often, it is more important to focus on the major revenue sources under local control (e.g., property taxes), because small errors in such estimates will have much more significant impact than large errors in the estimates for more minor sources. This factor is what analysts refer to as the *materiality* of the forecast. The availability of reliable historical data in terms of the stream of revenue and the causal factors that may influence this stream are important considerations in selecting a forecasting method. Application of the most sophisticated methods cannot make up for unreliable or incomplete data. Forecasts of economic, technological, and political considerations are not particularly reliable in the longer term, and therefore revenue forecasts based on “cause-and-effect” models are only as good as

the forecasts of the “causes.” Finally, whatever method is used, the forecast must be *explainable* to decision-makers who must use this information in formulating fiscal policy.

4.4 Estimating Local Expenditures

A similar “divide and conquer” approach should be applied in estimating local expenditures. Each particular class of expenditure should be analyzed and projected, accounting for various explicit assumptions regarding the supply and demand associated with a particular public service. Three major sets of variables should be considered:

1. *Salary variables*: projections of the levels or rates of increase for public employees in various salary and wage classes.
2. *Service variables*: projections of the way in which the level of service or manner in which services are provided will change, given some assumed change in the demand for services by the population.
3. *Population variables*: including projections of the size, age, and racial composition of the population.

Each expenditure estimate should be associated with specific statements concerning the values of these major variables, supplied by those local government officials best qualified to predict as a consequence of their access to pertinent facts. In instances where a high degree of confidence cannot be attached to a particular projection (due to uncertainty), different assumptions should be tested (using sensitivity analysis techniques).

Explicit statements concerning service levels permit the testing of the impact of decisions to expand or contract particular public services in some defined period. The concept of service level analysis, as an approach to budget building, is discussed in further detail in Chapter 6. Separate information inputs should be provided for each year over which projections are to be made. Unlike simple extrapolation techniques, this approach yields estimates and projections that are more independent (that is, are not unduly influenced by past trends). This approach can deal with a wide range of assumptions simultaneously—some services can be expanded, some contracted, other held at their present level. The capacity to test different alternatives is not readily available in the more traditional techniques.

Separate estimates of future expenditures should be provided at the level of detail shown in Table 2.3. For complex categories, further subdivisions may be made so that separate activities/responsibilities within departments can be examined in some detail. One of the advantages of the independent projection feature of this approach is that additional categories can be readily added where deemed appropriate. Since major activities are projected using separate equa-

TABLE 2.3 State and Local Government Expenditures (in millions)

	1980	1990	1992	1996
<i>Direct General Expenditure</i>	367,340	834,786	971,973	1,189,356
Education	133,211	288,148	326,769	398,859
Streets & Highways	33,311	61,057	66,477	79,092
Public Welfare	45,552	110,518	154,235	193,480
Health	8,387	24,223	29,344	40,166
Hospitals	23,787	50,412	58,768	70,648
Police Protection	13,494	30,577	34,545	44,683
Fire Protection	5,718	13,186	14,358	17,709
Environment	5,509	12,330	13,049	15,819
Sanitation & Sewerage	13,214	28,453	32,398	39,365
Housing & Community Development	6,062	15,479	17,067	22,666
Parks & Recreation	6,520	14,326	15,728	19,137
Financial Administration	6,719	16,217	18,090	22,633
Other General Expenditures	51,109	120,121	135,890	169,189
Interest on General Debt	14,747	49,739	55,255	55,912
<i>Utilities</i>	36,191	77,801	84,361	92,509
Water Supply System	9,228	22,101	24,378	28,950
Electric Power System	15,016	30,997	31,983	34,084
Transit System	7,641	18,788	21,879	25,961
Gas Supply System	1,715	2,989	3,058	3,514
Other	2,591	2,926	3,063	—
<i>Insurance Trust Expenditure</i>	28,797	63,321	90,276	108,751
Employee Retirement	14,008	38,355	46,419	68,010
Unemployment Compensation	12,070	16,499	32,887	29,509
Other	2,719	8,467	10,970	11,232
<i>Total Direct Expenditures</i>	432,328	975,908	1,146,610	1,390,616

tions, it is possible to depict interrelationships between activities within the same category and to examine the implications of various expenditure patterns arising from different program mixes. [8]

Estimates of future expenditures should be built on two basic sets of factors: estimates of expenditures arising from personnel and those linked to non-personnel-related expenditures. Projections should be made for each department (or category of expenditure) regarding the total number of employees and their distribution among various skill and wage levels. With these data as a base, both the number of employees in a particular wage or salary class and the average annual salary or wage and staff benefit costs for that class should be

projected and summed to produce total personnel expenditures. Personnel projections are related both to the demographic characteristics of the population (which can be used as a measure of the demand for public services) and to policy decisions (or policy alternatives) as to the level and quality of services provided. The use of policy variables permit assumptions to be made regarding the appropriate response to be made in terms of supply as a multiple or fraction of some observed relationship between changes in demand and the prior levels of services provided.

Nonpersonnel items consist of contractual services, materials and supplies, travel costs, utilities, equipment, and debt service charges. These items should be estimated using linear regression equations that express the functional relationship between these nonpersonnel expenditures and personnel expenditures (or, alternatively, total number of personnel). Some nonpersonnel items are closely related to staffing levels (for example, office equipment, supplies, travel costs). Other items are more directly influenced by pricing considerations.

4.5 Methods of Financing Capital Improvements

The options for financing public facilities are similar to those available to any individual or family: (1) pay cash out of current earnings, (2) save money for future acquisitions, or (3) borrow on anticipated earning power. A sound program for financing capital improvements will seek to develop an appropriate mix among these three methods.

Supporting capital improvements from *current revenues* encourages government to “live within its income,” minimizes premature commitments of funds, and conserves credit for times of emergency when ample credit may be vital. Pay-as-you-go financing avoids the added cost of interest payments and therefore is less costly than borrowing. On the other hand, the pay-as-you-go approach may result in an undue burden being placed on present taxpayers to finance some future need from which they may not fully benefit. Thus, it may be argued that public projects that provide services over many years should be paid for by people according to their use or benefit—that is, should be financed on a “pay-as-you-use” basis.

Financing capital facilities through a *reserve fund* (sometimes called a capital reserve) can be thought of as the opposite of borrowing in that the timetable is reversed. A portion of current revenue is invested each year in order to accumulate sufficient funds to initiate some project in the future.

Like all governmental powers, the *capacity to borrow* must be used with critical regard for its justifiable purposes and a clear understanding of its safe and reasonable limits. A sound borrowing policy is one that seeks to conserve rather than exhaust credit. The ability to borrow when necessary on the most favorable

market terms is an objective that applies to governments just as it does in business and industry.

States often impose borrowing limits on local governments. These limits typically are cast in terms of dollars of outstanding debt as a percentage of the jurisdiction's real property tax base. Beyond any state-imposed limits on borrowing, municipalities are restrained by the fact that this year's borrowing must be paid back from revenues in subsequent years. When the debt service burden of a municipality becomes overly large in comparison to its the tax base, the bond rating of the municipality may be lowered and the cost of borrowing may increase. Companies that rate municipal bonds (and thereby influence the interest rate that must be offered to place such bonds) emphasize the importance of "good fiscal stewardship" in this regard.

Government loans are marketed with maturities ranging from a few days to several decades. *Short-term borrowing* takes various forms—bills, certificates, or notes sold to banks or other investors, bank loans, warrants paid out in lieu of cash, and unpaid bills and claims—and is most frequently used to smooth out irregularities between expenditure and income flows and to finance current operations on a temporary basis during periods when tax receipts fall off unexpectedly. *Intermediate borrowing* has limited but definite uses. Jurisdictions operating largely on a pay-as-you-go basis may resort to intermediate borrowing when the requirements for capital expenditures are exceptionally high and cannot be met from current revenues (e.g., in times of emergency capital needs). A city may discover favorable opportunities to convert a portion of its outstanding debt by floating a new intermediate loan at a lower rate of interest. In general, *long-term borrowing* is appropriate under the following conditions: (1) where the project is of a type that will not require replacement for many years, such as a city hall, auditorium, major health facility, or sewage disposal plant; (2) where the project can be financed by service charges to pay off the bond commitments; (3) where needs are urgent for public health and safety purposes or other emergency reasons; (4) where special assessment bonds are the only feasible means of financing improvements in the absence of subdivision regulations or other controls; (5) where intergovernmental revenues may be available on a continuous basis to guarantee the security of the bonds; and (6) for financing projects in newly annexed areas or areas of rapid expansion where the demands on local tax resources are comparatively large and unforeseen.

Calculations should be made regarding debt service requirements, applying information regarding the amount of debt outstanding, plans for new capital expenditures, and expectations concerning future interest rates to derive forecasts of the principal and interest payments on public debt. Policy variables should be used to examine the mix of financing techniques for long-term capital expenditures.

5 SUMMARY

Financial analysis and planning provide the foundation for effective financial management. An analysis must be made of the various sources of revenue currently available under existing fiscal policies and, in particular, an examination of the revenue sources under the direct control of the local jurisdiction. Alternative fiscal policies and methods of financing should be explored to include an analysis of adjustments in the tax rate (millage) and other fee schedules and the current debt structure. Fiscal policies should be formulated in light of these analyses to deal with revenues, operating expenditures, capital improvement, debt commitments, and relationships between and among these fiscal components.

ENDNOTES

1. Robert L. Bland, *A Revenue Guide for Local Government*, (Washington, D.C.: International City/County Management Association, 1995), p. 34.
2. *Ibid.*, p. 106.
3. The State of Michigan applies a single business tax and the State of New Hampshire applies a business enterprise tax, both modified value-added taxes.
4. James Heilbrun, *Urban Economics and Public Policy* (New York: St. Martin's Press, 1974), pp. 324–330.
5. John L. Mikesell, *Fiscal Administration: Analysis and Applications for the Public Sector* (Fort Worth, Tx.: Harcourt Brace College Publishers, 1999), p. 479.
6. *Ibid.*, p. 480.
7. Public Works Committee, *Long-Range Programming of Municipal Public Works* (Washington, D.C.: National Resources Planning Board, 1941), p. 7.
8. For a further explanation of how this approach might be applied, see: Claudia DeVita Scott, *Forecasting Local Government Spending* (Washington D.C.: The Urban Institute, 1972).

3

Cash Management

Cash management is the process of maximizing the liquid assets of an organization through the acceleration of receivables and the disciplined control of disbursements. Cash management assures that an organization's liquid assets are planned, organized, and controlled to meet immediate financial obligations in a timely manner and that temporarily idle funds are invested in safe and profitable securities from which they can be drawn quickly as the need arises. Cash management focuses on revenues as well as expenditures so as to avoid three potential problems: (1) a liquidity crisis, when an organization has insufficient cash to meet its obligations; (2) the inability to accelerate receivables and deposit them in the organization's accounts; and (3) the failure to invest funds that may not be needed for days, weeks, or months. Temporarily idle cash balances draw no interest and hence, represent a loss of potential revenue.

1 MAXIMIZING RETURNS ON CASH FLOWS

Most local officials must continuously seek additional funds to provide an increasing array of public services. As the same time, many jurisdictions may be losing significant revenue by not utilizing the cash management techniques to maximize returns on their cash flows. Numerous constraints may be encountered, however, in efforts to maximize the benefits from these idle funds.

1.1 Impetus for Cash Management

Problems of cash management are rarely discussed in the literature of public financial administration. Even less attention has been given to the constraints that may impede efforts to maximize returns on the investment of temporarily idle funds. Local governments and other public organizations stand to realize considerable financial benefits if they manage their resources efficiently. Yet, few public organizations have established specific policy guidelines with regard to the management of cash.

Cash management has been a perennial problem for all governments, and it became even more urgent and acute in the late 1970s and early 1980s as a result of the high cost of borrowing money. Interest rates soared to unprecedented heights in the late 1970s, reaching as high as 21 percent in 1980. Governments attempted to keep borrowing to the minimum by managing the cash available more efficiently. In the late 1980s and into the 1990s, the huge and rising federal debt led the federal government to reduce assistance to state and local governments, thereby forcing these governments to explore other options for additional and/or replacement revenues.

The magnitude and severity of the fiscal crisis confronting major cities (New York City, Cleveland, Philadelphia, Washington, D.C., Los Angeles) has eclipsed the problems of smaller units of government. Although the fiscal problems of smaller governmental units may not be as dramatic as those of the major urban areas, they are equally as important, as these units of governments—cities, counties, special districts—encounter increasing pressure on available fiscal resources. The literature of financial management has paid only peripheral attention to the fiscal management needs of smaller units of government. In all likelihood, these needs will become the basis for a renewed emphasis on cash management in small local governments.

1.2 Two Types of Decision Costs

When cash is committed to future use, the holder must forfeit income that could be earned through investments in marketable securities. The amount of cash to be held can be determined by balancing two kinds of cost decision:

1. The opportunity cost of not investing, which increases as the size of the cash balance increases.
2. The costs of collecting and reviewing information and making the decisions required to invest, disinvest, borrow, or repay loans.

The basic cash management problem is how to balance these two types of conflicting costs. The objective is to incur minimum data collection and opportu-

nity costs, while at the same time holding a cash balance just large enough to reduce to an acceptable level the risk of running out of cash. Beyond that minimum balance, maintaining idle cash is an expensive practice. Investing \$1 million in a certificate of deposit, at an annual interest rate of 7.5%, for example, would earn \$6,250 per month, or \$75,000 per annum.

In the private sector, rising interest rates and the profit incentive have spurred vigorous activity to maximize the utilization of cash resources. Businesses have recognized the potential earnings that can accrue from the short-term investment of idle cash. Many private organizations have employees whose sole responsibility is to management the company's cash position.

The opportunity to minimize interest costs should motivate public organizations to initiate more efficient cash management practices. Public funds should be managed no less prudently than private funds.

1.3 Emerging Interest in Cash Management in the Public Sector

Interest in cash management in the public sector has emerged only in the past 25 years, spurred by increasing costs of providing services amid decreasing tax resources, high unemployment rates, and inflation. The primary concern of public financial officers in the past had been to hold sufficient amounts of cash to satisfy the financial obligations of their organizations. This attitude began to change, however, in the face of increasing costs of borrowing, increasing yields of marketable securities, and the rapid expansion of activities that require large amounts of working capital. Many public organizations gradually realized the importance of minimizing cash holdings, accelerating cash inflows, and controlling cash outflows.

Although cash management originally developed out of a custodial function, its role today has expanded and become more sophisticated. [1] Thus, the main objectives of a cash management system are (1) to provide for the adequate availability and safekeeping of funds under varied economic conditions and (2) to achieve an organization's financial objective of an adequate return on investments. These objectives may seem to be contradictory: cash that must be available to meet daily financial obligations cannot at the same time be invested in interest-yielding securities.

The ability of local governments to achieve the objectives of cash management is often limited by constraints imposed by state constitutions, local ordinances and by-laws, and even federal laws or regulations. The financial management practices of local government are restricted by laws that establish procedures for the collection of moneys and payment of obligations and regulate the deposit of funds and the purchase of securities.

2 ELEMENTS OF CASH MANAGEMENT

Cash management is made up of four basic elements: (1) forecasting, (2) mobilizing and managing the cash flow, (3) maintaining banking relations, and (4) investing surplus cash (see Figure 3.1). Each of these elements must be actively pursued to achieve an effective cash management system. Following an overview of these four elements, the balance of this chapter will focus on cash flow forecasting and cash mobilization techniques. Investment strategies are discussed in greater detail in the following chapter.

2.1 Forecasting

As applied to cash management practices, *forecasting* can be defined as the ability to calculate, predict, or plan future events or conditions using current or historical data. In general, *short-term forecasts* cover periods of one year or less, while *long-term forecasts* extend beyond one year.

Forecasts form the basis for a *cash budget*, which monitors how much money will be available for investment, when it will become available, and for how long. Thus, a successful investment strategy for any organization depends

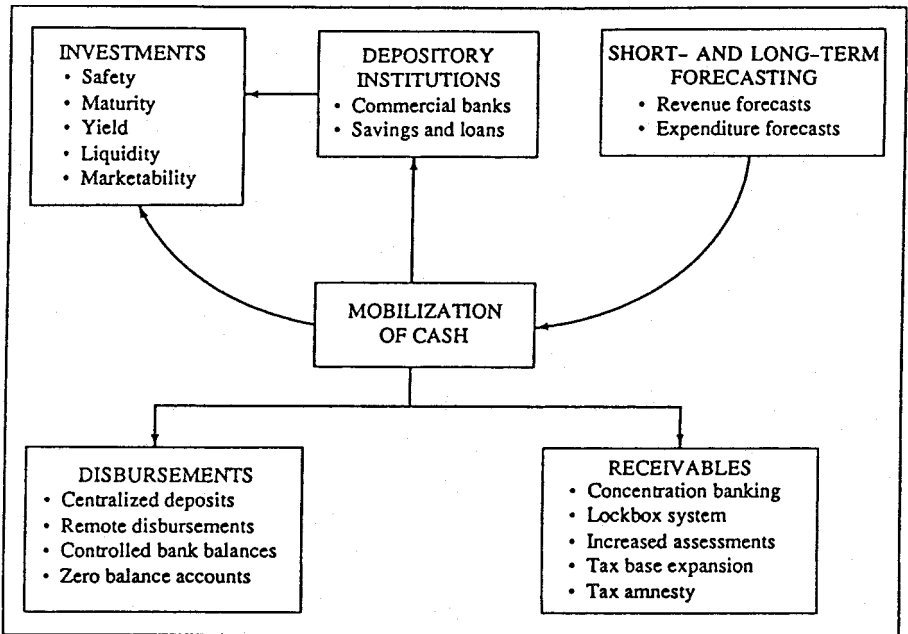


FIGURE 3.1 Elements of cash management.

on the accuracy and timeliness of its cash budget. Since many receipts and expenditures are predictable, the cash budget should provide a workable schedule of cash flows for a given period of time. A number of constraints, however, may make it difficult to construct and maintain effective cash budgets for governmental and other public organizations.

Revenues and expenditures in public organizations are not always well coordinated. Owing to the large inflow of revenue just prior to the penalty dates on the tax calendar, there are periods during which idle cash balances accumulate. Intergovernmental transfers—local government entitlements from federal and state sources—are also disbursed on a periodic basis and in relatively large amounts. Bonds issued for capital construction normally are sold before the beginning of the project to ensure complete financing in advance. These funds are then disbursed as costs are incurred throughout the period of construction, leaving a cash balance for investment.

The ability of management to make decisions and take actions compatible with sound forecasting techniques will affect the cash budget. There usually is some variance between forecasts and actual cash flow, because all necessary information and variables cannot be incorporated into the forecast model. As Hartley has observed, specific management action will be constrained by “circumstances ruling at the time the decision is taken,” including “the nature and size of the cash problem, the financial standing of the local government, the economic environment and the ongoing market rate of interest.” [2]

2.2 Cash Mobilization

Cash flow management involves three basic operations: collection, deposits, and disbursements. Cash mobilization involves the techniques used to assemble funds and make them readily available for investment. Organizations must:

1. Develop policies and procedures to guide each major source of income/revenue.
2. Establish deposit procedures to handle major revenue processing problems (such as the semiannual collection of property taxes in local governments) and for each type of revenue and collection location.
3. Adopt and maintain policies and procedures for each type of expenditure or category of vendor.

Reducing time delays in *collecting receivables* is an area with great potential for providing additional usable cash. The collection of local property taxes and the penalties that may be levied on delinquent accounts are strictly prescribed by state statutes. Although the law requires people to pay their taxes within a predetermined time span, some people deliberately delay payments, particularly if they will not be penalized for doing so. Efforts to mobilize cash

will be futile unless taxpayers make prompt payments. This same caveat applies to prompt payments by clients of other public organizations.

The cash flow problem is essentially that of having sufficient resources in current bank deposits to meet cash obligations. All receipts, checks, money orders, and cash should be deposited as soon as possible. Although this practice may seem obvious, Smith has noted that many organizations hold these items for a week or more before depositing them. [3] Idle funds, such as checks sitting in safes, cash registers, or desk drawers over the weekend or even overnight, could be earning income for the organization.

Techniques to accelerate collections and deposits include:

1. *Lockbox systems* involving the use of special post office boxes to intercept payments of accounts receivable and accelerate deposits for cash utilization.
2. *Electronic transfers* to provide a quicker, less costly, and more secure means of moving funds than checks or other instruments that have to move through the postal system.
3. *Area concentration banking*—a network of depository accounts in local banks into which receivables are paid and accumulated payments are transferred to a number of regional banks that serve as collection centers.
4. *Disbursement procedures* focus on methods, policies, and procedures that an organization can employ in paying its bills.

In spite of the overwhelming evidence regarding the efficiency and effectiveness of electronic transfers, some local government treasurers are prohibited from using such transfers to perform investment transactions. [4] This constraint severely restricts investment opportunities in a rapidly changing money market.

In recent years, keeping a tight rein on bank balances has become one of the most highly touted principles of cash management. Money not needed for operating costs or to meet compensating balances is money unemployed. Hill contends that “cash can be conserved by employing a sound payables system that centralizes the payment of large bills. This allows for careful timing of disbursements, the ability to take offered discounts, and the possible use of drafts rather than cheques.” [5] The techniques that organizations have developed to control their cash balances to avoid the buildup of idle cash will be discussed in a subsequent section.

2.3 Banking Relations

Maintaining good relations with the financial community—banks, savings and loan associations, investment bankers, commercial paper dealers, and security analysts—is an important part of cash management. Local governments are fre-

quently constrained by state laws in the formation of relations with banking institutions. State laws may determine, for example, the bank or banks with which a local jurisdiction may do business. Banks licensed to operate in the state are preferred, and localities may be further restricted to banks operating in their particular city or county. Total deposits by the local government in each local bank may be legally restricted, based on the bank's capital. Finally, local politics may influence financial management practices in selecting depository institutions and making investments.

Although the idea of "spreading the wealth around" makes good political sense, it makes bad economic sense. From a cash management perspective, using too many local banks makes it difficult to determine how much cash is available for investment purposes at any given point in time. On the other hand, if a jurisdiction "puts all its eggs in one basket," it is likely to receive lower yields on its investments than if it had "shopped around." The choice of one bank for the deposit of the majority of local government funds may be based on tradition or on politics.

Shifting business among three or four local banks on an annual or biannual basis is a good political strategy that also simplifies cash management by minimizing the number of open bank accounts. However, competition may be limited, and local banks may not be motivated to offer additional services to the local jurisdiction or to improve existing ones.

Whenever possible, the banks with which a local government does business should be selected through a competitive bid process. The bidding process involves four steps. First, an evaluation must be made of the financial environment to determine the basic requirements of the organization and what it is willing to pay for these services. Next, a request for proposals should be prepared and circulated to competing banks. Third, the proposals submitted should be reviewed in an open manner, making the criteria for selection public. Finally, local officials should select and enter into contractual agreement with the bank or banks that best meet the established criteria. The benefits to be derived from competitive bidding are as follows:

1. Additional interest earnings from improved yield, resulting in overall increase in amounts available for investment.
2. Additional services provided for the same amount of bank charges.
3. Reductions in bank service charges or compensating balances.
4. Overall increase in efficiency of cash management operations.

Bankers prefer *compensating balances* to fee payments because deposits are the main source of a bank's loanable funds. The compensating balance is a constraint on the ability of a local government to maximize earnings, however, because banks require a minimum average rather than an absolute minimum

balance. [6] This issue is critical because the average cash balance determines interest revenue, a key factor in cash management profitability.

Compensating balances generally are negotiated and mutually agreed upon by the local jurisdiction and its banks. Prior to these negotiations, local financial executives must come to definite decisions on a number of issues: (1) how much money should be kept in the bank to cover the jurisdiction's operating needs, (2) what types of services are expected from the bank, and (3) how much the locality is willing to pay for these services. As Sanders and Kirk point out, compensating balances represent "potential lost revenue that may exceed the amount the jurisdiction might have paid if fees for each service had been levied by the bank." [7]

Banks should provide an analysis of compensating balances periodically. If the jurisdiction determines that its banks' demands for compensating balances have been excessive, it should take appropriate action to renegotiate them downward. On the other hand, if the analysis indicates that the banks are being under-compensated, the jurisdiction should be prepared to leave larger amounts on balance to support the established quality of services.

2.4 Investment of Excess Funds

Cash on hand to meet future financial obligations should be invested in short-term securities. A cash budget should provide an estimate of the organization's cash requirements for disbursement by months, weeks, or days. Such an estimate should enable the financial manager to determine what part of the cash balances can be invested. Different investments can be timed to mature when the funds are needed. When the timing is uncertain, funds can be held in securities that can be quickly converted into cash. Longer investment periods offer higher yields but less liquidity.

Since local governments and other public organizations are not profit oriented, they often are encouraged to hold short-term securities that have high liquidity and can be easily converted into cash, either through the market or through maturity. The most attractive instruments are securities supported by the full faith and credit of the federal government. Other relatively risk-free securities are time deposits, time certificates of deposit, commercial paper, banker acceptances, and repurchase agreements. [8]

Investors should be aware of seven characteristics of securities: (1) yield, (2) maturity, (3) marketability or liquidity, (4) risk, (5) call provisions, (6) the availability of denominations, and (7) taxability. In most cases, the decision to purchase a specific security will be guided by considerations of yield, liquidity, and maturity. Risk usually is a relatively minor factor in local government because state laws restrict the financial officer's ability to engage aggressively in the money market.

3 CASH FLOW FORECASTING

A forecast indicates the most likely outcome of a future event based on what is currently known about the circumstances that will influence that event. As Hartley has observed:

a forecast is no more than someone's belief in the future based upon certain assumptions that have been made regarding future events. If the assumptions subsequently prove to be wrong, then the forecast will not prove to be right either. For this reason, it is necessary to set down formally the key assumptions on which major parts of the forecast are based. [9]

In the context of cash management, the ultimate objective of a forecast is to guide appropriate and timely management action toward improved control of the organization's cash flow. A forecast that turns out to be incorrect is not necessarily a "bad" forecast. By the same token, a forecast that turns out to be right is not always a "good" forecast. Rather, a good forecast is one that provides a sound basis for management action as the future unfolds and as events begin to diverge from the forecast. A good forecast provides alternative scenarios and strategies that can be adopted as environmental conditions and organizational needs change.

3.1 Decisions Affecting the Movement of Cash

Cash flows as a result of management actions regarding receivables and disbursements. Decisions that elicit the flow of cash can be categorized as (1) operating decisions, (2) capital expenditure decisions, (3) credit decisions, (4) investment decisions, and (5) financing decisions.

Operating decisions stem from the policies of the organization, such as the creation or elimination of a service unit or department, increases in the tax rate or in the charges for services, changes in the salaries and fringe benefits extended to staff, and so forth. The implementation of such actions will result in adjustments in the inflow and outflow of cash.

Capital expenditure decisions that affect the infrastructure of the organization give rise to the outward flow of cash. An organization's infrastructure involves the construction, repair, and maintenance of fixed, physical assets. Local governments must provide the necessary infrastructure for social and economic development. In this context, Holland defines public infrastructure as "all government capital investment including social investment such as education and health care." [10]

Credit decisions involve the length of time an organization takes to make payments to its vendors for goods and services provided, as well as the length of time a client/customer may take to make payment to the organization without

penalty. An increase in supplier credit time is like providing the organization with an interest-free loan. The organization can invest the amount owed in short-term financial assets and earn interest prior to the payment deadline. An increase in the credit period granted to customers/clients, on the other hand, delays the flow of cash into the organization's treasury.

Investment and financing decisions set the flow of funds in motion. *Investment decisions* result in the use of inactive cash to purchase financial assets or the liberation of funds by the sale of such assets. *Financing decisions* involve the acquisition of new money by issuing bonds, borrowing, or increasing revenues (i.e., by raising user charges, prices, or taxes). It is obvious that cash does not flow of its own accord. Managers are responsible for initiating the flow of cash and must be able to monitor and control the direction of the flows to ensure that their organizations will not encounter cash flow problems.

3.2 Rationale for Forecasting

The primary objective of cash management is to ensure that sufficient funds are available to meet organizational needs at a minimum cost, including the opportunity cost associated with uninvested funds. This objective calls for:

1. An accurate cash flow forecast to eliminate the need for (or to minimize the cost of) short-term borrowing.
2. The efficient collection of receivables from the point of receipt to the place where funds can be invested or spent.
3. A scheduling of reimbursements to ensure that obligations are paid on time, but not ahead of payment deadlines.

Without a cash budget, a manager cannot obtain a long-term view of cash flow patterns and, therefore, cannot effectively plan future cash requirements and optimal investments.

The preparation of a cash budget on a regular and systematic basis increases the confidence of financial institutions in the organization and those who manage it. Any financier or lender would like to know when an organization will need additional funding, for how long, and in what amounts. Answers to these questions, coupled with the availability of relevant data and charts to support the answers, enhance the ability of an organization to raise funds when required.

The cash budget also enables improved use of capital. Forecasting not only spots cash deficiencies, but also indicates if and when cash surpluses are likely to be available for investment in interest-yielding securities. Conversely, when deficits occur, short-term borrowing can be arranged or maturing assets redeemed.

Ill-conceived and premature ventures usually result in serious financial consequences. Systematic forecasts of an organization's cash position, however,

should reveal the potential impact of such expenditures on the cash flow. This advance warning provides an opportunity to reconsider the expenditures and/or their timing. A cash budget reveals the movement of cash into and out of the treasury. An astute manager uses a cash budget to identify early signs of an impending cash problem and to indicate appropriate steps to avert the problem.

The prospect of going bankrupt is the most serious threat to the life of any organization. Organizations do not go bankrupt because they have had to liquidate their financial assets. Rather, they go bankrupt because they have cash flow problems. The avoidance of bankruptcy should be sufficient justification for cash forecasts.

Timing is an important element in cash forecasting. Even if all quantities of future cash flows can be estimated correctly, an organization may still be in considerable financial difficulty if the timing of the forecast is flawed. Thus, accurate timing of receipts and expenditures will enhance the capacity of the cash budget to serve the objectives enumerated above.

3.3 Types of Forecasts

Broadly speaking, there are two types of forecasts, each serving a distinct purpose. *Short-term forecasts* usually cover a period of less than one year. If appropriately designed and regularly revised, a short-term forecast can assist in the day-to-day operations of an organization, because it is based on a detailed statement of all the accounts that either generate or absorb cash. A short-term forecast highlights the peaks and troughs resulting from the daily, weekly, or monthly operations of the organization.

Long-term forecasts evaluate an organization's financial position over an extended period of time—two, three, or even five years into the future. Unlike more detailed short-term forecasts, a long-term forecast attempts to provide only a rough sketch of an organization's more distant financing requirements. Private firms use long-term forecasts to gauge the impact of proposed acquisitions, mergers, or new product developments on the cash flow position a number of years into the future. Such forecasts may also be used in determining the future cash needs of the organization, especially its working capital requirements. For example, if an organization is experiencing a serious cash outflow without a corresponding cash inflow, a sound forecast should provide a good indication of the rate and duration of this disparity and why it is happening.

A long-term forecast also facilitates the appraisal of proposed capital projects. It shows “not only how much cash the organization will generate to support these projects, it also shows how much financing, if any will be required to complete them.” [11] Thus, the extended cash forecast assists in deciding which proposed projects related to the expansion of the organization should be approved, deferred, or abandoned.

3.4 The Decision Environment of Government

In the private sector, the corporate hierarchy determines objectives and adopts the strategic plan, which is updated from time to time to reflect changing conditions both inside and outside the organization. The discipline evident in private-sector expenditure patterns often is lacking in the public sector, however. The plan, or budget, that ultimately emerges in the public sector is a reflection of a consensus reached and deals struck in extended negotiations among various participating parties.

Forecasting in the public sector should be relatively straight-forward, because governmental cash requirements are based on budgeted expenditures, which are finite and known in advance. Government revenues are tax-based and, therefore, estimable.

However, the mood of the voters, as interpreted by elected and appointed officials, determines the direction of expenditures (and also receipts). Major expenditure decisions are made by the County Board of Supervisors or City Council. Disbursement authority over major expenditures may also reside with the Board or Council. The finance officer may have little or no control over the timing of the disbursements that must be made. Any attempt to forecast revenues and expenditures can be seriously undermined by the uncertainties and irregularities of the timing of major commitments.

The major argument of those who believe that forecasting can serve only limited objectives is that the world is not static and that the assumptions under which a forecast is developed can change significantly even before the exercise is complete. Revenues are forecast on the assumption that all the variables taken into consideration—such as the general economic climate, prevailing prices, and legislative policies—will remain as they were. They almost certainly will not. Opponents of forecasting also argue that the knowledge and theoretical basis on which to predict what the economy will do in the next five years do not exist. They further argue that a forecast, the stability of which cannot be guaranteed, cannot be the basis for sound future financial planning.

This negative perspective misses a fundamental premise of forecasting. A forecast is an approximation of what will likely occur in the foreseeable future. The objective of forecasting is not to be accurate, but to provide a basis on which to measure the differences between actual events and the financial plan. In this way, the nature and extent of corrective actions can be more clearly defined. As Smith points out, a forecast is: “used to measure the gap between what will probably happen, leaving things alone, and what we want to happen. It gives a measure of the difference, which then forms the basis for developing different strategies . . . to eliminate the difference.” [12] Once this point is understood and accepted, the utility of forecasting as a tool of cash management can be more fully appreciated.

The notion that forecasting is impossible in the public sector is furthest from the truth. A survey of county governments indicates that 60 percent of the responding jurisdictions regularly attempt some form of forecast of their revenues and expenditures and use these forecasts as the basis for financial decision making. [13]

Wildavsky asserts that the best predictor of next year's budget is this year's budget. "Those in government operate in a world they never made, which is only partially subject to their ministrations. Commitments of the past make up the largest part of the budget, and it is either legally or politically impossible to alter them drastically." [14]

In order to estimate revenues, the manager should be knowledgeable about the specific historical characteristics and collection patterns of each revenue source. The development of a three-year "historical detail profile" is necessary to obtain a trend about the behavior of the various revenue sources. [15] This profile should include when revenue was received, the amounts received at those times, significant deviations in collection patterns, and relevant explanatory information.

The development of a historical profile may not be necessary for some revenue sources—for example, intergovernmental transfers and other revenues that are received according to established contracts and agreements. Revenues such as property taxes and user fees are received according to well-established patterns, but the amounts collected during each specific time period may vary significantly from year to year. Consequently, a historical detail profile would facilitate more accurate projections of these revenues.

3.5 Summary

Although the environments of public organizations are different from those of private firms, these differences should not preclude the application of cash management models in the public sector. The inability of local governments to develop and install efficient cash budgeting systems is a major constraint, limiting their capacity to maximize the returns on the investment of otherwise inactive cash. Unless local governments can develop reliable estimates of their cash flow positions, enabling them to identify how much cash will become available, they will not be in a position to maximize the returns on whatever financial assets they are able to purchase.

4 CASH MOBILIZATION

A cash budget focuses on the productivity of various revenue sources, the timing of surpluses, and the amounts likely to be available. Management must develop policies to mobilize these resources to meet organizational needs. Cash

mobilization falls into two functional areas: (1) acceleration of *receivables*—those funds that come into the organization's treasury and (2) control of disbursements—funds that must be paid out to vendors and others who provide services to the organization, including salaries and wages for the staff. Private firms and corporations have provided the major impetus for the development of various techniques for increasing the control of cash receipts and disbursements. Fisher suggests that “companies that have exemplary cash management programs invariably place great emphasis on three objectives in overseeing their day-to-day money transactions. These are (1) speeding up collections, (2) controlling payables, and (3) controlling bank balances.” [16]

4.1 Accelerating Collections

From the standpoint of fund availability and borrowing costs, the most effective collection system is one that minimizes the lapse between the time money is due to be received by the organization and the time the money is available for disbursement. The optimum system would be immediate wire transfer from the payee to the organization when payment is due. Given the different types of payments and the documentation that must be part of each payment, however, such a system is not feasible.

The flow and availability of cash to the organization can be expedited by collection systems that provide for advance billing and payment on or before receipt of goods and services. Such systems should include provision for the processing of payments separate from accounting documentation. The aggregate benefit of sound collection procedures is an increase in the productivity of cash as a working asset. Systems that bill and subsequently process documents and remittances together to the accounting department before deposit retard the availability of funds to the organization.

Accelerated collection of money owed also reduces an organization's borrowing costs and enhances its ability to earn additional income. Since the 1950s, when this principle gained widespread acceptance, banks and other private firms have conscientiously developed techniques to aid corporations in collecting and processing receivables and in making funds available quickly. The techniques used to accelerate receipts include lockbox services, pre-authorized checks, and concentration banking.

Lockbox services involve the use of special post office boxes to intercept payments and accelerate deposits. A bank is authorized to collect mail directly from such boxes. Lockbox processing was initiated in 1947 by Bankers Trust of New York and First National Bank of Chicago. The major impetus for the development of this technique, however, was provided in the mid-1950s by the Radio Corporation of America, which was seeking new approaches to speed up collections while at the same time reducing paperwork.

As applied in the public sector, the lockbox system consists of a post office box, rented in the name of the jurisdiction, to which taxpayers mail their property taxes, utility bill payments, and other remittances. The services usually provide by lockbox systems are detailed in Table 3.1.

The necessary accounting documentation is completed following receipt of payment, using deposit information from the bank. Meanwhile, the funds received have been invested with minimal delay. An additional advantage of the lockbox system is the reduction of local government staff time devoted to the collection process. It can also lead to significant reductions in staff required for manual processing of receivables. These advantages, however, should be weighed against the charges that the bank makes for these services.

A *pre-authorized check* (PAC) is a signatureless demand instrument used to accelerate the collection of fixed payment types of obligations. Under this collection technique, the customer signs an authorization agreement that allows checks to be drawn against his or her account at specified, agreed upon intervals. The company typically signs and sends an indemnification agreement to the customer's bank to notify it that signatureless checks are issued against some of the bank's accounts. Following completion of the authorization and indemnification agreements, the company or its PAC service bank produces the pre-authorized checks on the specified payment dates. [17] The advantages accruing from the use of this system are listed in Table 3.2.

TABLE 3.1 Lockbox Services

The lockbox is emptied at least daily.
The mail is opened, and original bills are matched with payments.
Same-day deposits are made of the payments.
The local government is provided with all bills or other paperwork indicating that payments have been made.
Any checks that do not have adequate documentation regarding what is being paid and by whom are returned to the local government.

TABLE 3.2 Advantages of Pre-authorized Check Systems

Increased predictability of cash inflow; the dollar amounts generated each day are known in advance, facilitating daily cash flow forecasting.
Elimination of billing costs; no repetitive notice to the customer is necessary, thus saving postage, clerical, and invoice production expenses.
Reduction of collection float; checks are produced and deposited by banks, and no cost for receipts is involved.
Elimination of collection problems associated with late payments or forgotten remittances: PAC assures payments as long as funds are available in the customer's account.

The primary purpose of *concentration banking* is to mobilize funds from decentralized receiving locations into a central cash pool. The cash manager can then monitor only a few cash pools, thereby facilitating better cash control. Under this approach, a number of banks throughout the community may serve as depositories for the payment of property taxes, utility bills, and other periodic receipts. From these banks, the money can be moved quickly by wire to a depository bank that serves as a central collection center.

Lockbox services, pre-authorized checks, and concentration banking are all aimed at speeding up receipts and reducing the time that remittances stay in transit. The number of days saved in transit time are days that the funds can be invested in interest-yielding securities.

4.2 Controlling Disbursements

Disbursements represent the outflow of funds in the form of checks issued and cash payments made. Delaying cash outflows enables an organization to optimize earnings on available funds. Good cash management practices generally dictate that disbursements be made only when payment is due. The timing of disbursements is a very important decision that has implications for the liquidity position of the organization.

In large organizations, the potential for great variability in the quality and form of disbursement decisions often presents a considerable challenge to the cash manager. Two approaches have been devised for meeting this challenge:

1. Centralize, to the extent practical, the management of payables, particularly those involving large dollar amounts.
2. Establish administrative limits on the amount of disbursements particular organizational units are authorized to make within specified time periods.

The first objective is achieved through the use of a *central depository account*. The second objective is designed to control subsidiary working funds and is achieved through a *zero balance account*.

Many local governments maintain a number of bank accounts to cater to the jurisdiction's various obligations, and therefore it is sometimes difficult to know how much cash is available for investment. Financial management experts have noted the advantages of consolidating various local government accounts into one central depository account. All deposits from such sources as general funds, general revenue sharing, federal and state grants, and other funds can be concentrated into this single account, thus reducing compensating balances and increasing surplus cash. The consolidation of accounts provides better control over the timing of payments, increases the effective use of excess cash, and permits the streamlining of banking relations. Decisions can then be made and car-

ried out on the basis of sound and uniformly applied economic considerations that are in the best interest of the local jurisdiction. As Sanders and Kirk point out, the concentration of accounts:

provides readily available information on the total cash balances available for investment, permit the easy determination of how much cash to maintain in a checking account in order to pay the bank for its services; facilitates the pooling of cash from the various funds to invest in higher yielding securities, prevents overdrafts and avoids the problem of “forgotten accounts” that are not utilized for extended periods. [18]

Zero balance accounts are concentration accounts maintained with a zero balance at the end of each banking day, thus affording the opportunity to maximize earnings on the float. *Float* is the time between when a check is written and when the check clears the payer’s and the payee’s banks. There are two kinds of float:

1. *Deposit float*—the period between collection and the time funds are available for the payee’s use or investment—consists of mail time, processing procedures, and the time it takes for the payment to clear the sender’s bank.
2. *Disbursement float*—the dollar difference between the balance on the organization’s books and the amount actually in the bank—is the result of the time lag that occurs after an organization writes a check: delivery time, processing time at the recipient’s bank, and processing time at the organization’s bank.

The time lags of the disbursement float can be diagrammed and monitored. For example, if an organization writes a check on Friday, the check may not clear the organization’s account until the middle of the following week. If the treasurer moves money to the checking account from either an interest-bearing account or another investment on the same day the check is written, the organization will lose interest on those funds. However, if the fund transfer is made on the day the check clears the organization’s bank, those funds can remain invested, earning additional interest. Although the potential lost revenue may be insignificant for one check, the losses for a full year can be quite considerable.

A zero balance account is perhaps the most useful tool in sound deposits management. [19] An organization maintains a single central account, or concentration account, in addition to separate bank accounts for each major functional category. Deposits are credited to each of the accounts for record-keeping purposes. These accounts are automatically debited for the amount deposited to maintain a current balance of zero with the receipts being credited to the concentration account. As checks drawn on these functional accounts are presented for settlement, the exact amounts are automatically transferred from the concentra-

tion account to make the necessary payments. Thereafter, the accounts revert to zero balances.

Zero balance accounts eliminate the need to maintain excess amounts in disbursement accounts. They relieve the cash manager of the burden of estimating when checks will be presented for payment and of deciding to transfer money from one account to the other. Finally, such accounts permit the pooling of resources for investment purposes.

4.3 Controlling Bank Balances

Keeping a tight rein on bank balances has become increasingly popular as a principle of cash management. Organizations have come to realize that money not needed to meet operating costs or for compensating balances should be invested in interest-yielding securities. Consequently, organizations seek to avoid the accumulation of inactive cash in their accounts by (1) using daily cash reports and (2) making payments through drafts.

Daily cash reports provide the means to monitor changes in the organization's accounts. Banks submit daily summaries of collections and disbursements handled on behalf of the organization. On the basis of these reports, the treasurer decides what to do with the balances in the accounts.

Using *drafts* to make payments enables the float to be managed without running the risk of overdrafts or inadvertently using uncollected funds. Additionally, any legal problems involving insufficient funds are circumvented, because the drafts are not "obligations" against the issuer until they are presented for payment. Drafts differ from checks in that they are drawn not on a bank but on the issuer and are payable by the issuer. Banks act only as agents in the clearing process, presenting the draft to the issuer for redemption. Although drafts have found wide acceptance in the financial community, a serious deterrent to their expanding use is that banks take no responsibility for the final payment of drafts once they are presented.

4.4 Constraints on Cash Mobilization

Local jurisdictions may find some of these techniques for cash acceleration and disbursement unacceptable. A jurisdiction must evaluate the possible effects on its taxpayers and clients of aggressive collection practices as well as disbursement techniques that delay payments and maximize float. The objectives of cash management must be artfully blended with the need to maintain good public relations with the vendors that serve the jurisdiction.

Use of lockbox systems and pre-authorized checks reduces the time required for a locality to handle receivables and deposit checks for collection. However, the speed with which these checks clear an individual's account has made citizens angry and has stiffened their opposition to electronic transfers.

Zero balance accounts earn a return on funds even though technically they have been committed for the settlement of an already issued check. In some states, however, it is illegal to write a check on any account unless sufficient funds are present in that account to cover the obligation.

State laws often place other constraints on local financial management procedures. Historically, states have imposed special legal restraints and controls on local borrowing, including limits on outstanding debts and requirements for local referenda prior to the issuance of bonds. State laws may also specify the purposes for which debt may be incurred and the characteristics of debt instruments, including maturities, interest rates, and methods of sale.

Local governments must rely largely on property taxes as the revenue source directly under their control. However, state governments control property tax collection procedures, the assessment function, and procedures for determining the penalties that may be added to delinquent accounts. These state controls are designed to facilitate uniformity in the assessment of property values and in the application of legal requirements as these relate to property taxation.

Plausible as these requirements may be, local officials complain that such regulations deny them essential control over their most vital revenue source. Because tax increases are politically dangerous, elected officials often prefer to reduce the existing level of services rather than raise taxes. However, if local authorities had responsibility over the assessment function, property could be assessed at an inflated value and then taxed at a lower rate.

Local jurisdictions also have only limited control over the collection and deposit of transfers from the state and federal governments. State-administered taxes, such as general sales, gasoline, and liquor taxes, are collected by the state and then returned on a proportional basis to localities monthly or quarterly. Many federal grants are also disbursed to localities at the discretion of the state. State authorities may be insensitive to the cash needs of jurisdictions in determining disbursement schedules. If state officials decide to disburse the proceeds from sales taxes on a quarterly basis, local governments can do little to expedite the receipt of funds. They not only must forgo the interest that such funds would have earned but often must borrow funds on a short-term basis to meet the obligations that these state transfers are intended to cover.

Adequate credit must be available if any organization or local government is to survive in the short term. Lines of credit are committed by banks to make loans available subject to certain mutually agreed upon conditions. A *revolving line of credit* legally obligates the bank to lend funds up to a specified limit. A *stand-by line of credit* only indicates that a bank will lend money if funds are available. Lines of credit are important as a hedge against unanticipated contingencies, such as temporary financing needs and short-term cash flow shortages. The cost of maintaining a line of credit, however, ranges from three-eighths of a percent to one percent. [20] Consequently, lines of credit

should not be maintained unless they are used with some frequency. Otherwise, the jurisdiction or organization will be paying for the privilege of having a line of credit that may be underutilized or unnecessary.

4.5 Strategies for Coping With Constraints

More frequent collection of property taxes may reduce the delinquency rate and improve public perception of the property tax as an acceptable form of taxation by reducing the burden of lump-sum payments. More frequent collection can also reduce administrative costs. Most states have established property tax payment periods, and taxpayers tend to wait until a few days before the deadline to mail their checks. The volume of checks to be processed during a relatively short time period usually necessitates hiring temporary workers or moving some clerical staff from other departments to the Treasurer's office to process checks. At times, the costs associated with this can be prohibitive.

The status of delinquent accounts should be reviewed and stiffer penalties imposed for continued nonpayment. More important, however, the procedures for follow-up contacts and collections should be improved.

Although localities may add interest charges to unpaid taxes until the account is settled, the allowable rate of interest, as determined by the state, is often below the prevailing market rates. In that case, the threat or actual imposition of interest charges may not be sufficient to bring about compliance with the law. For penalties to be meaningful and effective, they must be at least equal to the prevailing rate of interest.

Bills for property taxes, as well as for licenses, permits, and other services that localities provide on a fee basis, should be sent out promptly. The jurisdiction should specify on the face of the bill that beyond a certain date, late charges will be levied. At the same time, localities might offer discounts as an incentive for prompt payment of bills. The provision of self-addressed, postage-paid envelopes further encourages prompt payment of accounts. These strategies are advisable, however, only to the extent that the dollar return on the investment of early payments can be shown to equal or exceed the cost of the discount, envelopes, and postage.

Administrative rearrangements may accelerate receipt of other revenue. The local cash manager should be familiar with the disbursement schedules and funding rules for locally shared state taxes and should apply promptly for reimbursement. Since large sums of money are usually involved, one individual should be assigned the responsibility of coordinating these activities with state government agencies. The collection and deposit of such funds should be automatic, secure, and well-documented because it is effectuated through wire transfers.

Smaller amounts, often paid in cash, are frequently handled by localities.

By minimizing the number of collection points—consistent with the public's desire for convenience—the jurisdiction can ensure that fewer people handle receipts and that receipts are deposited promptly in the banks. During heavy property tax collection time, bank deposits may be made on an hourly basis to ensure that resources are not left idle. Caution should be exercised, however, in bringing in personnel or extending work hours. If the yield is low, the cost of overtime may exceed the return on investment. Therefore, local jurisdictions should undertake a cost-benefit analysis to determine if these measures should be adopted.

5 REVENUE ENHANCEMENT INITIATIVES

The public's antipathy to increases in property taxes has limited the capacity of local governments to respond to changing fiscal requirements. This problem was compounded in 1986, when Congress eliminated a key source of local government revenue—general revenue sharing grants. Therefore, the need to diversify local revenue sources has become increasingly urgent. While all level of government—federal, state, and local—are afflicted with fiscal gaps, they are most acute for local jurisdictions—the level of government most concerned with providing essential services to the general citizenry.

5.1 Tax Diversification

Tax diversification has two dimensions: diversification of tax revenue sources and diversification of a particular tax base. In addition to the property tax, local governments should have access to a broad-based tax source, such as a general sales tax or a personal income tax. Both have greater elasticity than the property tax, yielding greater amounts of revenue as the local economy grows.

Tax diversification is difficult for local governments because in most cases, it is not within their authority to determine their sources of revenue. Adoption of a local sales or income tax requires state enabling legislation, and most states have been reluctant to extend this authority to the local level, especially in times of fiscal austerity. The primary avenue open to local governments, therefore, is to seek ways to make existing revenue sources more productive, through efforts to stimulate economic growth, through more aggressive collection practices, and/or by increasing the tax rate. To maximize the yield from the property tax and to enhance its utility as a viable revenue source, the assessment function must be improved.

Montgomery County, Maryland, enacted a *recapture tax* in 1980, designed to collect, at the time of sale or transfer of real property, revenues that would have been collected in prior years if the assessment had reflected the actual market value of the property, as demonstrated by the current selling price.

The formula for the recapture tax excluded minor under-assessments (under \$8,000). In the first six years, the recapture tax netted Montgomery County more than \$10 million in additional revenue. Variations on the recapture (or rollback) approach to tap the increase in value of property at the time of sale have been adopted in a number of other states, most notably Missouri, Arizona, Texas, and New Jersey.

Tax-exempt properties owned by state and federal governments often are to be found within local jurisdictions (universities, state hospitals, military installations, prisons, etc.). Compensatory payment programs are designed to reimburse local governments both for the revenues lost because of the tax-exempt provisions attached to these properties and for the cost of providing services. Like other property, state and federal lands appreciate in value. By reassessing these properties to ensure that the assessed values are consistent with actual market values, local governments may have a basis for seeking more equitable payments in lieu of property taxation.

5.2 Tax Amnesty Programs

Delinquent tax bills may go unpaid and unpenalized year after year. According to a recent survey, about 16 percent of the local governments in the United States have a tax delinquency rate in excess of 10 percent. Tax evaders include individuals, firms, and corporations. In response, tax amnesty programs have been initiated in 34 states and the District of Columbia (see Table 3.3) since 1982, yielding some impressive results.

The amnesty program in Massachusetts gained national prominence in February 1984, when state tax officials reported that the three-month program had netted more than \$86.5 million in additional revenues from over 50,000 delinquent taxpayers. The Massachusetts state legislature made tax evasion a felony, punishable by up to five years in jail and/or fines up to \$10,000 for individuals and \$500,000 for corporations. A period of tax amnesty was then proclaimed, from October 17, 1983 to January 17, 1984. During this period, taxpayers could settle outstanding state tax obligations without any penalty charges and without criminal prosecution for past violations. All tax returns and payments due before October 17, 1983, were eligible for amnesty relief.

The two-month amnesty in Illinois in 1984 produced \$160.5 million; California's program in 1984-85 yielded an additional \$160.4 million; and Michigan estimated that its program in 1986 brought in approximately \$109.3 million. The three-month amnesty in Connecticut in 1990 resulted in \$54 million in additional revenues, and the 1992 program in Georgia produced an estimated \$51.3 million. The state legislature in New Jersey has authorized two tax amnesty programs, generating \$186.5 million in 1987 and \$401.3 million in 1996.

TABLE 3.3 State Tax Amnesty Programs November, 1982–February, 1997

State	Amnesty Period	Major Taxes Covered	Collection(a) (Millions)
Alabama	1/20/84–4/1/84	All	\$3.2
Arizona	11/22/82–1/20/83	All	\$6.0
Arkansas	9/1/87–11/30/87	All	\$1.7
California	12/10/84–3/15/85	Ind. Income	\$154.0
		Sales	\$6.4
Connecticut	9/1/90–11/30/90	All	\$54.0
	9/1/95–11/30/95	All	\$46.2
Florida	1/1/87–6/30/87	Intangibles	\$13.0
	1/1/88–6/30/88	All	\$8.4(b)
Georgia	10/1/92–12/5/92	All	\$51.3
Idaho	5/20/83–8/30/83	Ind. Income	\$0.3
Illinois	10/1/84–11/30/84	All	\$160.5
Iowas	9/2/86–10/31/86	All	\$35.1
Kansas	7/1/84–9/30/84	All	\$0.6
Kentucky	9/15/88–9/30/88	All	\$61.1
Louisiana	10/1/85–12/31/85	All	\$1.2
	10/1/87–12/15/87	All	\$0.3
Maine	11/1/90–12/31/90	All	\$29.0
Maryland	9/1/87–11/2/87	All	\$34.6(c)
Massachusetts	10/17/83–1/17/84	All	\$86.5
Michigan	5/12/86–6/30/86	All	\$109.8
Minnesota	8/1/84–10/31/84	All	\$12.1
Mississippi	9/1/86–11/30/86	All	\$1.0
Missouri	9/1/83–10/31/83	All	\$0.9
New Jersey	9/10/87–12/8/87	All	\$186.5
	3/15/96–6/1/96	All	\$359.0
New Mexico	8/15/85–11/13/85	All (e)	\$13.6
New York	11/1/85–1/31/86	All (f)	\$401.3
	11/1/96–1/31/97	All	n.a.
North Carolina	9/1/89–12/1/89	All (g)	\$37.6
North Dakota	9/1/83–11/30/83	All	\$0.2
Oklahoma	7/1/84–12/31/84	Income, Sales	\$13.9
Pennsylvania	10/13/95–1/10/96	All	n.a.
Rhode Island	10/15/86–1/12/87	All	\$0.7
	4/15/96–6/28/96	All	\$7.9
South Carolina	9/1/85–11/30/85	All	\$7.1
Texas	2/1/84–2/29/84	All (h)	\$0.5
Vermont	5/15/90–6/25/90	All	\$1.0(d)
Virginia	2/1/90–3/31/90	All	\$32.2
West Virginia	10/1/86–12/31/86	All	\$15.9

TABLE 3.3 Continued

State	Amnesty Period	Major Taxes Covered	Collection(a) (Millions)
Wisconsin	9/15/85–11/22/85	All	\$27.3
Dist. of Columbia	7/1/87–9/30/87	All	\$24.3
	7/10/95–8/31/95	All (i)	\$19.5

Source: The Federation of Tax Administrators.

NOTES

- (a) Where applicable, figure includes local portions of certain taxes collected under the state tax amnesty program.
- (b) Does not include intangibles tax and drug taxes. Gross collections totaled \$22.1 million, with \$13.7 million in penalties withdrawn.
- (c) Figure includes \$1.1 million for the separate program conducted by the Department of Natural Resources for the boat excise tax.
- (d) Preliminary figure.
- (e) The severance taxes, including the six oil and gas severance taxes, the resources excise tax, the corporate franchise tax, and the special fuels tax were not subject to amnesty.
- (f) Availability of amnesty for the corporation tax, the oil company taxes, the transportation and transmissions companies tax, the gross receipts oil tax and the unincorporated business tax restricted to entities with 500 or fewer employees in the United States on the date of application. In addition, a taxpayer principally engaged in aviation, or a utility subject to the supervision of the State Department of Public Service was also ineligible.
- (g) Local taxes and real property taxes were not included.
- (h) Texas does not impose a corporate or individual income tax. In practical effect, the amnesty was limited to the sales tax and other excises.
- (i) Does not include real property taxes. All interest was waived on tax payments made before July 31, 1995. After this date, only 50% of the interest was waived.

At the local level, the Taxpayer Automated Compliance System in New York City persuaded more than 55,000 individuals and companies to pay more than \$43 million in delinquent taxes in 1983-84. The city of Philadelphia reported collecting more than \$30 million in delinquent taxes. [21] In the District of Columbia, \$43.8 million has been collected through two tax amnesty programs.

Given the sluggish economy in the late 1970s and early 1980s, it is not surprising that tax delinquency rates in most localities were so high. In the 1990s, with the economy booming and personal and corporate incomes rising, amnesty programs for delinquent taxes, coupled with enforcement of stiffer penalties for tax evasion in some cases, have been enacted to provide inducements for the recovery of back taxes. The argument that amnesty programs tend to encourage delinquency (because people may assume that further amnesties will be granted) does not seem to be well founded.

5.3 Increasing Use of Service Charges and Service Taxes

Municipalities and counties are increasing their dependence on current charges and utility service fees. Service charges promote revenue stability by diversifying the revenue sources of a local government and by reaching beneficiaries of local services who would otherwise escape taxation. According to Penelope Lemov:

... several states are planning to take a less painful route by putting in place new or additional charges for those who use state services. College tuition and tolls on highways, the two biggest user fees, are likely to be increased. And several states are planning new user fees or small, earmarked taxes to help pay for environmental programs and health care. [22]

As a result of persistently harsh fiscal times, in 1986, Florida enacted a sales tax on services, covering everything from “poodle shearing and pool cleaning to legal work, accounting, and advertising.” The tax on services was expected to raise more than \$1 billion annually. A year later, the Florida service taxes were repealed—assaulted by the advertising industry and abandoned by a newly elected governor. But many states were not discouraged by Florida’s experience. Hawaii, New Mexico, and South Dakota have enacted taxes on almost every type of service enterprise. Many more states tax health club dues and dry-cleaning fees; some states have taxes on pest control, burglar protection systems, and nonresidential janitorial services.

5.4 Tax Exportation

Although local governments have always formulated revenue policy with an eye toward other jurisdictions, declining levels of federal aid as well as taxpayer resistance have contributed to an unprecedented level of inter-local competition for tax revenues and the exportation of the tax burden.

Tax exportation is the shifting of the local revenue burden to nonresidents—a sort of “beggar thy neighbor” strategy. Tax exportation is expressed through such measures as taxes on hotel, motel, and restaurant bills, entertainment taxes, commuter taxes, airport taxes, and taxes on businesses that sell their products or services to customers outside the taxing jurisdictions. Local governments with substantial tourism (especially in the sunshine states of Florida, Arizona, and Nevada), natural resource attractions, or cultural or commercial centers have exploited tax exportation to the fullest.

5.5 Nuisance Taxes

A number of local governments have enacted narrowly based taxes, such as occupational taxes, taxes on theater admission tickets, and property taxes on intan-

gibles such as stocks and bonds. These so-called nuisance taxes generally are costly to administer and yield relatively small amounts of revenue. Although many experts have advised local governments to develop plans to gradually eliminate these taxes, local officials have remained adamant regarding their maintenance, finding it difficult to abandon these taxes because they provide just enough revenue to make a difference in the local operating budget.

5.6 Tax Administration

The new reality in local financial management dictates that jurisdictions become more efficient in the administration of their taxes. In this way, the yield on the various sources of taxes under local control will be enhanced. States have begun to take advantages of the economies of scale associated with more centralized tax collection and enforcement programs. Indeed, in all states except Alaska, fiscal arrangements have been developed whereby the state governments collect local sales and incomes taxes in tandem with state taxes, funneling the local share back to the jurisdictions. Local governments have also pursued regional arrangements for the assessment, collection, and enforcement of property tax levies as a means of revenue enhancement.

Another approach is *reciprocity*, involving a mutual exchange of enforcement and/or collection responsibilities between jurisdictions. The District of Columbia and the neighboring states of Virginia and Maryland, for example, have an agreement whereby outstanding tickets issued for traffic-related offenses in the these jurisdictions must be paid before an individual's vehicle registration can be renewed. The District of Columbia estimates that 45 percent of its outstanding parking violations are issued to residents of Virginia and Maryland, representing more than \$4 million in potential additional revenue to the city. [23]

5.7 Gaming: Gambling and Lotteries

For cash-strapped state and local governments, clawing for every dollar they can get, gambling and lotteries offer the prospect of raising significant revenues without increases in taxes. In the past two decades, state lotteries have become a big business. Thirty years ago, only three states (New Hampshire, New York, and New Jersey) had lotteries. Today, thirty-eight states and the District of Columbia have them, with a combined gross sales of over \$25 billion and \$8 billion in state revenues.

States have selectively permitted pari-mutuel gambling on certain sporting events (such as horse racing, greyhound racing, and jai alai). A number of states have also authorized casino gambling as a way of broadening their revenue base. Casinos dot the national landscape and its water byways. Casinos now outdraw the national pastime—professional baseball—as the United States experiences the greatest gaming boom in history. Mississippi alone has thirty

casinos, scattered around the state, with revenues estimated at \$120 million in 1995. [24] The gambling take is taxed at 8 percent and local governments in Mississippi can tax up to an additional 4 percent. Colorado, Illinois, Indiana, Iowa, Louisiana, Mississippi, Missouri, Nevada, New Jersey, and South Dakota allow casino gaming on riverboats, docksides facilities, and land-based facilities. Michigan has authorized casinos on the Indian reservations within the state. Given the revenue potential of all forms of gaming—lotteries, gambling, bingo, slot machines, video games—state and localities appear to be as addicted to gambling as are the consumers.

State revenues from casinos tend to be relatively unstable, however, because they are affected by competitive forces in the gaming market and by private management decisions. These revenues are sensitive to cyclical trends in national and regional economies. They are also relatively expensive to collect.

5.8 Donations

Faced with the need to broaden their revenue base, local governments have left no stones unturned. For example, in the midst of a deficit of over \$100,000, the city of Friendswood, Texas, appealed to its citizens for donations. In a matter of weeks, donations poured into the city's coffers, and the deficit problem was overcome without the need to raise taxes.

The city of Oaklyn, New Jersey, had a different but equally effective approach to deficit-financing. The city council had bricks designed for use in the construction of government buildings. For a donation of \$35, people could have their names inscribed on the bricks; for \$50, a business could have its telephone number inscribed on a brick. [25]

5.9 Curtailing Mandated Expenditures

Federal and state governments have a history of imposing costly new regulations on local political units without appropriating the necessary funds for compliance. Mandated expenditures are obligations that must be met irrespective of annual budgetary decisions. These expenditures include social security payments and retirement benefits for employees, mandated educational standards, environmental impact analyses, and many other programs required to meet federal or state guidelines. Local governments often are compelled to devote significant resources to the fulfillment of long-standing obligations in these areas.

Localities can press for fewer mandated expenditures as a way of conserving local resources. Local officials often have found ready allies in voters. In 1990, localities in Florida pushed for the passage of a state constitutional amendment, barring unfunded mandates unless such measures are approved by two-thirds of the members of the legislature. According to David Hosansky, "since the amendment became part of the Florida constitution, the legislature

has imposed no big ticket unfunded mandates.” [26] Since passage of the Florida law, at least sixteen states have passed laws or constitutional amendments aimed at stopping legislators from imposing costly regulations on local governments.

Some local government officials have made state and federal lawmakers aware of how much these mandates cost localities by seeking *fiscal note legislation*, which calls for independent cost estimates of a bill’s fiscal impact. In some states, local governments have achieved partial reimbursement of state mandated costs. In other states, full responsibility for some traditional local functions have been assumed by state government. In this way, local resources that would have been devoted to these functions are freed up, thus enabling them to be devoted to other priorities, including investment in interest-yielding securities.

5.10 Commercialization Options

Local governments have the option of commercializing some services that they have previously rendered free of charge to their communities. This option is particularly viable in those areas where a distinct competitive advantage that is sustainable over time has been found within the local government. A number of municipalities have entered into contracts to extend surplus service capacity to neighboring communities (for example, potable water supply, solid waste disposal, and even fire protection). A pioneer in this field was the city of Lakewood, California. To enhance their revenue potential, some local governments have embarked on projects of selling information packages—for example, real estate databases and other locally developed data products.

5.11 Changing Mood of Taxpayers

The so-called “taxpayers revolt,” which gained national attention in 1978 with California’s Proposition 13, stalled after the November 1984 elections. The Voter’s Choice initiative in Michigan was defeated in 1984. This initiative would have rolled back a 1983 state income tax increase, would have required a referendum for any future tax hikes, and would have forced government bodies to muster a four-fifths majority to raise licensing fees. Nevada’s Question 12, calling for a two-thirds vote of state or local lawmakers and a majority of the voting public on any new state or local taxes, also was defeated. Jarvis IV, named after Howard Jarvis, the author of Proposition 13, called for state property tax rollbacks in California to 1979 levels and would have forced state and local governments to rebate roughly \$103 billion in tax revenues. This proposition also would have forbidden the imposition of user fees to generate revenues beyond the actual costs of the services included under the fee. Jarvis IV was also defeated.

In 1994, there was a major push in a number of states to permit voters have

the final say over tax increases. All these initiatives failed. Voters in Missouri, Montana, Oregon, and Nevada turned down the idea. [27] Apparently, the public thinks that it is poor public policy to allow specific fiscal measures and tax rates to be set in the voting booth.

Several reasons can be offered for the changing mood of the taxpaying public. The public in many localities has come to recognize the cause and effect relationship between the overall vitality of the local economy and the public services provided. Therefore, they are reluctant to take actions that might adversely affect economic growth. Above all, many people associate the 1981 tax cuts of the Reagan administration with the ballooning federal deficits. They feel that there have already been plenty of tax cuts at the federal level that are not sustainable at lower levels of government. Thus, policy makers have been largely liberated from the mood that pervaded the early 1980s, where any fiscal policies that included a tax increase amounted to political suicide. These developments notwithstanding, the basic need still remains for continued improvement and enhancement of local cash management practices.

ENDNOTES

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4

Investment Strategies

Until a few years ago, cash management was viewed as one of the more mundane tasks carried out by financial officers. Government leaders rarely played a role in cash management decisions, and many delegated the entire decision-making process. Circumstances have changed, however. Financial crises in localities previously assumed to be financially stable and affluent, such as Orange County, California, have stimulated new interest among public officials and politicians alike. New legislation has been passed in several states that limits the discretionary authority of public fund managers. Other states are considering such legislation. The environment in which fund managers work is likely to continue to evolve over the next several years as a result of this new conservatism.

1 CASH MANAGEMENT MODEL

The various elements of cash management, diagrammed in Figure 3.1, can be integrated into a general model, as shown in Figure 4.1. The purpose of cash management is to maintain sufficient liquid assets to satisfy legal obligations while at the same time utilizing unrestricted funds to generate income. This chapter will focus on the development of sound investment strategies to maximize investment potential while maintaining the safety of investment funds.

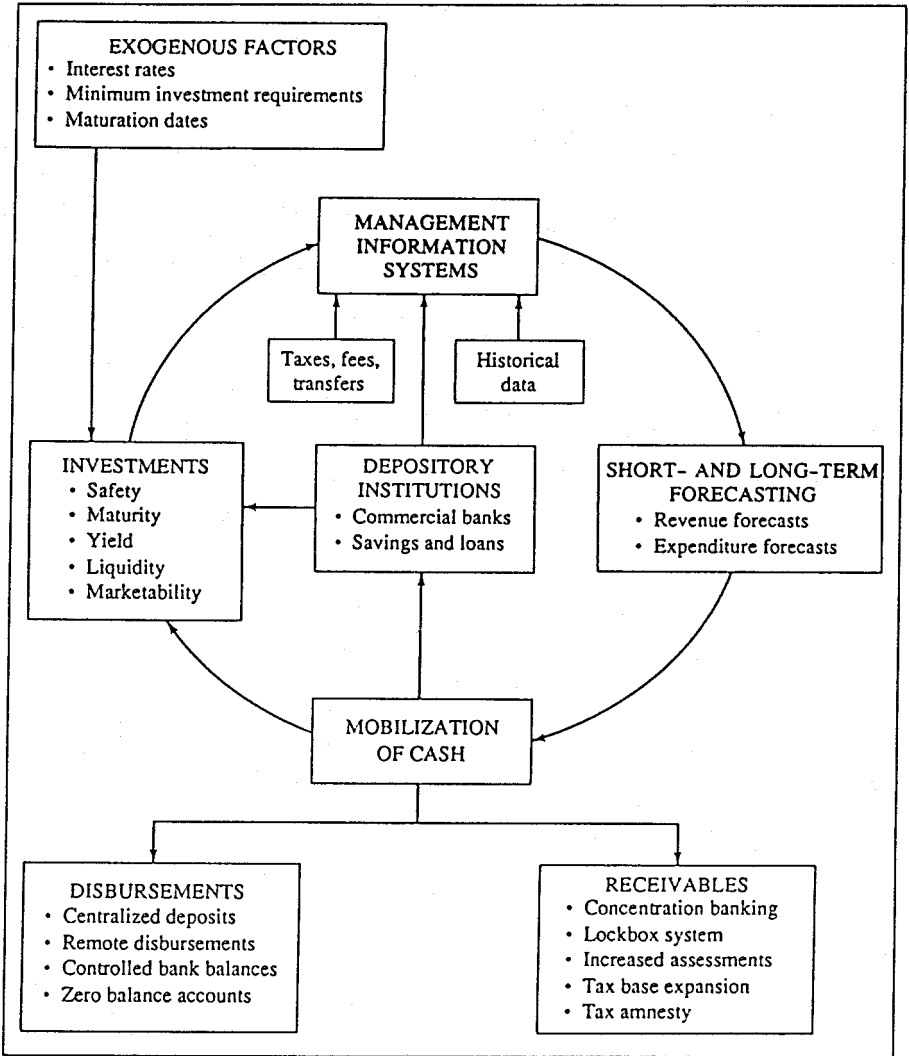


FIGURE 4.1 Cash management model.

Investment in speculative vehicles may be appropriate for certain individual investors. However, risky investing of public funds can have disastrous results, as recent experiences in California and other states have demonstrated.

1.1 An Iterative Cycle

Central to the cash management model is an information system that provides data and analyses regarding available fiscal resources, such as taxes, fees, and intergovernmental transfers, as well as historical data and other information necessary to develop short and long-term forecasts of revenues and expenditures.

Information flows from banks and other financial institutions to the management information system. This information is used to maintain the fiscal system on its present course or to modify it. Information generated at each level of the model feeds into and facilitates the achievement of objectives at the next level. In this way, a cycle is created, proceeding from the management information system (MIS) to forecasting, cash mobilization, banking, investments, and back to the MIS. With appropriate cash management, the cycle is continuously repeated.

1.2 Mobilizing Cash for Investments

Investment income can be increased if income can be obtained sooner and held longer. As discussed in the previous chapter, the receipt of expected revenues can be accelerated by using such available technologies as lockbox systems and area concentration banking. Other sources of revenue can be exploited by improving property tax assessments, expanding the tax base, and minimizing delinquent taxes (for example, by levying penalties and/or granting a tax amnesty). The productivity of available cash can also be maximized by controlling disbursements through the use of such techniques as centralized deposits, zero balance accounts, controlled bank balances, and remote disbursements (writing checks on remotely located banks).

Receivables are deposited in banks and other financial institutions for safekeeping and/or investment. Localities may authorize banks to invest amounts in excess of operating requirements, or cash managers or investment brokers can be employed to manage their investments.

Local governments accumulate cash balances for a number of reasons. A large inflow of revenue occurs, for example, immediately prior to penalty dates on the tax calendar. Intergovernmental transfers tend to be made in lump-sums as a consequence of statutory regulations and administrative practices governing such payments. Bonds for capital improvements usually are issued before a project begins, whereas disbursements of these funds occurs only as bills are paid throughout the construction period.

As a consequence of these and other factors, a jurisdiction often is able to

meet its current obligations and, at the same time, have some non-committed cash left over to invest in interest yielding securities.

Investment of idle funds is one of the tools of sound fiscal management being used more frequently by all levels of government. . . . It offers a source of additional revenue without increasing taxation, through the use of funds which would otherwise be temporarily unproductive. [1]

Trends in interest rates in recent years have been a contributing factor to the increased interest among local governments in the investment of idle cash balances.

2 PUBLIC INVESTMENT CRITERIA

The principal criteria to be considered in selecting a specific security in which to invest public funds are (1) safety/risk, (2) price stability, (3) liquidity/marketability, (4) maturity, and (5) yield. It has been said that the ideal investment is one that yields a high return at no risk, offers promise of substantial growth, and is instantly convertible into cash if money is needed for other purposes. This ideal specimen, of course, does not exist in reality. Each form of investment has its own special virtues and shortcomings. *Yield* is the ultimate measure of successful financial management in a market economy. In general, the longer the maturity of an investment, the higher the yield. For this reason, it is important to design an investment pattern whereby each security will mature close to the time that the money invested will be needed to cover operational needs.

2.1 Safety/Risk

It has long been assumed that public officials generally follow a fairly conservative path when investing public funds and that *safety* is accorded the highest priority. Over the past several years, however, it has become evident that a significant number of fund managers are routinely committing public funds to relatively risky investments. Although some of these fund managers have produced enviable returns on investments, others have lost large sums of public money. In a few cases, the outcome has been devastating.

However, the vast majority of local governments tend to invest in securities with relatively low levels of risk—and subsequently, low rates of returns. Public treasurers often take this more conservative approach because they are concerned that they may find their positions in jeopardy if a portion of these public funds is lost as a consequence of risky investment practices. Many localities, however, have a financial base that is large enough and strong enough to take limited risks without serious fiscal damage. An investment in a higher-yielding security may be appropriate if the risk is only slightly higher.

Many state legislatures restrict the investments of local governments to

securities that are *collateralized* or backed by the United States government. Even these investments—for example, long-term government bonds—“fluctuate in value and thus present some risk if they must be sold prior to maturity in an unfavorable market.” [2] The risk characteristics of different securities should be understood before decisions are made about which specific instrument to purchase.

2.2 Price Stability

Investments constitute *cash reserves* in addition to serving as income-producing assets. In the event of an unexpected cash shortage, the first reaction often is to convert some financial assets into cash. The desire to avoid financial loss under such circumstances explains the concern of public officials for the *price stability* of investments.

Generally speaking, U.S. Treasury bills (T-bills) are the most stable of all money market instruments, principally because they are backed by the full faith and credit of the federal government. In addition, T-bills are usually issued on a short-term basis, maturing before new market conditions alter the assumptions on which the investment strategy was based. Other investment instruments characterized by price stability are federal agency issues and certificates of deposit (CDs).

2.3 Liquidity/Marketability

The concept of *liquidity* involves managing investments so that cash will be available when needed. The basic question is: Can a security be sold quickly and easily when the need arises? *Marketability* varies among money market instruments, depending not only on the price stability of the instrument, but more importantly, on the extent of the secondary trading market available to it. Treasury bills, for example, are practically riskless and are actively traded. As Harrell and Cole observe, “the sheer volume of Treasury bill issues and their tradeability in the secondary market establish the bills as the nearest equivalent to pure cash in the market.” [3] Certificates of deposit and securities issued by federal agencies, such as the Federal Home Loan Mortgage Corporation and the Federal Farm Credit Bank System, also have excellent liquidity.

2.4 Maturity

One approach to the liquidity problem is to time the placement of investments so that they mature when the locality expects to need cash. Part of the investment portfolio may be earmarked for capital projects, and part of anticipated operating expenses. In managing the portfolio, the maturity dates of holdings should be synchronized with the dates when these funds will be needed. It

should be relatively easy to align these dates, because securities are usually classified according to their maturity periods (e.g., 30 days, 60 days, 90 days, 180 days, or one year).

The sale or redemption of a security prior to the agreed upon maturity date usually results, at the very least, in the loss of accrued interest. This predicament can be avoided by buying a mix of securities with scattered maturity dates. In this way, any time cash is needed, some asset is maturing, and losses from premature sales can be avoided.

2.5 Yield/Return on Investment

In general, securities with little risk, high liquidity, and short maturities also have low yields. For an investment to provide a high yield, one or more of the other relevant criteria must be compromised.

Despite the constraints imposed by safety and liquidity, local governments are becoming increasingly interested in *yield*. As a first step, many financial executives have increased their efforts to monitor account balances to ensure that excess cash is invested immediately. In addition, some localities are backing away from state and local government obligations, which characteristically have low yields, in favor of high-yield, high-grade corporate bonds. At the same time, however, many local officials still rank yield as the least important of all the criteria in selecting an investment instrument.

3 TYPES OF SECURITIES

Local governments and other public organizations often hold short-term securities that can be readily converted into cash either through the market or through maturity. The most attractive instruments that meet these criteria are federal securities, which are practically riskless, because they are backed by the full faith and credit of the federal government. Other securities carry varying degrees of risk and, therefore, must offer higher interest to make them attractive. Relatively risk-free securities include time deposits, certificates of deposit, commercial paper, banker's acceptances, and repurchase agreements. The money market instruments most widely used by local governments are arrayed in Table 4.1 against the basic characteristics described above. Understanding the unique features of each type of the security available to local governments is critical to the formulation of prudent investment strategies.

3.1 Treasury Bills, Notes, and Bonds

U.S. Treasury bills (T-bills)—the most important money market instrument available for local government investment—represent an obligation of the United States government to pay a fixed sum of money after a specified period of

TABLE 4.1 Money Market Instruments Used by Local Governments

Investment Instrument	Obligation Issuer	Denominations	Maturities	Marketability
United States Treasury Bills	U.S. government obligations	\$10,000 to \$1 million	3, 6, 9 & 12 months	Excellent secondary market
U.S. Agency Securities	Various Federal Agencies	\$1,000 to \$25,000	30 days; 270 days; 1 year	Good secondary market
Negotiable Certificates of Deposit	Commercial Banks	\$500,000 to \$1 million	Unlimited; 30-day minimum	Active secondary market
Non-negotiable Certificates of Deposit	Commercial Banks & Savings and Loans Assoc	\$1,000 minimum (usually \$100,000)	30-day minimum	Limited secondary market
Repurchase Agreements	Commercial Banks	\$100,000 minimum	Overnight minimum 1–21 days common	No secondary market
Banker’s Acceptances	Commercial Banks	\$25,000 to \$1 million	Up to 6 months	Good secondary market
Commercial Paper	Promissory Notes of Finance Companies	\$100,000 to \$5 million	5–270 days	No secondary market

Investment Instrument	Yield Basis	Comments/Restriction
United States Treasury Bills	Discounted on 365-day basis Also offered as tax anticipation bills through special auctions	Popular investment. Can be purchased in secondary market for varying maturities
U.S. Agency Securities	Discounted on a 360-day basis	Not legal obligation of or guaranteed by the federal government
Negotiable Certificates of Deposit	Interest maturity on 360-day basis	Backed by credit of issuing bank.
Non-Negotiable Certificates of Deposit	Interest maturity on 365-day basis	Lower interest rates for amounts under \$100,000. 90-day interest penalty for early withdrawal
Repurchase Agreements	Established as part of purchase purchase. Yield generally close to prevailing federal rates	Open: can liquidate at any time. Fixed: maturity set for specific period.
Bankers Acceptances	Discounted on a 360-day basis	Backed by credit of issuing bank with specific collateral.
Commercial Paper	Either discounted or interest-bearing on a 360-day-basis	Dealers will often negotiate “buy-back” agreements at a lower rate prior to maturity

time from date of issue. T-bills are negotiable, non-interest-bearing securities that have virtually no default risk and are the most liquid of money market instruments. The Treasury auctions three-month (13 weeks) and six-month bills (26 weeks) on a weekly basis (Mondays) and one-year bills each month.

T-bills are issued at a discount and then mature at par value. The amount of the discount varies at the time of issuance. The difference between the selling price and the face value represents interest income. The minimum denomination is \$10,000, with additional amounts in increments of \$5,000. The price of Treasury and other federal agency securities are quoted in 32nds and halves of a 32nd. For example, a price of 93-12 is 93 and 12/32nds percent. If the par value of the security is \$10,000, then the price would be \$9,337.50 (i.e., \$10,000 times 93.375). The investor would receive \$10,000 at maturity. If the security is a one-year T-bill, the yield would be $(\$10,000 - \$9,337.50)$ divided by $\$9,337.50 = 7.095\%$.

T-bills are sold either by competitive bid or noncompetitive tender. A noncompetitive tender simply states the number of T-bills the buyer desires, which will be awarded at the average price of the competitive bids accepted. The Treasury determines the number of bills it wishes to sell before the bidding begins, and the noncompetitive tenders are allocated first, with the remaining bills awarded to the competitive bidders, highest price (lowest discount yield) bids first.

The buyer of a T-bill does not receive a certificate. Ownership is recorded on the computer at the buyer's clearing bank and, in turn, on the computers at the Federal Reserve System. This book entry system permits the daily trading of billions of dollars of T-bills without the shifting of countless pieces of paper to record the transactions. Each owner gets periodic statements from the bank, acting as custodian, regarding the bills owned.

Treasury securities can be purchased with no commission cost through a program called Treasury Direct or through a broker (at a cost of \$50 to \$60 per transaction). The Treasury Direct program is designed for the investor who intends to hold the securities until they mature and requires that the interest and principal payments from Treasury securities be deposited directly into a checking or savings account. Therefore, investors who want to actively trade Treasury securities must buy them through a broker.

T-bills have virtually no default risk and are the most liquid of money market instruments. An attractive feature of T-bills is the ready market for resale. T-bills are traded at a "discount yield," which determines the size of the discount and the price of the bill. If the holder has a sudden need for funds, T-bills can be sold quickly for relatively predictable prices on the so-called secondary market. This characteristic has earned T-bills the label of "near money."

U.S. Treasury notes are intermediate term obligations, issued in two-year, three-year, five-year, and ten-year maturities. *Treasury bonds* are long-term obligations, issued in maturities from ten to thirty years. Treasury notes and

bonds are interest-bearing, negotiable securities, with coupon interest paid semi-annually. When originally issued, notes with two- or three-year maturities are available in \$1,000 increments, with a minimum purchase of \$5,000. Treasury notes and bonds are backed by the full faith and credit of the federal government and are prime obligations with an implied AAA rating.

The Treasury issues notes in regular cycles, like T-bills, but much less frequently (monthly for two- and five-year notes, quarterly for ten-year notes). Both competitive bids and noncompetitive tenders may be made for notes and all notes are noncallable. T-bonds are auctioned semi-annually (usually in February and August) through a process similar to that used for notes. Some T-bonds have a call feature; they may be called by the Treasury at par five years before the maturity date.

In normal financial markets, the yield on long-term bonds is greater than on short-term instruments, such as T-bills and money market funds. In today's market, however, the gap between short-term and long-term rates is not great. In October, 1998, for example, the yield earned on 10-year Treasury notes dropped to 4.16%, according to the Federal Reserve Board. The last time the yield was this low was in December, 1964. Interest rates fall because the money available to lend is greater than the demand for money to be borrowed. Interest rates also tend to follow inflation, and the current rate of inflation in the United States is very low. Many economists believe that any further decline in interest rates will most likely be in short-term instruments.

3.2 Zero Coupon Treasury Securities

Zero Coupon Treasury securities represent ownership of interest or principal payments on United States notes or bonds. Instead of periodic interest payments, these securities are purchased at a discount of 20% to 90% off the \$1,000 face value. Owners of Zero Coupon Treasuries receive no payment of interest until maturity. These securities are available in a wide range of maturities spanning one to thirty years, and major security dealers maintain an active secondary trading market. The best known zero coupon security is a United States Savings Bond.

The most popular type of Zero Coupon Treasury securities are STRIPS (Separate Trading of Registered Interest and Principal Securities), introduced in 1986 to meet the needs of investors for ready access to the zero coupon securities. The Treasury does not issue STRIPS. Instead, the Treasury declares that certain issues of Treasury notes and bonds are eligible to be split into separate interest and principal payments, with each payment trading as a separate security. This splitting up, or "stripping," of the issue, is done by government bond dealers and others, and not by the Treasury. Investors in STRIPS do not receive a physical certificate to serve as proof of ownership. Rather STRIPS are registered

in the name of the holder and are held in “book entry” form through the wire system of the Federal Reserve, facilitating the trading and liquidation of these securities by the holders. If sold before maturity, the market price will depend on the prevailing levels of interest rates.

Interest earnings from zero coupon securities are automatically reinvested at the same yield basis at which the investor originally bought the bond. This guaranteed compounding feature is attractive enough that investors are willing to pay higher prices (lower yields) for zero coupon securities than for regular coupon bonds.

Older zero coupon securities exist, but none have been issued by the Treasury since the mid-1980s, due to the STRIPS program. CATS (Certificates of Accrual on Treasury Securities) were the most widely traded “physical” Zero Coupon Treasury security, with over \$45 billion (face value) of CATS created. Treasury Investment Growth Receipts (TIGRS) were frequently purchased to provide a college education fund with a minimal initial investment. As a gift, TIGRS offered a tax-advantage to both parents and to a child (with a custodial account).

3.3 Federal Agency Securities

Federal agency securities are excellent investment instruments for local governments and are often characterized as close substitutes for Treasury bills. These securities are issued by government-sponsored, privately owned agencies that have been established to implement various federal policies. These agencies include the Federal Farm Credit Bank System, Farm Credit Financial Assistance Corporation, Federal Home Loan Bank System, National Mortgage Association (Fannie Mae), Student Loan Marketing Association (Sallie Mae), and the Federal Home Loan Mortgage Corporation (Freddie Mac). Mortgage-backed securities pay interest rates about 1.5 percentage points higher than Treasury bonds. Most agencies have minimum denominations of \$10,000 with additional increments of \$5,000. The Financing Corporation and the Resolution Trust Company were set up by Congress in the late 1980s to deal with problems caused by the failure of savings and loan institutions with resulting difficulties for the Federal Savings and Loan Insurance Corporation.

Agency securities are traded in an over-the-counter market, similar to U.S. Treasury obligations and usually by the same dealers. However, the spreads are somewhat wider, and therefore, it is more costly to trade in this market than in the Treasury market. Investors can choose from discounted notes, interest-bearing notes and bonds, and floating-rate notes. Although these securities are not backed by the full faith and credit of the federal government, each agency guarantees its own issued securities. Thus, the risk factor is considered to be very low. These agency securities have less liquidity, however, because the market for agency paper is smaller than for T-bills and T-bonds. While agency securities

trade at a yield premium over T-bills, the interest earnings are subject to federal income tax, and some agency securities are subject to state and local taxes.

3.4 Certificates of Deposit

A certificate of deposit (CD) is basically a savings account with a defined term. The advantage of a CD over a standard savings account is that the interest rates generally are higher. Upon deposit of funds, the investor receives a certificate specifying the terms of the investment, including the interest rate, compounding interval, and date of maturity. The owner of the CD receives both principal and interest on the maturity date. CDs may be purchased for various amounts, but those under \$100,000 usually carry a significantly lower interest rate. CDs are sold according to specified maturity periods, ranging from 14 days to five years. As with other investment instruments, the longer terms often pay significant higher interest rates.

There are two types of CDs: (1) *negotiable*, which the original investor can sell to another party on the secondary market; and (2) *non-negotiable*, which must be retained by the original investor until maturity. The ability to sell prior to maturity if the funds are needed gives CDs the liquidity necessary to make them competitive in the money market and therefore, makes them attractive to investors. Emergency liquidation of a CD prior to maturity can result in a loss of interest, however. Although a CD may have been purchased for only thirty or sixty days, in some cases a bank may require a penalty of ninety days' interest for early withdrawal.

Public organizations should invest only in those CDs that are insured by the FDIC. Not all CDs are federally insured, and some vendors may not volunteer this information. Private companies sometimes issue what they call "certificates". However, these are backed only by the private companies issuing them.

Banks have recently begun to issue *callable CDs*, which at the option of the issuer may be redeemed at par prior to the original stated maturity. The issuer pays the investor a higher interest rate in exchange for this call feature. The CDs have a time period, usually one or two years from the issue date, during which they are noncallable, at the end of which they may be called for the maturity value of the original investment. When interest rates are declining, the probability of the investment being called increases significantly.

3.5 Repurchase Agreements

A repurchase agreement is a contract between two parties whereby one party (e.g., a bank, perhaps acting as an agent for another party) sells an instrument (such as a T-bill) to another party (e.g., a municipality) and agrees to buy it back at a later date (often the next day) at a specified higher price. Repurchase agreements are most often entered into for very short periods of time, usually from

one to twenty-one days. They often represent investment transaction where the original holder of the instrument requires capital to cover short-term obligations. In economic terms, the buyer of the repurchase agreement is lending money to the seller, on a short-term basis, and the loan, in effect, has been repaid when the seller repurchases the securities.

Minimum amount of a repurchase agreement is usually \$100,000, with increments of \$5,000 above the minimum. Lower minimum can sometimes be negotiated, however. Two types of repurchase agreements are available: (1) *fixed*, wherein a specific interest rate and maturity period for the amount invested are established at the outset and if the agreement is liquidated prior to maturity, a penalty might be levied; and (2) *open*, meaning that the agreement may be liquidated at any time, with the interest rate—which may be slightly lower than for a fixed agreement—dependent on the duration of the transaction. A fixed repurchase agreement might be set for \$100,000, with a 12.5 percent annual interest rate for six days. If the agreement is liquidated prior to maturity, the bank has the option of levying a penalty.

Repurchase agreements are the most flexible investment instruments available because they allow a locality to negotiate both yield and maturity. Little risk is involved in such agreements because the principal is guaranteed and the return is fixed. However, no secondary market exists for repurchase agreements. They can be used most effectively to invest unexpected windfall revenues on a very short-term basis while alternative investments are being considered.

3.6 Banker's Acceptances

Banker's acceptances are time drafts or letters of credit negotiated by commercial banks to finance the export, import, shipment, storage of goods, or other foreign trade transactions. [4] These notes do not bear interest, but are sold at a discount. The bank guarantees to honor the full face value of the draft of a private company on the due date (typically ninety days after issue) by stamping "accepted" on the draft. In making such a guarantee, a well-known bank can significantly enhance the marketability of obligations of less well-known companies. Both the issuer and the accepting bank guarantee the draft.

An export-import company, for example, may require \$50,000 as a down payment on a foreign shipment of goods. The company might arrange for an American bank to issue, in the name of the exporter, an irrevocable letter of credit, which specifies the details of the shipment. The exporter can then draw a draft on the American bank and present it to an overseas bank for immediate payment. The draft is returned to the bank that issued the letter of credit, which stamps it "accepted," thereby incurring the liability to pay the draft when it matures. The export-import company is obligated to deposit the \$50,000 plus a specified interest in time to honor the acceptance at maturity. Alternatively, the

bank may accept a time draft from the company for \$50,750, repayable in 21 days. An investor provides the \$50,000, and at the end of the 21 days, the account of the export-import company is charged \$50,750, the investor is paid \$50,600, and the bank retains \$150 as its “placement fee.” The \$600 return on \$50,000 is the equivalent of a 20.5% annual return on investment.

Banker’s acceptances are sold in denominations ranging from \$25,000 to \$1 million. Major investors include the accepting banks, foreign central banks, money market funds, corporations, and other domestic and foreign institutional investors. The risk of default is very low, and dealers in the secondary market create sufficient liquidity for these instruments to continually attract investors. There are no known cases of principal loss to investors in the more than 70 years that banker’s acceptances have been used in the United States. However, the majority of states prohibit local governments from investing in banker’s acceptances and commercial paper (which generally earn higher rates of return than the approved securities).

3.7 Commercial Paper

Commercial paper is an unsecured promissory note issued for a specific amount with a maturity ranging from three to 270 days. Most issues have an average maturity of 30 to 45 days. Commercial paper often is issued by corporations with short-term capital needs, finance companies, bank holding companies, municipal authorities, and more recently, foreign corporations and sovereigns. Automobile finance companies, such as General Motors Acceptance Corporation, are among the largest issuers. Commercial paper typically is sold in large denominations (in multiples of \$100,000) as a discounted security; that is, the issues are purchased for an amount below their face value and then are paid back at full face value upon maturity. The difference between the face value and the purchase price represents the yield earned on the investment.

The rates offered on commercial paper depend on several factors: the credit rating of the issuer, the paper’s maturity, the total amount of money sought by the issuer, and the general level of interest rates. Almost all commercial paper is rated by one of the major rating agencies to provide an indication of the credit risk involved with each issue. Commercial paper offers higher yields than T-bills or other short-term investment options of similar maturities to compensate investors for the higher risk. No secondary trading market exists for commercial paper, and consequently, liquidity is generally low—investors usually must hold the paper until maturity.

At maturity, the commercial paper can be paid off or rolled over into a new commercial paper issue at the prevailing market interest rate. A remarketing agent is responsible for finding new investors if existing investors decide not to reinvest in the paper. Commercial paper typically is backed by a bank letter of

credit or some other type of liquidity provision. If new investors cannot be found and if the issuer is unable to provide the funds to pay-off the existing investors, then the issuer may draw on the letter of credit in order to obtain the necessary funds. As a result of the higher default risks, many states have restrictions against investment by local governments in commercial paper.

The relative ease of issuance of commercial paper results in greater flexibility and the ability to match the amount and timing of funds with the issuer's needs. However, rising interest rates may negate the advantage of short-term paper. The use of commercial paper may be precluded by disruptions in the capital market. The costs of remarketing and obtaining a bank letter of credit or another type of liquidity provision offset some of the interest rate savings normally associated with commercial paper.

Local governments use commercial paper to meet cash management needs, to finance equipment, to provide interim construction financing for capital projects, and to provide loans to business entities. Issuing short term paper at tax-exempt interest rates allows for the possibility of positive arbitrage.

3.8 Money Market Funds

Money market funds may be considered as an alternative to a savings account. The administrator of the money market fund pools the funds of hundreds or even thousands of investors to give each investor interest rates that otherwise may not be possible. Investments made in the amount of \$250,000 and up generally command higher interest rates than do lesser amounts.

Money market accounts often are set up to serve as a combination savings/checking account. Checks can be written on deposited funds. Money market funds are completely liquid, since they may be withdrawn at any time without penalty. Many banks offer a number of "perks" along with money market accounts. Tax free accounts may also be available for municipal funds.

All of the securities described above are excellent, safe investment alternatives for local jurisdictions. The specific yield-liquidity-safety configurations of each should be considered when making investment decisions. A locality usually purchases a mix of investments with varying yield-liquidity-safety arrangements, depending on which considerations public officials wish to emphasize in the overall investment program.

3.9 Stocks

Historically, the stock market has proven to be an excellent long-term investment option. However, short-term performance is virtually impossible to predict. Given that fact, direct purchase of stocks is generally not recommended for short-term investments of public funds. If a fund manager feels inclined to invest

in stocks, he or she should do so through a mutual fund or index fund with a proven track record.

Index funds were originally introduced as an investment strategy for institutional pension funds. In 1976, Vanguard offered an index fund to individual investors. The goal of an index fund is to match the performance of some benchmark that it is tracking, such as the Standard & Poor 500, Dow 30, or Wilshire 5000. The concept of an index is based on the Efficient Market Theory, which asserts that stocks and bond markets are efficiently priced at any given time and that an average investor could not beat the stock market on the whole. In fact, over long periods of time, only a small percentage of actively managed funds have beaten the market. So if you can't beat 'em, join 'em.

A pure index fund invests in every stock in the benchmark index it is tracking. A quasi-index fund tries to outperform the benchmark by using options or futures. Several mutual fund companies carry index funds—Vanguard, Dreyfus, Fidelity, and Bull & Bear to name a few. Index funds have lower portfolio turnover and minimal research requirements and hence lower costs than actively managed funds. Although index funds offer more predictable results, they are fully vested at all times, and if the market declines, so will the fund.

Exchange-traded funds are also available to track the Standard & Poor 500 index, as well as other important domestic and international indexes. The most prominent of these exchange-traded index investments is Standard & Poor's Depository Receipt or SPDR. The SPDR (or "spider") is similar to the closed-end funds, but it is actually called a unit investment trust or UIT. One SPDR unit is valued at approximately one tenth (1/10) of the value of the S&P 500. As a result, SPDRs can be expected to move up or down in value with the S&P 500 Index. Dividends are paid quarterly, based on the accumulated stock dividends held in the trust, less any expenses of the trust.

SPDRs can be bought or sold anytime during the trading day, and they can be shorted. When entering a short trade for a stock, the trade just before the short trade must be at a higher price than the previous trade—called an "uptick". The uptick rule does not apply to SPDRs.

Investing overseas is more difficult than investing domestically. Accounting and reporting rules differ from those in the United States, and it is not an easy task to obtain an accurate picture of a country or an individual company. Therefore, when investing overseas, it often makes sense to use professionally managed investments. The World Equity Benchmark Series (WEBS) are similar to SPDRs. WEBS trade on the American Stock Exchange and track the Morgan Stanley Capital International (MSCI) country indexes. WEBS are available for the following countries: Australia, Austria, Belgium, Canada, France, Germany, Hong Kong, Italy, Japan, Malaysia Free, Mexico, Netherlands, Singapore, Spain, Sweden, Switzerland, and the United Kingdom.

3.10 Derivatives

Derivative securities have recently received considerable media coverage, largely stemming from the decision of some local governments to seek bankruptcy court protection largely as a result of these investments. Derivative securities derive their value from some form of investment, such as Treasury bonds, corporate stocks and bonds, foreign currencies, or commodities contracts. In essence, they are bets that future interest rates will move in a particular direction. Derivatives were originally created to act as a safety device against dramatic changes in interest rates. When used in this manner, they are relatively safe investments. However, investment bankers have concocted a broad range of derivatives, often customized to suit the needs of their clients. When used as a speculative investment vehicle, the risk becomes great.

The simplest type of derivatives are *futures*—contracts that set a price today but specify acceptance or delivery some months hence. A sausage maker might buy hog futures to protect against price increases, whereas a meat packer would sell such futures to ensure against losses if the price goes down. A speculator might either buy or sell in the hope that a change will allow him/her to make money by reversing the transaction tomorrow.

Since every order to sell must be matched by an order to buy, derivative markets as a whole balance out to zero—as opposed to stock markets, where companies may issue shares regardless of whether there are buyers. The price of futures is constrained by the current cost of the underlying commodity. Otherwise, if the price of gold futures, say, rose above a certain point, speculators could profit by buying gold today and holding it for sale on the delivery date.

Another form of derivatives are *options*, which confer the right to buy or sell stock (or other types of securities) at a fixed price for some period. Options are bets on the stock's future price, and the cost of the option is the ante for getting into the game.

Derivatives are designed to help corporations guard against sudden shifts in global financial markets—a plunging yen, a jolt in French bonds, a rapid rise in Hong Kong stocks. One of the more popular derivatives is known as an “interest rate swap,” which allows a company to exchange a fixed interest rate for a floating rate payment. Company A wants to benefit from falling interest rates; Company B would like to protect itself against a possible rise in interest rates. Company A “lends” B \$100 million at a fixed rate (say 8 percent), and B “lends” \$100 million at a variable rate. In some cases, such arrangements can greatly reduce the financing costs to the company. Each month, they balance accounts; if the variable rate is greater than 8 percent, A pays B the difference; if it is less, B pays A. Although the loan principal is recorded on the books of each company, it is an accounting fiction.

In the derivatives market, these swaps take on a value of their own. By

looking at today's interest rate, investment analysts can figure out how much income a swap will generate and for whom, and then can sell the swap for an appropriate price. Derivatives often are designed to benefit from a falling interest rate. As the rate falls, the securities derive an additional value, and it is this "margin" that is sold to other investors. To add another layer of complexity, companies may exchange the payments from debts denominated in different currencies—for example, the income from U.S. Treasury bills for dividends generated by a portfolio of Japanese stocks. Each combination allows the participants to trade a different set of potential risks and benefits.

Derivatives offer higher yields than the average market rate, which makes them attractive at times when short-term interest rates are low. However, when the Federal Reserve began to raise interest rates in 1994 in an effort to cool the economy, many derivatives loss value dramatically.

A survey by the General Accounting Office in early 1994 indicated that 288 from among 3,737 state and local government agencies reported using derivatives to some extent. In October 1994, the House Banking Committee staff compiled a list of 19 government or public funds that had suffered substantial losses due to derivatives. Investors who had borrowed money to buy derivatives faced particularly harsh losses. An investment fund run by the treasurer's office of Orange County, California, reported a \$1.7 billion loss, partly because of derivatives. About \$8 billion of the \$20 billion portfolio of Orange County was invested in derivatives. About 185 cities, schools districts, and other government agencies in Southern California had money invested in that fund. The Florida Treasurer's Office reported a \$175 million loss in its portfolio, partly due to derivatives.

The problem stems from the fact that some investment firms sold extremely complex securities and may not have adequately informed the customers of the risks. Local governments and other public organizations not well-versed in the vagaries of the investment marketplace saw only the opportunity for high yields on short-term investments at a time when other options were hovering around 3 percent.

The National Association of Securities Dealers has issued a set of rules to govern the sales of government securities, which includes "structured notes," a type of derivative backed by government bonds. The Federal Reserve Board has ordered investment banks dealing in derivatives to provide customers with a more complete explanation of the pitfalls of certain risky derivatives. Derivative securities were the hottest area of investment in the early 1990s, growing to over \$12 trillion in contracts by the end of 1992. But like many rapidly rising investment schemes, the fall can be even more rapid, and for unsuspecting municipal governments and other public organizations, the consequences can be devastating. The Eastern Shoshone Tribe in rural Wyoming invested nearly \$5 million in mortgage derivatives in 1993 at the encouragement of a brokerage firm in Hous-

ton, Texas. The values dropped substantially leaving the 3,000 members of the tribe (70% of whom are unemployed) with little to show for their investment.

Municipal derivatives were originally developed for and sold to the municipal bond mutual fund industry. Few, if any, municipal derivatives have been sold to individual investors, but that could change at any time, since sales to individuals have been proposed at major municipal bond firms. Municipal derivatives are created by dividing a fixed-rate bond into two parts, called a *floater* and an *inverse floater*. While the interest and principal payments of the issuer remain unchanged, the division of interest payments between the floater and the inverse floater may vary during the life of the bond. The rate paid on the floater is a variable rate, determined by one of the methods used to set rates on variable rate bonds. A common method is to have a periodic auction of the floaters (often every 35 days to compete in the short-term investment market). The rate paid on the inverse floater is the difference between the fixed rate paid on the original bond and the amount paid on the floater.

To illustrate this process, assume an underwriter takes \$200,000 (face value) in bonds with a 6% coupon rate, maturing in 20 years and splits this amount into two parts: \$100,000 face amount of floaters and \$100,000 face amount of inverse floaters. Further assume that the initial rate set on the floaters (by auction) was 3.5 percent; the \$100,000 face amount of floaters receives \$3,500, while the \$100,000 face amount for inverse floaters receive \$8,500 (i.e., the difference between the \$12,000 in interest earned at the fixed rate of 6% and the amount allocated to the floaters). If short-term interest rates increase, the interest paid on the floaters will increase, and the interest paid on the inverse floaters will decrease. Not only will the income from the inverse floaters decline, but the price will also decline, along with bond prices generally.

3.11 State Investment Pools

A number of states have established investment pools to facilitate the amalgamation of local government funds to achieve a wider market for short-term investments and the yield advantages of larger investment blocks. These pools should be particularly attractive to smaller local governments seeking greater returns on their investments through the professional management that such fund consolidation can achieve. The success of these investment pools, in large measure, depends on the fiscal skills and prudence of those who manage them. The \$1.7 billion loss experienced by the Orange County Investment Pool in 1994 illustrates the potential problems with such pools when higher risk investments and overextended borrowing practices are pursued. To bolster confidence, some states have sought ratings for their investment pools, have adopted guidelines for the regulated money market regarding the average maturity of holdings, and, in some cases, have contracted with private financial advisors to manage these pooled investment funds.

3.12 Arbitrage

Proceeds from a municipal bond issue are usually put into short-term investments until either they are spent on their intended use or, in the case of a refunding issue, used to call the original bonds. Both of these situations can generate arbitrage earnings. Arbitrage in the municipal bond market is the difference in the interest paid on an issuer's tax-exempt bonds and the interest earned by investing the bond proceeds in taxable securities. If interest rates on the investments are below the interest rates on the bonds, then there is "negative arbitrage."

During the 1980s, the federal government became concerned that municipal governments were abusing their power to borrow by issuing bonds unnecessarily in order to try to earn arbitrage. The 1986 Tax Reform Act established a variety of restrictions and regulations designed to prevent abuse. Federal arbitrage restrictions apply if the yield on the investments is $\frac{1}{8}$ of 1% greater than the interest rate on the bond issue. For example, if the yield on the refunding bond is 6%, the issuer is limited to a 6.125% return on the investment of the bond proceeds. The issuer can purchase special low-yield U.S. Treasury securities, called the state and local government series, to meet this requirement if the normal market instruments are paying more.

There are exceptions to the yield restriction, however. Arbitrage may be earned for certain temporary periods if the bond proceeds are used for certain kinds of projects and spent within specified periods of time. At the end of the permitted temporary period, the issuer must restrict the yield on the remaining proceeds.

Should the issuer earn prohibited arbitrage that had not been foreseen, any earnings in excess of the bond yield must be returned to the U.S. Treasury in a process called "rebating." Two possible penalties for an issuer failing to comply with rebate requirements are (1) the IRS can declare the bonds taxable retroactive to the date of issue or (2) the IRS can assess a monetary penalty. Failure to adhere to federal arbitrage provisions can, in certain circumstances, cause the municipal bonds to lose their tax-exempt status.

Another regulation limits advance refundings to once for each original bond issue. This limit prevents governments from repeatedly refunding the same issue each time interest rates drop in an attempt to realize even greater arbitrage earnings. Therefore, issuers must carefully choose the timing of an advanced refunding. Private activity bonds cannot be advance refunded at all. This restriction prevents the federal subsidization of private activities through tax-exempt arbitrage earnings.

4 PORTFOLIO MANAGEMENT

The fundamental objective of cash management is to maximize yield and minimize risk. To this end, public officials need to formulate a portfolio management

strategy that reflects the overall objectives of the community and can be applied to govern the actions taken on a day-to-day basis.

4.1 The Fund Manager

Individuals assigned the responsibility for managing the cash reserves of public entities often are entrusted with significant discretionary authority. Ideally, the fund manager should possess both formal education and related experience in investment banking, financial counseling, or related fields. A strong track record is a must. Equally important are positive character traits and a demonstrated practice of using good common sense.

A fund manager may single-handedly lead a government to financial ruin if bad investments are made. From that perspective, a fund manager has more potential to do harm to a government than does the chief executive officer. For that reason, public officials must exercise considerable caution when selecting a fund manager.

Over the past several years, the standards of discretion for fund managers have changed, in some cases considerably so. Several states have adopted legislation regulating the amount of discretionary authority that can be granted to fund managers. The gist of these laws is that fund managers are expected to handle public funds in a responsible, generally conservative, manner so as to minimize the likelihood of loss of principal. A fund manager should exercise extreme caution when considering investments where even a remote possibility of loss of principal exists.

On the other hand, a fund manager may be held accountable if the funds are invested in such a conservative manner that the earning potential of the funds is not maximized. The mix of investments entered into by the manager must be appropriate to the fiscal condition of the entity represented and must take into consideration the status of the state and national economy.

4.2 Building an Investment Structure

The first step in managing an investment portfolio is to develop cash flow projections to reflect the impact of various economic conditions on the overall availability of funds for investment. An intervening credit crunch and high interest rates, for example, may cause suppliers to shorten their credit terms and to press for more prompt payment of invoices. Conversely, cheap credit and lower interest rates may ease supplier terms. Information on these broader conditions should enable the fiscal manager to arrive at reasonable predictions as to how much money will be available to invest, and for how long.

The next step is to formulate a policy on investments. As suggested earlier, many public officials tend to overemphasize safety and, as a result, invest in se-

curities with relatively low rates of return. In formulating an investment policy, the financial manager should investigate the investment instruments available in the market, determine their relative yields for the maturities required, and evaluate the difference in risk associated with them. On the basis of this evaluation, a policy should be developed and submitted to a finance committee for review and approval. In this way, the financial manager can attain broader counsel on the implementation of an appropriate investment policy, gain insight, and decrease personal liability.

In general, the longer the maturity of an investment, the higher the yield. For this reason, it is important to design an investment pattern whereby each security will mature close to the time when the money invested will be needed to cover operational needs. For example, a locality may determine through its forecasts that a given sum of money will be available for a 90-day period. This amount may be invested in, say, a three-month T-bill. Another sum, available for only thirty days, might be invested in a certificate of deposit. In some cases, funds may be available for only a day or a week at a time. These funds might be invested in repurchase agreements or other securities that can be held for indeterminate periods.

Large local governments may have millions of dollars to invest and may have several employees whose primary responsibility is handling these investments. Smaller jurisdictions may be unable to afford an investment manager because of the relatively small amounts to be invested, often for only a few days at a time. Such localities may authorize their banks to invest automatically any surplus funds in money market funds, certificates of deposit, or other short-term securities.

4.3 Constraints on Public Investments

The inadequacy of resources is a major constraint on the maximization of investment returns. A locality cannot invest in the money market unless it can raise enough revenue to satisfy current obligations and accumulate a surplus. Whereas some local governments are relatively affluent and have large tax bases, others often are hard-pressed to maintain and deliver needed services to their citizens. Thus, central to the issue of optimal return on investment is the question of resources: (1) the availability of surpluses to invest and (2) the technical expertise necessary to manage a portfolio of investments.

Investment activities of local governments are regulated by state statutes that are presumed to reflect public policy. Some of these regulations restrict the investment opportunities available to localities, thereby depriving the public of the benefits of efficient investment of public funds. Such regulations were once necessary to control the imprudence of some local officials in the management of public funds. However, more recent developments have tended to render typical state investment laws obsolete:

First, the money markets themselves have become increasingly sophisticated and competitive, with a myriad of financial institutions seeking investment capital through new securities and instruments. Thus, the options available to investment officers have increased dramatically. [5]

Securities are now available with varying levels of risk, investment return, and maturities. Whatever the financial objectives of a locality, a range of appropriate investment strategy is available.

Secondly, the sophistication of state and local government investment officials has grown in the past decade. . . . With increasing specialization and professionalism common throughout the state and local government sector, these public money managers increasingly rival their private sector counterparts in their understanding of investment securities and relative risks and rewards. [6]

At the same time, some local jurisdictions have self-imposed additional restrictions and limitations on their investment policies. Localities have tried to mitigate risk by setting up a variety of investment criteria designed to diversify investment holdings and avoid investments in weak financial institutions. The objective is to identify appropriate eligibility standards, investment limits, and safekeeping requirements. The over-riding goal remains to minimize risk and maximize investment income.

The requirement that banks pledge securities as collateral to secure public deposits and investments imposes excessive costs on the financial institution—costs that are usually passed on to the public entity in the form of reduced rates of return. Experts argue that in the event of widespread failures in the banking system, many of the securities used for collateral pledges could prove equally worthless. The positive benefits associated with collateralization become most obvious, however, when a public organization deals with a single financial institution and the institution defaults because of poor management or some other micro-economic factors. A case in point is the 1982 collapse of Penn Square Bank, in which collateralization provisions protected the assets of the state and its political subdivisions. Collateralization is akin to an insurance policy aimed at protecting the safety of public deposits.

4.4 Exogenous Factors

Exogenous factors may be more important in determining investment yields than the characteristics of the investment instruments themselves or the ability of the local government to accumulate resources for investment. *Maturity dates* are an important determinant in choosing investments. Suppose, for example, that an investment officer determines that about \$500,000 will be available for invest-

ment from May 1 to June 10. After taking bids from several banks and brokers, a list of maturity dates and yields is developed, as follows:

Issue	Maturity Date	Yield
T-Bills	June 11	6.25
Certificate of Deposit	June 8	5.80
Banker's Acceptances	June 13	6.75
Repurchase Agreement	June 15	7.20

Although the banker's acceptances and repurchase agreements offer the highest yields, their maturity dates occur after June 10, when the principal must be available for other uses. The CD has the lowest yield, but may be considered the best alternative because it matures prior to the June 10 date. The T-bills mature on June 11 and may be the best choice, depending on the possibility of a one-day leeway in the need for these invested funds. Although the amount available for investment is substantial, the primary consideration may be the maturity date of the investment, despite a smaller yield than might be considered optimal.

Interest rates have fluctuated widely over the past several years. It is important for a portfolio manager to understand how these fluctuations can affect investment decisions. The manager should endeavor to predict the interest rate cycle and use those predictions in managing the jurisdiction's investments.

It may be determined, for example, that \$125,000 is available for investment during a 180-day period, after which the principal and interest will be applied to finance a capital improvements project. After taking bids from several investment firms and banks, the manager decides to invest the funds at 5.15 percent. No consideration is given to the possibility that interest rates could be rising, and investment is "locked in" at 5.15 percent. The expected yield on this investment is:

$$\$125,000 \times 0.0515 \times 180/360 = \$3,218.75$$

Instead of locking in the investment for the full 180 days, the manager could have decided to purchase a short-term CD and to reevaluate the movement of interest rates at its maturity. The rate bid for a 30-day CD is 5.075 percent; therefore, the expected yield for the 30 days is \$528.65. At the end of 30 days, bids are again sought and the following quotations received:

14 to 30 days	5.45%
31 to 60 days	5.88%
61 to 90 days	5.95%

A new CD might be purchased for another 60 days at 5.88 percent, with the expectation of a further evaluation of the interest rate situation at the end of that

time. The expected yield for this 60-day period on \$125,528.65 (i.e., \$125,000 + \$528.65 interest) is \$1230.18. Assume that at the end of the 60-day period, the interest rates have peaked. At that time, the cash manager decides to “lock into” the current rate of 5.75 percent for the remaining 90 days. The expected interest yield on the \$126,759.03 (\$125,528.85 + \$1230.18) is \$1822.16. Thus, under this managed approach, the total interest earned would be \$528.65 + \$1,230.18 + \$1,822.16 = \$3,580.99. This yield is \$362.24 more than under the initial approach. This second approach also creates a measure of liquidity to respond to unexpected cash flow problems.

4.4 An Investment Matrix

An investment matrix for local government is presented in Table 4.2. *Characteristics* refer to broad sets of circumstances that reflect the economic and fiscal environment of a given jurisdiction. *Emphasis* suggests the elements to which financial managers may attach the greatest importance, given the stated characteristics. *Investment options* identify the types of investments that best “fit” the characteristics and emphasis used to describe a particular jurisdiction.

It is important that the yield-liquidity-safety mix be considered in every investment decision. The degree of emphasis placed on any particular element is a function of the fiscal and economic circumstances confronting the locality. When the resources of a jurisdiction are limited, yield cannot serve as the primary objective, because high-yield securities usually have correspondingly higher risks associated with them. A resource-limited community must be more concerned with the safety of its investments and its ability to convert these investments to cash on short notice. A small, rural jurisdiction, with relatively limited resources:

cannot afford the luxury of losing any part of its principal investment. As a result of its concern for security, its investment options are limited to securities with rapid convertibility to cash so that the ability of the jurisdiction to undertake major capital expenditures is not handicapped by funds being tied up in non-maturing financial assets. [7]

The investment options available under such circumstances are determined by the safety-liquidity considerations. The investment of such localities, of necessity, are concentrated in low-risk, low-yield securities, such as T-bills, agency securities, and participation in state investment pools. The locality is forced to accept a level of yield that is not optimal as a trade-off for the safety of its investments, while at the same time retaining the leverage to convert its investments easily to cash if the need arises.

Jurisdictions having appreciably larger annual budgets, larger population bases, and professional management staffs are likely to be more aggressive in their investment strategies. While their strategies pay adequate attention to

TABLE 4.2 Investment Matrix for Local Government

Characteristics	Emphasis			Investment Options
	Yield	Liquidity	Safety	
Limited resources; low tax base; minimal cash balance		X	X	<ul style="list-style-type: none">• Investment of cash balances at guaranteed rates through local banks and other depository institutions• Treasury bills• Agency securities• State investment pools
High income; high tax base; large cash balances; expanding economy	X			<ul style="list-style-type: none">• Certificates of deposit• Commercial paper• Repurchase agreements• State investment pools
Minimum training in financial management	X		X	<ul style="list-style-type: none">• Contracts with banks to invest excess balances• Treasury bills• State investment pools
Elected treasurer			X	<ul style="list-style-type: none">• Funds left uninvested• Certificates of deposit• Treasury bills• Agency securities• State investment pools
Cash investment manager	X	X	X	<ul style="list-style-type: none">• Treasury bills• Agency securities• Certificates of deposit• State investment pools
High rate of tax delinquency		X	X	<ul style="list-style-type: none">• Treasury bills• State investment pools
Low rate of tax delinquency	X		X	<ul style="list-style-type: none">• Certificates of deposit• Treasury bills• State investment pools
Upward trend in interest rates	X	X		<ul style="list-style-type: none">• Certificates of deposit (purchased on a short-term basis)• Treasury bills
Downward trend in interest rates			X	<ul style="list-style-type: none">• Certificates of deposit (locked in at prevailing high rate of interest)• Commercial paper
Capital expenditure needs		X	X	<ul style="list-style-type: none">• Treasury bills• Certificates of deposit• Repurchase agreements

safety and liquidity, the yield of investments is pursued with greater intensity, often resulting in rates of return 2 to 4 percentage points higher than smaller jurisdictions. [8]

A third category of jurisdictions can be identified that have enormous amounts of expendable and investable resources.

The annual budgets of the jurisdictions in this category are beyond the billion dollar mark; their daily cash balances and investable amounts run into several millions; and their investment realize rates of return between 11 and 12.99 percent. [9]

Investment models adopted in these localities are designed to predict the movement of interest rates over time, thus enabling financial managers to ride the interest rate curve with their investments. These jurisdictions are not threatened by cash flow problems but have a steady inflow of revenue through taxes, fees, and transfers. As a consequence, financial assets can be structured to emphasize high-yield, long-term securities.

The failure in the 1980s of several investment companies specializing in government securities, combined with the more recent near bankruptcies of several local governments resulting from highly speculative investments, has forced financial managers to rethink their investment strategies and has led to a renewed emphasis on the safety of local government investments. In the 1980s, investment companies bought securities from savings and loan associations seeking to raise cash temporarily, then sold these securities as repurchase agreements to local governments with idle cash to invest. The local governments that lost money in these incidents neglected a cardinal rule of investment: get possession of the securities. They allowed the dealers to retain control of the securities, and some of these dealers, in turn, pledged the same securities to other investors. State laws guiding public investments generally require localities to take physical possession of investment securities as well as collateral.

The structure of many local governments is not consistent with the maximization of returns in cash management. Some local officials do not see the utility of "gambling" with the taxpayers' money and prefer to leave surplus funds secured on deposit with banks. To the extent that these funds are not invested, returns cannot be optimized. In addition, several procedural requirements often are attached to cash management in local government, including:

1. Requirements that cash managers obtain prior approval before an investment security is bought or sold
2. Requirements that written quotations be obtained for all investment purchases
3. Prohibitions on the use of wire transfers for investment transactions
4. Restrictions that narrow the range of potential money market instruments

Legal constraints influence the formation of banking relations, the level of bank compensating balances, and the safety-liquidity requirements of the securities in which a local government may invest. Local governments often cannot achieve optimal returns on their investments because they are not at liberty to use their discretion in investing in securities that meet their individual needs.

Political constraints are evident in several forms, including prohibitions against the use of nonlocal banks or investing outside the local area and the practice of sharing deposits among all banks in the community. The primary argument in support of these prohibitions is the notion of “keeping the money at home.” As long as investments are limited to local options, however, local governments may be forgoing higher interest rates available in other markets.

5 SUMMARY AND CONCLUSIONS

Safety of principal is an important component of any investment strategy. Concerns about safety, which had diminished over the previous decade, have again been raised as a result of several recent governmental investment disasters. The renewed state of awareness concerning investment safety has led to the enactment of new legislation in several states. Existing laws (1) limit banks with which local governments can do business, (2) specify the amounts that can be left on deposit in each bank, and (3) require collateral for uninsured funds. Additional requirements that mandate fund oversight and specify requirements regarding appropriate investment instruments are likely.

In addition, public funds on deposit in commercial banks and savings and loans associations are protected under the Federal Deposit Insurance Corporation and the Federal Savings and Loan Insurance Corporation. Under these circumstances, safety cannot be used as the only measure of an investment strategy. Nonetheless, investment options open to local governments have been proscribed by state laws and by self-imposed local statutes. Local financial managers must operate within these parameters or be in violation of the law.

Liquidity is an important investment consideration, especially when a need for funds occurs unexpectedly. Careful planning and structuring of the portfolio mix, however, will ensure that liquidity is built into the investment strategy. Since various securities mature in 30, 90, 180, or 270 days, one year or even longer, a locality can structure its assets in such a way that securities will mature at the time the funds are needed for other commitments.

Yield, or return on investment, is the paramount criterion for measuring the success or failure of an investment strategy. Confronted with continuing demands to provide improved and expanded services, local governments face (1) the need to expand revenues if these demands are to be met, (2) already heavily burdened taxpayers, and (3) narrow restrictions on their ability to borrow to finance public expenditures. Under these circumstances, local governments can be

expected to respond enthusiastically to any source of additional revenue that does not involve increased taxation or additional debt. The financial asset portfolio is such a source, and the net return on investments can be an especially important source of revenue.

The role of the financial manager in the foreseeable future is likely to become more complicated, with stronger regulatory oversight. Large investments will more likely require approval of finance committees and/or concurrence of investment experts. The role will require more consensus building, self education, and legal understanding. The primary benefits of an investment strategy, however, will continue to be measured in terms of the increased interest earned through the investment of temporarily idle cash.

ENDNOTES

1. Public Affairs Research Council of Louisiana, *Investment of Idle State Funds* (Baton Rouge, La.: Public Affairs Research Council, 1956), p. iii.
2. Municipal Finance Officers Association, *A Treasury Management Handbook for Small Cities and Other Governmental Units* (Chicago: Municipal Finance Officers Association, 1979), p. 41.
3. Rhett D. Harrell and Lisa A. Cole, *Banking Relations: A Guide for Local Government* (Chicago: Municipal Finance Officers Association, 1982), p. 27.
4. Frank Pataucci and Michael Lichtenstein, *Improving Cash Management in Local Government: A Comprehensive Approach* (Chicago: Municipal Finance Officers Association, 1977), p. 59.
5. Committee on Cash Management, *Model Investment Legislation for State and Local Governments* (Chicago: Government Finance Officers Association, 1984), p. 6.
6. *Ibid.*, p. 6.
7. Chukwuemeka O'Cyprian Nwagwu, *Cash Management in Local Governments* (Blacksburg, Va.: Center for Public Administration and Policy, 1985), p. 203.
8. *Ibid.*, p. 203–204.
9. *Ibid.*, p. 204.

5

Analytical Techniques for Financial Planning and Management

The common denominator among the various resources of any organization is the cost involved in their utilization. Therefore, the focus of management is usually on the most effective deployment of fiscal resources. The consequences of past decisions form the basis for much of the financial and cost analysis in complex organizations. Financial planning and management, however, demand analytical techniques that can accommodate the risk and uncertainty inevitably associated with future decisions.

1 TRENDS IN LOCAL GOVERNMENT FINANCE

The impetus for sound financial planning and cost control in public organizations arises from a number of factors, including a significant decline in federal assistance, the growing impact of fiscal restrictions and increasing public demand for accountability, and the difficulties of marketing bonds amidst a highly volatile environment for investments. The financial difficulties of New York City (1975) and Cleveland, Ohio (1979) thrust financial management into public discourse. However, more recent events, such as the severe fiscal problems of Philadelphia (1991), Bridgeport, Connecticut (1992), and Washington, D.C. (1995), and the bankruptcy of Orange County, California (1995), have shaken public confidence in the ability of local governments to manage their fiscal resources. As a result,

the financial functions of public institutions have undergone significant, and perhaps permanent, changes. The new reality is that “those responsible for government fiscal resources—finance directors, cash managers and planners, and analysts—will become increasingly entrepreneurial and make decisions in the context of comprehensive economic and financial strategies as they continue to be increasingly constrained by factors outside their control.” [1] To be successful, financial managers must be cognizant of the following emerging trends in local government finance: (1) an entrepreneurial outlook, (2) a strategic approach, and (3) increasing interdependence. [2]

1.1 An Entrepreneurial Outlook

Financial managers in local government must become more than strictly administrators of their respective areas of responsibility. They must adopt more of an entrepreneurial outlook in their approaches to these responsibilities. The fiscally conservative bent of the nation means that local financial managers must expand their responsibilities from merely controlling the public purse to accommodating the necessity for long-range planning, risk management, and innovative ideas that stimulate and sustain economic growth—factors critical to securing the local revenue base.

1.2 A Strategic Approach

Schick has noted that the budget in the public sector has three important functions: strategic planning, management, and control. [3] As an instrument of strategic planning, the budget should reflect strategic choices made by the broader society. These choices can be used to enhance or retard economic development and to plan for or ignore the future.

The strategic approach requires financial officers to develop cash budgets that will enable the jurisdiction to determine its revenue and expenditure patterns and to project these patterns into the future. Forecasting enables financial officers to be more aware of the different possibilities and options that can be employed to achieve fiscal objectives.

1.3 Increasing Interdependence

As Chapman has pointed out, increased interdependence will occur in two areas. The first is in the political arena, where financial decisions may be both “constrained or enhanced by priorities of various departments within the jurisdiction, by mandates and economic conditions within the U.S.” [4] The other area where interdependence occurs is in the budget itself. On the revenue side, for example, actions to enhance the productivity of a particular revenue source could adversely affect the availability of other sources of revenue. An increase in corpo-

rate taxes, for example, may result in corporate relocation with a consequent decline in both sales and corporate tax revenue. On the expenditure side, increases in privatization may result in reduced direct labor costs, but the same aggregate costs may still be incurred. Financial managers and public officials must work together to make sound decisions concerning revenue and expenditure trade-offs, based on compelling empirical analyses concerning issues of tax incidence, marginal costs, and opportunity costs.

2 ANALYSIS OF FINANCIAL DATA

Various indicators have been used for many years in the private sector to measure the well-being of a business with respect to liquidity, leverage, profitability, and the utilization of assets. These indicators, for the most part, are derived from the accounting records of the organization. Accounting data reflect important financial dimensions of an organization. However, analysts need to be aware of several inherent weaknesses of accounting data and to interpret their analyses in light of these weaknesses.

2.1 Limitations of Accounting Data

A major limitation is that accounting data do not reflect non-measurables, such as the quality of the services being delivered or the overall performance of the service delivery agents. Performance is usually measured in terms of a balance sheet, which in the private sector reflects profits and market share and in the public sector, the fiscal objective of “breaking even.” Measures of performance, such as customer satisfaction or accommodation of client needs, can only be indirectly reflected in balance sheet and other financial statements.

Second, accounting data often goes unchallenged because public officials lack the specialized knowledge necessary to interpret the accounting statements or to verify the authenticity of some of the data reported by the accountants. The Governmental Accounting Standards Board (GASB) has developed a new “model” in an effort to make annual financial reports of state and local governments easier to understand and more useful to those who apply these data in making decisions. [5] The new model requires an objective discussion of the basic financial statements, comparing current and prior years; an analysis of the overall financial position, including all known facts, decisions, or conditions expected to have a significant impact on current and future operations; and an analysis of significant variations between the original and final budget and the actual results for the general fund. These new GASB guidelines will be discussed in some detail in Chapter 9.

Third, accounting data available for public inspection are aggregates and, as such, often lack the details necessary for making informed decisions.

Accounting data may also be biased. For example, the valuation of assets in terms of their acquisition cost or market value may result in biased information if the value of the assets has risen. [6] In this connection, GASB Statement 34 provides practical guidance for establishing estimates of the cost of services and for reporting infrastructure assets in order to demonstrate greater accountability.

2.2 Strategic Funds Programming

A fundamental approach to financial analysis considers the sources, flow, and uses of organizational resources in an effort to identify discretionary funds that might be used to implement new programs and strategies. This technique provides a future-oriented perspective on financial requirements and potential sources to meet those needs. As such, it can be applied to organizations in both the private and public sectors.

Introducing a new program or strategy is something like attempting to rebuild a ship while at sea. The current organization must be kept afloat and operating properly at the same time as programs are introduced to move the organization into new areas. Managers may become so enamored with the potential opportunities of a new strategy that they fail to provide sufficient support to current operations. [7] Therefore, in identifying appropriate sources of funds to implement the new strategy, management must also weigh the fiscal needs of the current organization.

The first step is to determine how current fiscal resources are allocated from period to period. This *cash flow analysis* can help identify sources of discretionary funds and show where potential adjustments must be made. Generally speaking, an organization can generate new funds from three sources:

1. Regular operations and other internal sources (such as, profits after taxes, depreciation, disposition of excess inventory or unused facilities, increased revenue through adjusted tax levies).
2. Expansion of short-term debt consistent with the fiscal structure of the organization (for example, having banks provide extended lines of credit, leasing rather than buying equipment, factoring accounts receivable).
3. Changes in the fiscal structure of the organization to permit the addition of new long-term debt or equity funds.

Funds accumulated from these sources generally comprise the total funds available for managing the organization's operations. These funds, in turn, fall into two categories: baseline funds and strategic funds.

Baseline funds support the current, ongoing operations of the organization. They are used to pay current operating expenses, provide adequate working cap-

ital, and maintain current plant and equipment. Baseline funds are used to maintain (1) the same level of production or services, (2) the organization's "market share," or (3) a specified, ongoing rate of growth.

Strategic funds are invested in the new programs required to meet the organization's goals and objectives. They are used to purchase new assets, such as equipment, facilities, and inventory; to increase working capital; and to support direct expenses for research and development, marketing, advertising, and promotions. In the private sector, strategic funds are also used for mergers, acquisitions, and market development. A market penetration strategy, for example, may call for a more intensive investment of funds in the current business. A market expansion strategy usually requires aggressive use of strategic funds for advertising and promotion. A company must use strategic funds to produce more diverse products or services and to develop new markets for them.

The programming of strategic funds begins with the identification of basic organizational units (program or budget units) and the formulation of goals and objectives for these units. The total amount of strategic funds available to the organization can be determined by subtracting baseline funds from total assets (revenue or appropriations). Strategies must be formulated to carry out the goals and objectives of each unit. Once estimates have been made as to the funds required for each strategy, they can be ranked according to their potential contribution to the achievement of the identified goals and objectives. In undertaking this ranking, the kinds of strategic funds available and the level of risk involved must be taken into account. Procedures for dealing with risk will be described in greater detail in a subsequent section of this chapter.

The available strategic funds should be allocated to each program according to some set of priorities. Key decision points concerning risk and return are encountered (1) when funds available from internal sources have been fully consumed, and (2) when readily available credit sources have been exhausted. At this point, proposed strategies must be evaluated in terms of changes required in the financial structure of the organization. The final step is to establish a management control system to monitor the generation and application of funds to achieve the desired results.

The programming of strategic funds simply identifies feasible options under different fiscal assumptions. A further assessment of risk and return on investment must be made before the final option is chosen. This approach is discussed in further detail in a subsequent chapter under the heading of Service Level Analysis.

2.3 Computer-Assisted Financial Planning

In recent years, computer-based methods of analysis have become a significant tool for financial planning. Interactive financial planning software allows the non

programmer to use the computer as an on-line, real-time decision support system (DSS) to test assumptions upon which a plan is based, to consider the risk associated with different available alternatives, and to explore a range of possible decision scenarios. Traditional methods of financial analysis often can only explain from hindsight why things went right or wrong under a particular plan of action. Computer-assisted methods of financial planning, however, provide a basis for the continuous fine tuning of a plan so as to anticipate things to come and adjust to unanticipated events that may arise as the plan is implemented.

In early approaches to interactive financial planning, a fixed structure was used to provide the capacity to pose “what if” questions about certain input variables. These programs usually display the results as pro forma balance sheets or income statements. Simultaneous equations are used to project the organization’s fiscal performance. Sales revenues often are the driving force in these models—alternative income and balance sheet projections can be made by using different sales forecasts. The balance sheets show expected changes in assets and liabilities based on various scenarios with regard to sales.

Obviously, the results of such analyses are only as valid as the forecasts made by the planners. However, running through different fiscal scenarios increases management’s awareness of potential problems and its preparedness to deal with them when they occur.

Individuals lacking experience in computer programming often were unable to use these early models, however, for two reasons: (1) the need to learn a new, unfamiliar computer language that often was difficult to communicate; and (2) the inflexibility associated with procedural languages, which force the user to make input statements in a sequence different from the structure of the actual problem. Software packages designed to eliminate these problems are now available. Such software is, in the jargon, “user friendly.” Menus and submenus are written in English and allow users with very little programming experience to select the analytical steps appropriate to their needs. These packaged programs use a nonprocedural approach in which no “correct” or predetermined sequence of statements is required to describe the problem. Thus, they offer a great deal of flexibility in terms of both model design and subsequent modifications that may be necessary.

Modern interactive packages for financial planning provide a number of important options in addition to generating automatic reports for various “what if” questions. Models applicable to the particular conditions confronting an organization can be developed and used to (1) project financial statements, (2) analyze cash flow requirements, (3) optimize leverage, (4) compare lease versus purchase options for different depreciation schedules, and (5) evaluate the impact of proposed mergers or acquisitions. Models can often be consolidated or combined so that managers in different functional areas of the organization can use the same financial planning package (and assumptions) to design models to

meet their particular needs. By combining these models, it may be possible to attain an overall “meta-model” for the whole organization.

Goal-seeking procedures can also be applied in such models. Certain targets (goals) are set by management, and the computer works back from these targets to determine the conditions that will have to prevail to achieve the specified goals. Goals can be viewed as constraints to problem solving; in some instances, it may be necessary to relax some of the constraints (lower the targets) in order to arrive at a feasible solution.

Available software packages also make it possible to perform sensitivity analyses to determine how an optimal solution might change if some of the key variables in the model should change. Models often respond to key assumptions, while the majority of variables may have little effect on the results. Thus, management has a means of selecting those variables that require a more detailed analysis. This selection is the first step in performing risk analysis.

In the application of *deterministic models*, it is assumed that a single estimate can be specified for each of the input variables. Behind any precise calculation, however, are often data that may not be precise. Taken together, these combined uncertainties could result in a total uncertainty of major proportions. Many computer-based systems for financial planning, however, have the capacity to introduce and analyze risk and uncertainty, as will be discussed in a later section of this chapter.

3 ANALYSIS OF COST DATA

Accounting data can be useful in assessing internal strengths and weaknesses of an organization. Numbers connote precision, and precision is often assumed to have its own virtue. It is important to bear in mind, however, that the numbers provided in balance sheets and income statements are condensed from many detailed accounting records and reports. Therefore, any further analyses based on these data must be undertaken with full awareness of the abstractions that have already been made. Although accounting data reflect the fiscal dimensions of an organization, other important factors may impinge on the overall performance of the organization, however, and must also be considered.

3.1 Factors Influencing Future Costs

Any framework for financial planning and management must include those factors that influence the future costs of goods and services provided by an organization to its clientele or customers. No program decision is free of cost, whether or not the decision leads to the actual commitment of organizational resources. Choices among alternative strategies for the accomplishment of the goals and objectives of any organization are likely to involve many costs. Such choices

include not only the expenditure of money, but also the employment of human resources, the consumption of physical resources, and the use of time—all critical commodities in any organization.

Often the tendency is to consider costs strictly in terms of dollar inputs—the financial resources required to support personnel, equipment, materials, and so forth. Future costs that cannot be easily measured in dollar terms all too often are dismissed as noncost consideration. Such costs, however, may have important implications beyond their measurable monetary value.

The financial manager must be cognizant of the following factors that influence future costs:

1. Scope and quality of the services or products to be delivered
2. Volume of activity required to deliver these services or products
3. Methods, facilities, and organizational structure required to perform these activities
4. Qualities and types of labor, materials, equipment, and other cost elements required by these programs
5. Price levels of the various cost elements

In addition, uncertainty—in the political, economic, and social arenas—which may include exposure to risk, constitutes a major factor influencing the direction of future costs.

These cost factors must be analyzed as they relate to the various programs, activities, and operations to be performed. These factors must be closely tied to the organization's comprehensive financial planning strategies—a linkage that is absolutely necessary but all too often ignored by strategic planners and financial officers. Cost factors should be considered (1) in the development of plans and programs, (2) in the preparation of budget requests, and (3) after commitments have been authorized, as programs or projects enter the implementation phase.

Many activities can be measured in terms of *units of production* (workload measures). Current records of personnel activities may provide sufficiently accurate and reliable data to determine workloads. In some cases, however, it may be necessary to undertake more extensive analyses of the nature and scope of the activities involved. Further refinements are possible where cost accounting procedures have been adopted.

Having established the volume of work required to perform certain activities under existing organization and methods, it may be appropriate to examine *alternative approaches* to determine if greater efficiency and effectiveness can be attained. The analysis of alternatives should precede the formulation of a financial plan and should also continue after the actual allocation of resources to ensure that the approaches adopted fit the resources available. Work methods should be analyzed to establish the appropriate mix of personnel, equipment, supplies, and other operating requirements to do the job with the

least effort and at the least cost. Particular attention should be given to possible increases in productivity through simplified procedures and the use of labor-saving equipment.

Personnel (labor) is the most critical cost element for most organizational operations. Therefore, performance measures, expressed in terms of personnel hours required to carry out particular activities or programs (*workload measures*), are most useful to program and financial managers. *Unit cost standards* may be established for activities that are of a type and importance to justify the application of cost accounting procedures. For nonroutine (nonrepetitive) activities, however, workload and unit cost measures may not adequately represent the cost elements involved. In such cases, management may have to rely on more subjective measures to provide an adequate basis for strategic decisions.

Personnel costs are subject to management control in two important areas: salary rates and job classifications. Periodic reviews should be made to see that each employee has the proper work assignment in view of his or her pay rate. All too often, skilled employees with higher pay classifications are assigned tasks that lower-rated persons should perform. Eliminating positions at the lower end of the pay scale may result in serious false economies if higher-paid personnel eventually have to do the work previously assigned to these positions.

Changes in salary plans should be made only after a thorough study of such factors as trends in the cost of living, rates paid by comparable organizations, and fringe benefits, including sick leave, vacations, extra holidays, and security of tenure. Often, improved fringe benefits can provide a bigger “payoff” to employees than increases in salaries and wages, which are likely to be subject to a larger “tax bite.” Sound personnel and compensation policies will yield economic benefits to the organization in the long run.

Prices for materials and equipment can be controlled to some extent by scheduling purchases to take advantage of the lowest price consistent with necessary quality. Price trends of frequently used commodities should be continuously analyzed, and appropriate inventories should be maintained for those items subject to price fluctuations. At the same time, the cost of maintaining inventory (space requirements, shelf life, anticipated price changes, and so forth) also must be considered.

3.2 Monetary Costs and Economic Costs

Monetary costs are those commonly reflected in financial accounts. They include research and development costs, investment costs, and the costs of operations, maintenance, and replacement. At times, it may be appropriate to look beyond these monetary costs to what economists call opportunity costs, associated costs, and social costs.

Research and development (R&D) involve “front-end” costs that may or

may not figure into the actual expenses of a given project or program (see Figure 5.1). R&D costs incurred explicitly for a given project should be included as a project expense. However, general R&D costs that eventually benefit more than one project or program must be considered as *sunk costs* and should not be included in the direct cost estimate for a specific project or program.

Investment costs are expenses incurred to obtain future benefits. Such investments may be classified as sunk costs or actual project outlays, depending on their timing. Consider the decision to build a health clinic on land that was purchased some years earlier for another public purpose. Only those additional investment costs required to prepare the site for the clinic should be considered as project outlays. The previous investment for the land purchase is a sunk cost.

Sunk costs can become an *inheritable asset* if previous investments can be used to the particular advantage of one alternative over another. The decision regarding the site of the health clinic should not be based solely on the past investment, however. If that location would be an inferior alternative in view of identified client needs, this decision would simply result in throwing good money after bad.

Investment costs vary primarily with the size of a particular program or project, but not with its duration. *Recurring costs*, on the other hand, include operating and maintenance costs that vary with both the size and duration of the program. Such recurring costs include salaries and wages, employee benefits, maintenance and repair of equipment, miscellaneous materials and supplies, transfer payments, insurance, and direct overhead costs. These recurring, or op-

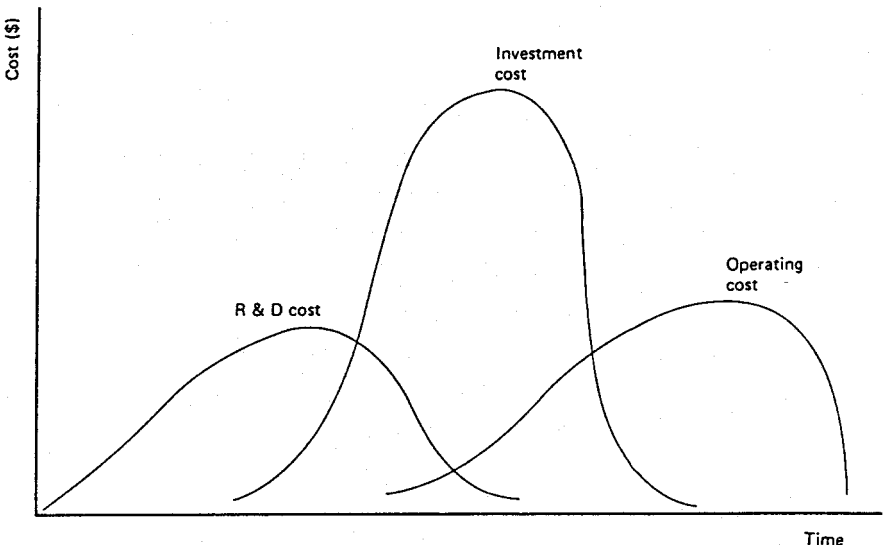


FIGURE 5.1 Life cycle costs plotted against time.

erating costs, do not add to the stock of capital. Rather, they are incurred to maintain the value of the existing stock. In preparing cost estimates, it is important that these recurring costs be considered over the life of the project or program, not just in the initial fiscal period.

As these distinctions suggest, some program costs are *fixed*, that is, they are the same regardless of the size or duration of the program or project. Other costs are *variable*; that is, they may change significantly as the scope of the project or program is increased. Some uncertainty may exist regarding these costs, particularly if the program has a relatively long duration. It is important, therefore, to consider the marginal (or incremental) costs of increasing the size or scope of a program or project.

Suppose, for example, that the decision is whether to build one or two public health clinics. It may be possible to get quantity discounts on materials and equipment that would reduce the cost of a second clinic. As a result, suppose the cost of building one clinic is \$1,200,000, and the cost of building two clinics is \$2,000,000. The *average cost* of each clinic would be \$1,000,000; however, the *marginal cost* of the second clinic would be only \$800,000.

If resources are committed to one program, the opportunity has been preempted to use these resources elsewhere. The concept of *opportunity costs* can be illustrated by returning to the health clinic example. Having determined the monetary cost of the proposed facility, it may be appropriate to describe some of the alternative uses of these resources. For example, to what other purpose could the land be put? What other use could be made of the required staff salaries? If bonds are to be issued, what other uses might be made of the funds required for interest and principal payments?

If these alternative uses are sufficiently important, an attempt should be made to estimate their value. This evaluation would consider the benefits that must be given up if the decision is made to go ahead with the proposed clinic. Keep in mind that a basic purpose of cost analysis is to estimate the value of alternatives forgone. Opportunity costs may be extremely important in making decisions among alternative strategies.

Associated costs are “any costs involved in utilizing project services in the process of converting them into a form suitable for use or sale at the stage benefits are evaluated.” [8] Associated costs are often incurred by the beneficiaries of public programs and services. The associated costs that must be borne by users of public recreational facilities, for example, include the incremental costs of travel, food, lodging, and so forth. If access to a recreational facility is improved, so that the users’ travel costs are reduced, then these savings in associated costs may be considered as benefits arising from improved access.

Social costs can be defined as the subsidies that would have to be paid to compensate persons adversely affected by a project or program for their suffering or “disbenefits.” Such compensation rarely is made (except perhaps when affected individuals enter into litigation and are awarded damages). Thus, social costs represent an analytical concept.

In making a cost analysis, social costs can be handled in one of two ways. [9]They may be treated as external costs and subtracted from the market value of the output of the project to obtain a *net social value*. Alternatively, they may be treated as opportunity costs, by examining the *potential benefits* to those who are likely to be adversely affected if the project funds were spent on some other program. For example, the location of a sewage treatment facility may result in reduced property values in adjacent residential areas. These losses may be treated as “negative benefits” and subtracted from the overall benefits of the project to the larger community. Alternatively, the benefits that would accrue to these property owners from an alternative use of project funds (for example, development of a park site) might be calculated. The project with the larger “yield” would represent the better use of these resources.

Unfortunately, social costs, if included at all in a cost analysis, are seldom treated fairly. Such cost considerations are either underplayed by proponents of a project or overplayed by its opponents. Social costs often carry significant emotional overtones and therefore may be difficult to evaluate. Nevertheless, an evaluation of such costs may be a very important factor in the decision to invest organizational resources in a project or program.

4 ACTIVITY-BASED COSTING

Cost accounting procedures were originally developed to help industries estimate the full costs of manufacturing goods, including the *variable costs* (labor and raw materials) involved in production as well as the *fixed cost* (overhead or indirect costs). *Variable costs* generally are the same for each unit of production, but their total fluctuates in direct proportion to the volume of production (i.e., the more goods produced, the greater the total variable costs). *Fixed costs* do not change in total as the volume of activity increases, but become progressively smaller on a per unit basis. *Overhead* is defined in the private sector as all costs, other than direct labor and materials, associated with the production process. *Indirect costs* are those costs that cannot be traced directly to any of the individual activities or programs of an organization. In the public sector, the terms overhead and indirect cost often are used interchangeably.

4.1 Traditional Methods for Analyzing Costs

The sum of these variable and fixed costs divided by the number of units produced/processed represent the *per unit cost*. This accounting method was sufficiently accurate for budgeting and planning in a basic business environment. Traditional costing models use direct cost factors (e.g., labor hours, machine hours, material dollars) as surrogates to allocate overhead or indirect costs to the various products. These allocation factors tend to vary proportionately with

the volume of goods produced or services provided. Costs became more difficult to assign, however, as the range of goods and service provided increased. This difficulty was due, in part, to an increasingly complex production environment, resulting in added layers of overhead costs that could not be precisely allocated.

Most accounting systems currently in use capture and distribute costs by one of the following methods:

- Organizational units/elements

- Budgetary accounts

- Traditional cost accounting with direct and indirect cost allocation

Each of these methods has advantages and disadvantages and each has met the past needs of organizations. Yet, each fails to meet the full requirements for management information.

Under an *organization-based accounting system*, the elements of the traditional bureaucratic structure are identified and the identifiable costs are applied to each of those elements. Indirect costs are usually captured and paid in a central repository with no attempt to further subdivide or distribute these costs. In many traditional organizations, the only costs identified to the organizational elements are the direct salary costs.

This approach was created to provide management with information on the costs of organizational elements. It was never intended to define the output costs, either at the element or organizational level. Regardless of the approach taken within this method, this model is totally inadequate for making decisions on output variations. Costs are not applied to the ultimate outputs, activities, or process flows of the organization.

Budgetary accounts track program costs in a manner very similar to that of the organizational element. Historically, public organizations have been most concerned with ensuring that their total expenditures do not exceed the allocated budgetary resources. Consequently, accounting systems became a safeguard mechanism to capture commitments, undelivered orders, and expenditures. These cost data are normally divided by organizational element to enable tracking of budget execution. The major objective is to fully use the resources assigned rather than to enhance productivity or to reduce expenses. Any attempt to conserve resources may lead to a reduction in the future budget resource level. Like organizational accounting systems, no attempt is made to relate cost to output or, in most cases, to even define output.

The traditional model of cost accounting has been the mainstay for over 100 years of those organizations that perform activities that require costs to be distributed to output. Most of these organizations are reimbursed by their customers based on sales of their goods and services. Hence, cost accounting operations were established to capture and distribute costs to the output goods or

services, using the classic model designed around the major factors of production: direct labor, direct materials and overhead.

Traditional cost accounting methods provide for tracking of costs by *functional area*, with functions tied to the end items being produced. Direct costs can be identified relatively easily in this fashion, as can some, but not all, indirect or overhead costs. Those indirect costs that cannot be attributed to specific functions or programs are typically allocated across the functional areas using a pro-rating formula. Thus, for example, if the identified indirect costs (central administration, accounting, purchasing, etc.) of an organization total \$1 million and the total direct costs total \$2 million, an indirect cost rate of 50% might be applied to distribute these indirect costs. If a particular production line accounted for \$200,000 of the total direct costs, then the “burdened” cost (direct and indirect) of this line would be $\$200,000 \times 1.5 = \$300,000$.

With the recent advent of activity-based accounting, it has been discovered that a significant difference in output cost can be created under the traditional cost accounting method because of the manner in which overhead costs are allocated to output. This difference in distribution can skew the ultimate price of the output and can lead to poor management decisions.

4.2 Process-Oriented Approach

Robin Cooper and Robert Kaplan of the Harvard Business School have argued that the traditional approach to cost accounting is flawed because certain cost behavior is a consequence of *activities* carried on in support departments and should not be driven by allocation factors related to the volume of production. Activities describe what an organization does (see Table 5.1 for a glossary of ABC terms). The primary function of an activity is to convert resources (e.g., labor, material, and technology) into outputs (e.g., products and services).

The Activity-Based Costing (ABC) model, which Cooper and Kaplan developed, reconfigures how organizations manage costs by attaching costs to activities—the processes or procedures that cause work to be performed in an organization. [10] Cost management and cost control can then focus on the sources of cost, rather than on where the costs are incurred or reported. In this way, the total cost of all traceable activities is based on how much of each activity is consumed by the product or service, regardless of organizational or functional boundaries. A fundamental premise of ABC is that managers can learn how to identify and eliminate waste by focusing on the root cause of a cost rather than merely addressing the symptoms.

Activity-based costing recognizes that although common processes or activities may be performed within each functional area, the pro-rating method does not truly account for the usage variance in process costs that may exist in different units. The major difference between traditional cost accounting and ac-

TABLE 5.1 The ABC Glossary

ACTIVITY

Total Cost of Activity The total amount of direct and overhead charges associated with or allocated to a single activity

Cost Driver A measurable factor that represents the amount of performance and creates or affects the costs within a single defined activity, i.e. the number of iterations, amount of effort, etc.

Elapsed Time The total amount of time, to include the amount of time delay created while awaiting processing, consumed to complete the activity or an iteration of the cost driver.

Cycle Time The amount of time to complete one cycle or iteration of the cost driver without including delay or wait times.

PROCESS

Total Cost of the Process The total cost of all the activities in a process determined by the amount of the cost driver for each activity in relation to the output of the process

Cost of a Single Iteration The total cost of a single incident or cost driver allocation for each of the activities in a process flow which may be equal to the total cost when a single iteration occurs at each activity in the flow.

OUTPUT

Cost of the Output The total cost of the activity model allocated by the applied activity drivers to the output of the activity model.

IDENTIFICATION OF CHANGE OPPORTUNITIES

Significant Cost Consumption Activities identified which have an evidently larger consumption of inputs and mechanisms or the value of the output is less than the value of the inputs.

Significant Time Use Activities identified which have evidently larger time periods or use of time or large non-value delay periods.

EVALUATION OF CHANGE ALTERNATIVES

Cost Comparison Analysis of the allocated costs from the activity model to two or more alternative process methods.

Time Comparison Analysis of the total time or cycle times of two or more alternative process methods.

tivity-based costing is that ABC is a process-oriented method, based on the recognition that labor-intensive processes may represent the single largest contribution to the increasing cost of doing business.

A commercial production line, for example, may consume more direct labor, material, and even space than the facilities required for a small, high-precision, manufacturing contract undertaken for the NASA space shuttle program. However, the administrative overhead required to support the space shuttle contract is likely to be extraordinarily high, inflated by the additional (indirect) labor needed to perform such activities as the nonroutine handling of the small parts

procurements, more stringent acceptance testing, and NASA contract reporting requirements. In this environment, ABC can provide for a surrogate form of direct costing by accounting for the significant variance in indirect costs and proportionately allocating those costs to the end item products that consume them.

Manufacturing firms gain the greatest benefit from ABC in the area of overhead cost allocation. However, the approach offers benefits to service industries in the tracking of both direct and indirect costs. The process orientation of ABC makes it valuable and applicable to all types of organizations, including government, nonprofit organizations, and colleges and universities.

4.3 Cost Drivers

Any event that causes a change in the total cost of an activity is defined as a *cost driver* (what has traditionally been called an allocation basis). *Inputs* are the resources that are consumed by activities (usually measured as costs). *Outputs* are the products (goods or services) that an activity supplies to its customers (internal or external). ABC provides a more representative distribution of resource use because the cost allocations are based on the direct cost drivers inherent in each of the work activities that make up the organizational structure. ABC applies resource use directly to the output products and services based on the actual work activities of the process that produces the output. Arbitrary allocations of indirect or overhead costs are applied only on the most limited basis.

The first step in applying activity-based costing is to identify the management issues and decision-making needs for which better cost data is being sought. The output of each activity performed by the organization must be clearly defined. If multiple outputs can be defined, the subject of analysis probably needs to be split into several activities; if no output can be defined, then it is not an activity. In general, an increase in the quantity of an output will require an increase in the activity's resource consumption (i.e., total costs).

Costs must be traced from the traditional cost accounting structure (which identifies *what* resources are being used) to the activities (which relates *why* the resource is being consumed—for *what* purpose). The cost tracing can involve actual (historical) costs or budgeted costs. Some costs can be directly associated with an activity (most labor costs, for example), whereas other costs have to be allocated (such as utilities or rent). Costs of supporting departments are initially accumulated in overhead cost pools and are then allocated to appropriate activities. If costs must be allocated, the allocation basis is called a *first-stage driver* (e.g., square feet of floor space).

The next step is to quantify the volume of each activity's output, either as an actual (historical) volume or as a projected volume (define an *output measure*). The activity's total cost is then divided by its total volume to determine the average cost per unit of output. The total costs of individual activities

then are allocated to a responsibility center or activity center (i.e., a group of activities having a common objective). If the costs of a responsibility/activity center are to be allocated to cost objectives, then the output measure (e.g., cost per unit of output) is a *second-stage driver* rate. Finally, *performance measures* are identified to determine the results achieved by an activity or activity center (e.g., average cost per patient treated for a particular ailment).

The ABC approach is likely to produce a more accurate representation of indirect costs attributable to final cost objectives than using surrogate measures, such as direct labor hours or direct material dollars, as a means for allocating costs to products. The two-stage ABC process identifies activities and focuses on the cost drivers that are the major causal factors behind cost behavior.

The ABC method is more complex and requires additional time and effort to determine the attribution of indirect costs. In many situations, it is uncertain whether marked difference results are obtained by using the ABC method instead of more traditional approaches. If the costing system is used to determine fees or prices or to measure performance of selected activity centers or indirect cost pools, then the more complex ABC methodology may be appropriate.

4.4 What Does ABC Provide to the Decision-Maker?

The decision-maker is always faced with difficult choices and multiple alternatives. Although decisions can be made with feelings and intuition, this is not the predominant situation. Activity-based costing captures quantified cost and time and performance data and translates these into decision information. ABC measures process and activity performance, determines the cost of business process outputs, and identifies opportunities to improve process efficiency and effectiveness. These data assist in stratifying decision variables into a configuration that makes the decision clearer and easier to make.

Qualitative evaluation and determination alone is totally inadequate as a single measure of improvement, however. Although quality might determine “better,” it does not contribute to other meaningful decisions such as what is “cheaper” or “faster.” It is the integration of these two dimensions that is the critical decision support element of the total process. ABC is the mechanism to integrate these two views.

ABC is a technique that quantitatively measures the cost and performance of activities, resources, and cost objects, including overhead when appropriate. ABC captures organizational costs for the factors of production and administrative expenses, and applies them to the defined activity structure. The application can be as rigorous as a definite mathematical distribution or as creative as a selective assignment using surrogate indicators. Regardless of the method, ABC is a process of simplifying and clarifying decisions required by the process evaluators and senior management using activity costs rather than gross allocations.

ABC provides analysis information for consideration and evaluation of the processes of the organization activity model. It is specifically intended to further the objectives of process improvement, which are to:

- Reconfigure the current organization into an activity structure
- Select an “as-is” process flow for review and improvement
- Make radical changes to develop a “to-be” process flow for dramatic improvements in performance

ABC supports process improvement initiatives and enhances the analysis of selected opportunities and alternatives by gathering and interpreting existing organizational costs and translating the costs data into the activity structure. The various dimensions identified as activity costs are like a menu to be selected from, as deemed necessary, to support the project objectives. The process improvement team can be provided with a vast amount of decision support information, depending on which items are selected for completion.

ABC requires professional judgment and creativity when applied to a transitional business process model. This creativity does not invalidate the basic integrity of the approach, however, but is rather a necessity to bridge the gap from the traditional accounting data to the new process methodology. Although still an evolving discipline, ABC offers great advantages over these more traditional methods. Applied with sound accounting principles to translate cost data, ABC provides a reliable information source upon which to base managerial decisions.

One drawback to the adoption of ABC is that it is not readily supported by accounting systems currently in use by most organizations. Such systems are oriented—by the established chart of accounts—to the tracking of costs by function rather than by process. ABC can only be fully implemented in organizations that have a clear understanding of the body of activities that are commonly performed in all functional areas, along with a means of identifying the time spent on these activities and the ability to relate them to charges against the general ledger accounts.

5 COST-BENEFIT ANALYSIS

It has been suggested that: “One can view cost-benefit analysis as anything from an infallible means of reaching the new Utopia to a waste of resources in attempting to measure the unmeasurable.” [11] Many of the criticisms of cost-benefit analysis are equally applicable to other analytical techniques. Because analysis is difficult, costly, and troublesome, all too often the assertion is made that more intuitive approaches should be applied. This is not a valid argument, however, for abandoning efforts to improve techniques for cost analysis.

5.1 Benefit Investment Analysis

The principal objective of long-term investments in the private sector is to maximize profits, that is, to obtain the maximum return on stockholder's investments. Industries frequently average as much as 50 percent of their total resources in long-term investments. Much of this commitment, of course, is involved in the development of an appropriate cash flow (annual profit margin) and in routine replacement.

New concepts and tools were introduced in the private investment decision process in the mid-1950s, when it became evident that intuitive modes, developed in an era of easy profits through rapid industrial expansion, were no longer applicable. These new *discounted cash flow* techniques apply the principles and concepts of compound interest in a way that takes into account the differences in the worth of money over time. Each method also uses as input data the future negative and positive cash flows (costs and benefits) required to produce the desired returns that are a consequence of the particular investment.

The equivalent present value of future streams of both costs and benefits must be determined by multiplying each stream by an appropriate discount factor, which can be expressed as:

$$1/(1+i)^n$$

where i is the relevant interest rate per year and n is the number of periods into the future that the benefits and costs will accrue. If, as is the usual case, i is positive, the farther in the future that an event is expected to occur, the smaller is its present value. High discount rates mean that the present is valued considerably over the future; that is, there is a significantly higher regard for present benefits than for future benefits and/or a willingness to trade some larger amount of future benefits for smaller current benefits.

Of the various discounted cash flow methods used in investment decisions, two techniques are particularly relevant to cost analysis in the public sector. The *net present value* method gives the algebraic difference in the present worth of both outward cash flows and inward flows of income or benefits. In some cases, an investment may have a terminal value (T) at the end of the analysis period. Annual expenses (K) for the administration, operation, and maintenance of the project and the annual income (R) from sales revenues, receipts, or their equivalent must also be discounted to present values to be included in the analysis. Thus, the formula for calculating net present value can be expressed as follows:

$$\begin{aligned} NPV = & -I + [T/(1+i)^n] - K[(1+i)^n - 1]/[i(1+i)^n] \\ & + R[(1+i)^n - 1]/[i(1+i)^n] \end{aligned}$$

whereby I represents the initial investment, the present worth of the terminal value is calculated by multiplying (T) times the appropriate discount factor, and K and R are multiplied by the present worth factor of a uniform series.

The *equivalent uniform annual net return* (EUANR) combines all investment costs and all annual expenses into one single annual sum that is equivalent to all disbursements uniformly distributed over the analysis period. This method also includes an income or benefit factor—the solution to the formula indicates the amount by which the equivalent uniform annual income (or benefits) exceeds (or is less than) the equivalent uniform annual cost. This formula can be represented as follows:

$$\text{EUANR} = -I [i(1+i)^n]/[(1+i)^n - 1] + T [i/[(1+i)^n - 1] - K + R$$

where the initial investment (I) is multiplied times a capital recovery factor, the terminal value (T) is multiplied by a sinking fund factor, with K and R representing uniform annual expenses and uniform annual income respectively. R includes return on investment (depreciation and net profit).

To illustrate the application of these two methods of discounted cash flow analysis, assume that management is confronted with two alternative investment decisions, as shown in Table 5.2. Applying the formula for the equivalent uniform annual net return method it may be shown that alternative A has an EUANR of \$22,786, whereas alternative B has a EUANR of \$17,671. Therefore, all other things being equal, alternative A is the better investment. Similarly, alternative A has a net present value of \$195,030, whereas alternative B has a net present value of \$151,250. It should be noted that the EUANR for any project can be converted to the NPV by multiplying the EUANR by the present worth factor for a uniform series (which in the above example is 8.5594798).

These two techniques of investment analysis have counterparts in the cost analysis of public investments. The net present value method is similar in concept to the net benefits criterion, and the equivalent uniform annual net return method has its counterpart in the annual net benefits approach.

5.2 Basic Components of Cost-Benefit Analysis

A comprehensive cost-benefit analysis requires that estimates be made of both the direct and indirect costs and the tangible and intangible benefits of a program or project. Costs and benefits must then be translated into a common measure, usually (but not necessarily) a monetary unit. Costs and benefits are then compared by computing (1) a benefit-to-cost ratio (benefits divided by costs), (2) net benefits (benefits minus costs), or (3) some other value (such as, an internal rate of return) that summarizes the results of the analysis. Given adequate estimates, cost-benefit analysis offers a relatively straightforward assessment of *economic efficiency*, providing information on which to base decisions regarding the effective allocation of available resources among economically desirable options.

The crux of cost-benefit analysis lies in a statement of the problem. As Anatol Rapoport has observed, “The success with which any problem is solved

TABLE 5.2 Cash Flow Data for Analysis of Alternatives

Cash Flow Items	Alternative A	Alternative B
I = Initial Investment	\$1,100,000	\$2,000,000
T = Terminal Value	\$600,000	\$1,000,000
A = Annual Administrative Cost	\$100,000	\$90,000
J = Annual Operations Cost	\$280,000	\$295,500
M = Annual Maintenance Cost	\$120,000	\$100,000
K = Total of A, J, & M	\$500,000	\$485,500
R = Annual Income	\$629,200	\$700,000
i = Rate of Interest per Annum	8%	8%
n = Analysis Period	15 years	15 years
Capital Recovery Factor	= 0.1168395	
Present Worth Factor	= 0.3152417	
Present Worth of a Series	= 8.5594798	
Sinking Fund Factor	= 0.0368295	
EUANR/Alt. A	$= -\$1,100,000(0.1168295) + \$600,000(0.0368295) + \$129,200$ $= -\$128,512 + \$22,098 + \$129,200$ $= \$22,786$	
EUANR/Alt. B	$= -\$2,000,000(0.1168295) + \$1,000,000(0.0368295) + \$214,500$ $= -\$233,659 + \$36,830 + \$214,500$ $= \$17,671$	
NPV/Alt.A	$= -\$1,100,000 + \$600,000(0.3152417) + \$129,200(8.5594798)$ $= -\$1,100,000 + \$189,145 + \$1,105,885$ $= \$195,030$	
NPV/Alt.B	$= -\$2,000,000 + \$1,000,000(0.3152417) + 214,500(8.5594798)$ $= -\$2,000,000 + \$315,242+ \$1,836,008$ $= \$151,250$	

depends to a great extent on the clarity with which it is stated. In fact, the solution of the problem is, in a sense, a clarification (or concretization) of the objectives.” [12] Vague statements of problems lead to vague methods, where success is doubtful or at best, erratic. The more a given situation is clarified, the better the classification of the problems or issues, and the greater the promise of a successful solution. In the cost-benefit approach, the resource allocation problem is clarified through an identification of (1) an objective function, (2) constraints, (3) externalities, (4) time dimensions, and (5) risk and uncertainty. [13]

Selecting an *objective function* involves the identification and quantification, in dollar terms to the extent possible, of the benefits and costs associated with each alternative. Benefits are the net outcomes, both tangible and intangible, of a program or project. Specification of benefits sometimes may be relatively straightforward, as in many technical and industrial projects. For many

social programs, however, benefits often are diffuse, intangible, and difficult to define and measure. Costs are somewhat easier to identify. They are the direct and indirect inputs—the resources required to carry out the program or project. The evaluation of opportunity costs—the value of foregone opportunities—may be complex, however, even for programs for which extensive impact data are available.

Constraints are the “rules of the game”—that is, the limits within which a solution must be sought. Solutions that are otherwise optimal frequently must be discarded because they do not conform to these imposed rules. Constraints are incorporated into mathematical models as parameters or boundary conditions.

Projects may have external or spillover effects—that is, side effects or unintended consequences that may be beneficial or detrimental. These *externalities* may be difficult to identify and measure, so they may be excluded from the analysis initially in order to make the problem statement more manageable. The long-range effects of these phenomena must ultimately be considered, however, usually after the objective function and model have been tested and the range of feasible alternatives has been narrowed.

Costs and benefits occurring at different points in time must be made commensurable—that is, translated into a common unit of measurement. It is not sufficient merely to add the estimated benefits and subtract the estimated costs. The impact of deferred benefits and future costs must be taken into account. In so doing, the analyst encounters the problems of risk and uncertainty.

5.3 Discounting Future Costs and Benefits

In developing a cost-benefit analysis, it is important to recognize that dollar values are not equal over time. Benefits that accrue in the present usually are worth more to their recipients than benefits anticipated some time in the future. Similarly, resources invested today cost more than those invested in the future, because one option would be to invest the same funds at some rate of return that would increase their value. Therefore, the equivalent *present value* of future streams of both costs and benefits must be determined by multiplying each stream by an appropriate *discount factor*.

If the alternative is to invest available funds at some interest rate, then an appropriate discount factor can be expressed as:

$$1/(1+i)^n$$

where **i** is the relevant interest rate per year and **n** is the number of units of time into the future that the benefits and costs will accrue. As noted previously, high discount rates mean that there is a significantly higher regard for present benefits than for equal future benefits and/or a willingness to trade some larger amount of future benefits for smaller current benefits.

The choice of the discount rate may make the difference between acceptance and rejection of a project. Unfortunately, no simple guidelines are available for determining an appropriate discount rate for public investments. However, two common bases for discounting reflect both local conditions and the marketplace for investments: (1) the cost of borrowing the capital necessary to finance a project/program and (2) the rate of return based on what could be realized if an equivalent amount were invested for the same period of time. Thus, if a project could be financed by borrowing the necessary capital at 8 percent, or if an investment of equivalent funds could be expected to yield 10 percent, either of these percentages might be used to discount future costs and benefits.

Although the choice of a particular discount rate may be difficult to justify, the procedures for discounting are quite simple. Once an appropriate rate has been chosen, a table of discount factors can be consulted to determine the appropriate figure to apply to each year in the stream of costs and benefits. As the data in Table 5.3 illustrate, however, the selection of the discount rate can significantly affect the final decision.

5.4 Criteria for Analysis

Once an objective function has been identified, the next step in the analysis is to select an indicator of “success”—that is, an index that will yield a higher value for more desirable alternatives. Conceptually, such an indicator involves the *maximization* of something. Businesses, for example, seek to maximize profits. Public officials are presumed to seek maximum benefits for their constituencies. An inability to quantify overall benefits, however, has led to the identification of *cost minimization* as the objective function in many cost-benefit analyses.

TABLE 5.3 Discounting \$100,000 Annually Over Ten Years

Year	Discount Factor		Discount Factor	
	@ 8 Percent	Value	@ 10 Percent	Value
1	0.925926	\$92,593	0.909090	\$90,909
2	0.857339	85,734	0.826446	82,645
3	0.793832	79,383	0.751315	75,132
4	0.735030	73,503	0.683013	68,301
5	0.680583	68,058	0.620920	62,092
6	0.630170	63,017	0.564472	56,447
7	0.583490	58,349	0.513156	51,316
8	0.540269	54,027	0.466505	46,651
9	0.500249	50,025	0.424095	42,410
10	0.463193	46,319	0.385541	38,554
Total		\$671,008		\$614,455

It is frequently suggested that the goal of cost-benefit analysis should be to maximize benefits and minimize costs. In reality, however, both cannot be accomplished simultaneously. Costs can be minimized by spending nothing and doing nothing, but in that case, no benefits result. Benefits derived from a particular project or program can be maximized by committing organizational resources until marginal benefits are zero. But such action may require far more resources than are available. Therefore, some composite criterion is needed. Three obvious choices are:

- Maximize benefits for given costs.
- Minimize costs while achieving a fixed level of benefits.
- Maximize net benefits (benefits minus costs).

The first cost-benefit criterion to be used in the quantitative evaluation of alternatives was the *benefit/cost ratio*, introduced by the Flood Control Act of 1936. A benefit/cost ratio is defined as the present value of benefits divided by the present value of costs (or average annual benefits over average annual costs). Thus, for example, if the discounted stream of benefits over the expected duration of a program or project equals \$800,000 and the discounted stream of costs equals \$600,000, the benefit/cost ratio is 1.33.

A variation on the basic benefit/cost ratio emphasizes the return on invested capital by segregating operational costs and subtracting them from both sides of the ratio. In the previous example, assume that the present value of operational costs represents \$200,000 of the total stream of costs. Subtracting operational costs from both benefits and total costs results in the following net benefit/cost ratio:

$$\frac{\$800,000 - \$200,000}{\$600,000 - \$200,000} = \frac{\$600,000}{\$400,000} = 1.50$$

The net benefit/cost ratio becomes larger as operational costs account for an increasingly larger proportion of total costs.

Net benefit/cost ratios may be preferable in the private sector, where capital may be a greater constraint than operational expenses, especially when taxes are considered. A number of economists, however, argue for the use of gross ratios in public sector applications. Their contention is that legislative bodies should consider operational costs as well as capital costs and should give agencies credit for savings on operational costs by permitting them to spend more on capital costs.

The criterion recommended, if not used, most frequently in contemporary cost-benefit analysis is *net benefits*. Net benefits measure *difference*, whereas benefit/cost calculations produce a *ratio*. The results of these two techniques are not always interchangeable. The fact that the net benefits of alternative A are

greater than those of alternative B does not imply that the benefit/cost ratio of A is greater than that of B.

For example, suppose the benefits in alternative A have a present value of \$300,000, and the costs have a present value of \$100,000. The net benefits of this alternative would be \$300,000 minus \$100,000, or \$200,000, and the benefit/cost ratio would be \$300,000 divided by \$100,000, or 3.0. If the present value of benefits in alternative B were \$200,000 and that of costs \$40,000, alternative B would have lower net benefits (\$200,000 minus \$40,000 = \$160,000), but a higher benefit/cost ratio (\$200,000/\$40,000 = 5.0). In addition to knowing the benefit/cost ratio for a given project or program, it is also necessary to know the size of the project or program.

The size of the project is important in another respect. Suppose that two projects each offer net benefits of \$10,000. One involves a present value of benefits of \$2 million and a present value of costs of \$1.99 million; the other project has a present value of benefits of \$100,000 and a present value of costs of \$90,000. Now suppose that something goes wrong, so that the calculations of costs and benefits are off by 10 percent. The first project might have a negative benefit of as much as \$200,000, whereas the second would do no worse than break even.

5.5 Cost-Benefit Analysis: An Example

An underlying assumption in Benefit Investment Analysis is that cost and benefits will remain relatively constant over the life of the project. This assumption permits the application of the capital recovery factor, present worth factor, present worth of a series factor, and the sinking fund factor in calculating the Net Present Value and the Equivalent Uniform Annual New Return.

In reality, however, costs and benefits seldom remain constant. Costs may increase due to inflation or increases in the numbers of units of service provided. Benefits may accrue more slowly at the outset a project and then increase as additional “customers” are reached. In short, both costs and benefits may be a moving target during the course of the analysis. For this reason, a year-by-year discounting of costs and benefits, as shown in Table 5.4, often is preferred over a Benefit Investment Analysis.

The data in Table 5.4 are drawn from the cash flow data presented in Table 5.2. The initial investments required by each of the alternatives are expressed in terms of the annual debt service payments to support 15-year annuity serial bonds, issued at 6% interest for \$1,100,000 and \$2,000,000 respectively. Annuity serial bonds have uniform annual debt service payments, and therefore, the discounted costs diminish over the 15-year period of analysis. The administrative costs associated with each alternative are assumed to increase at an annual rate of 6%. The operation and maintenance (O & M) costs for Alternative A is

TABLE 5.4 Comparison of Cost-Benefit Analyses

Alternative A							
Year	Debt Service Costs	O&M Costs @ 6%	Admin Costs @6%	Discounted Costs	Discount Factor	Benefits	Discounted Benefits
1	113,259	400,000	100,000	567,832	0.925926	629,200	582,593
2	113,259	424,000	106,000	551,491	0.857339	654,368	561,015
3	113,259	449,440	112,360	535,884	0.793832	680,543	540,237
4	113,259	476,406	119,102	520,965	0.735030	707,764	520,228
5	113,259	504,991	126,248	506,692	0.680583	736,075	500,960
6	113,259	535,290	133,823	493,027	0.630170	765,518	482,406
7	113,259	567,408	141,852	479,932	0.583490	796,139	464,539
8	113,259	601,452	150,363	467,373	0.540269	827,984	447,334
9	113,259	637,539	159,385	455,318	0.500249	861,104	430,766
10	113,259	675,792	168,948	443,739	0.463193	895,548	414,812
11	113,259	716,339	179,085	432,607	0.428883	931,370	399,449
12	113,259	759,319	189,830	421,897	0.397114	968,624	384,654
13	113,259	804,879	201,220	411,585	0.367698	1,007,369	370,408
14	113,259	853,171	213,293	401,650	0.340461	1,047,664	356,689
15	113,259	904,362	226,090	392,070	0.315242	1,089,571	343,478
Totals	1,698,885	9,310,388	2,327,597	7,082,061		12,598,841	6,799,568
Terminal Value						189,145	
NPV					-93,348		
B/C					0.9868		

Alternative B							
Year	Debt Service Costs	O&M Costs @ 5%	Admin Costs @6%	Discounted Costs	Discount Factor	Benefits @ 4%	Discounted Benefits
1	205,926	395,500	90,000	640,209	0.925926	700,000	648,148
2	205,926	415,275	95,400	614,370	0.857339	728,000	624,143
3	205,926	436,039	101,124	589,888	0.793832	757,120	601,026
4	205,926	457,841	107,191	566,677	0.735030	787,405	578,766
5	205,926	480,733	113,623	544,658	0.680583	818,901	557,330
6	205,926	504,769	120,440	523,756	0.630170	851,657	536,688
7	205,926	530,008	127,667	503,903	0.583490	885,723	516,811
8	205,926	556,508	135,327	485,032	0.540269	921,152	497,670
9	205,926	584,334	143,446	467,085	0.500249	957,998	479,238
10	205,926	613,550	152,053	450,006	0.463193	996,318	461,488
11	205,926	644,228	161,176	433,742	0.428883	1,036,171	444,396
12	205,926	676,439	170,847	418,245	0.397114	1,077,618	427,937
13	205,926	710,261	181,098	403,469	0.367698	1,120,723	412,087
14	205,926	745,774	191,964	389,373	0.340461	1,165,551	396,825
15	205,926	783,063	203,481	375,916	0.315242	1,212,174	382,128
Totals	3,088,890	8,534,322	2,094,837	7,406,331		14,016,511	7,564,681
Terminal Value							315,242
NPV					473,592		
B/C					1.0639		

also projected to increase at 6%; the O & M costs for Alternative B is projected to increase at an annual rate of 5%.

Benefits for both alternatives are projected to increase at an annual rate of 4%, and the terminal values (\$600,000 for Alternative A and \$1,000,000 for Alternative B) become a benefit in the 15th year of the analysis (and must be discounted accordingly). The discount rate applied to costs and benefits is 8%, as stated in Table 5.2. A range of other assumptions could be made about the annual rates of increases (or decreases) in the costs and benefits of these two alternatives. However, these fairly limited assumptions serve to illustrate why a more detailed cost-benefit analysis is necessary.

Using the Benefit Investment Analysis approach, Alternative A, with a NPV of \$195,830 and an EUANR of \$22,786 appears to be the preferred alternative over B, with a NPV of \$151,250 and an EUANR of \$17,671. However, as shown in Table 5.4, when the prospect of increases in costs and benefits are considered, Alternative B has the higher NPV (\$473,592) and benefit/cost ratio (1.0639) than Alternative A (with a NPV of -\$93,348). Factors contributing to the higher NPV for Alternative B include the differential rate of increase in O & M costs and the spreading of the initial investment over the 15-year project.

5.6 Limitations of Cost-Benefit Analysis

Cost-benefit techniques do not solve all problems relating to the allocation of scarce organizational resources. Cost-benefit analyses provide only limited assistance in establishing priorities among various goals, and they are of limited usefulness in evaluating programs of relatively broad scope or in comparing programs with widely differing objectives.

The basic purpose of cost-benefit analysis is not simply to maximize the ratio of benefits to costs. At times, the “equalization” of benefit/cost ratios may serve as a necessary condition for achieving a desired goal. More often, however, other factors must be considered in selecting an appropriate or “best” decision. These factors include (1) the time stream of costs and benefits and the time preference for present as opposed to future consumption of goods or services; (2) limitations imposed by revenue (budgetary) constraints; and (3) the question of whether goals and objectives can be specified in sufficient detail to permit a fuller identification of direct and indirect costs and benefits.

It is virtually impossible to eliminate the need for subjective judgment in the process of making decisions for any organization. Nonetheless, a more systematic approach to the comparison of costs and benefits, including consideration of time preference and of the marginal productivity of capital investments, can contribute significantly to providing a more rational basis for such decisions. This is particularly true when compared with the uncoordinated, haphazard, and intuitive nature of many more traditional methods. Cost-benefit analyses include the examination of expenditures in terms of programs and objectives, instead of

merely by spending entities, and the consideration of total benefits of expenditures alongside total costs of inputs for alternative programs.

6 COST-EFFECTIVENESS ANALYSIS

The effectiveness of a program is measured by the extent to which, if implemented, some desired goal or objective will be achieved. A goal usually can be achieved in more than one way, so the analytical task is to determine the most effective approach from among several alternatives. The preferred alternative will either (1) produce a desired level of performance at the minimum cost or (2) achieve the maximum level of performance possible for a given level of cost. Although costs can ordinarily be expressed in monetary terms, levels of achievement are usually represented by nonmonetary indexes, or *measures of effectiveness*. Such indices measure the direct and indirect effects of resource allocations.

6.1 Output Orientation

Techniques of cost-effectiveness analysis originated in the early 1970s and initially were used in situations where benefits could not be measured in units commensurable with costs. In these early applications, the level of effectiveness or output was usually taken as a given. Several alternative methods of achieving this level were then examined in order to identify the alternative with the lowest costs. These initial studies revealed many important aspects of decision making with respect to the allocation of scarce resources.

In contemporary applications of cost-effectiveness analysis, the emphasis is on program objectives and on the use of effectiveness measures to monitor progress toward agreed-upon objectives. The extended time horizon adopted in cost-effectiveness analysis leads to a fuller recognition of the need for life-cycle costing—that is, analysis of costs over the estimated duration of the program or project.

Cost-effectiveness analysis can be viewed as an application of the economic concept of *marginal analysis*. The analysis must always move from some base that represents existing capabilities and existing resource commitments. The objective is to determine what additional resources are required to achieve some specified additional performance capability. Thus, the focus is on *incremental costs*.

Measures of effectiveness involve a basic scoring technique for determining the increments of output achieved relative to the investment of additional increments of cost. Such measures are often expressed in relative terms—for example, percentage increase in some measure of educational attainment, percentage reduction in the incidence of a disease, or percentage reduction in unemployment. These measures facilitate comparisons and the rank-ordering of alternatives in terms of the costs involved in achieving identified goals and objectives. However, because benefits are not converted to the same common denominator, the merit of any single project cannot be ascertained. Nor is it possible to

compare which of two or more projects with different objectives will produce the better returns on investment. It is only possible to compare the relative efficacy of program alternatives with the same or similar goals and objectives.

6.2 Types of Analyses

Three supporting analyses are required under the cost-effectiveness approach:

1. *Cost-goal studies* are concerned with the identification of feasible levels of achievement.
2. *Cost-effectiveness comparisons* assist in the identification of the most effective program alternative.
3. *Cost-constraint assessments* determine the cost of employing less than the most optimal program.

The objective of a cost-goal study is to develop a cost curve for each program alternative. This curve approximates the sensitivity of costs (inputs) to changes in the level of goal achievement (outputs). Costs may change in direct proportion to the level of achievement; that is, each additional increment of cost may produce the same increase in output. However, if output increases more rapidly than costs, then the program alternative is operating at a level of increasing return. This condition is represented by a positively sloped curve that rises at an accelerating rate, as illustrated by the initial segment of cost curve B in Figure 5.2a. If costs increase more rapidly than output, the program alternative is operating in an area of diminishing returns (as in the upper segment of cost curve B).

Cost-effectiveness analysis requires a model that can relate incremental costs to increments in achievement. For some types of problems, practical models can be developed with relative ease. For other problems, cost curves can be approximated from historical data. As the input-output relationships associated with various program alternatives are better understood, the construction of cost curves and effectiveness scales should become increasingly more sophisticated.

Assuming that the costs associated with different achievement levels can be determined for each alternative, the problem remains of how to choose among these alternatives. In principle, the rule of choice should be to select the alternative that yields the greatest excess of positive effects (attainment of objectives) over negative impacts (resources used, costs, and negative spillover effects). In practice, however, this ideal criterion is seldom applied, as there is no practical way to subtract dollars spent from the nonmonetary measures of effectiveness.

The best approach may be a *cost-effectiveness comparison* of program alternatives, as illustrated in Figure 5.2a. Alternative A achieves the first level of output (O1) at a relatively modest level of cost (C1A), whereas nearly twice the amount of resources (C1B) would be required to achieve the same level of effec-

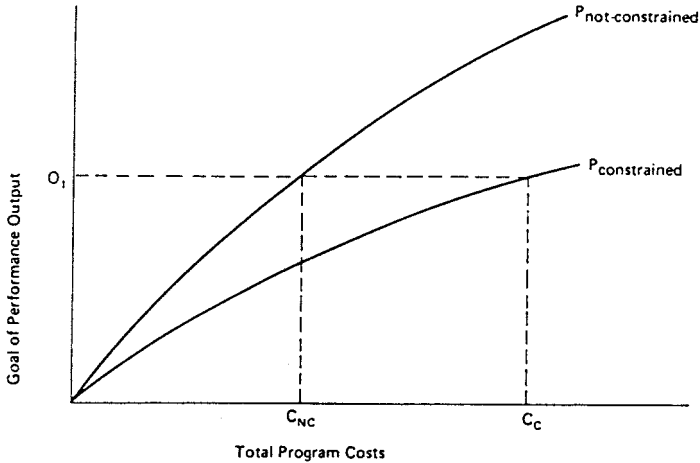
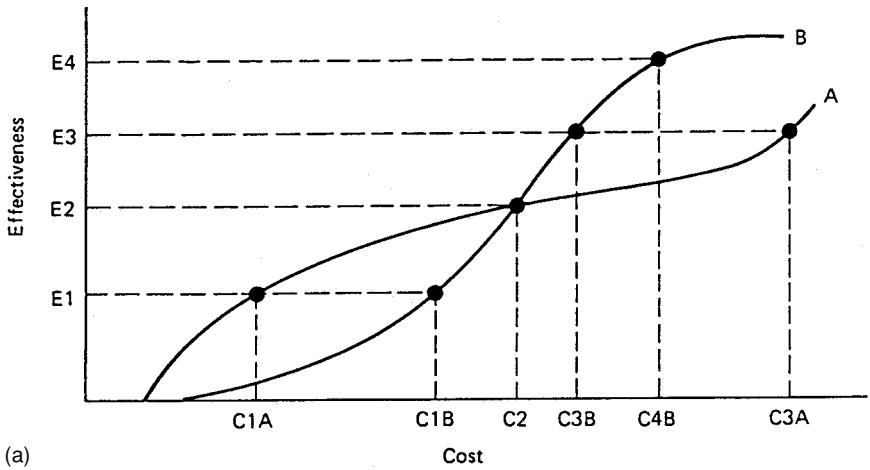


FIGURE 5.2 (a) Cost-effectiveness analysis in graphic form. (b) Cost-constraint analysis in graphic form.

tiveness using alternative B. Both alternatives achieve the second level of output (O_2) at the same level of cost (C_2). Alternative B requires a lower level of resources (C_{3B}) to achieve the third level of output (O_3). And only alternative B achieves the fourth level of output (O_4), since the program cost curve of alternative A is not projected to reach this level of effectiveness.

Which of these two program alternatives is more desirable? To answer that question, it is necessary to define the *optimum envelope* formed by these two

cost curves. If resources in excess of C2 are available, then alternative B is clearly the better choice. However, if available resources are less than C2, alternative A provides greater effectiveness for the dollars expended.

In general, it may not be possible to choose between two alternatives simply on the basis of cost-effectiveness unless one alternative dominates at all levels of goal achievement. Usually, either a desired level of performance must be specified and then costs minimized for that effectiveness level, or a cost limit must be specified and achievement maximized for that level of resource allocation.

In practice, organizations may adopt programs that are not the most effective from among those alternatives available. The more obvious reasons for this include legal constraints, technical capacity, employee rights, union rules, and community attitudes. The purpose of a *cost-constraint assessment* is to examine the impact of these factors by comparing the cost of the program that might be adopted if no constraints were present with the cost of the constrained program.

This analysis, shown graphically in Figure 5.2b, starts with the expressed goal O1 and two programs (P constrained and P not-constrained). P not-constrained represents the most effective program as determined by the cost-effectiveness analysis. The constrained program, however, may be the only program feasible. The cost of the constraints to the agency is the difference between the program cost of P constrained and P not-constrained.

Once this cost differential has been identified, decisions can be made as to the feasibility of eliminating the constraints. This assessment provides decision makers an estimate of how much would be saved by relaxing a given constraint. By the same token, the cost of the constraint suggests of the amount of resources that might be committed to overcoming it. In some cases, however, maintaining a constraint may be more important for social or political reasons than implementing a more effective program.

6.3 Optimum Envelope

Significant shifts in the configuration of the cost curves frequently occur in the formulation of program alternatives as additional levels of effectiveness are sought. Thus, program A may provide the most desirable ratio at one level of effectiveness (and cost), whereas at a higher level of effectiveness (and cost), some other program may provide the more desirable ratio.

The following case study illustrates this situation. Assume that some 3,000 workers in a given state become unemployed each year due to technical obsolescence, that is, the jobs for which they have been trained are eliminated through the mechanization of industrial processes. The state seeks to establish an effective program for retraining all or a significant portion of these workers to new skills through an intensive one-year training course. To provide this training, it is necessary to develop regional training centers, build new facilities, hire new in-

structional personnel, and so forth. It is anticipated that the program will operate over a ten-year period. Through this program, it is anticipated that the workers will be employable at a desirable skill level ten years earlier than if they had to attain these new skills on their own.

Two alternative programs are identified to meet these objectives. Program A is an equipment-intensive approach, involving extensive use of programmed learning techniques, tape libraries to upgrade basic skills, the use of computers to achieve self-paced learning, and so forth. This program only requires five instructors per training center and has a trainee-instructor ratio of 60 to 1. Program B is a teacher-oriented approach, involving team-teaching techniques. It requires 20 instructors per training center and has a 10 to 1 trainee-instructor ratio. The trainee capacity at training centers for program A is 300 and for program B, 200. The costs for each program are summarized in Table 5.5.

It is now possible to examine how costs and benefits (program effectiveness) are related in the tests for preferredness. Since decision-makers do not know the level of training that can be supported given limited resources, it is necessary to develop a schedule of costs and benefits over the full range of workers to be trained each year (i.e., 0 to 3,000). Program A would require 10 training centers for 3,000 trainees and program B would require 15 centers. The development, investment, and ten years of operating costs are summarized in Table 5.6 for various levels of coverage.

Based on these data, it is possible to identify the best program given either a fixed budget or a specified level of benefits. The optimum envelope is indicated in Figure 5.3. Program B is preferred for all budgets under \$32.5 million because it would have a greater trainee capacity. Conversely, Program B is preferred for all trainee loads less than 1,800, because it will cost less than Program A. For budgets above \$32.5 million or trainee loads above 1,800, Program B is preferred. For example, at a budget of \$26 million, Program A has an annual capacity of 1,200 trainees, but Program B could accommodate 1,400 trainees each year for \$25.5 million. However, if the objective is to handle an annual training load of 2,400, then Program A would cost \$39 million, whereas Program B would cost \$43 million. This brief example illustrates how fixed costs (i.e., R&D costs), investment costs (per center), and variable costs (operating costs) can impact the overall cost configuration in different ways.

TABLE 5.5 Alternative Program Costs

Item of Cost	Program A	Program B
Development costs	\$13,000,000	\$1,000,000
Investment per training center	1,500,000	500,000
Operating costs per year per center	1,750,000	3,000,000

TABLE 5.6 Total Costs over Ten Years (in thousands)

<i>Program A</i>					
Centers	0	3	6	10	
Trainees	0	900	1,800	3,000	
R&D	\$13,000	\$13,000	\$13,000	\$13,000	
Investment	—	\$ 4,500	\$ 9,000	\$15,000	
Operations	—	\$ 5,250	\$10,500	\$17,500	
Totals	\$13,000	\$22,750	\$32,500	\$45,500	
<i>Program B</i>					
Centers	0	5	9	12	15
Trainees	0	1,000	1,800	2,400	3,000
R&D	\$1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000
Investment	—	\$ 2,500	\$ 4,500	\$ 6,000	\$ 7,500
Operations	—	\$15,000	\$27,000	\$36,000	\$45,000
Totals	\$1,000	\$18,500	\$32,500	\$43,000	\$53,500

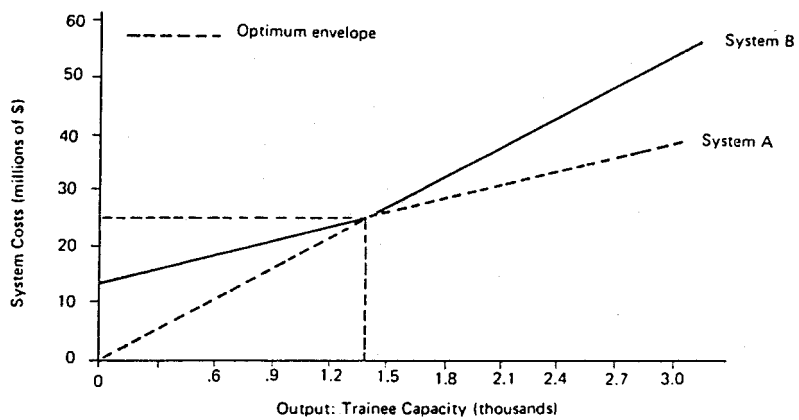


FIGURE 5.3 Trainee capacity versus system costs for alternative systems A and B.

7 RISK AND UNCERTAINTY

Financial planning and management often is concerned with future events that are inevitably characterized by uncertainty. It is important to recognize such uncertainty and to explicitly deal with it from the outset. Strategic decisions should involve an assessment of uncertainty and risk based on available estimates of alternative payoffs or gains. A risk is taken no matter what the decision. Even the decision to do nothing involves the risk of lost opportunity. An effective financial manager, whether in the public or private sector, must be aware of how opportunity, innovation, and risk are interrelated and must be willing to take risks appropriate to his or her level of responsibility.

7.1 Converting Uncertainty to Risk

One financial manager's uncertainty may be another's acceptable risk. What one manager may interpret as an uncertain situation to be avoided, another may see as an opportunity, albeit involving some risk. Although the two terms often are mistakenly used interchangeably, the distinction between uncertainty and risk is important in financial management.

Certainty can be defined as a state of knowledge in which the specific and invariable outcomes of each alternative course of action are known in advance. The key to certainty is the presence of only one state of nature (although under some circumstances, numerous strategies may be applied to achieve that state). This condition enables the manager to predict the outcome of a decision with 100 percent probability.

Uncertainty can be defined as a state of knowledge in which one or more courses of action *may* result in a set of possible specific outcomes. The probabilities of these outcomes, however, are neither known or meaningful. As Archer has observed, uncertainty involves a range of conditions in which probability distributions vary from a condition of relative confidence, based on objective probabilities, to a condition of extreme uncertainty, with little or no information as to the probable relative frequency of particular events. [14]

If a program manager is willing to assign objective or subjective probabilities to the outcome of uncertain events, then such events may be said to involve risk. *Risk* is a state of knowledge in which each alternative leads to one of a set of specific outcomes, each outcome occurring with a probability that is known to the decision maker. More succinctly, risk is reassurable uncertainty. Risk is measurable when decision expectations or outcomes can be based on statistical probabilities. The event of a Republican or Democratic victory in any given election is an uncertain outcome. The event of drawing a red card from a well-shuffled deck is an example of a risky outcome with a probability of 50 percent.

7.2 Uncertainty, Risk, and Probability Functions

In financial management, risk and uncertainty must be confronted from two primary sources: (1) statistical uncertainty and (2) uncertainty about the state of the real world in the future. The first type of uncertainty is usually less troublesome to handle. It arises from chance elements in the real world and would exist even if the second type of uncertainty were zero. Monte Carlo and related probability techniques can be used to deal with statistical uncertainty when it is encountered. [15]

Establishing a probability function can bring problems within more manageable bounds by reducing uncertainty to some level of risk that may be tolerable, depending on the risk threshold of the manager or organization. Probabilities can be established either *a posteriori* (by induction or empirical measurement) or *a priori* (by deduction or statistical inference).

The basic conditions necessary to establish *a posteriori* probability are (1) the number of cases or observations must be sufficiently large to exhibit statistical stability; (2) the observations must be repeated in the appropriate population or universe; and (3) the observations must be made on a random basis. The inductive approach offers the maximum opportunity for applied decision theory, because the number and range of situations in which such objective probabilities can be applied are increasing significantly.

Under the deductive, or *a priori* approach, a probability statement is not intended to predict a particular outcome for a given event. Rather, it asserts that in a large number of situations with certain common characteristics, a particular outcome is likely to occur. In short, a statistical inference is made regarding the probable outcome of an uncertain event or series of events.

7.3 Uncertainty and Cost Sensitivity

The second type of uncertainty—uncertainty about the future state of the real world—is more troublesome for financial management. In such cases, the use of sophisticated statistical techniques may be little more than expensive window dressing. When the environment is uncertain, an *expected value* approach often must be applied. Expected value is determined by multiplying the value products across all possible outcomes. In mathematical terms, expected value (EV) can be expressed as:

$$EV = P_1\$1 + P_2\$2 + \dots P_n\$n.$$

where P stands for probability, \$ stands for the value of an outcome, and

$$P_1 + P_2 + \dots P_n = 1.$$

Several techniques utilizing the concept of expected value have been developed to analyze uncertainty about the future state of events. These techniques

include (1) sensitivity analysis, (2) contingency analysis, and (3) a fortiori analysis. Each of these techniques is applicable in cost analysis under varying circumstances. The purpose here is not to present a “how-to” approach, but rather to identify the conceptual framework underlying these methods.

Sensitivity analysis is designed to measure (often quite crudely) the possible effects that variations in uncertain decision elements (for example, costs) may have on the alternatives under analysis. In most strategic decisions, a few key parameters exhibit considerable uncertainty. The analyst must determine a set of expected values for these parameters (as well as other parameters). Recognizing that these expected values may be, at best, “guesstimations,” the analyst may use several values (optimistic, pessimistic, and most likely) in an attempt to ascertain how sensitive the results might be to variations in the uncertain parameters.

Table 5.7 illustrates how sensitivity analysis can be used to determine the variations in rankings among several alternatives, based on anticipated costs. First, the analyst sets the expected values for all costs that are certain (for which some reliable basis exists for establishing an estimated cost). Three values for the uncertain costs are then determined. The optimistic cost represents an assessment of cost based on the assumption that everything will go right with the project—that all of the uncertainty is resolved favorably. The pessimistic cost represents the opposite assumption. The most likely cost figure falls somewhere in between these two extremes.

Two points concerning uncertainty are illustrated in Table 5.7. First, the range of uncertainty may vary from alternative to alternative (for alternative A, the uncertain range is \$10,000 to \$110,000; for alternative B, \$30,000 to \$115,000; and for alternative C, \$20,000 to \$90,000). Second, uncertain costs may not always be the critical factor in determining the “best” alternative. For example, although uncertain costs for alternative C vary over the narrowest range, this alternative still ranks third except under conditions of high—or pessimistic—uncertain costs.

Probability theory also can be applied in connection with sensitivity analysis. Assume, for example, that the probability of the most likely costs being realized is 50 percent; the most pessimistic costs, 30 percent; and the most optimistic costs, 20 percent. The composite expected values for all costs are shown at the bottom of Table 5.7. Given these assumptions, alternative B is clearly the preferred alternative.

Contingency analysis is designed to examine the effects on alternative choices when a relevant change is postulated in the evaluation criteria. This approach can also be used to determine the effects of a major change in the general decision environment, or “ground rules,” within which the problem situation exists. In short, contingency analysis is a “with and without” approach. In the field of public health, for example, alternative approaches to environmental health

TABLE 5.7 Illustration of Sensitivity Analysis

Cost Levels	Alt. A	Alt. B	Alt. C
Expected Values of Certain Costs	\$ 90,000	\$ 80,000	\$100,000
Optimistic Expected Values of Uncertain Costs	\$ 10,000	\$ 30,000	\$ 20,000
Expected Values of All Costs	\$100,000	\$110,000	\$120,000
Rankings	1	2	3
Pessimistic Expected Values	\$110,000	\$115,000	\$ 90,000
Expected Values of All Costs	\$200,000	\$195,000	\$190,000
Rankings	3	2	1
Most Likely Expected Values	\$ 60,000	\$ 40,000	\$ 70,000
Expected Values of All Costs	\$150,000	\$120,000	\$170,000
Rankings	2	1	3
Composite Expected Values			
Alt. A = [.50(150,000) + .30(200,000) + .20(100,000)] = \$155,000			
Alt. B = [.50(120,000) + .30(195,000) + .20(110,000)] = \$140,500			
Alt. C = [.50(170,000) + .30(190,000) + .20(120,000)] = \$166,000			

might be evaluated with and without a major new code enforcement program. In a more local context, a public service organization might evaluate various sites for the location of its headquarters under existing conditions of client distribution and access routes. Additional evaluations might then be made, assuming different client distributions and other route configurations.

A fortiori analysis (from the Latin, meaning “with stronger reason”) is a method of deliberately “stacking the deck” in favor of one alternative to determine how it might stand up in comparison to other approaches. Suppose that, prior to analysis, the governing board strongly favors alternative C. In performing the analysis on C in comparison to the other feasible alternatives, a deliberate choice is made to resolve any major uncertainties in favor of C. The analyst would then determine how each of the other alternatives compared under these circumstances. If some alternative other than C looks good (that is, if C does not show up “with stronger reason” to be the best alternative), there may be a very strong case for dismissing the initial intuitive judgment that favored C. This type of analysis can be carried out in a series of trials, with each alternative, in turn, being favored in terms of the major uncertainties.

These three techniques for dealing with uncertainty may be useful not only in a direct analytical sense; they may also contribute indirectly to the resolution of problem situations. Through sensitivity and contingency analyses, for example, it may be possible to gain a better understanding of the really critical uncertainties of a given problem. With this knowledge, a new alternative might be formulated that would provide a reasonably good hedge against a range of more significant

uncertainties. This is often difficult to do. When it can be accomplished, however, it may offer one of the best ways to offset the uncertainties of a problem situation.

7.4 Uncertainty, Risk, and Expected Utility

The assumption that people actually behave rationally in the manner suggested by the mathematical notion of expected value often is contradicted by observable behavior in a risky situation. People are willing to buy insurance, for example, even though they know that the insurance company makes a profit. People are willing to buy lottery tickets even though the chances of winning are minimal. Consideration of the problem of insurance and the so-called “St. Petersburg paradox” led Daniel Bernoulli, an eighteenth-century mathematician, to propose that these apparent contradictions could be resolved by assuming that people act so as to maximize their *expected utility*, rather than expected value. Thus people buy insurance because the consequences against which they are insured are significant in view of the costs. People are willing to invest small amounts of money in lottery tickets, even though the probability outcome is highly uncertain, because the payoff is so high relative to their expected utility.

Extensive research has been performed in the area of risk and uncertainty because the behavior of decision makers often appears to violate commonly accepted axioms of rational behavior. Although no exact probabilities may exist for the success or failure of a particular event, it has been observed that an individual with “clear-cut, consistent preferences over a specified set of strategies . . . will act as if he has assigned probabilities to various outcomes.” [16] The values for the probabilities will be unique for each individual and not unlike the values of utility that might be assigned to an individual through a study of his or her social preferences. The obverse of social preferences, of course, is risk aversion, a subject on which opinions vary. [17]

As most economists will now admit, utility theory alone cannot resolve the disputes over social preference and/or aversion to risk. There are numerous situations in which financial managers will have to obtain a more careful reading of the various utility functions or preferences of their clientele and the organization as a whole. As Stocky and Zeckhauser explain, strategic choice under uncertainty is a threefold process: [18]

1. Alternatives must be assessed to determine what probabilities and payoffs are implied for individual members of the organization and its clientele.
2. Attitudes toward risk of these individuals must be evaluated to determine the certainty equivalents of these probabilities and payoffs.
3. Having estimated the equivalent benefits that each alternative offers to different members of the organization/clientele, the decision maker must select the preferred outcome.

Although this process may sound simple, it often is very complex in application. Some basic tools have been developed to aid in unraveling these complexities. [19] These techniques can be brought into play, however, only after the manager has a fairly good understanding of organizational and/or clientele preferences. Once the groundwork for approximating utility has been laid, the financial manager will be better prepared to address uncertainties in a more systematic fashion.

A basic objective of financial management is to reduce uncertainty by bringing to light information that will clarify relationships among elements in the decision process. This reduction of uncertainty may cause the risk associated with a particular choice (1) to remain unchanged, (2) to decrease (as in the case where a reduction in uncertainty permits the assessment of more definitive probabilities), or even (3) to increase (as happens when the additional information reveals risk factors that previously were unknown). Thus, although risk and uncertainty are interrelated, they must be treated independently in many situations.

8 SUMMARY

In the allocation of limited financial resources, it may be assumed that most organizations consider both the payoffs and the pitfalls associated with various program requirements. These assessments, however, are often haphazard and uncoordinated, with little systematic effort to quantify benefits or to include all costs appropriate to the particular alternatives under consideration.

Strategic funds programming is a future-oriented approach that can be helpful in determining where discretionary funds may be available to implement new programs and strategies. Techniques used in programming strategic funds help to identify feasible options under various fiscal assumptions. The financial manager, however, must still make an assessment of risks and payoffs before the “best” option is selected.

In recent years, interactive computer software has become a significant analytical tool for financial planning, making possible on-line, real-time decision support systems. Traditional methods of financial analysis use hindsight to determine why things went wrong. Computer-assisted methods of financial planning provide a basis on which to anticipate (and accommodate) change before its full impact occurs. Most computer-based systems for financial planning can also be used to analyze risk and uncertainty.

Factors influencing future costs must be examined as part of the financial planning process. Monetary costs—research and development costs, investment costs, and the costs of operations, maintenance, and replacement—are commonly reflected in financial accounts. In financial planning, however, it often is necessary to look beyond these monetary costs to opportunity costs, associated

costs, and social costs. A thorough cost analysis must also distinguish among (1) fixed and variable costs, (2) recurring costs, and (3) marginal or incremental costs. These costs should be examined over the life of the project or program under analysis. The need to adopt an extended time dimension in such cost assessments has led to the development of cost-benefit analysis.

Cost-benefit and cost-effectiveness analysis can be applied at two pivotal points in the evaluation of resource commitments. In the planning stage, cost-benefit analyses are based on anticipated costs and benefits. Such analyses are not necessarily empirically based. After a program or project has been implemented and shown to have a significant impact, cost-benefit and cost-effectiveness analyses can be used to assess whether the costs of the program are justified by the magnitude of net outcomes. Such after-the-fact analyses should be based on detailed studies of available empirical data.

Cost-benefit and cost-effectiveness models need not be adopted “whole cloth.” A number of subroutines may be introduced into ongoing cost analysis procedures. Decision inputs can be developed to include considerations of time preference and marginal productivity of capital investment. The techniques of cost curve analysis can be applied to a variety of decision situations. The examination of expenditures in terms of program objectives and the evaluation of total benefits for alternative program expenditures can be important derivatives of cost-benefit techniques. The extended time horizon adopted in these analytical methods leads to a fuller recognition of the need for life-cycle costing and benefits analysis. The importance of incremental costing, sunk costs, and inheritable assets also is underlined by this extended perspective. Cost-goal and cost-constraint analyses add other important dimensions to the information available to the decision maker. As the complexity of the resource allocation problem becomes more evident, other subroutines may be adopted, depending on the availability of data and the capabilities of the analyst.

Uncertainty can be reduced and risk can be brought within tolerable limits through the generation of management information that clarifies critical relationships among elements in the decision process. Various methods have been formulated for converting uncertainty to risk—including the use of objective and subjective probabilities and the techniques of sensitivity analysis, contingency analysis, and a fortiori analysis. The concept of expected utility has been touched upon in this chapter in an effort to provide the reader with a broader understanding of the critical dimensions of strategic decisions.

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6

Principles and Practices of Public Budgeting

Budgeting is a cyclical decision-making process for allocating limited fiscal resources to achieve organizational priorities and objectives. A budget can be defined as “the financial articulation of the activities of a government unit . . . which recognizes anticipated revenues, authorizes activities, and appropriates expenditures” for a specific time period [1] Budgeting involves the systematic evaluation of prior commitments and their consequence in terms of anticipated outcomes or accomplishments. Properly applied, budgeting can contribute significantly to greater efficiency, effectiveness, and accountability in the overall management of an organizations’s financial resources.

1 BUDGETING: KEYSTONE OF GOVERNMENT ACTIVITIES

For trivia fans, the word *budget* is derived from the French word “bouge,” meaning leather bag. The Lord of the Exchequer would bring to Parliament a document that the government proposed be adopted as its fiscal commitments for the coming year. This document would be carried in a small leather bag or *bougette*. Thus the document eventually took on the name of the container used to transport it.

Today, the budget is the most important policy document at all levels of

government. Always voluminous and complex, “budgets simultaneously record policy decision outcomes, cite policy priorities and program goals and objectives, delineate a government’s total service efforts and measure its performance, impact and overall effectiveness.” [2] Issues concerning the size, scope, and composition of budgets at all levels of government currently dominate public discourse and are likely to continue to do so in the future. As Allen Schick has asserted, budgeting is central to all government activities. “The capacity to govern is the capacity to budget.” [3] As the United States remains mired in debt, the President and Congress are deadlocked in political grandstanding over budget and program priorities, new spending cuts and/or taxes, and other fundamental philosophical differences. The budget is the link between political and economic choices.

Budgeting involves meeting obligations, keeping promises. It involves choices about values, about which purposes are of highest priority. It involves questions of power: How are we governed and by whom. Most of all, taxing and spending decisions involve real people with real pain and real benefits. . . . Persistent deficits are blamed on a lack of courage or goodwill. Wrong. Deficits persist because choices are bad. . . . [4]

1.1 The Objectives of Budgeting

A budget is more than a fixed document, presented annually for review and approval by a governing body. Budgeting represents a complex decision process whereby (1) policy is formulated, (2) action programs are put into effect, and (3) both strategic and management controls are established. As Gladstone once remarked, “budgets are not merely affairs of arithmetic, but in a thousand ways go to the root of prosperity for individuals, the relations of the classes, and the strength of the kingdom.” [5] The annual cyclical nature of the budget process should not be misinterpreted as an inflexible routine. The needs of the public, citizen interests, organizational technology and service delivery systems tend to change over time. Budgets must have the capacity to adapt to these environmental dynamics.

Budgeting has always been viewed as a process for systematically relating the expenditure of funds to the accomplishment of planned objectives. Against this backdrop, the budget process must cope with the unprecedented problems of priorities, expenditures, revenue, tax policy, and debt financing. A budget represents the culmination of a complex decision process whereby public policy is translated into action programs, and both legislative expectations and management controls are established. In so doing, the budget must encompass many interrelated functions, including (1) allocating relatively scarce resources, (2) raising revenue, (3) stabilizing the economy, (4) holding operating agencies accountable, (5) controlling expenditures, (6) facilitating the transfer of intergov-

ernmental funds, (7) achieving planned goals and objectives, and (8) managing programs and projects. [6]

Thus, it is possible to define more clearly what the basic objectives of budgeting can and should be. A budget can be defined as a comprehensive plan, expressed in financial terms, by which an operating program is effective for a given period of time. It includes estimates of (1) the services, activities, and projects to be carried out, (2) the resulting expenditure requirements, and (3) the resources usable for their support. [7] A budget provides the legal basis for spending and accountability, especially in not-for-profit organizations. Revenue and expenditure information is structured through the budgeting/accounting process to facilitate the continuous monitoring, evaluation, and control of financial resources. Financial authority and responsibility can be delegated, while appropriate central control is maintained.

The budget process provides a framework for making decisions about the size, allocation, and financing options appropriate to achieve program and policy objectives. Goal determination and the proportion of resources to be allocated for the accomplishment of these goals “are the very real stuff of politics.” Consequently, the attempt to allocate scarce resources among competing objectives generates intense conflict among the participants in the budgetary process. Budgeting is conflict-ridden every step of the way, and the smaller the available resources, the more intense will likely be the conflict.

The budget summarizes the total work program of the government for the fiscal year. “Agency by agency, program by program, and project by project, the budget incorporates thousands of decisions on what will be done and at what cost.” [8] As the debate over the national budget bears out, the budget process is extremely political and seriously contentious. Public budgeting serves as a substitute for mechanisms of the economic market system. It is the process by which decisions are made regarding “who gets what.” The figures tell who won, who lost, or who stayed even in the conflicts over available resources.

Budgeting also involves the making of decisions under conditions of uncertainty, where such decisions may have significant long-term consequences. The purpose of budgeting should include both policy formulation and program management. Before a budget is proposed, goals and objectives should be formulated, plans delineated, policies analyzed, and programs defined. Financial commitments to organizational programs are (or should be) a clear declaration of policy. The fiscal stewardship that builds on the budget is a primary responsibility of management.

1.2 Operating and Capital Budgets

A distinction often is made between an annual operating budget and a capital budget. The annual *operating budget* includes an estimate of expenditures in

such areas as salaries, wages, contractual services, materials and supplies, and other “consumables,” which, in turn, must be balanced against the recommended revenue program for the coming fiscal year. An operating budget:

1. provides information to each successive level of management as a basis for evaluating competing requirements for limited financial resources.
2. provides the basis for the adoption of revenue measures and adjustments to fiscal policy.
3. facilitates the scheduling of work and the coordination of personnel and nonpersonnel service requirements
4. establishes the parameters for a fiscal audit and performance evaluation both during and after the close of the fiscal year.
5. provides the basis upon which the governing body may adopt an ordinance or resolution that authorizes agencies to incur obligations and to make payments with respect to these commitments.

Although the budget sets limits on spending, adoption of the annual operating budget should be viewed as a positive act. Emphasis on the control aspects of budgeting often results in a negative perception of the process, which can adversely affect the execution of the budget.

A *capital budget* identifies the capital expenditures to be incurred to meet long-term needs for public improvements (capital facilities) and the means of financing these commitments for the current fiscal period. [9] A capital budget often is supported by a *capital improvements program*, which documents improvement priorities over a longer time period (usually five to six years). A *capital facilities plan*, encompassing an even longer time horizon (15 to 20 years), may also be developed to provide an analysis of the fiscal resources available to support long-term debt commitments.

The budget for a specific project or program may include capital commitments. These anticipated capital expenditures, in turn, should be reflected in the overall capital budget of the jurisdiction. The principal resource allocations to support the activities of public agencies, however, are reflected in the operating budget, which is subject to periodic (e.g., annual) review and authorization. Different budgeting and accounting principles and procedures are associated with each of these basic budgets. The balance of this chapter will focus on the annual operating budget. Chapter 8 is devoted to the planning and budgeting of capital facilities.

1.3 The Budget Cycle

Budgeting requires careful scheduling to ensure adequate time and information for sound decisions. The budget process involves four major steps: (1) executive

preparation, (2) legislative review, modification, and enactment, (3) budget execution, and (4) post audit and evaluation. If important deadlines are to be met and the mass of detail required in the budget process is to be coordinated, these steps must be undertaken in an orderly sequence with responsibility for the performance of each step clearly assigned.

The budget cycle begins with the issuance of a budget memorandum or *budget call* by the chief executive, outlining (1) established goals and objectives; (2) anticipated fiscal policies; (3) specific performance expectations; and (4) level of funds available (in terms of percentage increases or agency ceilings). Policies and special instructions to guide the preparation of agency requests should be detailed in writing (i.e., as a *budget manual*). These instructions may include a forecast of anticipated economic conditions, a discussion of population trends, an outline of emerging service demands, and an effort to identify what these factors mean in terms of revenue and expenditure requirements.

A *budget calendar* sets forth key dates and assigns responsibility for carrying out the preparation of the budget. Controlling dates of the budget calendar for local governments often are set by state law, city charter, or local ordinance. The budget calendar should identify important deadlines, such as the date for submitting the budget to the governing body, for legislative adoption, and for setting the annual property tax levy and millage rate.

The budget calendars outlined in Table 6.1 are based on a fiscal year beginning on January 1, with property taxes falling due on the same date. Actual dates, of course, will have to be adjusted to reflect the fiscal year of the jurisdiction. The total time for the annual budget preparation cycle may vary from four to six months in larger cities and from two to three months in smaller municipalities and other public jurisdiction. The time required for each step will also vary with the size of the jurisdiction, established legal requirements, and the type of budget format applied.

Agency requests in response to the budget call should be built upon service plans for the coming year (responses to anticipated public demands for services) and forecasts as to the conditions likely to impact agency programs (conditions both within and outside the agency's control). If budget targets were established as part of the budget call to reflect preliminary estimates of revenue potentials, these constraints should be reflected in the agency's budget request. The required budget forms should be completed by each agency, reflecting the most appropriate assignment of resources—personnel, equipment, materials and supplies, and so forth—to carry out its program responsibilities.

Narrative justifications may be required and may include measures of efficiency and effectiveness to be applied in evaluating agency performance. Broad goals and objectives identified in the guidance memorandum may have to be further refined in order to place specific agency programs within this broader perspective. These justifications may also include a priority listing of all programs.

TABLE 6.1 Suggested Budget Preparation Calendars for Large and Small Cities

Time Period		Budget Requirement	Responsible Official
Large City	Small City		
Feb 1– July 15	June 14– Aug. 15	Preparation of long-term program of services and capital improvements	Chief Administrator and Agency Heads
Prior to July 15	Prior to Aug. 15	Preliminary work, including preparing financial data for prior and current-year and preliminary revenue estimates	Chief Finance Officer and Budget Director
July 15	Aug. 15	Issue budget instructions and request forms	Chief Administrator
July 15– Sept. 1	Aug. 15– Oct. 1	Prepare service plans, work programs and budget estimates	Agency Heads
July 15– Sept. 1	Aug. 15– Oct. 1	Prepare revenue estimates	Chief Finance Officer and Budget Director
Sept. 1– Sept. 15	Oct. 1– Oct. 15	Compile agency requests, check accuracy, and prepare summary	Chief Finance Officer
Sept. 1– Oct. 14	Oct. 1– Oct. 31	Review and investigate agency requests; determine final recommendations	Chief Administrator and Budget Director
Oct. 15– Nov. 1	Nov. 1– Nov. 15	Prepare budget document	Chief Administrator, Chief Finance Officer and Budget Director
Nov. 1	Nov. 15	Submit budget to Governing Body	Chief Administrator
Nov. 1– Nov. 30	Nov. 15– Nov. 30	Legislative consideration of budget, including public budget hearings	Governing Body
Dec. 1	Dec. 1	Budget adoption by enactment of appropriation and revenue ordinances	Governing Body
Dec. 1– Jan. 1	Dec. 1– Jan. 1	Prepare and mail tax bills	Finance Department
Dec. 15– Jan. 10	Dec. 15– Jan. 10	Prepare, review, and establish budget allocations and allotments	Budget Director and Agency Heads
Continuous	Continuous	Budget administration and management research	Administrative and agency staffs

Major policy issues or administrative problems, if any, should be identified, and requirements for new organizational policy or legislation should also be outlined, as appropriate.

1.4 The Executive Budget

The chief executive has primary responsibility for the preparation of budget estimates and for the development of a preliminary budget document. The executive budget is then presented to the governing body for review and adoption. In larger jurisdictions, the chief executive may rely on a budget office, a finance department, and financial planning analysts to develop the background information and financial details necessary to support the budget document.

The central budget agency checks agency submissions for completeness and accuracy. Agency requests are then compiled into a preliminary document to provide an overall summary of total dollar needs. State laws usually prohibit local jurisdictions from making expenditure commitments that exceed revenue expectations. Preliminary estimates may also be prepared by the budget staff to reflect changes in employee compensation and benefits, estimates of debt service requirements and interfund transfers, and any policy changes inherent in agency budget requests.

Balancing expenditure requests against total anticipated revenues is a major budgeting task for the chief executive and his or her staff. Since department heads are concerned primarily with the operations of their own units, the budget requests they submit, in the aggregate, usually exceed estimate revenues. Thus, the process at this stage is often one of budget cutting to bring the total budget into line with overall fiscal constraints. It may be necessary and appropriate, however, to identify new or modified fiscal policies to provide the resources necessary to meet justified program needs.

Department head should be given an opportunity to meet with the chief executive to explain or defend all, or selected portions, of their budget submissions. Such meetings may be wide-ranging in scope, or they may be restricted to a few points requiring further clarification prior to a final executive decision.

The executive budget document should provide a clear picture of the programs to be carried out and the fiscal resources to support these activities. This document must be designed so that it can be readily understood by members of the governing body and program managers, as well as by financial experts. The enthusiasm of budget technicians for complete detail often must be curtailed somewhat in the interest of clarity and simplicity. Clarity can be achieved without omitting important facts by a well-constructed budget message, carefully chosen summaries, and the use of tables and charts to explain

service programs and the interrelationship among various elements of proposed financial commitments.

The budget document is usually presented in at least two major parts. Part I contains the chief executive's *budget message* and summaries of revenue and expense information on all funds that have a direct bearing on cost. The budget message is the primary vehicle for conveying a clear understanding of the issues confronting the jurisdiction as it enters the next fiscal year. Its primary purpose is to give life and meaning to the budget figures and to highlight salient features. The message should outline the proposed fiscal policies and the basic premises underlying the estimates contained in the budget. It should include a summary of financial operations during the past year and current year to date; an analysis of the present financial situation; a description of the proposed financial and activities programs; and an explanation of the principal budget items. Major changes in public services, program objectives, costs, revenues, and financial trends should be noted and explained. A few carefully selected charts and graphs may be interspersed throughout the written text to add emphasis. However, the budget message must be concise to maintain reader interest.

A series of summary statement regarding revenue and expenditures should follow the budget message. The exact form of these statements will vary, depending on the legal funding structure of the jurisdiction. Among the more commonly used summary statements are the following:

General Budget Summary: preferably a one-page statement indicating the balance between proposed expenditures and resources; this statement may be divided into sections covering each major fund.

Summary of Expenditures: a breakdown of expenditures by program, function, agency, and fund.

Summary of Property Tax Revenues: a tabulation for several years of important data concerning property taxes, including assessed valuation by class of property, tax levy, tax collections, distribution of receipts by fund, and tax rate details.

Summary of Miscellaneous Revenues: tabulations for several years of revenues collected and analyzed by source and by fund.

Bonded Indebtedness Statement: data concerning amounts of bonds outstanding, bonds authorized and unissued, conditions of sinking funds, and analysis of legal debt margin.

Part II of the budget document contains the detailed supporting data and may be divided into several sections: (1) program objectives, volume-of-activity data, and expenditure requirements for each agency; (2) details for the current budget period regarding the capital improvements program; and (3) information concerning special funds not directly involving "cost" to the taxpayer, such as trust funds and revolving funds. The amount of detail and form of presentation

vary depending on legal requirements and the desires of the budgetmakers. Some jurisdictions include a Part III, which contains the drafts of ordinances to be adopted by the governing body, such as the appropriation ordinance, tax levy ordinance, and the borrowing ordinance (if bond issues are proposed).

1.5 Budget Adoption

Every effort should be made to provide a full explanation of the budget in terms of the range and scope of services it represents. The governing body should receive more than a thick document, with page after page of exhibits, offering little or no explanation of the services to be provided or the intent of the administration. Handed such a document, members of the governing body tend to focus on details of expenditures, such as the amount requested for office supplies, publications, and so forth. Such nit-picking over details arises from the absence of any broad explanation of the programs to be undertaken. As a consequence, important policy decisions—for example, determining appropriate levels of service—may never be directly addressed. The governing body may wish to consult with the chief executive and budget staff for detailed explanations of the proposed programs and the means of financing them.

In local government, public hearings generally are required by law so that citizens may express their sentiments on the budget. These hearing should be widely publicized. A summary of the tentative budget may be published, together with a notice of the time and place of the hearing. Although relatively few citizens attend unless they are irate over some aspect of the budget, public officials should be prepared for surprises. The turnout may be much larger than anticipated, and officials must be prepared to answer any and all questions.

After the public hearings, the budget should again be discussed in executive session in an effort to reach consensus on the proposed budget. The governing body may approve the budget by resolution, or it may adopt a separate appropriation ordinance that lists specific amounts for specific agencies by specific categories of expense. An appropriation ordinance provides a more effective benchmark for budget administration and post-auditing. Care must be taken, however, not to limit the ability of agencies/programs to adjust to changing conditions in order to implement activities during the fiscal year.

1.6 Budget Execution

The preceding steps in the formulation and review of the budget are of relatively little consequence if the budget is not properly administered. Budget execution is both a financial process and a substantive operational process. Authorized projects and programs must be initiated within an established time schedule, within monetary limits, and ideally, within standard cost limits. Budget execution is the longest stage in the budget cycle, covering the full fiscal year and overlapping

the formulation and review stages of the budget for the succeeding and prior years, respectively.

Budget execution procedures vary considerably from one public organization to the next. In some cases, these procedures consist of little more than “cash flow bookkeeping,” whereby actual expenditures are recorded in accordance with a predetermined system of accounts. In more advanced systems, however, the steps in budget administration include (1) appropriation, (2) allocation and allotment, (3) expenditure control, and (4) adjustment. Under these procedures, the budget is viewed as both a mandate for and a limit on expenditures. The budget contains estimates of revenues to be collected, and the operating and accounting cycles of government are based on the budget.

In government, an *appropriation* represents the legal authority to spend. As a rule, such authority is very specific about how much each agency can spend, and for what. The budget contains estimates of the revenues to be collected, and the operating and accounting cycles are based on the budget. The fiscal period begins with the effective date of the budget. The budget is formally recorded by the initial accounting entries for the fiscal period, at the level of detail specified in the appropriations.

The budget is further subdivided through an allocation process. *Allocations* may be identified in the budget document or may be made administratively in executing the budget. Allocations can be made according to objects and/or character of expenditure, organizational units, activity, programs, and/or functions. The budget of the Public Health Department, for example, might be subdivided through the allocation process to stipulate amounts for outpatient clinics, public health nurses, a community mental health program, and so forth. Allocations are often made for personnel services (salaries, wages, and fringe benefits) and for operations, with further subdivisions by major line items (such as travel, materials and supplies, and fixed assets or equipment).

Provision may also be made for an *allotment* system, whereby budget allocations are further subdivided into time elements—for example, monthly or quarterly allotments for personnel services or for some items in the nonpersonnel service categories. A system of allotments is particularly appropriate when expenditures are contingent upon some future event, such as the availability of a federal or state grant or the projected opening of a new public facility. For example, assume that the Fire Department’s budget makes provision for utility services in a new fire station. These funds should not be made available before the new station is completed and opened. Under this approach, the portion of the budget in question remains unallocated until it is required for actual commitment. Thus, if the facility is not completed on schedule, moneys initially earmarked for these purposes are restricted until required for the originally approved use. The basic function of the allocation and allotment processes is to assign elements of the overall budget to specific categories of expenditure to ensure that the funds are reserved for those categories.

1.7 Expenditure Controls

Budgetary accounting provides the principal control mechanisms for enforcing allocation, allotment, and appropriation limits. The techniques of budgetary accounting will be discussed in further detail in a subsequent chapter.

An *encumbrance system* is perhaps the important feature of budgetary accounting in terms of controls on expenditures. Specific allocations may be encumbered—reserved from the appropriation at the outset of the fiscal year. These commitments are then liquidated on an “as billed” basis—for example, payments for employee benefits, legal services, or consulting fees. The purpose of an encumbrance is to ensure that these funds will be available at the time needed—that they will not be spent for other purposes. In addition to all actual expenditures, commitments for goods and services that have been ordered but not yet received must be recorded in an encumbrance system. In this context, an encumbrance simply records the placing of a purchase order or the letting of a contract against the appropriation or allocation.

The basic function of an encumbrance system is to protect against a “floating debt”—incurring fiscal obligations in excess of appropriated or allocated funds. Suppose, for example, that sizable maintenance agreements, payable in four quarterly installments, are required on computer hardware leased from vendors. These payments may be scheduled so that the final quarter can be deferred until the next fiscal year, thereby freeing up additional operating funds to meet the day-to-day expenses of the computing center. Such deferred bills, however, become a burden on the next fiscal period. The appropriation/allocation for that subsequent period may become exhausted prematurely, thus encouraging further deferrals. Although the computing center may appear to stay within its budget for any given fiscal period, eventually the accumulated “debt” must be funded. An encumbrance system is designed to prevent this type of problem.

Other mechanisms through which the governing body can control specific expenditure are (1) line-item appropriations, (2) detailed controls on specific funds, (3) periodic budgetary reports, and (4) audits at the close of the fiscal year. Line-item appropriations—funding for specific, detailed spending purposes—became so commonplace in the era of fiscal control that the budget format has come to be known as a line-item budget. The governing body may retain some control in the budget execution stage by requiring that any proposed transfers between major appropriation items (usually above some arbitrary percentage level) receive its approval. Mandatory expenditures may also be imposed on local governments by the state legislature (for example, for education), and a state supervisory authority may need to be satisfied that the legal aspects of budgeting have been met. Monthly or quarterly budget reports offer an opportunity to assess the overall progress toward the attainment of program objectives within the authorized levels of funding. A comprehensive

review may be scheduled during the time that the budget for the succeeding year is being prepared.

1.8 Budget Adjustments

These periodic assessments, along with changing conditions, often necessitate significant adjustments in the budget during the fiscal year. Sufficient information should be maintained—through the accounting process and other sources—to anticipate requirements for formal budget amendments during the fiscal year. Some amendments require immediate attention; others can be handled more efficiently through a single *omnibus amendment*, ordinarily made during the final three or four months of the fiscal year. Budget amendments may require legislative action by the governing body, especially if supplementary appropriations are involved.

Revised estimates must be made during the final quarter of the fiscal year to determine the closing status of any unallocated fund balances. Specific allocations are often limited as to their fiscal year carryover; that is, unspent budget allocations may revert to the general treasury at the end of the fiscal year. Year-end reversion of funds is often cited as a major shortcoming of traditional budgeting procedures. This practice offers no incentive for conserving resources and, in fact, promotes year-end spending.

Some allocations may lapse at the end of the fiscal year only if they are not encumbered. Even if the funds have been encumbered, the National Council on Governmental Accounting recommends that government units either honor the contracts in progress at the end of the fiscal year or cancel them. If the government unit intends to honor outstanding contracts, (a) encumbrances outstanding at year end should be disclosed in the notes to the financial statements or by reservations of fund balance and (b) the subsequent year's appropriation should provide authority to complete these transactions. [10] A comparable amount of funds must be reserved in the subsequent appropriation to cover the estimated expenditures for the unperformed portions of existing contracts.

In attempting to “zero out” budget allocations as the end of the fiscal year approaches, agencies must exercise caution to ensure that the items of expenditure or encumbrances will withstand the test of a post-audit—that is, the agency is eligible to incur such items of expenditure. If allocations do not revert at the end of the fiscal year, or if only the unencumbered portions lapse, “encumbrances outstanding at year end should be reported as reservations of fund balance for subsequent year expenditures based on the encumbered appropriation authority carried over.” [11]

1.9 Internal and External Audits

There are two basic types of audits: internal and external. *Internal audits* are conducted periodically by in-house staff and result in reports for internal control

purposes. The *external audit*, normally required by state law, is conducted by independent accountants after the fiscal year has been completed. An external audit may be submitted to the regulating state agency (such as, the Auditor of Public Accounts), as well as to the local governing body. The governing body, in turn, should review the audit to ensure that revenue and expenditure activities have been conducted in accordance with the intentions of the budget and appropriation ordinance.

The traditional emphasis of the post audit has been on financial compliance—on an assessment of financial transactions for accuracy, legality, and fidelity. More recently, emphasis has been placed on *management audits*, which seek to assess efficiency and economy of resource utilization and to examine the adequacy of management information, administrative procedures, and organizational structure. This emphasis has been further expanded to include an assessment of program results. Such audits seek to determine whether program objectives have been met and the desired benefits achieved and examine alternative approaches that might yield the desired results at lower costs.

These three components—financial and compliance, economy and efficiency, and program results—when taken together, have been designated by the U.S. General Accounting Office as a performance audit. [12] Such an audit is generally undertaken when a program or project has been completed or has reached a major milestone in its funding. In some instances, auditors must review the performance of agencies or programs because standards of performance accountability are spelled out in legislation, regulations, or other governmental guidelines. Thus, the scope of auditing is expanding because the notion of accountability has been expanding.

2 EVOLVING PERSPECTIVES ON THE BUDGET

Current perspectives on what constitutes prudent fiscal policy differ considerably from those of the past. The appropriate role of government in providing public facilities and services as a “driving engine” for societal change has come under considerable scrutiny. These shifts in perspective have both emerged from and resulted in changing attitudes toward budgeting in the public sector. As Charles Beard once observed, “Budget reform bears the imprint of the age in which it originated.”

2.1 Fiscal Control Mechanism: Objects of Expenditures

Historically, the fiscal control aspects of the budget have received the greatest emphasis both in practice and in the literature of public budgeting. The budget has been viewed primarily as an extension of the accounting and manage-

ment control system, in which expenditure estimates for various programs are reviewed in monetary terms. Under this approach, budget requests are supported by detailed *objects of expenditures*—tabulations of the myriad items required to operate each program, including salaries and wages, rent, office supplies, travel, equipment, and other inputs. The validity of budget requests is judged primarily through comparisons with previous levels of expenditures. During this era of fiscal controls, annual balancing of revenues and expenditures (including commitments for capital improvements) was regarded as a fundamental principle of sound fiscal policy. This practice, however, frequently resulted in serious constraints on economic growth and development.

Early leaders in the movement for executive budgeting envisioned a system of *functional classifications* that would focus on the work to be accomplished, reflecting the fundamental dichotomy between politics and administration. [13] Functional accounts were to be designed primarily to facilitate rational program decisions, with detailed objects of expenditure regarded as subsidiary data, included for informational purposes only. In the view of many, however, such functional accounts did not provide adequate protection against administrative improprieties. Therefore, after some experimentation, most early budget agencies settled on the detailed itemization of expenditures, which they believed desirable not only “. . . because it provides for the utilization of all the machinery of control which has been provided, but it also admits to a much higher degree of perfection than it has at present attained.” [14]

By the early 1920s, the object-of-expenditure approach was widespread in its public application. This budget format, with its detailed recording of spending requirements and subsequent commitments, provides a most effective basis for fiscal control. The expenditure of budget allocations can be controlled within relatively narrow, predetermined limits. Financial accounting systems—developed in parallel with the object-of-expenditure budget—admirably support the objectives of fiscal control. This period in public financial management was marked by a preoccupation with forms and detailed procedures for budgeting and accounting.

Budgets based on objects of expenditure are readily understood by legislators and other public elected officials, which is one important reason why this budget format has survived for so long. It is relatively easy to grasp the fiscal significance of a proposed increase of 10 percent in printing or data processing, or a salary reclassification for a specific position or salary class. Therefore, governing bodies can review the budget and alter the minutiae of proposed expenditures. Larger issues of efficiency and effectiveness that should be examined through the budget process, however, often remain buried in the detail of object classifications. Such classifications cannot provide a basis for measuring the per-

formance of an agency or program or the progress made in the implementation of a particular set of objectives or activities.

2.2 Management Orientation: Performance Budgeting

As more reliable systems of accounting were installed, the budget was gradually freed from its primary role as fiscal watchdog. If the main function of budgeting is to keep spending in check, then program outputs are seen primarily in terms of limited and fixed values. However, with the advent of Keynesian concepts in economics, it became evident that governmental spending could serve as a means to increase wealth, as well as to redistribute it, without displacing private investment. If program accomplishments are examined in terms of benefits, the task of budgeting must be redefined to include a more effective marshaling of fiscal and other organizational resources to achieve those benefits.

The scientific management movement, with its historical ties to public administration, also hastened the adoption of budget processes for the evaluation and improvement of administrative performance. Government agencies sought to develop performance standards, and rudimentary techniques of work measurement were introduced along with elements of cost accounting.

In the late 1930s, the budget began to be recognized as an important tool of management—providing a focus on operating economies and performance efficiencies. These efforts culminated in the concept of performance budgeting, which had its heyday in the late forties and early fifties. In 1949, the Hoover Commission called for a budget approach that would:

focus attention upon the general character and relative importance of the work to be done, or upon the service to be rendered, rather than upon the things to be acquired, such as personal services, supplies, equipment, and so on. These latter objects are, after all, only the means to an end. The all important thing in budgeting is the work or the service to be accomplished, and what that work or service will cost. [15]

The performance budget format seldom is discussed in any detail in contemporary texts on public budgeting, being relegated for the most part to a historical footnote. Nevertheless, many of the attributes of performance budgeting have survived to become important, integral parts of modern budgeting systems.

The principal objective of a performance budget was to help administrators assess the *work efficiency* of operating units, by (1) casting budget categories in functional terms and (2) providing work-cost measurements to

encourage more efficient and economical performance of prescribed activities. The budget was envisioned as a work program, with work-cost data reduced into discrete, measurable units. *Activity classifications* were used to relate functions and work responsibilities to distinct operating units. Narrative program descriptions were also added to the budget document to provide a general picture of the work that was to be carried out by the unit requesting funds. These narrative statements also provided a basis for subsequently evaluating the agency's performance.

The principal focus of a performance budget is on performance units at or below the departmental level, where the work efficiency of operating units can be assessed. A *performance unit* can be described as a team of staff members responsible for carrying out a specific task or series of tasks. Work-cost data are reduced into discrete, measurable units to determine the performance efficiency of prescribed activities.

Very few functions of government are conducted by only one agency or department, however. Although functions may cut across organizational lines, in application, work programs were usually identified within the established agency structure. The inability to achieve a uniform and consistent basis for identifying performance units and a reluctance to adopt cost accounting procedures to assist in measuring performance served as major impediments in the implementation of performance budgeting, limiting its application as an aid to decision-making at the policy level.

2.3 Emphasis on Planning: PPBS and Program Budgeting

The next major innovation in the budget process to receive national attention was the Planning-Programming-Budgeting system (PPBS), heralded by some as the Holy Grail of over a half century of budget reform crusades. PPBS was brought into the public spotlight in August 1965, when President Lyndon B. Johnson announced that all federal departments would adopt the budgeting system that had been used for some years in the Department of Defense. However, what had proved to be highly successful techniques for the evaluation of weaponry systems were soon found to have only limited applications to other public agencies. Much heat but relatively little light arose from the ensuing discussions of PPBS that took place in legislative chambers, agency conference rooms, and college classrooms.

As with many innovations introduced by dictum, inadequate groundwork was laid for the development of PPBS at the federal level, and even less at the state and local levels. Although PPBS received enthusiastic support from proponents of a more rational and comprehensive approach to financial

management, it was met with corresponding skepticism by many who had experienced previous experiments with performance and program budgeting. The emphasis of PPBS on long-range planning to the near exclusion of the control functions proved to be disorienting to both operating agencies and policy-makers.

PPBS was an outgrowth of program-based budgeting techniques that had been developed earlier in business and industry. [16] The basic objective of *program budgeting* is to present budget requests in terms of program “packages” instead of the usual object-of-expenditure format. A conscious effort is made (1) to state end objectives, (2) to seek a wide range of program alternatives, and (3) to link program and financial plans. In short, program budgeting recognizes that planning and budgeting are complementary processes.

The need for planning, programming, budgeting, and scheduling arises from the indissoluble connection between the allocation of resources and the formulation and conduct of governmental policy. When undertaken in the proper “mix,” these processes constitute the means by which objectives and resources—and the interrelations among them—are taken into account to achieve a more coherent and comprehensive program of action. . . . [17]

Program budgeting provides the basis for resource allocation procedures that incorporate the basic objectives of accountability, efficiency, and effectiveness. Programs represent groups of interdependent, closely related activities or services. A program is a distinct organization of resources that contributes to a common objective of either (1) eliminating, containing, or preventing a problem, (2) creating, improving, or maintaining a condition affecting the organization or its clientele, or (3) supporting or controlling other identifiable programs.

Program budgeting focuses attention on aggregates of expenditures—broad program classifications that may cut across agency lines of responsibility. Such a focus was intended to facilitate the evaluation of alternative courses of action in terms of costs and benefits (or effectiveness). Program budgeting departed from the more basic models of cost-efficiency in which the objective is fixed and quantities of inputs and outputs are adjusted to secure an optimal relationship. In program budgeting, policy and program objectives may be considered to be variables, with their analysis leading to new statements of objectives. In program budgeting, the emphasis is on grouping data into categories that facilitate comparisons among alternative mixes of public expenditures to achieve defined goals and objectives.

2.4 Zero-Base Budgeting

For over seventy years, budget reformers have criticized the lack of coordination and the neglect of important values in traditional budget-building procedures, suggesting that they produce only small, incremental changes in the status quo. Such procedures, they argue, are arbitrary and irrational in that short-term results from previous allocation decisions are accepted as the primary criteria for future decisions. Existing programs are continued into the future, often without intensive re-examination. A comprehensive analysis of previously allocated resources—the *budget base*—seldom is undertaken under the incremental approach.

Therefore, such incremental budgeting is suspect as to its ability to limit the growth of governmental appropriations or to allocate scarce fiscal resources in the most economical, efficient, and effective manner. As E. Hilton Young observed in 1924: “It must be a temptation to one drawing up an estimate to save himself trouble by taking last year’s estimate for granted, adding something to any item for which an increased expenditure is foreseen. Nothing could be easier or more wasteful and extravagant.” [18]

Zero-base procedures were first adopted at the federal level in 1962 as part of an experiment in the preparation of the budget request of the U.S. Department of Agriculture for fiscal year 1964. The instructions issued by the Office of Budget and Finance of USDA stated:

All programs will be reviewed from the ground up, and not merely in terms of the changes proposed for the budget year. . . . Consideration must be given to the basic need for the work contemplated, the level at which work should be carried out, the benefits to be received and the costs to be incurred. The fact that certain activities have been carried out for a number of years will not, per se, adequately justify their continuation nor will the fact that programs are prescribed by statutory law necessarily be a controlling consideration. [19]

The results of the USDA experiment with zero-base budgeting revealed certain disadvantages or problems with the process. A major factor limiting the application of zero-base budgeting is the increased workload, often resulting in the diversion of effort from regular programs. The USDA found that analyzing budget requests from the “zero base” did not significantly improve program efficiency or effectiveness, but did produce overwhelming amounts of paperwork. The experiment was abandoned after one year.

As governor of Georgia, Jimmy Carter became interested in zero-base budgeting through an article authored by Peter Phyrri that appeared in the November–December 1970 issue of the *Harvard Business Review*. Phyrri spent a year in Georgia helping to design and implement the first year of zero-base budgeting for

the entire state government in conjunction with the reorganization of the executive branch. Upon his election as President, Carter sought to install zero-base budgeting techniques at the federal level, and in April of 1977, the Office of Management and Budget published the official federal instructions on zero-base budgeting.

Although zero-base-analysis techniques received the greatest publicity at the federal and state levels, they may have even more significant potential in application at the local level. Agencies are required “to examine their budgets below the base; the base being their current level of expenditures. . . . Zero-base budgeting requires each agency to specify—on paper—as part of its regular policy submission—possibilities for spending less money than the current year.” [20] Current applications of zero-base budgeting have taken a somewhat more modest and more realistic approach as compared to earlier efforts in the mid-1960s. The detailed analysis of programs “to the zero base” has been replaced by the concept of *levels of effort*. The basic objective remains the same—to circumvent the shortcomings of incremental budgeting.

2.5 Need to Integrate Planning and Control Objectives

The past thirty years have been a period of experimentation in the processes of public budgeting. At the federal level, PPBS—the major budgetary reform of the mid-1960s—gave way to zero-base budgeting under the Carter administration, only to be replaced by mission budgeting and supply-side economics in the 1980s. Each of the approaches represent an attempt to provide a more comprehensive and longer-range perspective to the budget process—to incorporate a *planning perspective*.

An evident shortcoming of these new budgetary approaches, however, has been the failure to fully integrate these more systematic procedures with the other basic components of financial management. In particular, more recently developed budgeting techniques—such as program budgeting and zero-base budgeting—have not been well aligned with appropriate accounting procedures. These new budgetary formats tend to emphasize the planning function. Far less attention is given to the equally important techniques and procedures for financial control. As a result, these new approaches, in many cases, have failed to produce the desired improvements in terms of more efficient, economical, and effective governmental operations.

Each of these budget formats arose from the financial management needs at a particular point in time; each reflects varying decision-making capacities; and each has varying management information needs and output capacities (see Table 6.2). Efforts to more fully integrate the basic objectives of financial planning and management control within the budget process provide a primary focus of the next chapter.

TABLE 6.2 Basic Differences Among Budget Orientations

Characteristic	Objects of Expenditure	Performance Budget	PPBS/Program Budget	Zero-Base Budget
Control	Central	Operating	Operating	Operating
Management	Dispersed	Central	Supervisory	Dispersed
Planning	Dispersed	Dispersed	Central	Central
Role of Budget Agency	Fiduciary	Efficiency	Policy	Effectiveness
Information Decision	Bottom-Up	Bottom-Up	Top-Down	Iterative
Flow	Aggregative	Aggregative	Disaggregative	
Information Focus	Objects	Activities	Programs	Decision Packages
Decision Basis	Incremental	Incremental	Programmatic	Programmatic
Key Budget Stage	Execution	Preparation	Analysis	Analysis
Personnel Skills	Accounting	Administrative	Economics	Management
Appropriation/ Organization Linkages	Direct	Activity-Based	“Across-the-Board” Budget Units	

Adapted from: Allan Schick, “The Road to PPB: The Stages of Budget Reform,” in *Planning Programming Budgeting: A Systems Approach to Management*, ed. Fremont J. Lyden and Ernest G. Miller (Chicago, Ill.: Markham Publishers, 1968), p. 50.

ENDNOTES

1. James C. Snyder, *Financial Planning and Management in Local Government* (Lexington, Mass.: Lexington Books—D.C. Heath and Co., 1977), p. 99.
2. Albert C. Hyde, “The Development of Budgeting and Budget Theory: The Threads of Budget Reform” in *Government Budgeting, Theory, Process, Politics* (Pacific Grove, CA.: Brooks/Cole Publishing, 1992), p. 1.
3. Allen Schick, *The Capacity to Budget* (Washington, D.C.: Urban Institute, 1990).
4. Aaron Wildavsky, in Hyde, *op. cit.*, p. 2.
5. As quoted in Hyde, *op. cit.*, p. 1.
6. Donald Axelrod, *Budgeting for Modern Government*, 2nd edition (New York: St. Martins Press, Inc., 1995), p. 7.
7. Committee on Budgeting of the Municipal Finance Officers Association.
8. Axelrod, *op. cit.*, pp. 8–9.
9. Capital budgeting has been a vehicle of financial planning and management for local and state governments since the early 1900s. The first Comprehensive Capital Investment Plan was introduced in Kalamazoo, Michigan, in 1921, but elements of capital budgeting date back to 1681, when the first capital program was developed for the City of Philadelphia under the direction of William Penn.
10. National Council on Governmental Accounting, *Statement 1: Governmental Accounting and Financial Reporting Principles* (Chicago: Municipal Financial Officers Association, 1979), p. 14.
11. *Ibid.*, p. 14.

12. Leo Herbert, *Auditing the Performance of Management* (Belmont, Calif.: Lifetime Learning Publications, 1979).
13. See: Frank J. Goodnow, "The Limit of Budgetary Control," *Proceedings of the American Political Science Association* (Baltimore, 1913), p. 72; William F. Willoughby, "Allotment of Funds by Executive Officials, An Essential of Any Correct Budgetary System," *op. cit.* pp. 78–87.
14. New York Bureau of Municipal Research, "Some Results and Limitations of Central Financial Control in New York City," *Municipal Research*, Volume 81 (1917), p. 34.
15. U.S. Commission on Organization of the Executive Branch of the Government, *Budgeting and Accounting* (Washington, D.C.: U.S. Government Printing Office, 1949), p. 8.
16. David Novick, often credited for the formulation of PPBS, has observed that the concepts of program budgeting "have rather ancient and hoary origins." Large corporations, such as DuPont and General Motors, were applying program budget techniques in the early 1920s. For a further discussion of the roots of PPBS, see: David Novick (ed.), *Program Budgeting: Program Analysis and the Federal Budget* (Cambridge, MA: Harvard University Press, 1967).
17. Alan Walter Steiss, *Public Budgeting and Management* (Lexington, MA: Lexington Books—D.C. Heath Co., 1972), pp. 154–155.
18. Cited in Aaron Wildavsky and Arthur Hammann, "Comprehensive versus Incremental Budgeting in the Department of Agriculture," *Administrative Science Quarterly* 7 (December 1965), p. 321.
19. Wildavsky and Hammann, *op. cit.*, p. 321.
20. Allan Schick, "Putting It All Together," *Sunset, Zero-Base Budgeting and Program Evaluation*, Proceedings of a Conference on Legislative Oversight (Richmond, Va.: Joint Legislative Audit and Review Commission, 1977), p. 41.

7

Budgeting as a Mechanism for Financial Planning and Management

As outlined in the previous chapter, a budget can serve as a fiscal control mechanism, a management tool, and an important component of financial planning. As a *control mechanism*, a budget seeks to assure financial integrity, accountability, and legal compliance—the traditional roles of the budget. As a *management tool*, a budget can be used to achieve operating economies and performance efficiencies. As a component of *financial planning*, a budget must reflect public objectives and the overall effectiveness of government programs in meeting public service needs. In this chapter, an effort will be made to integrate these three basic functions into a more comprehensive budget process.

1 FISCAL CONTROL AND ACCOUNTABILITY

The fiscal control of governmental activities is achieved primarily through the line-item appropriation process and the object of expenditure budget. Funds are appropriated to agencies through a series of line items—such as salaries, materials and supplies, travel, contractual services, and equipment—and agencies must receive legislative approval for any expenditures that exceed the dollar amounts of these authorized appropriations (usually beyond some predetermined level—for example, plus 10 percent). Line-item appropriations became so commonplace in the era of fiscal control that the budget format came to be known in

some quarters as a *line-item budget*. However, the critical linkage between the budget and the accounting system is the more detailed objects of expenditures that form the subdivisions of the line-item appropriations. Therefore, a more descriptive label for this budget format would be a *line-item/object-of-expenditure budget*.

1.1 Line-Item/Object-of-Expenditure Budget

The line-item/object-of-expenditure budget has two distinct advantages over other budget formats:

1. Accountability. *Object classifications* establish a detailed pattern of accounts that can be controlled and audited. Each object of expenditure is subject to a separate documentation. Object classifications show in great detail *what* is purchased, but not *why*—i.e., the nature of organizational programs and accomplishments anticipated under those programs.
2. Management control. Personnel requirements are closely linked with other budgetary requirements. The control of authorized positions can be used as leverage to control the whole budget.

Budget requests are supported by detailed listings of the categories of expense required to operate each program (see Table 7.1). Appropriations may be made on a lump-sum basis, leaving considerable discretion to the agency regarding the specific categories of expenditure permitted. Or funds may be appropriated according to specific line-item categories—for example, for personnel services (salaries, wages and staff benefits) and nonpersonnel services (all other operating expenditures). Under this latter approach, agencies might be permitted to shift dollars from other operating categories to salaries and wages, but might not be authorized to shift funds from salaries and wages to operations. In effect, appropriations for salaries and wages are encumbered, and any unexpended funds in this line item revert to central appropriations. This line itemization approach is used to prevent agencies from holding positions vacant to generate more operating dollars (for example, for “windfall” equipment purchases). Such line itemization can also specify more detailed appropriations for various personnel categories (for example, professional staff, technical-support personnel, clerical personnel) or for specific object codes (for example, equipment or travel).

Projected expenditures may be backed up by a *personnel schedule* that identifies the specific positions (i.e., by job titles) to be authorized and the anticipated salary commitments of each position. The personnel schedule (Table 7.2) for the Investigations Division of the Rurbana Police Department clearly shows that the proposed staffing increase would add a sergeant, an inspector, and a detective to

TABLE 7.1 Line-Item Budget for Investigation Division

Budget Comments			
As a result of the reorganization of the Police Department, it is requested that the staff of the Division be increased by three persons. The budget request shows an increase of 18.35% or \$225,205 over the current budget period. Personnel Services show an increase of \$142,165 (17.7%). This increase is the result of four new employees and a five percent salary increase for all city employees. Increased emphasis is placed on the purchase of drug information. The increase is shown under object code 1250. Additional data processing and laboratory equipment has been requested.			
Object Classification	Last Fiscal Year	Current Budget	Next Fiscal Year
<i>Personnel Services</i>			
1110 Salaries	\$737,223	\$802,975	\$945,140
1120 Wages	0	0	
1130 Special Payments	0	0	
1140 Overtime Payments	36,861	40,150	47,260
Subtotal: Personnel Services	774,084	843,125	992,400
<i>Contractual Services</i>			
1210 General Repairs	398	440	505
1220 Utility Services	996	1,100	1,265
1230 Motor Vehicle Repairs	2,520	2,750	3,165
1240 Travel	1,000	1,100	1,210
1250 Professional Services	4,408	6,600	7,920
1260 Communications	795	880	1,010
1270 Printing	0	0	0
1280 Computing Services	4,523	5,000	5,750
1290 Other Contractual Services	0	0	0
Subtotal: Contractual Services	14,640	17,870	20,825
<i>Supplies and Materials</i>			
1310 Office Supplies	4,806	5,290	5,820
1320 Fuel Supplies	6,540	7,195	7,915
1330 Operating Supplies	2,667	2,935	3,230
1340 Maintenance Supplies	1,988	2,190	2,410
1350 Drugs & Chemicals	7,896	8,685	9,555
1360 Food Supplies	0	0	0
1370 Clothing & Linens	8,012	8,815	9,700
1380 Education & Recreation Supplies	0	0	0
1390 Other Supplies	0	0	0
Subtotal: Supplies & Materials	31,909	35,110	38,630

TABLE 7.1 Continued

Object Classification	Last Fiscal Year	Current Budget	Next Fiscal Year
<i>Equipment</i>			
1410 Office Equipment	0	1,500	3,000
1420 Electrical Equipment	0	0	0
1430 Motor Vehicles	30,000	45,000	40,000
1440 Highway Equipment	0	0	0
1450 Medical & Lab Equipment	0	400	800
1480 Data Processing Equipment	0	5,000	8,500
1490 Other Equipment	0	0	0
Subtotal: Equipment	30,000	51,900	52,300
<i>Current Obligations</i>			
1530 Rental Charges	0	0	0
1540 Insurance	3,700	4,000	4,500
1550 Dues & Subscriptions	30	40	50
1560 Electrostatic Reproduction	500	1,000	1,150
1590 Other Obligations	0	0	0
Subtotal: Current Obligations	4,230	5,040	5,700
<i>Employee Benefits</i>			
1610 Retirement & Pension Benefits	73,722	88,325	118,141
1620 Social Security Contributions	50,500	55,005	67,576
1640 Group Insurance	14,744	16,060	18,905
1650 Medical/Hospital. Insurance	103,211	114,825	137,990
Subtotal: Employee Benefits	242,178	274,215	342,610
TOTALS	1,097,040	1,227,260	1,452,465

the ranks of the Division. Each of these new positions presumably would be funded at the entrance level of the salary range. Therefore, of the \$117,085 budget increase requested for salaries, \$78,000 can be attributed to the three new positions and the balance to the proposed 5 percent across-the-board increase for all city employees. The possible linkages between the proposed staff increase and the 12 percent increase (\$6,955) in the operating costs (exclusive of equipment) shown in Table 7.1 is not evident from the line-item/object of expenditure budget, however.

1.2 Accountability through Object Codes

Objects of expenditure represent the fundamental elements of an organization's operations in terms of the goods and services procured. *Object codes*—three-digit or four-digit numbers—can be used to budget *and* record expenditures in considerable detail (see Table 7.1). These object codes (or class codes) represent cost items that are common to all government agencies and therefore, provide across-the-board uniformity in the tracking of expenditures through financial ac-

TABLE 7.2 Personnel Schedule for Investigation Division

City of Rurbania Police Department					
Position Title	Current Authorized Personnel	Requested Personnel	Monthly Salary Range	Current Budget	Next Fiscal Year
Lieutenant	1	1	\$2,700–3,200	\$36,000	\$37,800
Laboratory Supervisor	1	1	2,500–3,000	32,000	33,600
Sergeant	2	3	2,300–2,800	60,000	90,600
Inspector	3	4	2,200–2,700	86,750	117,500
Detective	15	17	2,000–2,500	425,000	494,250
Photographer	1	1	1,800–2,300	23,000	24,150
Property Clerk	1	1	1,700–2,200	22,000	23,100
Laboratory Technician	1	1	1,600–2,100	21,600	22,680
Photographer Technician	1	1	1,400–1,900	18,500	19,425
Secretary	1	1	1,200–1,700	17,940	18,840
Clerk-Stenographer	4	4	1,100–1,600	60,185	63,195
Total	31	35		\$802,975	\$945,140

counting procedures. Object codes can be further subdivided into sub-object classifications—for example, 1200 contractual services can be broken down into 1210, general repairs; 1220, utility services; 1230, motor vehicle repairs; 1240, travel; and so forth. Categories of contractual services can be further enumerated; for example, 1240 travel might be organized as follows:

- 1241 mileage (use of private vehicles)
- 1242 automobile rentals
- 1243 fares for airlines and other public conveyance
- 1244 tolls and parking
- 1245 lodging and subsistence
- 1246 convention and educational expenses

Objects of expenditures, in turn, can be aggregated under broad expenditure characteristics such as for current operations, capital expenditures, and debt service. They can also be assigned to and recorded as the expenditures of a specific organizational unit, activity classification, program or subprogram, and/or basic function of government. For example, the following sixteen-digit code:

23-01-105-1245-45301

might be used to record a travel expenditure for meals and lodging (1245) of a staff member from the Police Department (105) under the public safety function (23) in conjunction with an out-of-town investigation on a specific case (45301). The code 01 might be used to designate the funding source (general funds) to

which this expenditure is to be charged. The five-digit project code might also be used to designate the program or subprogram (45xxx) and the activity classification (xx30x). The activity classification in this instance might represent a felony involving bodily harm to the victim. Using such multi-digit codes, accounting entries can be retrieved and sorted to meet a variety of financial management and reporting purposes. The capacity to monitor and to “crosswalk” expenditure data for various financial planning and control purposes will be discussed in further detail in a subsequent section.

Recent developments in the field of budgeting have emphasized the planning aspects of the resource allocation process. Unfortunately, some of these applications of budget reforms have abandoned or have significantly altered the management control features of more traditional budget approaches. In part, this counter swing is a reaction to perceived shortcomings of the line-item/objective-of-expenditure budget. It also is a consequence of a more centralized, “top-down” approach to budgeting that seeks to improve the rationality of public decision-making through both structural and procedural changes. Techniques and procedures to increase the efficiency and effectiveness of resource allocation decisions must be incorporated in any financial planning and control system that is responsive to these demands. By the same token, mechanisms of accountability and control must be retained in a balanced approach to budgeting.

2 MANAGEMENT EMPHASIS ON PERFORMANCE

The management objectives of operating economies and performance efficiencies derive much of their conceptual and technical basis from cost accounting and the precepts of scientific management. The focus on these objectives culminated in the late 1940s and early 1950s in the concept of performance budgeting. Three components distinguish performance budgeting from other budgetary approaches:

1. Identification of *work programs* that are meaningful for management purposes
2. Delineation of *performance units* within each work program, either in terms of activities or by specific end products
3. Efforts to fully measure *performance costs*

These components represent particular strengths of performance budgeting, yet in another sense, they also reflect the basic shortcomings of this approach in terms of its implementation.

2.1 The Budget as a Work Program

A performance budget is built on a series of work programs related to particular functions or programs carried out by public agencies or units within not-for-

profit organizations. Work programs are usually identified within the established agency structure. Work-cost data are translated into discrete, measurable units to determine how efficiently prescribed activities are carried out by *performance units*—teams of staff members responsible for specific tasks.

To illustrate the performance budget format, the data for the Investigations Division of the Rurbana Police Department, presented in Table 7.1, have been translated into a work program and related effort and cost distributions in Table 7.3.

Activity classifications or *descriptions* seek to relate specific activities to the responsibilities of distinct operating units. The term “activity” can be applied under various circumstances to mean process, project, or purpose. A *process* approach would list as activities the various steps in carrying out the work program of a performance unit. A *project* approach might list the individual projects (often involving fixed assets and capital facilities) that go to make up the total activity areas of an agency. A *purpose* classification might group activities according to broad functions or by clientele groups. In the case of the Investigations Division, activities are classified by levels of crime—misdemeanors and felonies—and the supporting scientific investigations carried out in the laboratory. This activity classification is essentially by purpose.

Performance costs are those costs directly associated with carrying out these activities. The aggregate costs associated with each activity classification are shown in Table 7.3 for the previous fiscal year, the current fiscal year, and the level of support requested for next fiscal year. A significant increase (18.7%) is projected in the number of felony cases to be investigated, and a slightly lesser increase (16.9%) in the number of misdemeanors. The staff hours to be devoted to the investigation of felonies are projected to increase by only 8%, whereas the staff hours devoted to the investigation of misdemeanors are projected to increase by 19.3%. Misdemeanors are investigated initially by uniform patrol officers, and therefore, cases that are referred to the Investigations Division tend to be more time consuming. A modest increase in the case load is likely to result in a proportionately greater increase in the staff hours required for these investigations.

2.2 Performance Measures

Unit cost measures aggregate all relevant costs associated with the delivery of a particular service and divide these costs by the total units of service provided. In the field of public health, for example, the unit cost for the administration of a immunization program for children would include the salary costs of the medical personnel involved as well as the cost of the vaccine, other supplies, and equipment. These costs may vary with the number of children inoculated and with the method of delivery (e.g., through public health clinics, in schools, or by private

TABLE 7.3 Effort and Cost Distributions for Activities of the Investigations Division

Work Program									
The Investigations Division is responsible for the follow-up on criminal cases initially handled by patrol officers. The Division is organized to handle specific types of crime or clientele. The Division investigates cases, arrests violators, and prepares evidence to assist in legal prosecutions. Crimes investigated include felonies and misdemeanors, crimes involving moral turpitude, gambling, and substance abuse, crimes involving minors and the mentally ill. The Division's laboratories provide scientific assistance to all types of investigations.									
Activity Description	Last Fiscal Year			Current Budget			Next Fiscal Year		
	Units	Staff Hours	Cost	Units	Staff Hours	Cost	Units	Staff Hours	Cost
Felony Cases	797	33,600	\$710,815	855	34,880	\$773,065	1015	38,570	\$888,125
Misdemeanors	408	10,070	\$212,930	445	10,310	\$243,430	535	13,375	\$326,350
Licenses	250	1,120	\$17,286	260	1,130	\$17,585	380	1,615	\$26,695
Lab Examinations	4897	5,860	\$85,797	4980	7,865	\$117,825	5075	8,120	\$119,535
Forensic Investigations	260	560	\$14,903	275	560	\$15,030	285	570	\$14,250
Evidence Procurement	8580	1,850	\$22,734	8700	1,870	\$23,170	8800	1,760	\$26,400
Impounded Autos	865	185	\$2,375	935	200	\$2,590	985	250	\$2,705
Misc. Property	890	185	\$2,292	915	190	\$2,375	900	180	\$2,115
Photography	18600	2,125	\$26,070	18900	2,150	\$26,620	19200	1,920	\$28,800
Firearm Regis.	82	25	\$290	115	35	\$415	125	40	\$500
Lectures	20	100	\$1,548	66	330	\$5,155	20	100	\$1,500
Audio-Video		0	\$0	0	0	\$0	4	700	\$15,490
TOTALS		55,680	\$1,097,040		59,520	\$1,227,260		67,200	\$1,452,465

practitioners). Unit costs are likely to decrease as the size of the immunization program increases (economies of scale), but at some point, unit costs may again increase as hard-to-reach cases are encountered.

Workload measures relate to the volume of work performed during some time period. In a public welfare department, for example, it may be possible to determine the number of cases in various categories that can be handled by a caseworker on a daily, weekly, or annual basis. With this information and an estimate of the total number of cases to be processed, it is possible to calculate the number of personnel required during any fiscal period. Other common workload measures are number of customers served, tons of trash collected, number of children vaccinated, number of hospital patients served, number of inspections made, number of library books circulated, number of emergency calls responded to, and number of full-time equivalent students. Each of these measures must include a time dimension—per day, week, month, or year. Workload measures provide basic budget-building information and, retrospectively, often indicate the adequacy of previous resource allocation decisions.

Workload measures are output measures. In the aggregate, they indicate the volume of goods and/or services delivered by a program or agency. Unit cost measures, on the other hand, are *input measures*; they indicate the resources used to operate a program. When workload (output) measures are related to unit costs (input) measures, the resulting index often is called a *performance measure*.

Workload and unit cost measures for the Investigations Division of the Rurbana Police Department are shown in Table 7.4. As these data suggest, the unit costs for felony cases are anticipated to decrease as the number of units increases, whereas the unit costs for cases involving misdemeanors are projected to increase in the coming fiscal year.

Performance measures often are used as indicators of operating efficiency—for example, cost per patient-day of hospital service; number of cases successfully prosecuted per law enforcement officer; or response time involved in providing paramedical services. As may be seen from these examples, not all performance measures are expressed in cost terms. Performance measures provide basic information on program economics, revealing important relationships between initial resource allocations (inputs) and the delivery of services (outputs).

An overemphasis on performance measures in administrative decision-making, however, may result in pseudo-efficiency. Performance measures can be overstated. Or units may resort to “creaming”—doing the easy assignments first and deferring or neglecting the more difficult ones—in order to meet such measures of efficiency. If, for example, the forensic laboratory is evaluated in terms of the number of tests performed, priority might be given to the relatively simple tests, leaving the more involved ones until the “volume” tests have been completed. Thus, there is need for careful review of performance data by disinterested third parties—often the responsibility of internal auditors.

TABLE 7.4 Workload and Unit Cost Measures for Investigations Division

Activity Description	<i>Last Fiscal Year</i>			<i>Current Budget</i>			<i>Next Fiscal Year</i>		
	Units	Staff Hours per Unit	Cost per Unit	Units	Staff Hours per Unit	Cost per Unit	Units	Staff Hours	Cost per Unit
Felony Cases	797	42.16	\$891.86	865	40.32	\$893.72	1015	38.00	\$875.00
Misdemeanors	408	24.68	521.89	445	23.17	547.03	535	25.00	610.00
Licenses	250	4.48	69.14	260	4.35	67.63	380	4.25	70.25
Lab Examinations	4897	1.20	17.52	4980	1.58	23.66	5075	1.60	23.55
Forensic Investigations	260	2.15	57.32	275	2.04	54.65	285	2.00	50.00
Evidence Procurement	8580	0.22	2.65	8700	0.21	2.66	8800	0.20	3.00
Impounded Autos	865	0.21	2.75	935	0.21	2.77	985	0.25	2.75
Misc. Property	890	0.21	2.58	915	0.21	2.60	900	0.20	2.35
Photography	18600	0.11	1.40	18900	0.11	1.41	19200	0.10	1.50
Firearm Regis.	82	0.30	3.54	115	0.30	3.61	125	0.32	4.00
Lectures	20	5.00	77.40	66	5.00	78.11	20	5.00	75.00
Audio-Video		0.00	0.00	0	0.00	0.00	4	175.00	3,872.50

Performance budgeting introduced a broader use of program information in the formulation of budget documents and the subsequent accounting of expenditures. Workload and unit cost measures and the concept of performance levels have been incorporated into many contemporary management applications that seek greater efficiency and economy in the allocation of limited financial resources.

3 PLANNING AND BUDGETING

The budget affords an opportunity to reevaluate the broad goals and objectives of an organization on a regular cycle. It also provides a basis on which to compare programs and their costs in light of these longer-range objectives. Until recently, the planning potential of the budgetary process, however, has largely been overshadowed by the traditional focus on fiscal controls.

3.1 Program Budgeting

Program budgeting—the successor to PPBS—is actually its predecessor. The roots of program budgeting can be traced back to turn-of-the-century efforts at budget reform. Program budgeting offers considerably more latitude within which to combine a financial planning orientation with the basic functions of management control. Therefore, program budgeting provides a foundation for a dual budgetary system more fully attuned to the basic objectives of accountability, efficiency, and effectiveness.

In recent years, the techniques of program budgeting have been adopted (and adapted) by some state and local governments and other public organizations. Few state and local applications of these techniques and procedures are identical, however. Many are actually performance budgets, presenting budget information in work-efficiency terms by projects or activities. Other formats have been tailored to the point that they are not easily recognizable as program budgets in the pure conceptual form. This tailoring usually is the result of financial management needs as perceived by the governing body, however, and should not be considered a violation of the basic conceptual framework of program budgeting.

Program budgeting is designed to provide a more rational basis for decision-making (1) by identifying data on the costs and benefits of alternative resource allocations in the pursuit of program objectives and (2) by providing measures of effectiveness and efficiency to facilitate the continual review of programs and subprograms designed to attain chosen objectives. The features of accountability and personnel management—distinct characteristics of traditional budgets—can be retained through the development of program information statements.

The concept of a *program crosswalk* was developed to provide a basis for translating object-of-expenditure budget data into program terms. Primary cost data are regrouped from the more traditional budget format into program and subprograms. Personnel costs—salaries and wages and staff benefits—are the most significant elements of expense for most public activities. Therefore, personnel commitments serve as the focus for most program crosswalks, with other operating costs initially following the distribution of personnel costs. A crosswalk can also be used to provide program budget information in the more detailed object-of-expenditure format.

The procedural steps leading to a program budget are often carried out through a series of iterations. The process of identifying goals and objectives, for example, may further clarify the appropriate programs and subprograms of the agency. This clarification, in turn, may help determine which activities should be placed within each subprogram. Precise statements of strategic and management objectives may not be possible, however, until the agency's activities have been examined in some detail. The establishment of activity schedules may require careful examination of alternative strategies and associated measures of efficiency and effectiveness. Thus a program budget must be viewed from the top down in terms of strategic and management objectives and from the bottom up in terms of agency activities necessary to carry out these objectives.

3.2 Program Structure

The following aspects should be taken into account in identifying programs:

1. A program defines a series of activities within a larger process; some of the elements of a program are interdependent, while others may be effective on a free-standing basis.
2. A program should facilitate the comparison of alternative methods of pursuing imperfectly determined objectives.
3. Each program should be delineated to permit at least partial quantification of its objectives.
4. Some programs may have overlapping structures that serve as the means to meet certain common objectives.
5. A program is concerned with a time span of expenditures beyond the current fiscal period, and every effort should be made to bring together all costs associated with its execution.
6. Program objectives must be consistent with the resources available (or anticipated). Specific objectives must be described—how and where specific resources (personnel, equipment, materials, capital expenditures, etc.) will be used.

An example of a program structure for local government is provided in Table 7.5. Governmental activities of the City of Rurbana are grouped according to ten basic *functions*, with several programs identified under each function. The function of Public Safety, for example, includes basic programs for law enforcement, traffic safety, fire safety, maintenance of public order, and the prevention and control of other hazards. These five programs, in turn, are supported by a general administrative program.

TABLE 7.5 Program Structure: City of Rurbana

I. Public Safety—Security of Persons and Property <ul style="list-style-type: none">a. Law Enforcementb. Traffic Safetyc. Fire Safetyd. Maintenance of Public Ordere. Prevention and Control of Other Hazardsf. Administration and Support	VI. Education <ul style="list-style-type: none">a. Public Schoolsb. Adult and Vocational Educationc. Community College Servicesd. Higher Education Opportunitess
II. Housing and Community Development <ul style="list-style-type: none">a. Housing Standards and Code Enforcementb. Community Improvementc. Administration and Support	VII. Recreation and Culture <ul style="list-style-type: none">a. Recreation and Parksb. Youth Opportunitiesc. Cultural Enrichment (inc. Libraries)d. Administration and Support
III. Transportation <ul style="list-style-type: none">a. Traffic Control and Accessibilityb. Street Development and Maintenancec. Mass Transportationd. Administration and Support	VIII. Economic Development <ul style="list-style-type: none">a. Industrial Development and Promotionb. Job Opportunity Developmentc. Consumer Protection and Regulationd. Administration and Support
IV. Environmental Enhancement and Protection <ul style="list-style-type: none">a. Environmental Healthb. Water Servicesc. Sewer Servicesd. Sanitation Servicese. Environmental Code Enforcementf. Administration and Support	IX. Finance and Revenue <ul style="list-style-type: none">a. Financial Operations (Purchasing)b. Assessment and Tax Collectionsc. Internal Audit and Recordsd. Recorder of Deedse. Administration and Support
V. Human Resources <ul style="list-style-type: none">a. Conservation of Healthb. Financial Assistance and Servicesc. Vocational Rehabilitationd. Ambulance & Rescue Squad Servicese. Public Health Services	X. Executive Direction and General Support <ul style="list-style-type: none">a. City Councilb. Executive Managementc. City Planningd. Budget and Controle. Human Relations & Equal Opportunityf. Voter Registration and Electionsg. Community Relationsh. General Service Administrative Support

Programs are formulated in response to broad public goals. Detailed program analysis often is not feasible at this level, however, because the stated goals usually are not specific enough. It may be difficult to measure cause and effect relationships accurately since linkages between specific program inputs (costs) and outputs (accomplishments) may be rather vague or only broadly defined. The program goal for Public Safety, for example, is: “To reduce the amount and effect of external harm to persons and property; and to maintain an atmosphere of personal security among all citizens of Rurbana.”

It often is necessary and appropriate to “factor” or subdivide programs into component parts—subprograms and program elements. The programs under the function of Public Safety in the City of Rurbana are illustrated in Table 7.6, and the subprograms under the Law Enforcement Program are identified in Table 7.7. More specific and measurable objectives and activities can then be associated with each component. Resources provided for subprograms often are interchangeable for maximum accomplishment. Given a budget target at the program level, an agency must determine how resources are to be distributed among the component subprograms to achieve the optimal output.

TABLE 7.6 Program Budget for Public Safety Programs

Programs	Last Fiscal Year	Current Budget	Next Fiscal Year
Law Enforcement	\$3,770,595	\$4,122,005	\$4,787,095
Traffic Safety	1,415,720	1,604,830	1,861,680
Fire Safety	2,202,670	3,778,975	4,499,125
Maintenance of Public Order	459,435	510,605	592,330
Prevention & Control of Other Hazards	582,045	726,128	871,245
Unassignable	0	0	0
Total	8,430,465	10,742,543	12,611,475

TABLE 7.7 Program Budget for Law Enforcement Program

Subprograms	Last Fiscal Year	Current Budget	Next Fiscal Year
Police Operations	\$2,308,265	\$2,498,640	\$2,876,080
Police Investigations	1,068,160	1,196,645	1,419,835
Judgment of Non-Traffic Offenses	152,260	164,820	189,715
Rehabilitation of Offenders	241,910	261,900	301,465
Total	3,770,595	4,122,005	4,787,095

3.3 Program Analysis

The systematic analysis of program alternatives is the cornerstone of more effective financial management. The same dollars spent on different program objectives (or on alternative approaches to the same program objective) may yield greatly varied results. In any organization, the best policy is to spend resources where they can produce the greatest net benefits. A systematic analysis of costs and benefits may be undertaken during the preparation of the budget, or on an ongoing basis, in an effort to determine optimal resource allocation and financial policy recommendations.

Program analysis seeks (1) to determine whether a particular program or proposal is justified, (2) to rank various program alternatives appropriate to a given set of objectives, and (3) to ascertain the optimal course(s) of action to attain such objectives. Program analysis operates within an extended time horizon. Insofar as possible, it includes explicit consideration of both direct and indirect cost factors involved in the allocation of resources.

In practice, the time frame of programs formulated under a program budget is between five and ten years. *Multi-year program plans* often are developed to identify the anticipated outputs of services and facilities according to the program and subprogram objectives. Program plans indicate what accomplishments can be expected from a given commitment of resources.

Program evaluations of the actual performance of ongoing or recently completed activities may be carried out to (1) suggest changes in resource allocations, (2) improve current operations, or (3) plan future activities. The feedback from programs that have been formulated to meet agreed-upon objectives should be monitored on a continuous basis, as should any subsequent revisions to these programs. Program analysis is prospective; program evaluation focuses on the actual performance of ongoing or recently completed activities. Program analysis and evaluation must be an iterative process, involving refinement and modification as dictated by changing circumstances in program delivery. The probability that program revisions will be required increases significantly as the time span of decisions increases.

Program costs are obtained from the organization's financial management system. These costs are projected to match revenue sources to support the proposed programs. Future cost commitments generated by current programs must also be projected. After the budget has been developed in program terms, total costs can be disaggregated by type of inputs (i.e., salaries and wages, materials and supplies, equipment, and so forth). In short, multi-year program and financial plans serve as the critical link between program objectives and other outputs, on the one hand, and resource inputs, on the other.

Program and subprogram objectives bring specificity to program goals by identifying key results (strategic and management objectives) to be accomplished

within a specific time period. Objectives form the basis for program strategies and measures; therefore, to the extent possible, they should be quantifiable or verifiable. Objectives must be realistic and attainable, but they should present a challenge to improve conditions, consistent with existing governmental policies and procedures. A program objective must be consistent with the resources available or anticipated. Specific responsibility and accountability should be assigned within an objective, even when joint efforts among agencies are involved.

3.4 Program Measures

Measures of efficiency and effectiveness provide the mechanisms for determining the success (or lack thereof) of a program element in achieving agreed-on objectives. Some measures may be expressed in terms of inputs, such as the number of worker-days, number of requests received, number of calls responded to, or number of cases per staff member. Such measures are appropriate in measuring agency/program efficiency. However, they do not provide a basis for assessing the effectiveness of program or activities in relation to the costs incurred. The output of many public programs may be difficult to define and measure in direct terms. As a consequence, secondary measures—called *surrogates*—must often be used to evaluate costs and to test alternative approaches. The direct benefits of a program that seeks to reduce the incidence of dropouts from high school, for example, may be difficult to measure. A surrogate measure might be derived by comparing the anticipated lifetime earnings of individuals who complete high school with those who drop out. Such figures, available in terms of national averages, can be applied as rough measures—surrogates—of program benefits.

The purpose of defining appropriate strategies and measures is to establish a baseline against which to test *adequacy of effort*. In the absence of such a baseline, the traditional least-cost compromise is likely to prevail. What may appear in the short run to be the least-cost approach, however, may have significant (and detrimental) implications for the community or organization in the longer term.

The program elements of the Investigations Division are shown in Table 7.8. The subprogram has been divided into three program elements: general investigations by detectives; investigations involving moral turpitude (vice); and investigations of crimes involving juveniles. These three elements correspond to basic categories of misdemeanors and felonies. A fourth program element reflects the laboratory support services common to the three other sections or units. A fifth program element, dealing with efforts to increase citizen awareness of the consequences of substance abuse, is also shown but with no resources assigned. This program element has not previously been specifically identified among the Division's program responsibilities, although the detectives and other officers assigned to other program elements have been carrying out some efforts in this area. Finally, the personnel costs associated with the impoundment of automo-

TABLE 7.8 Program Budget for Police Investigations Subprogram

Program Elements	Last Fiscal Year	Current Budget	Next Fiscal Year
Detective Section	\$542,720	\$604,345	\$704,964
Vice Squad	187,785	214,375	288,113
Juvenile Section	184,060	195,100	228,920
Laboratory Services	153,595	182,825	197,838
Substance Abuse Prevention	0	0	\$0
Total	1,068,160	1,196,645	1,419,835
Transfers	28,880	30,615	32,630

biles and other miscellaneous property and with the issuance of licenses and registration of firearms have been transferred to Police Operations.

3.5 Program Crosswalk

A “crosswalk” was performed on the various activities associated with the Investigations Division to arrive at the cost data for the program elements. This crosswalk is illustrated by Table 7.9. Like many government programs, the activities of the Investigations Division are labor-intensive. Personnel costs, including salaries, benefits, and overtime payments, account for 91 percent of the \$1,334,795 requested for the next fiscal year. The crosswalk is built on the distribution of personnel among the four program elements currently staffed.

The results of the crosswalk are further delineated in Table 7.10. Operational objectives are cited for each program element along with suggested measures of efficiency and effectiveness. It is anticipated that the workload (number of cases) for each program element will increase. However, only in the Detective Section is the requested staff increase sufficient to result in a reduction in the caseload per FTE (full-time equivalent personnel). Alternative staffing distributions might be considered during the budget analysis. For example, increasing the Detective section to 15.25 FTE would result in a modest reduction in the caseload (to 42 cases per FTE). The assignment of the 0.50 FTE thus freed up to the Juvenile Section, however, would yield a significant reduction in the caseload—from 80 cases per FTE projected in Table 7-10 to 73 cases per FTE.

Data presented in Tables 7.5 through 7.10 illustrate the format of a program budget in accordance with textbook definitions. Public resources are aggregated and allocated according to agreed-on goals and objectives. Each level in the program structure is allocated a certain level of funding, and these amounts can be aggregated upward or disaggregated downward. Thus, the program structure forms a pyramid or programmatic hierarchy.

Program budgeting provides a more rational basis for resource allocation

TABLE 7.9 Program Information: Police Investigations

A. Detectives

The Detective Section investigates the majority of reported misdemeanors and felonies.

Objectives:

To accommodate the increase in the number of reported misdemeanors and felonies at an increase of no more than 7% in the cost per case.

To maintain or reduce the number of cases per FTE to ensure adequate attention is given to the timely resolution of each case.

	Last Fiscal Year	Current Budget	Next Fiscal Year
<i>Work Data</i>			
1. Staff Hours	26,400	28,800	31,680
2. Full-time equivalent personnel	13.75	15.00	16.50
3. Number of Work Units	598	620	675
<i>Measures of Efficiency</i>			
4. Cost/Case	\$908	\$975	\$1,044
<i>Measures of Effectiveness</i>			
5. Compliance with standards			
6. Number of Cases per FTE	43.49	41.33	40.91
<i>Activity Costs</i>			
7. Labor costs	\$508,611	\$548,880	\$656,714
8. Material costs	\$14,109	\$22,465	\$25,375
9. Equipment costs	\$20,000	\$33,000	\$22,875
10. Total Cost	\$542,720	\$604,345	\$704,964

B. Vice Squad

The Vice Squad investigates crimes involving moral turpitude, gambling, liquor, and substance abuse.

Objective:

To accommodate the increase in the number of reported misdemeanors at an increase of no more than 3% in the cost per case.

To accommodate the increase in the number of reported felonies at an increase of no greater than 2% in the cost per case.

	Last Fiscal Year	Current Budget	Next Fiscal Year
<i>Work Data</i>			
1. Staff Hours	9,840	10,320	13,200
2. Full-time equivalent personnel	5.125	5.375	6.875
3. Number of Work Units	307	330	435
<i>Measures of Efficiency</i>			
4. Cost/Case	\$612	\$650	\$662
<i>Measures of Effectiveness</i>			
5. Compliance with standards			
6. Number of Cases per FTE	59.90	61.40	63.27

TABLE 7.9 Continued

<i>Activity Costs</i>			
7. Labor costs	\$175,025	\$201,810	\$263,700
8. Material costs	\$10,760	\$9,565	\$10,788
9. Equipment costs	\$2,000	\$3,000	\$13,625
10. Total Cost	\$187,785	\$214,375	\$288,113

C. Juvenile

The juvenile Section investigates all crimes involving minors and the mentally ill.

Objective:

To accommodate the increase in the number of reported misdemeanors and felonies at an increase of no more than 5% in the cost per case.

To maintain or reduce the number of cases per FTE to ensure adequate attention is given to the timely resolution of each case.

	Last Fiscal Year	Current Budget	Next Fiscal Year
<i>Work Data</i>			
1. Staff Hours	8,400	8,400	10,320
2. Full-time equivalent personnel	4.375	4.375	5.375
3. Number of Work Units	300	350	440
<i>Measures of Efficiency</i>			
4. Cost/Case	\$614	\$557	\$520
<i>Measures of Effectiveness</i>			
5. Compliance with standards			
6. Number of Cases per FTE	68.57	80.00	81.86
<i>Activity Costs</i>			
7. Labor costs	\$163,800	\$171,635	\$205,256
8. Material costs	\$15,260	\$9,565	\$10,788
9. Equipment costs	\$5,000	\$13,900	\$12,875
10. Total Cost	\$184,060	\$195,100	\$228,920

D. Laboratory Services

Carries out activities associated with the police laboratory by providing scientific assistance to all types of investigations.

Objective:

To accommodate the increase in number of examinations and investigations at an increase of no greater than 5.5% in the cost per case.

	Last Fiscal Year	Current Budget	Next Fiscal Year
<i>Work Data</i>			
1. Staff Hours	9,120	10,080	10,080
2. Full-time equivalent personnel	4.75	5.25	5.25
3. Number of Work Units	5,157	5,255	5,360

TABLE 7.9 Continued

<i>Measures of Efficiency</i>			
4. Cost/Work Unit	\$30	\$35	\$37
<i>Measures of Effectiveness</i>			
5. Compliance with standards			
6. Number of Examinations per FTE	1085.68	1000.95	1020.95
<i>Activity Costs</i>			
7. Labor costs	\$139,843	\$164,400	\$176,709
8. Material costs	\$10,752	\$16,425	\$18,204
9. Equipment costs	\$3,000	\$2,000	\$2,925
10. Total Cost	\$153,595	\$182,825	\$197,838
Summary	Last Fiscal Year	Current Budget	Next Fiscal Year
<i>Work Data</i>			
1. Full-time equivalent personnel	28	30	34
<i>Activity Costs</i>			
7. Labor costs	\$987,279	\$1,086,725	\$1,302,380
8. Material costs	\$50,881	\$58,020	\$65,155
9. Equipment costs	\$30,000	\$51,900	\$52,300
10. Total Cost	\$1,068,160	\$1,196,645	\$1,419,835
7. Labor costs	\$20,952	\$22,000	\$23,100
Overtime	\$1,048	\$1,100	\$1,155
Benefits	\$6,880	\$7,515	\$8,375
8. Material costs			
9. Equipment costs			
10. Total Cost	\$28,880	\$30,615	\$32,630
7. Labor costs	\$1,008,231	\$1,117,340	\$1,335,010
8. Material costs	\$50,881	\$58,020	\$65,155
9. Equipment costs	\$30,000	\$51,900	\$52,300
10. Total Cost	\$1,097,040	\$1,227,260	\$1,452,465

decisions by identifying data on costs and benefits and by providing measurements of effectiveness and efficiency. The features of accountability and personnel management—distinct characteristics of the object-of-expenditure or line-item budget—can be retained through the development of program information statements (as shown in Table 7.10). Program crosswalk techniques were developed to provide a basis for translating traditional budget data into program terms. However, a crosswalk can also be used to provide budgetary information in the more traditional line-item format.

Under program budgeting, resources are allocated on the basis of goals,

TABLE 7.10 Budget Crosswalk for Investigations Division

	Total	Detectives	Vice	Juveniles	Lab Support
Lieutenant	\$37,800	\$9,450	\$9,450	\$9,450	\$9,450
Lab Supervisor	\$33,600				\$33,600
Sergeant	\$90,600	\$30,200	\$30,200	\$30,200	
Inspectors	\$117,500	\$29,375	\$58,750	\$29,375	
Detectives	\$494,250	\$370,688	\$67,781	\$55,781	
Property Clerk					
Photographer	\$24,150				\$24,150
Laboratory Technician	\$22,680				\$22,680
Photo Technician	\$19,425				\$19,425
Secretary	\$18,840	\$9,420	\$4,710	\$4,710	
Clerk-Stenographers	\$63,195	\$15,799	\$15,799	\$15,799	\$15,799
Salary Totals	\$922,040	\$464,931	\$186,690	\$145,315	\$125,104
Overtime @5%	\$46,100	\$23,246	\$9,335	\$7,265	\$6,255
Staff Benefits	\$334,240	\$168,538	\$67,675	\$52,677	\$45,350
Total Labor Costs	\$1,302,380	\$656,714	\$263,700	\$205,256	\$176,709
FTE	34.00	16.5	6.875	5.375	5.25
Contractual Services					
1210 General Repairs	\$505	252.5	101	101	50.5
1220 Utility Services	\$1,265	632.5	253	253	126.5
1230 Motor Vehicle Repairs	\$3,165	1582.5	633	633	316.5
1240 Travel	\$1,210	605	242	242	121
1250 Professional Services	\$7,920	3960	1584	1584	792
1260 Communications	\$1,010	505	202	202	101
1270 Printing	\$0	0	0	0	0
1280 Computing Services	\$5,750	2875	1150	1150	575
1290 Other Contractual Services	\$0	0	0	0	0
Subtotal: Contractual Services	\$20,825	10412.5	4165	4165	2082.5
Supplies and Materials					
1310 Office Supplies	\$5,820	2910	1164	1164	582
1320 Fuel Supplies	\$7,915	3957.5	1978.75	1978.75	0
1330 Operating Supplies	\$3,230	1615	646	646	323
1340 Maintenance Supplies	\$2,410	1205	482	482	241
1350 Drugs & Chemicals	\$9,555				9555
1360 Food Supplies	\$0	0	0	0	0
1370 Clothing & Linens	\$9,700	2425	1212.5	1212.5	4850
1380 Education & Rec Supplies	\$0	0	0	0	0

TABLE 7.10 Continued

	Total	Detectives	Vice	Juveniles	Lab Support
1390 Other Supplies	\$0	0	0	0	
Subtotal: Supplies & Materials	\$38,630	12112.5	5483.25	5483.25	15551
Equipment					
1410 Office Equipment	\$3,000	750	1500	750	
1420 Electrical Equipment	\$0				
1430 Motor Vehicles	\$40,000	20000	10000	10000	
1440 Highway Equipment	\$0				
1450 Medical & Lab Equipment	\$800				800
1480 Data Processing Equipment	\$8,500	2125	2125	2125	2125
Subtotal: Equipment	\$52,300	22875	13625	12875	2925
Current Obligations	\$5,700	2850	1140	1140	570
Totals	\$1,414,135	\$702,114	\$286,973	\$227,780	\$197,268

objectives, and strategies. These performance expectations, in turn, are translated into measures of effectiveness and efficiency. Program results (actual performance) are then evaluated on the basis of this planned performance. The data required to carry out such an evaluation include major elements derived from a cost-managerial accounting system. Other measures of effectiveness are based on the relative change in the situation that the program is meant to effect—for example, percent decrease in the incidence of a problem following the introduction of the program. Meaningful cost-effectiveness or cost-benefit analyses can be developed by interrelating key indices from both of these measurement sets.

4 SERVICE DELIVERY ACCOUNTABILITY

Service is the primary mission of local government and of many not-for-profit organizations. Therefore, the activities of such organizations can be readily identified and often can be measured in service delivery terms. In an era of increasing public demand for efficiency, effectiveness, and accountability in the delivery of services, the limitations of more traditional practices of budgeting (financial planning) and accounting (management control) are becoming more widely recognized.

4.1 Limitations of Incremental Budgets

The shortcomings of traditional budgetary procedures include:

1. *Insufficient Information.* Traditional accounting and budgeting practices provide relatively little useful management information about (1) the type and level of services provided, (2) the objectives and beneficiaries of the services, or (3) the special resources required in the provision of specific levels of service.
2. *Lack of Choice Mechanisms.* With increasing frequency, local governments and not-for-profit organizations have insufficient resources to fund all services at the requested levels. Traditional budgetary practices provide few mechanisms to help make choices or to identify the trade-offs among different services on anything approaching a cost-benefit basis.
3. *Impact of Change.* No meaningful processes exist (1) to predict how significant changes in funding will affect service delivery, (2) to determine the benefits in services afforded by increases in funding, or (3) to identify the absolute minimum level of service that must be provided.

Traditional budgetary procedures are based on incremental changes in the status quo, whereby only the differences between budget requests for the next fiscal year and budget appropriations for the previous fiscal year are examined. Since the results of previous allocations are accepted as the primary decision criteria, existing programs are often continued into the future without being subjected to intensive reexamination. A comprehensive analysis of previously allocated resources—the budget base—is effectively precluded by this incremental approach. Therefore, incremental budgeting is severely limited in its ability to allocate scarce resources in the most efficient, economical, and effective manner.

4.2 Service Level Analysis

Budget procedures have been formulated that subject all programs—old or new—to the same mechanisms of evaluation. This more comprehensive format is sometimes referred to as a *zero-base budget*, because the incrementally established budget base is not accepted as being fixed or permanent. In more recent applications, however, detailed analysis of programs “to the zero base” have been replaced by the concept of *service level analysis*—that is, the analysis focuses on the resources required to deliver various levels of service.

Traditional budgeting procedures focus on proposed dollar increases in the budget. Under service level analysis, attention is drawn to the elements of the budget base along with proposed changes in the level of services to be delivered.

Service level analysis is applicable to all actionable programs or activities—those in which some local discretion can be exercised as to the course of action to be pursued. All activities of local government that compete for general fund revenues (or the equivalent in other public organizations) should be included in the service level analysis.

Service level analysis may have only limited application to programs for which the levels of expenditures are imposed by law or statute, intergovernmental commitments, formula-funded programs, or other legal or fiscal constraints. These special or restricted funds should be identified as part of a service level analysis, however, in order to determine their importance to other organizational activities and to assist in identifying the public costs of such imposed constraints.

Actionable or discretionary program (that is, those for which expenditure levels are not fixed) make up only a portion of the total budget (less that 25%, according to some estimates). [1] However, such programs often represent the more difficult activities for local governments to analyze and plan. Thus, more effective financial planning and control of these components through service level analysis can greatly affect the entire financial commitments of the jurisdiction or organization.

One objective of service level analysis is to identify essential service levels, so that an agency can maintain, deliver, and be held accountable for such programs in a more efficient and effective manner. Defining a public service as *essential* is not the same as labeling its supporting expenditures as *fixed*. Local governments may have relatively little choice about the funding of essential service levels, and such service levels may constitute a major portion of the annual budget. Essential services, however, can be provided more efficiently (at less cost) or more effectively (with greater benefits).

4.3 Budget Units and Decision Packages

The basic components of a service level analysis include:

1. Identification of budget units
2. Analysis of decision packages
3. Priority ranking and evaluation of services

Budget units are the basic building blocks within the organizational structure that are responsible for the delivery of services. Budget units often correspond with established divisions within the established departments or agencies of the local or state government or other public organization. Large multifunctional units may be further subdivided, however, to reflect more specific functions. Because it is unlikely that budget units will change significantly from one year to the next, the identification of these units is generally a one-time task. Mi-

nor adjustments may be required in subsequent years as new programs are initiated or existing programs are revised.

The goals and objectives of each budget unit should be identified, and the current purposes and methods of operation of each unit should be examined. Methods for measuring performance and effectiveness, as well as relations with other budget units, should also be delineated.

Decision packages are discrete sets of services, activities, and resources required to carry out a given operation or accomplish a program objective. Decision packages may involve different methods for delivering a service (for example, using outside contractors versus carrying out the functions in-house) or alternate approaches that use “more” or “less” of the same basic resource inputs (for example, assigning full-time salaried personnel versus hiring part-time wage personnel on an as-needed basis). A decision package should be described in such a way that it can be evaluated and ranked against other packages competing for the same limited resources.

For some essential services, only one decision package may be readily evident. Continuation of the current approach at the current level of commitment may be the only feasible alternative. One of the underlying sources of waste and inefficiency in organizational operations, however, is the maintenance of existing programs simply because “that’s the way it has always been done.”

To illustrate these basic components, assume that the substance abuse aware program, identified in connection with the program budget of the Investigations Division, is designated as a budget unit—a set of activities to which resources are assigned. Two basic decision package can be delineated: (1) to assign this set of activities to the established units—the Detective Section, Vice Squad, and Juvenile Section—to be carried out within the scope of their existing responsibilities or (2) to establish a new unit to undertake these program responsibilities. Each of these decision packages, in turn, have several variations in terms of levels of service (funding and staffing commitments).

4.4 Minimum Service Levels

A minimum level of service should be identified for each decision package. By definition, the maintenance of an existing program or the initiation of a new program would not be feasible below this minimum level. Minimum service levels include only the most essential elements or activities within chosen decision packages. These elements provide the highest priority services or meet the most critical needs of the government or organization. The minimum service level also defines the minimum level of funding for each package.

In the case of the substance abuse prevention program, the minimum service level would be for the existing investigators to carry out these responsibilities on a “voluntary basis,” that is, with no additional staffing or reassignment of

other duties. Even this alternative would generate some operating costs (i.e., for materials and supplies, equipment, printing, and so forth). Thus, in Table 7.11, the minimum service level is budgeted at \$9,550; the \$3,700 requested for contractual services is for a media consultant to assist in the preparation of materials for this prevention program.

It often is difficult to identify a level of service below the present level of support. In such cases, a percentage of the current level may be set as the minimum level—typically, 65 to 80 percent of the current appropriation. The budget unit manager is asked to identify the level of service that could be provided at this reduced level and what current activities might have to be eliminated to accommodate this funding level.

Additional levels of service should then be identified. Each succeeding level should expand the services available until the level of service equals or exceeds current service standards (see Table 7.11). Each level of service must be analyzed in terms of the specific quantities and qualities of work to be performed (and services to be provided). Appropriate costs should be assigned to each level, and potential service impacts should be described.

As shown in Table 7.11, the second service level recognizes the substance abuse prevention program as a 5% assignment of each member of the current investigative staff—the lieutenant, sergeants, inspectors, detectives, and the laboratory supervisor. This specific assignment of effort is equivalent to 1.1 FTE, and in order to cover the existing work load of the Investigations Division, the staff would have to be increased accordingly (i.e., service level two is no longer on a “voluntary basis”).

The third service level involves the establishment of a substance abuse prevention team, staffed by 2.5 FTE—a sergeant (50%), an inspector, and a detective. These positions are new resources—that is, either new staff would be hired or existing staff would be given the assignment, and their current responsibilities would have to be covered on a “hire-behind” basis. This third service level is the recommended or requested level for the next fiscal year (as indicated by the 100% designation under the “percent positions” column in Table 7.11).

The fourth service level involves the establishment of a separate section, equivalent to the three existing investigative sections. This section would add a detective and the other 50% of effort of the sergeant to the previously defined team, bringing the total staffing to 4 FTE.

Finally, the fifth service level would involve the establishment of a second team—consisting of an inspector and a detective—which would increase the staff commitment to 6 FTE. This level of service would permit more complete coverage of cases involving substance abuse.

The resources required to deliver each level of service should be summarized for each budget unit. This summary should include detailed costs to be

TABLE 7.11 Service Level Analysis for Substance Abuse Prevention Program

Service Level	Service Level		Cumulative		Cumulative Percent	
	Total	Positions	Total	Positions	Total	Positions
Volunteer Service	\$9,550	0	\$9,550	0	7.44%	0.00%
5% Assignment	\$55,513	1.1	\$65,063	1.1	50.68%	44.00%
Substance Abuse Prevention Team	\$63,308	1.4	\$128,371	2.5	100.00%	100.00%
Substance Abuse Prevention Section	\$67,865	1.5	\$196,236	4	152.87%	160.00%
Add Second Team	\$86,540	2	\$282,776	6	220.28%	240.00%

Object Codes	Service Levels				
	1	2	3	4	5
Personal Services					
1110 Salaries	\$0	\$31,988	\$31,013	\$37,800	\$49,200
1140 Overtime Payments	\$0	\$1,599	\$1,551	\$1,890	\$2,460
Subtotal: Personal Services	\$0	\$33,587	\$32,563	\$39,690	\$51,660
Contractual Services	\$3,700	\$1,000	\$2,105	\$1,500	\$4,700
Supplies & Materials	\$3,000	\$1,000	\$1,120	\$3,075	\$4,000
Equipment	\$1,000	\$9,000	\$8,400	\$6,900	\$10,000
Current Obligations	\$1,850	\$50	\$200	\$2,045	\$1,900
Employee Benefits	\$0	\$10,876	\$18,920	\$14,655	\$14,280
TOTALS	\$9,550	\$55,513	\$63,308	\$67,865	\$86,540

Object Codes	Cumulative Budgets				
	1	2	3	4	5
Personal Services					
1110 Salaries	\$0	\$31,988	\$63,000	\$100,800	\$150,000
1140 Overtime Payments	\$0	\$1,599	\$3,150	\$5,040	\$7,500
Subtotal: Personal Services	\$0	\$33,587	\$66,150	\$105,840	\$157,500
Contractual Services	\$3,700	\$4,700	\$6,805	\$8,305	\$13,005
Supplies & Materials	\$3,000	\$4,000	\$5,120	\$8,195	\$12,195
Equipment	\$1,000	\$10,000	\$18,400	\$25,300	\$35,300
Current Obligations	\$1,850	\$1,900	\$2,100	\$4,145	\$6,045
Employee Benefits	\$0	\$10,876	\$29,796	\$44,451	\$58,731
TOTALS	\$9,550	\$65,063	\$128,371	\$196,236	\$282,776

met from all funding sources and a listing of personnel, equipment, and other major resource requirements. The object-of-expenditure budget format can be reintroduced at this point (see lower portion of Table 7.11). Once the detailed cost data have been established for the minimum level of service, these data can be built upon in cumulative fashion for each successive level. Only in exceptional cases, where decision-packages represent distinct service delivery alternatives, is it necessary to prepare separate object-of-expenditure budgets for each service level.

4.5 Ranking Service Levels

The difference between identifying levels of service and ranking them is similar to the distinction between efficiency and effectiveness. Peter Drucker has defined efficiency as “doing things right” and effectiveness as “doing the right things.” [2] Formulating service levels involves a determination of how to do things right. Deciding to do the right things is the primary objective of the ranking process.

Ranking establishes an order or priority among service levels for various activities or programs. For example, the service levels for the existing and proposed activities of the Investigation Division are ranked, and these rankings are then integrated with similar rankings of all other units (subprograms) under the Law Enforcement Program. Service levels are listed in descending order of importance until all levels have been included. This process of ranking, or “prioritizing,” is analogous to procedures that many localities have adopted for programming capital improvements (CIP). In this case, the priority system is applied to an analysis of the operating budget rather than the capital budget.

Before ranking can begin, it is necessary to establish a set of criteria on which to base these decision. Criteria should address such questions as the following: Is the program or service legally required? Can the jurisdiction afford not to implement the program at the proposed service level? Will the service delivery be cost-effective? Does the unit have the necessary technical skills to implement the planned activities? Does the proposed approach have a previous track record of success? Will lower-level management accept and execute the program?

In all likelihood, more service levels will be presented than can be funded from available resources. Three approaches can be used to bring proposed expenditures and projected revenue into balance:

1. Funds can be withheld from the lowest priority service levels.
2. Efforts can be made to reduce the cost of providing one or more levels of service.
3. Resources can be increased (for example, by increasing service fees, raising taxes, or liquidating assets).

Funds are allocated to the service levels in order of priority until the anticipated resources are exhausted. A funding “cutoff line” is drawn at this point, and those services below the line are not funded. Unfunded service levels should be reexamined, and if deemed necessary to the well-being of the organization or community, efforts should be made to reduce costs or increase resources.

Without a ranking process, budgeting is little more than a juggling act. Decision makers may try—often in a hit-or-miss fashion—to find the proper pieces in a somewhat jumbled jigsaw puzzle that will add up to an acceptable whole. Unable to determine which programs or activities are of a lower priority, decision makers often are forced to make across-the-board cuts. Service level analysis minimizes this need by creating an explicit priority listing.

Service level analysis can also be helpful in driving accountability for budgeting and budget execution deeper into the organization. Program managers must be involved in the analysis from the outset, thus tapping a larger reservoir of program knowledge and analytical skills. Direct involvement of program managers in budget making, in turn, often increases their concern for the proper implementation of organizational policies and programs. Thus, service level analysis can help to transform policies into plans and plans into action.

Service level analysis can serve as an important mechanism of financial planning and control, seeking to eliminate unnecessary spending that may be the consequence of obsolete, inefficient programs or duplications of effort. Service level analysis goes beyond an examination of incremental changes to existing programs by providing a closer scrutiny of all activities, old and new. Funds are channeled to the more important demands, thereby increasing overall efficiency. Service level analysis does not involve any radical departures from established financial management principles. It reflects the long-accepted practice of building a budget on a sound appraisal of needs matched against resource limitations.

5 PROJECT BUDGETING

A project budget represents a portion of the total agency budget for a given fiscal year that may be partially funded by external sources (e.g., federal or state agencies, foundations, or other extramural sources). The preparation of a project budget often can benefit from the application of service level analysis procedures.

5.1 Project Budget Case Study

Often project budgets are prepared for more than one fiscal period and, therefore, provision must be made for salary adjustments and inflationary increases in operating costs. Extramural funding sources may make provision for the recovery of indirect costs—that is, costs that support more than one activity or program

within an agency or organization. These indirect costs must be determined according to the funding guidelines and included in the project budget. The following case study may help to illustrate how a project budget can be constructed and adjusted to meet external funding expectations.

The State Public Health Institute (SPHI) has received a grant from the U.S. Public Health Service to develop and promote innovative approaches to the provision of prenatal health care at the local level. The SPHI has issued a request for proposals (RFP) for two-year pilot projects at the county level to serve a more rural population. Maximum funding level for a two-year pilot project has been set by the SPHI at \$400,000. It is anticipated that the county health agencies applying for these funds will provide additional support from local funds.

The Jefferson County Health Department decides to develop a proposal in response to this RFP. To undertake this project, adequate space must be secured, a clinic staff must be hired, trained, and certified, the clinic must be equipped, the programs of the clinic must be publicized, and eligible applicants must be screened and enrolled. In reviewing the planning for the clinic, it is determined that the operating costs in the proposed project budget should include staff salaries and wages, benefits, equipment, materials and supplies for the clinic and for record keeping and other office functions, educational and promotional materials, travel costs, and patient care costs.

Different levels of service (and therefore, different staffing requirements) are possible. For example, to provide care for high-risk pregnancies would require more sophisticated equipment (fetal monitors and ultrasound capability) and expanded laboratory facilities. The Clinical Laboratories Improvement Act requires further certification of the laboratory associated with the clinic, and a certified medical technologist would have to be included on the clinic staff.

On the other hand, operating costs could be substantially reduced if the clinic is designed primarily to serve low-risk pregnancies. Under this approach, the primary task of the clinic would be to identify potential problem. High-risk patients would be referred to other facilities (for example, a tertiary care center such as the university hospital). Level 1 lab services would include urinalysis, tests for strep and capillary glucose, hematocrit, and urine pregnancy test. Bloodwork could be processed by the County Health Department laboratory. As part of the clinic's program, subsidies could be included for patient transportation to the tertiary center and for other patient care costs that might be incurred.

The clinic could be staffed by gynecologists/obstetricians, family physicians, registered nurses, nurse practitioners, medical assistants, nutritionist, social worker, health educator, or some combination of these professionals. Costs

would vary significantly in terms of hours of operations, staffing patterns, salaries, and laboratory support costs.

Support staff requirements will vary according to the office practices and procedures that are adopted. Different approach might be adopted for patient record keeping and communication. Transcribing records requires more staff time and therefore, is more expensive than keeping handwritten charts. However, some malpractice insurance carriers offer discounts if all medical records are typed. Charts can be microfilmed or stored as “hard copy.” Answering and referral systems for phone-in questions can also take various forms.

Based on a service level analysis, preliminary staffing requirements are identified, as shown in Table 7.12. The first step in preparing a preliminary project budget is to determine the anticipated levels of effort for each of the staff positions and the equivalent salaries and benefit costs. Personnel costs often are the “major driver” of a project budget, and these costs initially should be estimated at optimal staffing levels.

TABLE 7.12 Preliminary Staff Requirements

<i>Family Physician</i>	Several family practitioners to be used on a part-time, rotating basis. A USPHS physician would be relatively inexpensive for the County and would have malpractice insurance covered by the federal government.
<i>Registered Nurse</i>	Assist the physician by providing injections and other treatments. Perform “telephone triage” for patients with medical questions and communicate with labor and delivery units at the hospitals.
<i>Nurse Practitioner</i>	Provide maternal support services, such as instruction in symptoms of prenatal problems, growth and development of fetus, nutrition and self-care during pregnancy.
<i>Medical Assistant</i>	Manage “patient flow,” obtain vital signs, process samples, oversee medical supplies, and package microbiological samples requiring further laboratory analysis.
<i>Receptionist/Clerical</i>	Make and confirm appointments, maintain medical files, and perform other typical clerical duties.
<i>Nutritionist</i>	Determine diet requirements for special medical conditions, healthy prenatal diets, and conduct educational programs for expectant mothers.
<i>Social Worker/Health Educator</i>	Counsel patients on broader social and health-related issues, including substance abuse avoidance and the availability of other social program support.

Staff Position	Annual Salary	Level of Effort	Salary	Benefits @ 29%
Family Physicians	\$92,920	25%	\$23,230	\$ 6,737
Nurse Practitioner	\$40,825	50%	\$20,413	\$ 5,920
Registered Nurse	\$41,400	50%	\$20,700	\$ 6,003
Nutritionist	\$39,100	25%	\$ 9,775	\$ 2,835
Social Worker	\$46,000	35%	\$16,100	\$ 4,669
Medical Assistant	\$22,625	100%	\$22,625	\$ 6,561
Clerk/Receptionist	\$18,130	50%	\$ 9,065	\$ 2,629
Wages	\$18,855	100%	\$18,855	NA
Total			\$136,892	\$35,354

The next step is to determine the operating costs (nonpersonnel costs) considered necessary to support the programs of the clinic.

Supplies & Materials	\$22,000
Travel	\$28,000
Other Operating Costs	\$ 5,700
Patient Care Costs	\$35,300
Total Operating Costs	\$91,000

Equipment and computing services complete the direct costs associated with the initial year of the proposed project.

Equipment	\$26,000
Computing Services	\$ 1,500

The RFP from the State Public Health Institute permits the recovery of indirect costs on all direct cost items except patient care costs, equipment, and computing services. The indirect cost rate authorized by the State Public Health Institute is 25%. This rate would result in an additional \$66,779 in the first year to cover those costs that cannot be identified/charged as direct costs against the project activities.

As shown on the preliminary budget (Table 7.13), the first-year costs for the project effort outlined above amount to \$361,395. The RFP requires that the applicant agency cost-share at least 20% of the proposed project costs. Therefore, in the preliminary budget, \$72,332 of the \$361,395 in anticipated costs for the first year of the proposed project is shown in the agency column.

The second-year budget is built on the first-year estimates by applying appropriate multipliers to the professional and staff salaries and to the various operating costs, much in the same manner as a line-item/object-of-expenditure budget is prepared. A 5% multiplier was applied to professional salaries;

a 6.5% multiplier was used for staff salaries and for wages; operating costs (excluding patient care costs) were advanced by 8%; and support for computing services was increased by 10%. Equipment is a one-time purchase; therefore, no additional funds are requested in the second year of the proposed budget. The second year of the project budget is estimated at \$344,417. Therefore, the preliminary budget for the proposed two-year project totals \$705,811.

The sponsor share of the preliminary budget exceeds the funding level indicated in the RFP by some \$164,760. Consequently, further adjustments in the distribution between agency cost-sharing and sponsor participation and/or in the levels of efforts are required if the proposal is to be considered responsive to the RFP.

5.2 Adjustments to the Proposed Project Budget

The first step in adjusting the preliminary budget estimates is to increase the agency’s cost-sharing commitments. Half-time assignments of the Nurse Practitioner and the Registered Nurse are split between the agency and the sponsor, reducing the proposed sponsor commitment by \$42,140 in salaries, \$12,221 in benefits, and \$13,590 in indirect costs. The Social Worker is eliminated as a staff position and is replaced by a consultant, saving \$13,780 in benefits and indirect costs (a consulting agreement carries indirect cost only on the first \$10,000). These adjustments in personnel costs reduce the level of funding requested of the sponsor by \$72,870.

In the final proposed budget (Table 7.14), the cost for consumable materials and supplies is shared on a fifty-fifty basis. Travel costs are reduced by approximately \$20,000 to \$38,210 and shared on a 50-50 basis. And the Health Department assumes a portion of the other operating costs (\$5,350) in the final budget. These direct cost adjustments also “save” \$5,170 in indirect costs recoverable from the sponsor. The Health Department also proposes to cost-share 50% of the \$26,000 in the final budget for equipment and assumes all of the costs for computing services (\$3,150).

Adjustments in the preliminary budget estimates result in an overall reduction of \$62,546 in the final budget proposal, as detailed below.

	Preliminary Budget	Final Budget	Difference
Salaries & Wages	\$289,321	\$251,102	\$38,219
Employee Benefits	\$72,612	\$63,040	\$9,572
Operating Costs	\$186,456	\$195,270	(\$8,814)
Total Direct Costs	\$577,539	\$538,563	\$38,976
Indirect Costs	\$128,272	\$104,702	\$23,570
Total Project Costs	\$705,811	\$643,265	\$62,546

TABLE 7.13 Preliminary Budget for Proposed Prenatal Health Care Project

Budget Period:				First Year		
	Annual Cost	Effort Agency	Effort Sponsor	Agency Amount	Sponsor Amount	Total Amount
<i>Professional Salaries</i>						
Family Physician	92,920	10%	15%	9,292	13,938	23,230
Nurse Practitioner	40,825		50%	0	20,413	20,413
Registered Nurse	41,400		50%	0	20,700	20,700
Nutritionist	39,100		25%	0	9,775	9,775
Social Worker/Health Educator	46,000		35%	0	16,100	16,100
<i>Staff Salaries</i>						
Medical Assistant	22,625	50%	50%	11,313	11,313	22,625
Clerk Typist/Receptionist	18,130		50%	0	9,065	9,065
Wages	18,855	10%	90%	1,886	16,970	18,855
<i>Total Salaries and Wages</i>				22,490	118,273	140,763
<i>Employee Benefits @ 29%</i>				5,975	29,378	35,354
Consumable supplies & materials				9,000	13,000	22,000
Travel				14,000	14,000	28,000
Other operating costs					5,700	5,700
Consultants & Subcontracts [†]				0	0	0
Patient Care Costs*					35,300	35,300
<i>Total Operating Costs</i>				23,000	68,000	91,000
<i>Equipment*</i>				8,000	18,000	26,000
<i>Computing Services*</i>					1,500	1,500
TOTAL DIRECT COST				59,465	235,150	294,616
<i>INDIRECT COST</i>						
MTDC		0.25	0.25	12,866	53,913	66,779
Subcontractors				0	0	0
TOTAL INDIRECT COST				12,866	53,913	66,779
GRAND TOTAL				72,332	289,063	361,395

*Not included in the MTDC; 25% indirect cost rate not applicable.

[†]Indirect costs applicable on the first \$10,000 of each subcontract.

The decrease in personal service costs results from the shift of the social worker to a consultant and the reduction in wages. The increase in operating costs is a consequence of the addition of the consultant, partially offset by the reduction in travel costs. More importantly, the final project budget shows a two-year request for sponsor support of \$399,997 (just under the funding threshold), with agency cost-sharing of \$243,267, or 37.8% of total project cost of \$643,265. The total direct cost request is \$340,718, with \$59,279 as indirect cost recoveries.

Second Year			Total Proposed Budget		
Agency Amount	Sponsor Amount	Total Amount	Agency Amount	Sponsor Amount	Total Amount
9,757	14,635	24,392	19,049	28,573	47,622
0	21,433	21,433	0	41,846	41,846
0	21,735	21,735	0	42,435	42,435
0	10,264	10,264	0	20,039	20,039
0	16,905	16,905	0	33,005	33,005
12,048	12,048	24,096	23,360	23,360	46,721
0	9,654	9,654	0	18,719	18,719
2,008	18,073	20,081	3,894	35,042	38,936
23,812	124,746	148,559	46,302	243,019	289,321
6,323	30,935	37,259	12,299	60,313	72,612
9,720	14,040	23,760	18,720	27,040	45,760
15,120	15,120	30,240	29,120	29,120	58,240
0	6,156	6,156	0	11,856	11,856
	0	0	0	0	0
	35,300	35,300	0	70,600	70,600
24,840	70,616	95,456	47,840	138,616	186,456
			8,000	18,000	26,000
	1,650	1,650	0	3,150	3,150
54,976	227,948	282,923	114,441	463,098	577,539
13,744	47,749	61,493	26,610	101,662	128,272
	0	0	0	0	0
13,744	47,749	61,493	26,610	101,662	128,272
68,720	275,697	344,417	141,051	564,760	705,811

6 RESPONSIBILITY CENTER BUDGETING

Responsibility center budgeting seeks to assign accountability to those managers who have the greatest potential to exercise influence over the costs on a day-to-day basis. [3] All pertinent direct and indirect costs and the revenue necessary to support these costs are assigned to various organizational units—departments, bureaus, and programs—designated as responsibility centers. [4] Each of these units is then held accountable for the specific outcomes that have occurred as a result of the total allocation of resources in support of the unit’s activities.

Table 7.14 Final Budget for Proposed Prenatal Health Care Project

Budget Period:	First Year					
	Annual Cost	Effort Agency	Effort Sponsor	Agency Amount	Sponsor Amount	Total Amount
<i>Professional Salaries</i>						
Family Physican	92,920	10%	15%	9,292	13,938	23,230
Nurse Practitioner	40,825	25%	25%	10,206	10,206	20,413
Registered Nurse	41,400	25%	25%	10,350	10,350	20,700
Nutritionist	39,100		25%	0	9,775	9,775
<i>Staff Salaries</i>						
Medical Assistant	22,625	50%	50%	11,313	11,313	22,625
Clerk Typist/Receptionist	18,130		50%	0	9,065	9,065
Wages	16,330	75%	25%	12,248	4,083	16,330
<i>Total Salaries and Wages</i>				53,408	68,729	122,138
<i>Employee Benefits @ 29%</i>				11,937	18,748	30,684
Consumable supplies & materials				11,000	11,000	22,000
Travel				8,250	8,250	16,500
Other operating costs				2,850	2,850	5,700
Consultants & Subcontracts [†]					15,000	15,000
Patient Care Costs*					35,300	35,300
<i>Total Operating Costs</i>				22,100	72,400	94,500
<i>Equipment*</i>				13,000	13,000	26,000
<i>Computing Services*</i>				1,500	0	1,500
TOTAL DIRECT COST				101,945	172,877	274,822
<i>INDIRECT COST</i>						
MTDC		0.25	0.25	21,860	27,394	49,255
Subcontractors					2,500	2,500
TOTAL INDIRECT COST				21,860	29,894	51,755
GRAND TOTAL				123,805	202,771	326,577

*Not included in the MTDC; 25% indirect cost rate not applicable.

[†]Indirect costs applicable on the first \$10,000 of each subcontract.

6.1 Controllable and Noncontrollable Costs

Under traditional approaches to public budgeting, operating units often are only held responsible for the management of their *direct costs*—that is, those costs incurred by the unit that are uniquely associated with a specific purpose. Salaries and wages, materials and supplies, travel, equipment acquisition and maintenance are generally considered to be direct costs that can be attributed to a given operating unit or program. It is assumed that the operating units can control these direct costs. Direct costs can be narrowly or broadly defined; the more narrow the definition, the larger the aggregate amount of indirect costs. *Indirect costs* are

Second Year			Total Proposed Budget		
Agency Amount	Sponsor Amount	Total Amount	Agency Amount	Sponsor Amount	Total Amount
9,757	14,635	24,392	19,049	28,573	47,622
10,717	10,717	21,433	20,923	20,923	41,846
10,868	10,868	21,735	21,218	21,218	42,435
0	10,264	10,264	0	20,039	20,039
12,048	12,048	24,096	23,360	23,360	46,721
0	9,654	9,654	0	18,719	18,719
13,044	4,348	17,391	25,291	8,430	33,721
56,432	72,533	128,965	109,840	141,262	251,102
12,583	19,774	32,356	24,519	38,521	63,040
11,880	11,880	23,760	22,880	22,880	45,760
10,855	10,855	21,710	19,105	19,105	38,210
2,500	2,500	5,000	5,350	5,350	10,700
	15,000	15,000	0	30,000	30,000
	35,300	35,300	0	70,600	70,600
25,235	75,535	100,770	47,335	147,935	195,270
			13,000	13,000	26,000
1,650	0	1,650	3,150	0	3,150
95,900	167,841	263,741	197,845	340,718	538,563
23,562	29,385	52,948	45,423	56,779	102,202
	0	0	0	2,500	2,500
23,562	29,385	52,948	45,423	59,279	104,702
119,462	197,226	316,689	243,267	399,997	643,265

costs associated with more than one unit, activity, or program that cannot be traced directly to any of the individual activities of the organization. Costs associated with an administrative unit (e.g., purchasing), for example, are often considered indirect costs. In the public sector, the terms indirect cost and overhead often are used interchangeably.

In theory, given a long enough time, all costs are controllable by someone within an organization. For purposes of budgeting, however, *controllable costs* often are defined as those costs subject to the direct influence of a given manager of a given program or unit during a given time period. An emergency room supervisor, for example, might exercise significant control over the assigned nurs-

ing staff, the use of supplies (and therefore, their costs), maintenance of the facility, and so forth. However, the ER supervisor may have little or no control over the cost of the doctors working in the emergency room, or the utility costs that support the running of the emergency room, or the insurance premium costs allocated to this aspect of the hospital's operations.

Noncontrollable costs include all costs that do not meet this test of "significant influence" by a given manager. Thus, costs assigned to the manager of any department may contain both controllable and noncontrollable elements. Although clear distinctions often are difficult to make, for purposes of performance evaluation, every effort should be made to separate these basic cost components.

6.2 Increased Responsibility for Indirect Costs

The ability to control costs is a matter of degree. Responsibility center budgeting places increased emphasis on the full allocation of costs in relation to well-defined areas of responsibility. When all costs are fully allocated, the illusion of free goods and services disappears. Under traditional budgeting approaches, for example, space and utilities appear to operating units to be "free commodities" because space costs seldom are charged to these units (e.g., in the form of rent). However, more than 10 percent of general fund expenditures typically is allocated for the operation and maintenance of facilities. Goods and services that may appear to be free to operating units are not free to the total organization. [5]

Operating units may be able to exercise considerable control on a day-to-day basis over such traditional indirect costs as utilities (the use of heat, light, air conditioning), facility maintenance (e.g., custodial services, upkeep of buildings and grounds), and even insurance premiums (e.g., through safety programs). Managers of responsibility centers are encouraged to adopt policies and practices that specifically address the monitoring and control of these indirect cost categories. In turn, funds necessary to support these indirect costs are included in the budget allocations of the responsibility centers. Concerted efforts to conserve electricity and other utilities, to maintain good housekeeping practices in work areas, and to adopt other programs to increase efficiency are "rewarded" by allowing the responsibility center to retain the cost savings from these initiatives. In some cases, responsibility centers are authorized to purchase on a "least costs basis" certain supporting services that traditionally have been provided by central administrative units (e.g., central stores, data processing, motor pool vehicles, travel services). Thus, if it can be demonstrated that certain supporting services can be obtained from external sources on a contract basis for less cost than from an internal service unit, responsibility centers may receive budget allocations to pursue these options.

Not all indirect costs are controllable at the responsibility center level. Long-term effects of costs such as depreciation, long-term lease arrangements,

and the like seldom qualify as controllable costs on the performance report of a specific manager. Therefore, these expenses should be further broken down between those that are controllable and those that are noncontrollable at the responsibility center level.

To illustrate these points, consider the costs of nursing services in a hospital. The extent to which these costs are controllable at the cost or responsibility center level will depend on the policies of top management regarding intensive care, the lead time available for planning the number of nurses in relation to patient load, the availability of short-term or part-time help, and so on. Some managers may have relatively little control over such cost-influencing factors. Clearly, an item such as depreciation on the hospital building is outside the realm of controllable costs at the responsibility center level.

Responsibility centers have primary responsibility for the management of resources and costs (as well as the broader mission for which these resources and costs are budgeted/allocated). Sources of financial support (revenue or income) are attributed to the responsibility centers on some equitable and consistent basis. Fees generated by building inspections, for example, should be “credited” to the responsibility center (e.g., Public Works Department) that carries out these inspections. Fees from public recreational facilities should be attributed to the Parks and Recreation Department. Grant-in-aid programs and other intergovernmental revenues that are earmarked for specific programs should be recorded as part of the budget allocations to the centers designated to carry out these responsibilities. Costs associated with internal service units (that is, units that do not receive revenue or income from external sources) are either charged to the responsibility centers on a *fee for service* basis or are recovered from the responsibility centers through some form of *assessment*.

Costs must be traced from the traditional cost accounting structure (which identifies *what* resources are being used) to the activities that describe what the organization does (which relates *why* the resource is being consumed). The cost tracing can involve actual (historical) costs or budgeted costs. Costs of supporting units, initially accumulated in overhead cost pools, must also be allocated to appropriate activities. A distinction often is made between a *service center*—which is assigned only the direct portion of overhead—and a *cost center*—which is fully burdened with indirect costs.

Once all income/revenue and costs have been fully allocated to the responsibility centers, in all likelihood, there will be some “surpluses” and some “deficits.” Responsibility centers should be permitted to retain all or a major portion of their “surpluses.” On the other hand, the deficits or shortfalls between total costs and revenues/income must be covered through some form of *subvention*—a central allocation to ensure the continued operation of programs existing at the time the new allocation model is implemented.

What is the source of the funds for the subvention? One approach would

be to “take funds off the top”—that is, to hold back some portion of the general funds to cover these costs. Another approach is to initiate a surcharge or “assessment” on the expenditure of the resources that have been fully allocated. The revenue collected through this levy could then be reallocated to responsibility centers, both as subvention to provide a level playing field for those units faced with deficits and to “seed” additional activities that may have organization-wide benefits. A portion of the assessment could also be used to support internal service units.

6.3 Application of Activity-Based Costing

The Activity-Based Costing (ABC) model, which Cooper and Kaplan developed, provides a basis upon which to reconfigure how organizations manage costs by attaching costs to activities—processes or procedures that cause work to be performed in an organization. [6] Cost management and cost control can then focus on the sources of cost rather than on where the costs are reported. In this way, the total cost of all traceable activities is based on how much of each activity is consumed by the product or service, regardless of organizational or functional boundaries. Managers can learn how to identify and eliminate waste by focusing on the root cause of a cost rather than by addressing symptoms.

The ABC approach is likely to produce a more accurate representation of the indirect costs attributable to the organization’s final cost objectives than using surrogate measures, such as direct labor hours or direct material dollars, as a means for allocating costs to products. The two-stage ABC process identifies activities and focuses on the cost drivers that are the major causal factors behind cost behavior.

7 SUMMARY

The traditional role of budgeting since the turn of the twentieth century has been fiscal control. The *line-item/object-of-expenditure* budget serves well the purposes of internal fiscal control by offering two distinct advantages over other budget formats: (1) a detailed set of accounts through which expenditures can be recorded, controlled, and audited and (2) the close linkage between personnel and other budgetary requirements permitting the use of position controls to control the entire budget. However, object classifications merely show *what* is purchased, but not *why*—that is, the nature of organization’s programs and anticipated accomplishments under those programs.

Performance budgeting strengthens the management aspects of the budget process by focusing on operating economies and performance efficiencies. Three components distinguish performance budgeting from other approaches: (1) identification of work programs, (2) delineation of performance units, and (3) mea-

surement of performance costs. A *performance unit* is a team of workers responsible for carrying out a specific tasks (i.e., a work program). *Performance costs* are those costs directly associated with carrying out these activities. *Workload* and *unit cost measures* provide detailed information useful to operating managers in assessing the efficiency of their programs and organizational units.

Program budgeting combines a planning framework with the basic functions of management and control. A *program* is a distinct organization of resources directed toward a specific objective. *Program objectives* describe how and where specific resources (personnel, equipment, materials, capital expenditures, etc.) will be used. *Multi-year program plans* often are developed to identify the anticipated outputs of services and facilities according to the program objectives. The extended time horizon of the program budget shifts the decision focus from the one-year budget cycle to a multi-year time frame, thus providing a more comprehensive basis for annual budget deliberations. The focus of program budgeting is on policy analysis and planning. Resources are allocated on the basis of goals, objectives, and strategies. Measures of effectiveness and efficiency are used to evaluate program results (actual performance) in terms of planned performance. It may be possible to carry out meaningful cost-benefit or cost-effectiveness analyses by interrelating key indices from these measurement sets.

The basic objective of zero-base analysis techniques is to circumvent the shortcomings of incremental budgeting. Under current applications, detailed analyses of programs “to the zero base” have been replaced by the concept of *service level analysis*. The identification of budget units and decision packages provides a rough parallel to programs and subprograms in the program budget format. By arranging levels of service in descending order of importance and determining a funding cutoff point, the analyst can rank alternative approaches according to their capacity to meet program objectives.

Responsibility center budgeting places emphasis on pertinent costs in relation to well-defined areas of responsibility. All sources of financial support (revenue or income) are attributed to the responsibility centers on some equitable and consistent basis. The techniques of activity-based costing can be used to trace costs from a more traditional cost accounting structure (which identifies *what* resources are being used) to those activities that best describe what the organization does (which better identifies *why* resources are being consumed). The management and control of cost can then focus on the sources of cost rather than on where within the organization the costs are being reported.

The information input and output requirements of program budgeting, service level analysis, and responsibility center budgeting differ significantly from those of more traditional budget practices. Contemporary budget formats provide important managerial feedback—soundings, scannings, and evaluations of changing conditions resulting from previous program decisions and actions.

Feed-forward information emerges from projections and forecasts; goals, objectives, and targets to be achieved; program analyses and evaluations; and the projection of outcomes and impacts of alternative programs. Such information provides a basis for more informed decisions and actions over a range of time periods, locations, and perspectives.

Each of these budget formats has obvious strengths and weaknesses. By combining the positive points of each format in a hybrid approach, however, public organizations should be able to develop budget systems that better serve sound financial planning and management objectives.

ENDNOTES

1. Allan Schick, "Putting It All Together," *Sunset, Zero-Base Budgeting and Program Evaluation*, Proceedings of a Conference on Legislative Oversight (Richmond, Va.: Joint Legislative Audit and Review Commission, 1977), p. 17.
2. Peter F. Drucker, "The Effective Decision," *Harvard Business Review*, 45 (January-February 1967), p. 95.
3. Charles T. Horngren, *Introduction to Management Accounting* (Englewood Cliffs, NJ: Prentice-Hall, 1978), p. 252.
4. For a discussion regarding the definition of responsibility centers, see: Edward L. Whalen, *Responsibility Center Budgeting: An Approach to Decentralized Management for Institutions of Higher Education* (Bloomington, IN: Indiana University Press, 1991), chapter 3.
5. Whalen (*Ibid.*, p. 51) suggests that if charges are not levied for such services, aggressive managers will seek to secure more "free" inputs until the additional contribution to the productivity of their units from these additional "free" inputs diminishes to zero. However, since these inputs are not free to the total organization, its overall performance is not optimized by such practices.
6. Robin Cooper and Robert Kaplan, "Activity-Based Costing," *Journal of Cost Management* (Summer 1988).

8

Government Responsibility for Capital Facilities

Two fundamental government responsibilities stem from the broad objective to “promote the general health, safety, morals, and public welfare”: (1) the regulation of the action of individuals to ensure that they will not be detrimental to the general public and (2) the provision of public services and facilities for the mutual benefit of all or a majority of citizens. The imposition of regulations and controls in the public interest is as old as history itself. Of more recent origins, the provision of public facilities and services has become widely accepted as a basic responsibility of government in contemporary society. Segments of the public may complain when taxes are increased to provide new schools or to expand public welfare programs. It is generally acknowledged, however, that significant economies can be achieved by such government activities—economies that could not be derived if each citizen had to provide for these facilities and services on an individual basis.

1 CAPITAL FACILITIES PLANNING

Maintaining, preserving, and improving a community’s capital facilities—public buildings, schools, roads, bridges, parks, water and sewer lines, and related equipment—is a fundamental responsibility of local government officials. The term *capital facility* refers to a project (1) involving a significant investment of

financial resources of a non-recurring nature, (2) designed to provide new or expanded government capacity for the delivery of public services, (3) resulting in a fixed asset for the community, (4) that has a relatively long life (usually a minimum of 15 to 20 years). Such facilities represent very large investments of public resources, are not easy to modify once built, and usually exert a profound effect on the form and functioning of a community over a period of many decades. Regular maintenance of the existing infrastructure can help to avert fiscal crises and avoid prohibitive future replacement costs. Therefore, capital facilities decisions should be based upon a systematic approach to planning, programming, financing, and debt administration.

1.1 The Planning Phase

Long-range planning of capital facilities has lagged significantly behind other developments in the field. State and local governments began to assume greater responsibilities for the provision of public facilities in the late 1800s and early 1900s. However, only the most evident needs were addressed, and these needs often were dealt with in a somewhat haphazard fashion. Little or no provision was made for the overall supervision and regulation of public expenditures through a comprehensive budgetary process. Municipal development during this period was characterized by the uncoordinated construction of public works. If any resources remained after the most obvious obligations were met, other projects might be initiated.

Gradually, public officials began to recognize that long-range planning could provide a means of assuring that capital projects would be carried out in accordance with a defensible system of priorities reflecting both public needs and the government's ability to pay. [1] The benefits of a systematic approach to capital facilities planning include:

- Careful planning of capital improvements helps local officials to make sound budgetary decisions, identify economical funding mechanisms, avoid excess debt commitments, avert costly mistakes, minimize unanticipated capital expenditures that could be detrimental to the community's overall financial well-being, and give evidence of sound financial planning, which investors tend to view favorably, in turn leading to lower borrowing costs.

- Capital facilities planning can be viewed as an essential element of a comprehensive growth management program because the location and capacity of public improvements help to shape and control future residential and economic growth in the community.

- Strong citizen participation in the capital facilities planning process can help build the political and social support necessary to achieve consensus on both the desirable projects—parks, schools, and community centers—

and the less desirable projects that fall under the “not in my backyard” category—sewer treatment plants, landfills, and correctional facilities.

Intergovernmental cooperation is encouraged by providing public officials of all governmental units an opportunity to plan the location, timing, and financing of improvements in the interest of the broader community.

Capital facilities planning also promotes coordination among the various departments and agencies of government and thereby helps to circumvent overlapping or conflicting programs. It protects against undue influence by special interest groups, which may attempt to force the adoption of “pet projects” at the expense of more urgent or more meritorious improvements. Bond issues or other revenue-producing measures can be adopted before the need becomes so critical as to require emergency financing measures. Advanced planning extends the period of time available for the proper technical design of facilities and permits a continual, systematic appraisal of personnel and equipment needs, resulting in a number of economies. And finally, the planning may provide justification for the advance acquisition of properties needed for improvements, thereby taking advantage of lower market values.

Capital facilities planning should be built upon a continuous assessment of community preferences, an identification of goals and objectives, demographic estimates and economic forecasts, and projections of development expectations. Data on future community needs must be sufficiently reliable to justify decisions that involve relatively large, long-term commitments of financial resources. The following elements should be included in this planning framework:

1. *External factors*—such as demographic shifts, changes in economic activities, social trends, scientific and technological change, emerging land use patterns, and so forth—that may influence the service programs of the community or organization.
2. *Total service demands*. Assumptions, standards, and criteria used to quantify and project facility and service needs must be clearly identified and tested against available trend analyses.
3. *Service delivery responsibilities*. Present and future roles of various levels of government, as well as private enterprise, in the provision of facilities and services must be examined and should include recommendations regarding the elimination of overlapping responsibilities through coordination or realignment.

1.2 Forecasting Community Growth and Change

The demand for public improvements is a function of growth. This emphasis on meeting growth demands does not imply a “self-fulfilling prophecy,” however. In situations of service crisis, local governments may be panicked into uneco-

nomical investments and overdevelopment. Comprehensive capital facilities planning can help avert these crises, thereby contributing to more realistic and rational patterns of growth.

To anticipate the types of improvements required, the population to be served should be delineated to the fullest extent possible. Income levels, household size, and other demographic and economic characteristics provide vital information as to facility needs and service expectations. An aging population, for example, will require specialized health facilities and housing. Young adults just starting families will require schools, day-care centers, and recreational facilities.

Demographic projections are often based on an age-cohort survival model, which analyzes the population by narrow age categories (cohorts) according to vital statistics on births, deaths, and net migration patterns (inflows or outflows of population). Further breakdowns in these data can also be made by race, sex, income, and so forth. It is important to understand the current demographic composition in order to identify unique characteristics that may influence future population structure. For example, the transient student population of a college town is influenced by factors other than typical demographic elements and cannot be “aged” in the cohort structure with the resident population.

Five-year age-cohorts are “stepped up” through each iteration (see Table 8.1), and the results of this “aging” of cohorts are then modified by adjustments for births, deaths, and net migration. The basic mathematics of the age-cohort survival model are fairly simple. Making good assumptions about migration is not easy, however, and for this reason, many projections turn out to be inaccurate or unrealistic in terms of actual demographic data.

Mistakes in projecting population can be quite costly. The baby boom, for example, which began in the late 1940s and lasted until the early 1960s, produced huge increases in public school enrollments. In the 1960s and early 1970s, many localities assumed the trend would continue into the foreseeable future, and made substantial investments in new school buildings. In fact, however, enrollments peaked a few years into the 1970s and then started downward. Today, many school districts, that experienced significantly declining enrollments are still paying off the bonds on underutilized school buildings.

1.3 Economic Forecasts and Projections

Economic forecasts are an important factor in the preparation of demographic projections because assumptions concerning population growth or decline are based, in part, on economic activities. A locality experiencing rapid industrial growth, for example, will likely experience a wave of worker in-migration. The age and socioeconomic characteristics of these new groups must be forecast to ensure adequate provision of basic public facilities and related services.

TABLE 8.1 Age-Cohort Survival Model: City of Rurbana

Age Cohorts Base Year	Population Base Year	Survival Rates*	Age Cohorts Plus 5 Year	Surviving Population Plus 5 Years
			Under 5	6656**
Under 5	6047	0.99173	5-9	5997
5-9	6782	0.99780	10-14	6767
10-14	6705	0.99777	15-19	6691
15-19	7543	0.99537	20-24	7508
20-24	9689	0.99382	25-29	9629
25-29	6398	0.99299	30-34	6353
30-34	4608	0.99136	35-39	4568
35-39	4124	0.98795	40-44	4074
40-44	4233	0.98127	45-49	4153
45-49	4081	0.97099	50-54	3962
50-54	3564	0.95468	55-59	3402
55-59	3239	0.93271	60-64	3021
60-64	2939	0.89949	65-69	2643
65-69	2400	0.85451	70-74	2051
70-74	1776	0.78990	75-79	1403
75-79	1272	0.69571	80-84	885
80-84	757	0.54790	85-89	415
85-89	371	0.37028	90-94	137
90-94	108	0.17810	95-99	19
95-99	20	0.08608	100+	2
100+	3	—		
Totals	76660			80336

*Application of Reed-Merrell tables on the probability of dying to actual mortality data.

Children Under 5 Born to Females of Child-bearing Age

Age Cohorts	Percent Base Year	Number Plus 5 Years	Fertility Rate	Children Under 5
10-14	48.78	3301		
15-19	48.84	3268	220	719
20-24	43.80	3289	280	921
25-29	43.29	4168	594	2476
30-34	49.44	3141	544	1709
35-39	50.30	2298	195	448
40-44	51.89	2114	181	383
Total				6656

Economic projections and forecasts, in turn, must be translated into public improvement needs. The attraction of young workers and their families to an area experiencing industrial growth will likely result in increased demands on the educational system. If the municipality is not responsive to these demands, the momentum of economic activities will be adversely affected.

Future economic conditions also determine the financial capacity of a community to pay for capital improvements. Economic indicators—including data on employment, cost of living, disposable income, building activity, and bank deposits—can be used to analyze trends and to suggest the future revenue capacity of the community.

Economic base studies, widely applied in capital facilities planning, divide the local economy into two broad categories (see Figure 8.1):

1. *Basic or export industries*—those industries producing goods and services (and capital) for distribution to markets outside a defined local economic area; and
2. *Nonbasic or service industries*—those producing goods and services that are consumed within the local economic area.

A distinction is made between economic activities that bring new money into the community (basic industries) and those that simply result in the recirculation of money (service industries). An underlying assumption of this approach is that expansion of basic activities usually results in growth of service activities and thus, growth in the total economy. Forecasts of economic growth are based on multipliers that relate local activities to exports.

Employment growth generally fosters population growth because job opportunities attract new residents. But the process works the other way too. Population growth creates employment in retailing, wholesaling, personal services, and related activities. In fact, the relationship goes still further because pools of labor and capital built up to serve a local population, in time, may foster the growth of manufacturing and other activities that are not directly related to servicing the local population.

1.4 The Local Infrastructure

Land use studies are an important part of planning for capital facilities. It is not possible, for example, to plan for sewer construction without a clear understanding as to what areas of the community need to be provided with sewers. Land use studies also are important for identifying land suitable for various types of capital facilities and for estimating the cost of such public improvements—the cost of sewers, roads, and other facilities can be greatly influenced by topography, subsoil conditions, and the like.

The results of the land use studies must be consistent with the economic

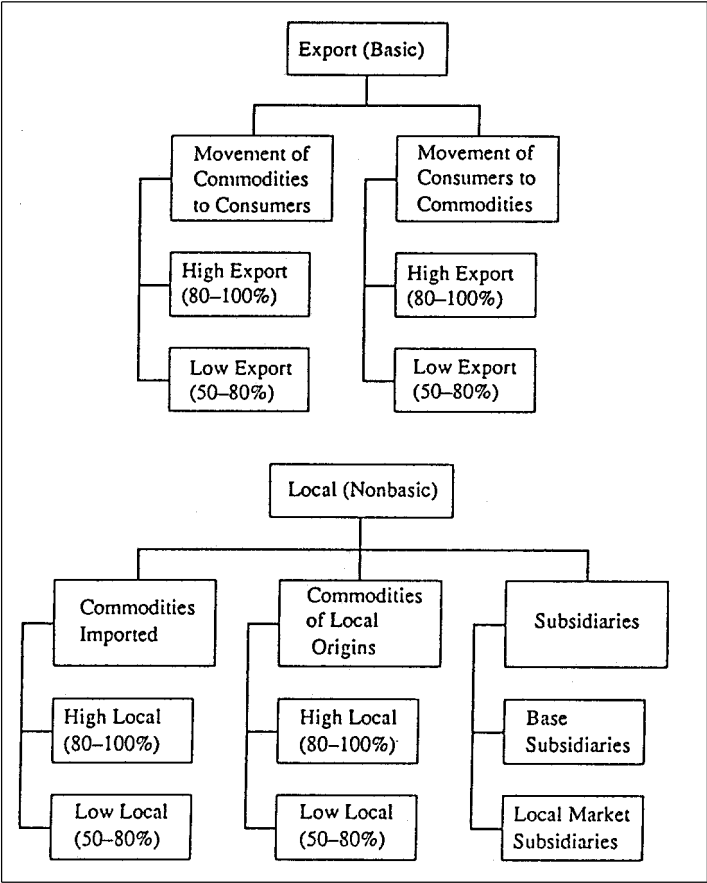


FIGURE 8.1 Economic Base Structure Classification by Location and Consumer Commodity

and population forecasts. If a land use study does not indicate enough developable area to accommodate projected population and employment increases, for example, the planner should think seriously about scaling down those projections.

1.5 Financial Planning and Fiscal Policy

The demand for services and facilities increases and changes as a function of growth and the social and economic characteristics of the community. However, local revenues have tended to increase at a slower rate, creating an ever-widening fiscal gap for many localities. The revenue sources available to local governments

are not very responsive to changes in the overall economy—in economic terms, they are relatively *inelastic*. The inelasticity of local revenues is attributable, in large part, to the tax structure that forces local governments to rely heavily on local property taxes, which have proven to be relatively unresponsive in meeting increasing demands for public services and facilities.

Other taxes have also not been very productive at the local level. Unilateral taxation of income, sales, or business by local governments often results in a shrinkage of the local tax base. If one local government introduces such taxes, economic activities may decide to locate beyond its boundaries (for example, major shopping facilities located just outside the taxing authority of cities) unless adjoining jurisdictions coordinate their tax policies such that no one jurisdiction has locational advantages that can be exploited by economic elements.

Government services tend to be labor intensive and not readily amenable to the substitution of capital for labor. Thus, although there have been massive increases in productivity in manufacturing, transportation, and agriculture, increases in public sector productivity have been much less significant. Hence, the cost of public services have risen more rapidly compared to many other goods and services.

Many local governments find themselves in a difficult fiscal bind. Taxpayers demand good schools, adequate police and fire protection, and other public services. At the same time, however, they stoutly resist any increases in local taxes to pay for these services.

Most intergovernmental aid is from the state rather than the federal government. Much of the state funds received by local governments, however, is really “pass-through” money. As federal transfers to the states diminish, state generosity to local governments is very likely to decline. For all of the above reasons, careful estimating of revenues and planning of expenditures is important.

1.6 Revenue and Expenditure Analyses

A sound revenue policy must be predicated on the basis of a thorough assessment of public service and capital facilities needs. Estimates should include an analysis of the revenues to be collected if existing fiscal policies are maintained. New revenue sources or shifts in yields from current sources under alternative policies should also be analyzed.

Sources of revenue should be disaggregated into appropriate categories and projected over a number of years. Demographic and economic forecasts are important in estimating the size of the tax base in the future. The impact of inflation must also be considered in estimating the magnitude of revenue sources such as sales and property taxes. The availability of intergovernmental aid also

must be estimated. Considerable uncertainty is involved in such analyses, and the likelihood of any jurisdiction accurately projecting its revenues over the next decade is quite small. Nevertheless, there is no good alternative to the use of such projections.

Expenditure data should also be separated into major categories. Historical fiscal data assist in determining appropriate multipliers for each expenditure category. For example, a profile of historical data might be used to project the cost per pupil of primary school education. Population projections for the community provide enrollment estimates in future years. This yields a first approximation of the real costs. The projected costs might then be adjusted for projected inflation to identify the actual dollar costs. Note that one uncertainty (projected cost per pupil) is being multiplied by a second uncertainty (number of pupils) and then by a third uncertainty (changes in the value of the dollar). Therefore, the results of such analyses are only very rough approximations.

1.7 Capital Costs and Debt Burden

The annual cost of any improvement program is determined by the planning, scheduling, and methods of financing, together with the projected operating costs. To be most effective, the programming of capital improvements should undertake to level off annual costs and to avoid erratic fluctuations. Annual costs, when measured against tax resources and available subsidies, determine the tax burden generated by the capital improvements program. The overall debt burden is determined by the total capital costs, together with the schedule and financing methods. When the tax or debt burden becomes too great for public resources, it may be necessary to reduce the level of improvements scheduled until their costs fit to these resources.

Standards of service must also have a degree of “built-in” flexibility; to be meaningful, they must represent actual performance or benefits. As new operational techniques are introduced or as new demands arise, it is important that such standards be flexible enough to permit adjustments to meet changing conditions.

2 PROGRAMMING CAPITAL FACILITIES

A growing body of evidence indicates that the deterioration of the urban infrastructure is a very serious problem of national scope. Articles in the popular press, research sponsored by various agencies, and a series of congressional hearings have contributed to increased national concern as to the status of water and sewer systems, health and educational facilities, streets, bridges, and public facilities in our cities and towns.

2.1 The Infrastructure Problem from the Local Viewpoint

Recognition of the seriousness and magnitude of the problems of the urban infrastructure unfortunately comes at a time when resources are constrained at all levels of government. While debt levels of state and local governments over the past 25 years have increased at an annual rate of just over 6 percent, local spending for new capital facilities as a percentage of total expenditures has recorded significant declines. During the recent period of fiscal pressures, many local governments also have deferred maintenance spending as a “temporary measure” to ease their financial burdens. Such spending deferrals, however, have only multiplied future repair needs and investment requirements. Public officials and administrators have had to confront a number of difficult, complex, and often politically sensitive decisions.

The programming of capital facilities should be based on a system of priorities that, in turn, should be linked to the goals and objectives set forth in a capital facilities plan. Procedures must also be developed for the continuous evaluation of services and facilities. The process by which limited public resources are allocated among a wide range of competing improvement needs should include the following key elements:

- A basic inventory and a set of indicators for assessing the condition of the infrastructure systems of the community
- Determination of current conditions and range of potential infrastructure improvement needs
- Analyses of the maintenance, repair, and replacement options for different improvement proposals (including the “do-nothing” option)
- Analyses of risks and uncertainties associated with various investment options, culminating in a ranking of proposals
- Evaluation of financing options
- Selection, programming, budgeting, and scheduling of specific improvement projects

Local practices for allocating limited resources to capital needs often are based on traditional engineering standards. Such standards are not sufficiently comprehensive to provide needed information on *trade-off options* for proposed improvements, however. Highly subjective assessments may be based on limited information regarding infrastructure conditions, the impacts of proposals, available financing options, or an analysis of repair and replacement options. Local discussions concerning priorities among competing projects often are intensely political debates. And all too often, in the absence of sound information and analysis, the “squeaky wheel” approach to decision-making prevails.

2.2 Estimation of Current Infrastructure Conditions

Capital commitments should be based on an assessment of major components of the local infrastructure—monitored over time and compared to benchmark data where possible. Priorities among capital projects can be more readily determined once the conditions of individual segments of the infrastructure are clearly identified. Application of Geographic Information Systems (GIS) techniques can be of considerable assistance in maintaining an inventory of infrastructure conditions. Once the data are loaded into the GIS, periodic updates and analyses can be accomplished with relative ease. Specific analysis of repair and replacement alternatives can be undertaken when information on the condition of the current infrastructure is combined with cost accounting data on maintenance spending.

Three categories of indicators should be considered for each infrastructure system:

1. *Engineering-type assessments*, such as measures of water pipe capacity loss, bridge condition ratings, etc.
2. *Performance measures*, such as number of sewer line stoppages, frequency of bus breakdowns; service calls for water line repairs, etc.
3. *Service impact indicators*, such as numbers of citizen complaints and losses arising from system failures (e.g., water main breaks, basement flooding incidents from sewer backups).

A small group of indicators for each system should be selected that offer valid measures of conditions and for which reliable information can be obtained over time. Selection will be facilitated by seeking the advice of professional groups and by examining the experience of other local governments that have implemented such assessment procedures. Efforts should be made to identify assessment systems that are reliable (e.g., that minimize dependence on judgments that may differ among surveyors), while at the same time are practical (e.g., that minimize extensive data gathering or use of expensive equipment in the assessment process).

Standardized definitions should be prepared for each indicator and, where possible, *benchmarks* should be established for the selected performance measures, such as system failures and breakdown rates. This information, coupled with rules of thumb developed by practitioners, should provide measures of the mean and range of performance levels against which the local infrastructure can be compared and evaluated.

The product of this task should be a description of appropriate *condition indicators* and procedures for obtaining information on a regular (e.g., annual) basis. Estimates should be made of the data collection costs and of the reliability/validity of the procedures. Special attention must be given to the cost-saving

trade-offs of collecting data for condition assessments. In some cases, new procedures will be warranted. In others, existing information can be utilized.

2.3 Replacement Analysis

A replacement analysis provides an assessment of the trade-offs among four options: (1) replace the facility or equipment, (2) rehabilitate or undertake a major overhaul, (3) continue to provide current maintenance with emergency repairs as required, or (4) cut back maintenance spending and defer repairs. The fourth option may be the least expensive in the short run but usually is the most costly in the long term. Replacement analysis provides information on the likely costs, impacts on service levels, and risks of the choices involved.

Ideally, *depreciation curves* should be developed for different components of the infrastructure, showing the rate of deterioration as a function of such factors as age, original construction material, climate, intensity of use, and the like. Unfortunately, although some general guidelines concerning service durations do exist, these typically do not relate to individual segments of the local infrastructure. Much of the technical literature from the related fields of engineering economy, capital budgeting, and cost-benefit and cost-effectiveness analysis has focused on private sector choices, which have the simplifying advantage that the outputs of investments, as well as the costs, can be expressed adequately in dollar terms. In the public sector, however, consideration must also be given to non-monetary impacts, such as water quality, transportation delays, sewer stoppages and backups, and the like.

Equipment replacement models seek to minimize future net costs by estimating the appropriate time for replacement. Optimal replacement occurs when operating and maintenance costs (plus loss of resale value) of existing equipment exceed the annualized cost of replacement plus the operating and maintenance cost of the new equipment. In short, the cost of maintaining the existing equipment for another year is compared with the cost of buying new equipment and operating it for the same period.

Cost-benefit analysis has been popular in examining transportation alternatives and in assessing water resource projects. Problems of how to meaningfully impute dollar values to service-level impacts, and secondarily, how to handle distributional effects, are likely to limit the utility of cost-benefit analysis at the local level, however. In addition to the basic principles of the various forms of economic analysis, the detailed procedures should include:

Estimation of costs. Local governments often have difficulty in using information from maintenance records, engineering estimates, and bids to project costs of various alternatives. Procedures for the explicit consideration of full costs (i.e., operating and maintenance costs) as well as investment costs should be developed when feasible. The use of statistical

cost analysis techniques should be explored to make better estimates of future costs.

Discount rates. Discounting is important in considering the time stream of expenditures and benefits (and opportunity costs). Appropriate discount rates for local analyses, however, often are unclear. Often these measures, if stated in monetary terms, represent dollar imputations rather than actual dollar outlays.

Distributional effects. Procedures should be developed to examine the distributional effects of investment choices within a locality. The numbers of citizens affected, as well as their location and demographic, economic, and social characteristics, should be considered. Condition indicators often can be disaggregated by neighborhoods, districts, etc.

2.4 Ranking Capital Project Requests

Capital projects may be divided into four major categories, as summarized in Table 8.2. The decision process associated with each of these categories may vary considerably, depending on the quantitative and qualitative information accessible and the options available.

In all likelihood, the overall cost of proposed capital projects will exceed the available financial resources. Therefore, decisions regarding capital project requests should be based on measurable and defensible criteria that establish priorities among needs. Information derived from the previous tasks (infrastructure condition assessments, repair and replacement cost options, service impacts) can provide a basis for priority ratings. Such procedures should seek to combine criteria to provide an overall summary score, without losing the backup information on each individual criterion for each proposal. Economic costs and benefit often can be quantified in such priority systems. With few exceptions, however, social benefits and costs have yet to reach this level of quantification. Various “political factors” seldom are included among such criteria but are brought to bear on the final rankings.

Systems for assigning priorities can be divided into two approaches: (1) those that stress intangible values and (2) those that seek to quantify various criteria to develop a numerical scoring system. Each of these approaches has its merits and shortcomings, and to the extent possible, elements from each should be incorporated into a sound priority classification system.

Under an *intangible approach*, preference is given to projects that contribute to the *protection of life, health, and public safety*. A second important consideration assigns priority to projects designed to meet *current deficiencies* in existing facilities, based on some standard of service. While deficiency criteria often are expressed in rather general terms, it may be possible to establish some quantifiable measures based on these general statements that can then be applied

TABLE 8.2 Categories of Capital Improvements Projects

Repair and Renovations

Involves the maintenance of existing facilities and equipment in satisfactory condition. Projects often are much less expensive than those in other categories, and as a consequence, are easier to evaluate. Examples include: replace of a pump that is supplying water from an artesian well; a new roof for the city garage to replace one that is causing significant water damage to the facility. Such projects often do not require elaborate quantitative or qualitative evaluations.

Compliance with Government Regulations/Safety Requirements

Projects often are mandatory and must be implemented within a specified time to avoid significant fines, costly legal battles, and even heavy court judgments. The objective is to determine the most cost-effective way to satisfy the government mandate or safety requirements. Examples include: modification of public buildings to meet the requirements of the Americans with Disabilities Act; replacement of outmoded and unsafe elevator that violates the city code and represents a substantial liability in the event of an accident; replacement of air conditioning equipment to meet Environmental Protection Agency guidelines.

New Construction/Major Renovations

Typically involving the most expensive projects, decisions in this category often must rely on an evaluation of qualitative benefits. The costs of such projects can be estimated, but the benefits often are not subject to quantitative dollar measurement. Examples include an addition to the public library, including a facelift for the old facility; a new heating/cooling plant to replace an outmoded and inefficient one; a new office building to accommodate city personnel currently housed in rental spaces. Reduced utility and maintenance costs resulting from a new plant and the rental savings should be quantified and included as benefits in the evaluation.

Implementation of New Programs

Commitments to implement new programs or expand existing programs often result in significant capital costs that may not be readily apparent and/or fully considered as part of the program decision. New equipment may have to be leased or purchased. New or expanded facilities subsequently may be required to accommodate the program initiatives. Examples include: new accounting procedures to provide improved information on which to make more timely decisions, which may require a substantial investment in computing hardware and software and a local area network to fully utilize their potential; an expanded prenatal health care program, which may require the leasing of space to increase convenience for access to such services.

to determine the essential level of service and the harm arising from a deficiency of service. It often is difficult, however, to develop measures that are comparable across functions lines (e.g., parks versus schools).

Priority consideration also may be given to projects designed to *conserve* or *maintain* some existing properties, investment, or resources, or those that demonstrate some substantial economic or social benefit to the community. Es-

tablished facilities may depend on new projects to realize their full potential, and therefore, such projects also might be given a high priority, as would projects that are self-supporting or self-liquidating. Special consideration may also be given to projects for which substantial state or federal subsidies are available. Finally, special consideration would be given to emergency situations.

A six-way breakdown of priorities is shown in Table 8.3, along with criteria for assigning capital projects to each of these categories. An examination of the suggested criteria will reveal several areas in which more measurable indices could be developed. Hatry, Millar, and Evans have suggested eleven criteria for the evaluation of capital projects, as summarized in Table 8.4. Most cities require a description or justification of each project as part of the departmental submissions. Often these statements are so general, however, that the process of comparing and selecting among competing projects becomes very subjective. For these evaluation criteria to be useful, information should be provided on each of the relevant factors.

In recent years, a number of governments have begun to identify a set of ranking criteria against which each capital improvement proposal is rated. Nu-

TABLE 8.3 General Criteria for Capital Facilities Priority System

Category	General Criteria
<i>Urgent</i>	Projects that cannot reasonably be postponed; projects that would remedy conditions dangerous to public health, welfare, or safety; projects required to maintain a critically needed program; projects needed to meet an emergency situation.
<i>Essential</i>	Projects required to complete or make fully usable a major public improvement; projects required to maintain minimum standards as part of a ongoing program; desirable self-liquidating projects; projects for which external funds for over 65% of costs are available for a limited period.
<i>Necessary</i>	Projects that should be carried out within a few years to meet clearly demonstrated anticipated needs; projects to replace unsatisfactory or obsolete facilities; remodeling projects for continued use of facilities.
<i>Desirable</i>	Adequately planned projects needed for the expansion of current programs; projects designed to initiate new programs considered appropriate for a progressive community; projects for the conversion of existing facilities to other uses.
<i>Acceptable</i>	Adequately planned projects useful for ideal operations but which can be postponed without detriment to present operations if budget reductions are necessary.
<i>Deferrable</i>	Projects recommended for postponement or elimination from immediate consideration in the current capital facilities plan; projects that are questionable in terms of overall needs, adequate planning, or proper timing.

Adapted from: Alan Walter Steiss, *Local Government Finance: Capital Facilities Planning and Debt Administration* (Lexington, Mass.: Lexington Books, 1978), p. 38.

TABLE 8.4 Suggested Evaluation Criteria

<p>Fiscal Impacts. Explicit consideration should be given to initial costs of development (site acquisition and preparation, construction, and equipment acquisition) and subsequent costs of operation, maintenance, and repair of the capital facility. Capital projects may generate new revenues or may result in a reduction in revenues. Increases or decreases in energy requirements should be included as part of a project's cost impact. Estimates should be made of any potential cost liabilities of undertaking (or not undertaking) a capital project.</p> <p>Health and Safety Effects. Project justifications should include an assessment of health and safety-related effects, such as anticipated reduction in traffic accidents, elimination of health hazards arising from poor water quality, long-term effects of asbestos in public buildings.</p> <p>Economic Effects. Information on the economic effects of proposed projects should included the likely impact of the project on (1) property values, (2) the tax base, (3) employment opportunities, (4) personal income, (5) business income, and (6) the stabilization or revitalization of declining neighborhoods.</p> <p>Quality of Life and Service. Both beneficial and adverse effects on the quality of life—environmental, aesthetic, and social—should be considered. Estimates should be provided as to the duration and severity of service disruptions and the number of persons likely to be affected.</p> <p>Distributional Effects. Where appropriate, estimates of the number of persons likely to be affected should be broken down by age groups, economic status, neighborhoods or districts, residential or commercial areas, handicapped persons, etc.</p> <p>Project Feasibility. Projects should be evaluated for special problems that may arise in implementation including legal issues, compatibility and compliance with the capital facilities plan, impact on prior investments, and degree of public support for or opposition to the project.</p> <p>Implications of Project Deferral. The impact of deferring the project should be examined in terms of each of the previous criteria. What will be the added costs? What and who will be disbenefited, and how? Is intergovernmental assistance more or less likely to be available in the future? What are the trends in the bond market?</p> <p>Risk and Uncertainty. All capital projects involve some risk and uncertainty. When such risks and uncertainties are substantial, the consequences should be included in the overall project evaluation.</p> <p>Interjurisdictional Relations. Special coordinating activities may be required if a proposed project has significant adverse or beneficial effects on other jurisdictions or agencies that serve the same area.</p> <p>Advantages Accruing from Other Proposals. The relationship between capital projects should be identified, particularly if the initiation of one project will affect the costs or benefits of another project. If two or more projects can be undertaken together at a lower cost than if done separately, the combined effort may rate a higher priority.</p>
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Adapted from Harry P. Hatry, Annie P. Millar, and James H. Evans, "Guide to Setting Priorities for Capital Investments," *Guides to Managing Urban Capital*, Volume 5 (Washington, DC: The Urban Institute Press, 1984), p. 9.

merical weights are assigned to each criterion and used as multipliers to calculate an overall summary score for each proposal, which are then used to rank the proposals. The criteria usually involve economic, political, social impact, and distributional considerations.

Under a *numerical priority system*, the criterion judged to be most important or most significant is given the highest score (frequently based on units of ten or some multiple of ten). All other factors are then ranked in relation to this score. Thus, “protection of life and maintenance of public health” may be ranked as the most important criterion and given a score of 100. “Conservation of resources” may be judged to be nearly as important and thereby given a score of 90. On the other hand, “aesthetic and cultural values” may be ranked relatively low, scoring only 20 points. These categories often are further divided into a number of subcategories and scores accumulated for any given period. It should be evident that any effort to develop such an “objective” approach must be based, to a large degree, on subjective judgments.

While priority systems should have some degree of flexibility, they must be stable enough to offer substantial justification for the scheduling of projects and the allocation of funds within the capital improvements program. The priority system must be tailored to the particular goals and objectives of the individual jurisdiction. One locality may be interested primarily in furthering industrial growth and development. Another may have tourism and the development of the recreational industry as a basic objective. A third may place primary emphasis on the preservation of a well-maintained residential atmosphere. In the final analysis, planners and administrators must exercise their best professional judgment in working with the various operating agencies in assigning priorities. At the same time, it must be recognized that “. . . the actual choice and establishment of final priorities are still accompanied by the political process of compromise, a give-and-take between all groups concerned.” [2]

Ranking procedures are not intended to make decision making on capital improvement proposals “automatic.” They are not a substitute for judgment and consideration of the political environment. Instead, they provide more substantive information—in effect, making more explicit the issues and trade-offs that are always present but often hidden.

2.5 Capital Improvements Program

When all proposed projects have been examined and analyzed, a composite capital improvements program should be prepared for review and adoption by the chief executive and legislative body. A capital improvements program (CIP), usually spanning a five- to six-year period, represents the more immediate and more detailed portions of the long-range capital facilities plan. Governments have found with experience that five to six years is a convenient period for the

detail programming of capital expenditures, permitting sufficient lead time for the design and other preliminary work required by such projects. Projects included in the CIP should be arrayed according to their priority ranking.

The responsibilities for capital facilities planning are shared by the chief executive, the legislative body, various operating departments, the finance agency, and the planning agency. Each plays an important role in the decision-making process. As Coughlin has observed: "Each group attempts to look at the program as a whole and make decisions about its parts. But, because of its particular function and position, each group sees the problems with a slightly different emphasis." [3]

Ultimately, decisions regarding capital expenditures must rest with the chief executive and legislative body. As the elected representatives of the people, these officials must share a primary concern for the broader interests and the welfare of their constituents. However, their particular function and position dictates that they emphasize different aspects of the CIP. The chief executive must assume a position that places primary emphasis on middle-range objectives, falling somewhere on the continuum between the short-range perspective of the finance agency and the longer-range viewpoint of the planning agency. The chief executive must also pay particular attention to the political consequences of capital expenditure decisions. The governing body must also take cognizance of the political implications of decisions but generally tends to gravitate toward more immediate program objectives, placing particular emphasis on the cost factors involved. As elected officials, members of the city council or county board are most sensitive to potential taxpayer (voter) reactions to the costs of major improvements.

The drawbacks to this approach, in terms of the time required to carry out the process and the compromises that often are necessary, should be obvious. As one student of government has put it: "Rome wasn't built in a day—but it would have taken a heck of a lot longer if the construction proposals had to go through our modern form of democratic government." To circumvent the delays that arise from this approach, the capital facilities plan and capital improvements program must be developed with a spirit of close coordination and cooperation among the various groups involved.

When adopted, the CIP should be made available in report form to civic groups and interested citizens in addition to being distributed to the operating departments. The CIP report should cover three main topics:

1. Explanation of the various considerations and policies brought to bear on the development of priorities, that is, legal requirements, magnitude of projected capital needs, the fiscal resources of the jurisdiction, and so forth
2. A listing of the major projects now under construction or for which funds have been appropriated

3. A detailed description of the capital improvements program and budget for the next fiscal year and the following five years, with a listing of projects by agency and by priority

The detailed description of each project should include a brief statement as to its general purpose and reason for its inclusion in the CIP. Capital costs, operating costs, source of funds, method of financing, and the financing schedule should be set forth in the report for each project.

Even after legislative action has been taken in adopting the CIP, funds must still be made available. Therefore, after a capital budget has been adopted, another opportunity for review occurs at the time appropriations are made, or in the case of an issuance of general obligation bonds, at the time the referendum is placed before the voters. Of course, even after appropriations are made, changes and adjustments are still possible prior to construction or acquisition. If the original project requests are based upon a sound planning foundation, however, the need for such changes should be minimal.

2.6 Gaining Political Support

A capital facilities plan has a far better chance of success if it has political support from the outset. Unfortunately, local governments have not been particularly successful in promoting bond referenda. The local business community, which requires adequate infrastructure support to be cost competitive, seldom has been enlisted as an effective partner in designing the capital plan and generating public support for it.

Few cities faced infrastructure problems of the scale of Cleveland's in the late 1970s. The capital facilities of the metropolitan area had deteriorated badly through neglect. The city had temporarily defaulted on its bonded debt, and therefore, access to normal sources of capital financing had been severely limited. The newly elected mayor and the business community joined in launching the Community Capital Investment Strategy. The Greater Cleveland Growth Association convened business leaders and the heads of regional authorities, the county, and the city to begin a systematic study of the capital investment that Cleveland had to make to restore its infrastructure facilities. The mayor and business leaders campaigned for an increase in the local income tax, part of which would be dedicated to financing the new capital plan. This commitment has made it possible to turn around two decades of erosion in capital facilities in Cleveland. Business support has been vital to a commitment to capital financing in other communities.

3 METHODS OF FINANCING

The options for financing public facilities are similar to those available to any individual or family: (1) pay cash, (2) save money for future acquisitions, or (3)

borrow on anticipated earning power. A sound, long-range revenue program will seek to develop an appropriate mix among these three methods of financing capital improvements.

3.1 Pay-As-You-Go Financing

Financing capital improvements on a “pay-as-you-go” basis from current revenues encourages government to “live within its income.” It minimizes premature commitments of funds and conserves credit for times of emergency when ample credit may be vital. Pay-as-you-go financing avoids the added cost of interest payments and therefore is less costly than borrowing.

On the other hand, the pay-as-you-go approach may result in an undue burden being placed on present taxpayers to finance some future need from which they may not fully benefit. Achieving *user-benefit equity* may require financing a facility so that the burden is spread over the life of the improvement. Thus, it may be argued that public projects providing services over many years should be paid for by people according to their use or benefit—that is, should be financed on a “pay-as-you-use” basis.

Excessive commitment to pay-as-you-go may prevent a locality from doing things that really need to be done because the projects are too costly to be carried out using only annual operating funds. In point of fact, few governments today have the capability to finance vital public facilities strictly on a “pay-as-you-go” basis. Therefore, the power to borrow is one of the most important assets of government.

3.2 Reserve Funds

Financing capital facilities through a reserve fund (sometimes called a capital reserve) can be thought of as the opposite of borrowing in that the timetable is reversed. A portion of current revenue is invested each year in order to accumulate sufficient funds to initiate some project in the future. The amount (S) of a reserve fund that is generated by a fixed investment (N) placed annually at compound interest (r) for a term of n years can be expressed by the following formula:

$$S = \frac{N [(1 + r)^n] - 1}{r}$$

Thus, an investment of \$10,000 each year for ten years at 6 percent interest will yield a reserve fund of \$131,808.

$$S = \$10,000 \times [(1.06)^{10} - 1]/0.06 = \$10,000 \times 0.7908477/0.06 = \$131,808$$

Conversely, the amount (N) that must be placed annually at compound interest (r) for a term of n years to create a reserve fund (S) can be calculated by means of the following formula:

$$N = \frac{S(r)}{[(1+r)^n] - 1}$$

Should the objective be to develop a reserve fund of \$2 million at the end of ten years, an investment of \$151,736 per year at 6 percent would be required.

$$N = \$2,000,000 \times 0.06 / [(1.06)^{10} - 1]$$

$$N = \$2,000,000 \times 0.07586796 = \$151,736$$

Simple computational routines using these basic formulas can test various assumptions as to appropriate investment periods under different interest rates.

To illustrate this point, assume that a municipality is considering a major addition to its community health center. Construction costs are estimated to be \$1,000,000 (in current dollars), with an additional \$75,000 for site preparation and \$300,000 for equipment. Construction costs are increasing at a rate of 8 percent a year, and the cost of equipment is estimated to be increasing 10 percent a year. In other words, if construction is deferred for one year, the cost would increase to \$1,080,000; if deferred for two years, the cost of construction would increase to \$1,166,400, and so forth. Three different financing approaches that might be considered are outlined in Table 8.5.

Given the cost assumptions, the third alternative—building a capital reserve while funding the project from this reserve—is the “least cost” approach in terms of the municipality’s investment. Achieving the least cost, however, is not necessarily the only consideration, for there are pros and cons to any financing strategy.

3.3 Borrowing

Like all governmental powers, the capacity to borrow must be used with critical regard for its justifiable purposes and with a clear understanding of its safe and reasonable limits. A sound borrowing policy seeks to conserve rather than exhaust credit. The ability to borrow when necessary on the most favorable market terms is an objective that applies to governments just as it does in business and industry.

Local governments often borrow to finance major facilities on the assumption that future economic and population growth will make the payment of debt service (principal and interest) more feasible. Future events may or may not prove this assumption correct. Jurisdictions also may borrow on the assumption that inflation will make repayment easier. As inflation erodes the real value of the dollar, the actual burden of a given dollar of debt declines. A municipality that issued 30-year bonds in 1969 was paying debt service in 1999 with dollars worth perhaps one-third their initial value. However, unless one’s crystal ball is unfailingly accurate, relying on inflation to lift the burden of debt can be a high risk strategy.

TABLE 8.5 Cost Analysis of Funding Alternatives

Alternatives		Duration	
1.	Fund the project from General Tax Revenues	Over a period of four years with site preparation in year 1, construction in years 2 and 3, and equipment acquisition in year 4.	
2.	Build a Capital Reserve Fund	Over four years until the total project costs have been accumulated at which time the project can be constructed.	
3.	Establish a Capital Reserve Fund	With annual payments made from this fund to cover the project schedule outlined under Alternative 1.	

Alternative 1. "Pay-As-You-Go" Financing from General Revenues

Year	Project Phase	Cost Calculations	
1	Site Preparation	=	\$75,000
2	Construction: Phase 1	\$500,000(1.08) =	\$540,000
3	Construction: Phase 2	\$500,000 (1.1664) =	\$583,200
4	Equipment Acquisition	\$300,000 (1.331) =	\$399,300
	Total Cost		\$1,597,500

Alternative 2. Capital Reserve Fund (6% Annual Interest)

Project Phase	Cost Calculations	
Site Preparation	\$50,000 (1.3605) =	\$102,037
Construction	\$500,000 (1.3605) =	\$1,360,489
Equipment Acquisition	\$150,000 (1.4641) =	\$439,230
Total Reserve Required		= \$1,901,756
Annual Payments		= \$434,725
Total Cost	\$434,725 × 4 =	\$1,738,901

Alternative 3. Capital Reserve Fund with Annual Funding of Project

Year	Carry Forward Payment to Reserve	Cost Reserve	Balance
1	\$369,535 (1.06) = \$391,707	\$75,000	\$316,707
2	\$316,707 + \$369,535 (1.06) = \$727,417	\$540,000	\$187,417
3	\$187,417 + \$369,535 (1.06) = \$590,369	\$583,200	\$ 7,169
4	\$7,169 + \$369,535 (1.06) = \$399,306	\$399,300	\$ 6
	Total Cost	\$369,535 × 4 =	\$1,478,140

States often impose borrowing limits on local governments. These limits typically are cast in terms of dollars of outstanding debt as a percentage of the jurisdiction’s real property tax base. Beyond any state imposed limits on borrowing, municipalities are restrained by the fact that this year’s borrowing must be paid back from revenues in subsequent years. When the debt service burden of a municipality becomes overly large in comparison to its the tax base, the bond

rating of the municipality may be lowered and the cost of borrowing may increase. Companies that rate municipal bonds (and thereby influence the interest rate that must be offered to place such bonds) emphasize the importance of “good fiscal stewardship” in this regard.

Government loans are marketed with maturities ranging from a few days to several decades. For purposes of discussion, it is possible to divide government borrowing practices into three categories: (1) short-term loans with maturities of a year or less, (2) intermediate loans with maturities over one year but not more than five years, and (3) long-term loans with maturities of over five years. While the latter category is most commonly associated with long-range financing of capital projects, each may have a role in the financial planning of a municipality or county.

Short-term borrowing takes various forms—bills, certificates, or notes sold to banks or other investors, bank loans, warrants paid out in lieu of cash, and unpaid bills and claims. Short-term borrowing is most frequently used to smooth out irregularities between expenditure and income flows and to temporarily finance governmental operations during periods when tax receipts fall off unexpectedly.

Intermediate borrowing has limited but definite uses. Cities operating largely on a pay-as-you-go basis may resort to loans of intermediate maturities when exceptional expenditures cannot be met from current revenues. A jurisdiction whose outstanding debt is primarily in the form of callable-term bonds (bonds that may be called in and the principal paid in full after a specified period) may discover favorable opportunities to convert a portion of such debt by floating a new intermediate loan at a lower rate of interest.

In general, long-term borrowing is appropriate under the following conditions: (1) where the project is of a type that will not require replacement for many years, such as a city hall, auditorium, major health facility, or sewage disposal plant; (2) where the project can be financed by service charges to pay off the bond commitments; (3) where needs are urgent for public health and safety purposes or other emergency reasons; (4) where special assessment bonds are the only feasible means of financing improvements in the absence of subdivision regulations or other controls; (5) where intergovernmental revenues may be available on a continuous basis to guarantee the security of the bonds; and (6) for financing projects in newly annexed areas or areas of rapid expansion where the demands on local tax resources are comparatively large and unforeseen.

3.4 Bonding Strategies

A *bond* is a promissory note ensuring that the lender will receive periodic payments of interest (at some predetermined rate) and at maturity (the due date), repayment of the original sum (principal) invested. Thus, a 10-year bond for \$2 million with a 7 percent interest rate will pay the bond-holders

\$140,000 in interest each year (usually in semiannual installments), and at the end of 10 years, the \$2 million in principal will be repaid. Although referred to as “municipal bonds,” this broad investment category includes bonds issued by any political subdivision—cities, counties, school districts, or special purpose districts—public agency, authority, or commission, or by a state, territory, or possession of the United States.

The price of a bond is usually quoted as a percentage of its face value (sometimes referred to as the “clean price”). The face value is the amount that the issuer of the bond pays the bond holder at maturity. Most municipal bonds are issued with a face value of \$1,000. Municipal bonds may be sold at discount or at a premium. For example, the quoted price of a bond selling at a 5% discount would be 95 (i.e., 95% of \$1,000 or \$950). The quoted price of a bond selling at a 3% premium would be 103 (i.e., 103% of \$1,000 or \$1,030). The actual payment exchanged between two parties, however, may be different from the quoted price. Bonds purchased between coupon payments, for example, accrue interest that is proportional to the coupon period. Therefore, the buyer must pay the seller the quoted price plus any accrued interest. This sum is known as the *invoice price* of the bond. For example, a bond issued on July 1, 200x, with a 6% interest rate, purchased on October 1, 200x, would have an invoice price of $\$1,000 + (\$1,000 \times .06) \times 3/12 = \$1,015$.

The *coupon rate* is the annual rate of interest on the face value of the bond that the issuer agrees to pay the bond holder until maturity. The term “coupon” comes from the manner by which bonds were redeemed historically. A series of coupons were attached to the bond certificate, one coupon for each interest payment stipulated in the bond’s indenture. At each coupon payment date, the bond holder (bearer) would clip the appropriate coupon, and present it for payment. Bearer bonds are rarely issued in this hi-tech era since registering bonds is no longer the time-consuming, labor-intensive task it once was.

In 1983, Congress required municipal bonds to be in *registered* or book entry form for the interest income to be exempt from federal income taxes. A registered bond certificate contains the name and address of the bondholder (or his/her agent), and all payments and notices are sent to the holder of record (there are no coupons to clip and present for payment). The holder of record can transfer the bond to a new owner by endorsing it (similar to endorsing a personal check). Book entry bonds do not have certificates. Instead, records of ownership are kept by a depository for its members—brokerage houses, banks, and other financial institutions. All new issues of municipal bonds (with minor exceptions) are assigned a CUSIP number, which provide a unique identification of the security. [4] Transferring the ownership of a bond is accomplished by changing the records on the books of the depository and its members to reflect the bond trade.

Interest earned on municipal bonds is exempt from federal taxation, and usually from state taxes in the state in which the bond is issued. As a conse-

quence, municipal bonds carry lower interest rates than taxable corporate bonds. This tax exemption is, in effect, a federal subsidy that reduces borrowing (debt service) costs for local governments. In April, 1988 the Supreme Court overruled a major 1895 precedent, by holding that the Constitution does not protect state and local governments against federal taxation of the interest received by holders of their bonds. However, the chairmen of the Senate and House tax-writing committees immediately went on record that the decision was not expected to prompt Congress to impose any new taxes on such bonds.

The Tax Reform Act of 1986 did subject some municipal bond interest to possible income tax—the federal Alternative Minimum Tax. Under this Act, municipal bonds issued after August 15, 1986 fall into one of three categories, depending on their purpose:

Public purpose bonds, used for traditional municipal projects that are clearly the responsibility of government, are tax-exempt.

Private activity bonds issued by state or local governments supply funds for “private” projects, such as sports arenas, civic centers, or even shopping malls, and are subject to federal taxation, but may be exempt from state or local taxes in the states in which they are issued.

Nongovernmental purpose bonds that support “nongovernmental” (but not “private”) projects, such as public housing or student loans, are tax-exempt, but the amount of such bonds that may be issued is capped and the income is treated as a preference items for the purposes of the alternative minimum tax.

Any profit from the purchase or sale of a municipal bond is subject to tax regulations regarding capital gains.

Municipal bonds possess three significant features in addition to their tax-exempt status:

1. The security of municipal bonds is generally considered second only to that of federal government bonds.
2. Municipal bonds have high marketability, assuring that investors can always sell them if they wish to do so.
3. The diversity of municipal bonds enables investors to obtain bonds in geographic areas and at maturities of their preference.

3.5 Types of Bonds

General obligation bonds backed by the “full faith, credit, and taxing power” of the issuing locality. For many investors, general obligation bonds are seen as the most secure of the municipal issues because the issuing authority must have the power to levy taxes at a level necessary to meet debt service requirements. The levy of taxes has practical limits, however. In effect, the security of

general obligation bonds is based on the economic resources of taxpayers in the issuing jurisdiction. Defaults are rare, and principal and interest are generally paid on schedule.

Special Tax or *Special Assessment Bonds* are payable only from the proceeds derived from a special tax (such as highway bonds payable from a gasoline tax) or from a special assessment levied against those who benefit from the facilities constructed (e.g., special assessments for curbs and gutters in certain residential areas). Special benefit assessments place a major share of the burden of financing on those individuals or properties receiving the greatest benefits from the improvements. The rising cost of special assessment bonds in recent years has resulted in a large majority additionally being secured by a pledge of full faith and credit, making them general obligation bonds. Sometimes referred to as *limited tax bonds*, these general obligation bonds often are secured by a specified maximum tax rate within the taxing power of the issuing authority.

Revenue bonds are obligations issued by an agency, commission, or authority to finance a revenue-producing enterprise—such as the construction of a toll road or bridge, parking structure, sewage treatment plant, and other facility that has fairly predictable revenue generating capacities. Both the principal and interest of such bonds are paid exclusively from the earnings of the enterprise. As a general rule, such issues do not have any claim on the general credit or taxing power of the governmental unit that issues them. A system of sinking funds and operating controls typically is established to assure investors that the financial affairs of the project will be maintained in good order and all commitments will be honored. Government with the power to tax also may issue revenue bonds. Debt service payments may be restricted to only those funds from the enterprise that generates these revenues; the issuing government does not pledge its own credit to pay the bonds.

Revenue bond financing is best suited to projects that (1) can operate on a service charge or user-fee basis; (2) have the potential to be self-supporting, previously demonstrated under public or private operation; and (3) can produce sufficient revenue without jeopardizing other important economic or social objectives of the community. Problems of social equity may arise when traditionally tax-supported functions are placed on a service charge basis. Facilities supported by service charges also frequently produce benefits to individuals who do not pay for them—for example, an enhancement in land values that may accrue to speculative holders of unimproved real estate.

Many local capital improvements can only be financed through the issuance of tax-supported general obligation bonds to provide full project funding or the local match. Faced with increasing rehabilitation needs, spiraling construction costs, and limited bonding authority, many cities may need to consider alternative financing arrangements for projects traditionally funded through general obligation bonds. For example, local governments are exploring increased

use of revenue bond financing for projects with identifiable revenues that can be pledged to debt repayment.

Local governments have many possibilities for combining and substituting funding sources. The use of revenue bonds to finance capital construction in one area—such as a water system—may free up funds to support general obligation bonds for financing other portions of the capital plant—such as streets—where service pricing is not feasible. Restricted funds may be used to free up block grants for other capital purposes. These financing alternatives should be made explicit in the initial evaluation and ranking of capital investment projects.

3.6 Method of Redemption

Municipal bonds can also be classified into two general types according to the method of redemption. *Term bonds* all mature on the same date and must be redeemed by a lump sum principal payment that accrues by making annual payments to a *sinking fund*. When invested at compound interest, these annual payments should produce the amount of principal required at maturity. Frequent actuarial computations are required to determine the adequacy of sinking funds to meet principal payments at maturity. Some states do not permit the issuance of bonds for which the principal is funded solely through a sinking fund. With proper investment safeguards, however, term bonds do offer some advantages. Term bonds may serve to finance public utilities and other enterprises that do not have established earning records.

Serial bonds are retired by annual installments directly from tax revenues, or in the case of revenue bonds, from earned income. Serial bonds have simpler retirement requirements and offer greater flexibility in marketing and in arranging the debt structure of the jurisdiction or public organization. There are two types of serial bonds: annuity serials and straight serials.

With *annuity serial bonds*, the debt service payment is approximately the same each year (as with a home mortgage). The portion of the annual payment devoted to interest is higher in the early years of the issue but declines as payments toward principal are made (as the outstanding principal is retired).

Straight serial bonds require annual payments of principal of approximately equal amounts. Interest payments are large in the early years and decline gradually as the bonds approach maturity. A payment schedule for straight serial bonds, with interest calculated over ten years at 6 percent on a declining principal, is shown in Table 8.6. Also shown in this table is the payment schedule for an annuity serial bond, with interest calculated at 6 percent on the outstanding principal for the life of the loan. Note that the total debt service cost of the straight serial is less than that of the annuity serial.

Callable bonds are issued with the provision that they can be paid off—“called in” for payment—prior to their maturity date. The call provision nor-

TABLE 8.6 Debt Service Charges on \$1 Million for Ten Years

Straight Serial Bonds (6 percent on declining principal)				
Year	Outstanding Principal	Principal Payment	Interest Payment	Total Debt Service
1st	1,000,000	100,000	60,000	160,000
2nd	900,000	100,000	54,000	154,000
3rd	800,000	100,000	48,000	148,000
4th	700,000	100,000	42,000	142,000
5th	600,000	100,000	36,000	136,000
6th	500,000	100,000	30,000	130,000
7th	400,000	100,000	24,000	124,000
8th	300,000	100,000	18,000	118,000
9th	200,000	100,000	12,000	112,000
10th	100,000	100,000	6,000	106,000
Total		1,000,000	330,000	1,330,000

Annuity Serial Bonds (6 percent on outstanding principal)				
Year	Outstanding Principal	Principal Payment	Interest Payment	Total Debt Service
1st	1,000,000	75,868	60,000	135,868
2nd	924,132	80,420	55,448	135,868
3rd	843,712	85,420	50,623	135,868
4th	758,467	90,360	45,508	135,868
5th	668,107	95,782	40,086	135,868
6th	572,325	101,528	34,340	135,868
7th	470,797	107,620	28,248	135,868
8th	363,177	114,070	21,791	135,868
9th	249,100	120,922	14,946	135,868
10th	128,178	128,178	7,690	135,868
Total		\$1,000,000	\$358,68	\$1,358,680

mally is exercised with appropriate notice only on interest payment dates. The most common type of call is the *optional call*, which allows the issuer to call the bond for any reason on a predetermined date at a predetermined price. A typical call date is ten years after the issuance of the bonds. A *sinking fund call* allows the issuer to call a certain number of bonds each year in order to meet annual requirements for retiring a portion of the bond issue. An *extraordinary call* allows the issuer to call the bonds if the proceeds cannot be utilized or if certain other events occur.

Callable bonds can afford greater flexibility in the jurisdiction's debt structure. In effect, call provisions allow the issuer to change the date of maturities. Bonds may be recalled and refunded at more favorable terms if (1) market inter-

est rates are lower than the interest rates being paid on the bonds, (2) the jurisdiction's credit rating improves, (3) the initial retirement schedule proves too rapid, or (4) a period of declining revenue is encountered. The callable feature can be used to avoid overly rigid fiscal responsibilities while at the same time permitting more rapid retirement if the project's revenue capacity expands. Most investors insist on a premium for callable bonds, so the resultant savings must be carefully considered. A common call feature in the mid-1990s was callable in 10 years at 102 (providing a 2% premium), in 11 years at 101, and in 12 years or more at 100. If the entire issue is not called, a partial call may be made in inverse order of maturity, that is, the longest maturities are called first.

3.7 New Fiduciary and Fiscal Instruments

The municipal bond market traditionally has been supported by large institutional investors, such as fire and casualty insurance companies. Faced with reduced profit margins in the late 1970s, many of these institutions curtailed their municipal bond buying, forcing tax-exempt bond yields to unprecedented highs. Interest costs increased significantly as bond issuers were forced to make yields more attractive to buyers. Investors were unwilling to lock into fixed returns, feeling uncertain about inflation, tax liabilities, and yield curves. As a consequence, a number of new fiduciary and fiscal instruments were devised.

In traditional serial bonds, each maturity has a single coupon rate payable over the life of the bond. *Stepped coupon bonds*, on the other hand, use a serial maturity schedule, with coupon rates that start at lower levels and progressively increase to higher levels, even though all the bonds in the issue are sold at par. The substantial increase in coupon payments each year is intended to provide a hedge against inflation and thus make the bonds more marketable. From the perspective of the issuing government, more bonds may be scheduled to mature in early years because of the lower coupon rates, thereby lowering the average life of the issue.

Zero coupon bonds were introduced in the late seventies to take advantage of federal tax laws that entitle bondholders who forgo tax-free income over the life of their investment to receive tax-exempt capital gains upon maturity. Zero coupon bonds sell at substantial discounts from the face, or par, value of \$1,000 because they pay no interest. By paying par upon maturity, however, they offer capital gains that may be as much as 25 times the original investment, depending on the length of the issue. The result is tax-free income, accrued annually from the time the bonds are first issued. A 17-year zero coupon bond, for example, purchased for \$150 and held to maturity will provide a tax-free capital gain of \$850; or, according to the IRS, \$50 in tax-exempt income each year (\$850 divided by 17 years). Zero-coupon bonds tend to outperform other fixed-income issues when the economy loses momentum and interest rates decline.

Capital appreciation bonds (also called compound interest bonds, accumulators, or municipal multiplier bonds) are sold at par. The interest component is held by the issuer and compounded at a stated rate so that the investor receives a lump sum, consisting of both the principal and interest, at the bonds' maturity. Unlike zero coupon bonds, which sell at a discount, these bonds sell at face value. However, an investor in compound interest bonds still pays much less for the bond than it would be worth at maturity. The main advantages of these bonds over regular coupon bonds is that an investor knows exactly what the total return on his or her investment will be. Capital appreciation bonds guarantee the current rate of return for the duration of the issue—as much as fifteen to twenty years. This type of bond combines the investment multiplying power of compound interest with the income sheltering feature of traditional tax-exempt bonds.

Payments to a sinking fund must be structured to earn a sufficient sum to cover the “appreciated capital,” that is, the accumulated interest and principal costs. At some point during the term of the bond, the issuing jurisdiction may begin to make interest payments to the bond holders. The total annual payments are much higher, however, because interest must now be paid on the interest that has accumulated as additional capital (principal). It has been estimated that a capital appreciation bond can cost the municipality 2.5 times as much in annual sinking fund payments when compared to a more conventional term bond where only the principal payments are deferred (and paid in a lump sum when the bonds mature).

Tender option bonds, also known as *put bonds*, offer the investor the option of submitting the bond for redemption before maturity. Usually the investor may redeem or “put in” a bond five years after the date of issue or on any anniversary date thereafter. In return for this option, the investor accepts a lower yield. The issuer pays a lower rate of interest (usually about 1 percent less than for conventional bonds of the same maturity), and consequently, the jurisdiction's cost is lower. However, the bond returns more to the investor (about 0.75 percent) than conventional bonds that mature on the first prescribed put date.

Tender option bonds may also be issued with a simultaneous “call” date, on which the issuer can call in and pay off the bonds. Thus, the issuer and the bondholder have equal rights to cash in the bonds when market conditions and interest rates are favorable. If interest rates go down, a put bond will probably be called in by the issuing government. Conversely, if interest rates go up, the bondholder can “tender his option” to be paid at face value by the issuer.

The yield (interest paid by the issuer) on *flexible interest bonds* changes over the life of the bond, based on some interest index printed on the bond itself. This feature stands in contrast to traditional fixed-rate bonds for which the interest rate remains constant while the market value changes when interest rates rise or fall. The interest index most often used is the average weekly rate of Treasury

bills or bonds issued during the preceding interest period. The floating rate for a short-term bond, for example, might be pegged at 67 percent of the average weekly T-bill quote, while the rate for a longer-term issue might be set at 75 percent of the average weekly quote on 30-year Treasury bonds. This approach provides stability for both the issuer and the bondholder throughout the life of the bonds, particularly during times of interest rate volatility. As with other municipal bonds, the maturities of flexible interest bonds vary. Such bonds usually have call and/or put features, specifying the earliest dates at which the bondholder can get his or her money back at par.

Interest rates on *variable rate demand bonds* are reset periodically based on a specified index. A demand feature allows the investors to require the issuer or a specified third party to purchase the bonds at specified times, such as when the interest rates are reset. The most common variable rate bond is the "*lower floater*" in which the interest rate is adjusted weekly relative to a specified index that reflects the current market. Holders of lower floater bonds can require redemption of the bonds after seven-days notice.

The structure of long-term, variable rate demand debt involves a rather complicated credit system. The issuer usually enters into an agreement with a credit facility, typically a commercial bank, which provides the debt issuer with a *letter of credit*. Should bondholders redeem the bonds before maturity, the issuer hires a *remarketing agent*, who resets the interest rate and then tries to re-market the bonds. If some bonds remain unsold, the issuer's remaining cash needs are met by the agreement with the credit facility.

Detachable warrant bonds give the holder the right, at some future date, to purchase more of the same securities to which the warrant is attached, at the same price and rate of return as the original bond. In exchange for that right, the issuer pays a lower rate of interest (about one-half percent less) than offered on otherwise comparable securities. The marketability of such bonds depends on the opinion of prospective buyers as to anticipated fluctuations in interest rates. If interest rates rise, the savings to the issuer become real because of the initial lower interest cost. If the rates fall, the opposite is true.

A *private activity bond* is a municipal bond, used either entirely or partially for private purposes, which must meet the test of qualification outlined within federal tax law to obtain tax-exempt status. To qualify as a private activity, tax-exempt bond, the debt must fit into one of the seven categories, meet volume cap requirements, and satisfy several other requirements outlined in section 147 of the federal statutes. Tax-exempt bonds offer private entities lower interest rates than they would otherwise be able to obtain. A government can use private-activity bonds to give economic incentives to targeted activities or geographic areas. Some economists believe that the incentive given by tax-exempt status through private-activity bonds creates positive economic effects beyond the specific project or program that is being financed.

Under the Internal Revenue Code, as amended by the Tax Reform Act of 1986, municipal bonds *are not* tax-exempt if (1) more than 10 percent of the proceeds from such bonds are used in support of private business activities and (2) more than 10 percent of the bond principal or interest is secured by bond-financed property or the income it generates. Bonds issued to finance property owned by an organization that is exempt under section (501)(c)(3) are tax-exempt provided that (1) no more than five percent or \$5 million of the bond's net proceeds are used in private trade or business; and (2) no more than five percent of the bond's net proceeds are secured by facilities used in a private trade or business or by the income generated from such facilities. These are known as the "private use test" and the "private security or payment test."

Buyers of *inflation protection bonds* accept a lower stated rate of return in exchange for a guarantee that their buying power will not be diminished by inflation alone. The principal amount of these so-called "bullet" instruments will be adjusted for inflation—measured by the Consumer Price Index—while the interest rate remains fixed. Because the adjustment for inflation at maturity is subject to capital gains, an investor could face adverse tax consequences should inflation surge. The break-even inflation rate for a taxpayer in the 28 percent bracket is 8.5 percent.

Under *tax-exempt leveraged lease* (or TELL) financing, local governments generate capital funds by selling public facilities (see Figure 8.2). A private investor (special purpose limited partnership) buys a public facility by making an appropriate down payment and, over a five-year period, contributing equity equal to 25 to 30 percent of the sales price. The balance of the sale is financed through tax-exempt revenue bonds issued on behalf of the partnership and loaned by a qualifying financing authority (such as a industrial development authority). The private investment is "leveraged" by the municipality leasing back the facility at subsidized rates. Underwriters arrange the tax-exempt bond financing, and the sale/leaseback transaction to meet the requirements of the bond market, the private investors, and the government. Financing costs are sharply reduced, a new pool of unrestricted funds for capital improvements is created (i.e., from the proceeds of the sale), and greater financial flexibility is provided to the borrowers.

Lease-purchase financing has become popular among state and local governments. Lease purchases have been used to finance the acquisition of equipment, such as computers and motor vehicles, and more recently, long-term projects, such as the acquisition of real property. In a lease-purchase agreement, a government acquires an asset by making a series of lease payments, which are considered installments toward the purchase of the asset. The government may obtain title to the asset either at the beginning or at the end of the lease term. After arranging an agreement, the lessor often will assign the rights to the lease payments to a number of investors.

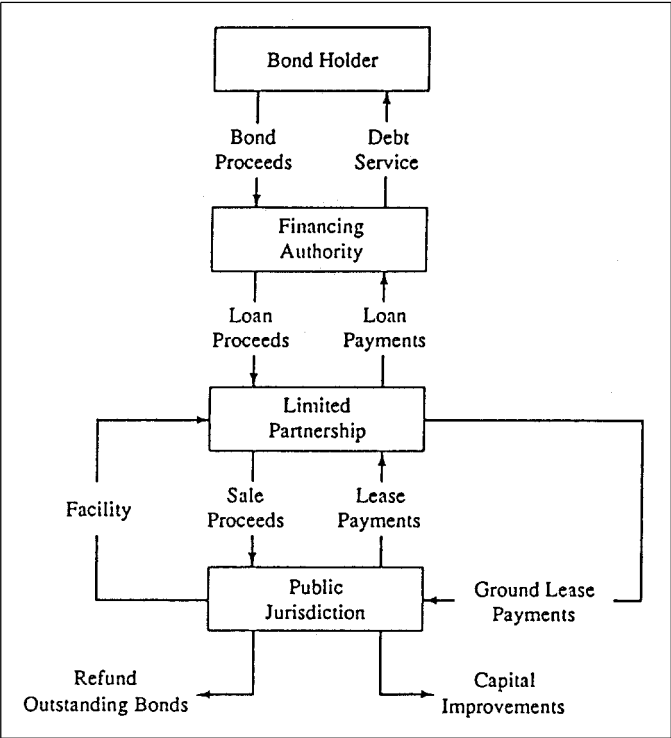


FIGURE 8.2 Structure for Tax-Exempt Leveraged Lease Financing

The *non-appropriation clause* of a lease-purchase agreement distinguishes it from general obligation tax-exempt debt. If the lessee government fails to make the specified lease payments, the agreement is terminated. Lease purchases can be entered into much more quickly than bonds, often within 60-90 days of initial authorization. Lease purchase financing avoids the commitment a large share of operating revenues to cash purchases of assets, preserves general obligation debt capacity, and avoids some of the referendum costs associated with general obligation bonds.

Certificates of participation (COPs) are a widely used type of lease-purchase financing mechanism, whereby individual investors purchase fractional interests in a particular lease. Certificates are generally issued in \$5,000 denominations and can receive investment ratings from a rating agency. COPs can be traded in the secondary market, making them more marketable. Therefore,

issuers are able to obtain a lower interest rate on COPs than on other types of lease-purchase financing.

Under a *master lease-purchase program*, individual lease purchases are consolidated into a single lease-purchase program in order to achieve lower interest rates, tighter controls, and lower administrative costs. Typically, a centralized governmental department issues tax-exempt debt to finance the purchase of various assets, such as vehicles, equipment, or computers, on behalf of other governmental departments. The centralized department then enters into a standardized lease-purchase contract with each of the other departments. The lease-purchase payments received from these departments is used to repay the debt.

In the dynamic and uncertain period of the 1980s, state and local governments had to develop capital financing programs that were more responsive to their overall financial conditions and fiscal policies than traditional general obligation and revenue bonds. The emergence of more innovative approaches stems from the willingness of state and local governments to accept and deal with the uncertainty of future markets for financing capital facilities. More conventional approaches should not be abandoned, however, unless officials are satisfied that sufficient benefits will accrue compared to the risks. Practical concerns are also part of the equation, including the political acceptability of such approaches, the ability of government to structure and manage these creative financing mechanisms, and of course, the laws that govern capital financing. Interest payments are still the cost that governments must pay for the use of other people's money. Careful application of new financing techniques, however, may uncover some real opportunities or provide capital resources that otherwise would be unavailable.

3.8 Funding Capital Facilities as a Development Cost

The difficulties of obtaining public funds for capital improvements have induced many localities to look to the private sector for help. It was once common to rely on the private sector to design, construct, and finance major capital improvements, such as water systems, roads, or mass transit systems. While this practice has largely been abandoned, developers of new subdivisions and some commercial or industrial projects may be required to pay the infrastructure costs created by their developments.

This shift to private sector financing has been most pronounced in high-growth states and especially those faced with strict limitations on public bonding or taxes. It has been estimated, for example, that more than half of all state and local capital investments in California in the 1980s were financed by private developers, either by direct installation of capital facilities or by the payment of fees in lieu of facility dedication. The recent trend has been to require private developers to finance more of the "off-site" capital costs. Although each state has

its own body of court rulings on these requirements, the courts generally have upheld off-site dedications that can be shown to be “reasonably related” to the public capital costs attributable to development.

In 1981, for example, the Suburban Sanitary Commission, which provides sewer and water services in northern Virginia, established a “system expansion offset charge” (SEOC), defined as an “equity charge” on new residential and commercial subscribers to fund new or expanded capital projects required to meet the increased service demands without making older system subscribers pay the cost. The SEOC is a lump sum, nondeferrable fee; it is in addition to water and sewer service connection charges. The legality of the fee differential of the SEOC, set at three times the fee paid by existing residents to finance new or expanded capital projects, was challenged. The court decision was in favor of the Commission as long the linkage between the expansion and the requirements of new development can be demonstrated.

Developers contribute to infrastructure costs under the Adequate Public Facilities Ordinance in Montgomery County, Maryland. For example, each developer is assessed a proportional share of the cost of providing the additional capacity required to accommodate the trips generated by households and commercial activities in that developer’s subdivision during the morning peak traffic hours.

The State of Texas requires developers outside areas currently serviced by sewer and water systems to establish a Municipal Utility District. The developer is responsible for installing all the capital facilities necessary to provide services. Once the system is built, the developer may operate it, sell it to the residents, or find another form of private management.

Broward County, Florida, has implemented one of the more innovative and sophisticated impact fee systems, covering additional road, park, and school costs generated by new development. The fees are adjusted annually to the GNP price deflator for the previous 12 months and are deposited in a non-lapsing trust fund. Revenues for parks are set at a level equal to the assessed value that would otherwise be dedicated or are calculated according to the type of residential unit in a development. School fees are determined in a similar fashion based on provisions in the county code for impacts generated by specific types of housing units and the number of bedrooms they contain. A computerized model is used to determine the proportional share of road capacity that the developer must finance. Each subdivision development is charged according to its share of use of expanded or extended network segments.

Notwithstanding early legal challenges, the system in Broward County appears to be working fairly effectively. Developers benefit by knowing beforehand how much they will have to pay for a given type and scale of project. And the county achieves the necessary capital facilities with a minimum processing time and negotiations and without having to finance them.

4 SUMMARY AND CONCLUSIONS

The early literature of public finance and administration reflected a concern for the honest administration of governmental resources. More recent studies have tended to emphasize the services provided through the allocation of limited public resources. This new focus reflects a shift in public budgeting procedures—from a concern for input and process to one of output and performance effectiveness.

Capital facilities planning involves a unified series of steps to carry out the policy aims of government. It must recognize the interrelated character of all expenditures, whether for new or existing programs or capital outlays, and must provide for their joint evaluation in arriving at expenditure decisions. As a management tool, capital facilities planning provides a coordinative mechanism for all phases of capital construction—estimation, submission, approval, execution, and post audit.

Capital budgeting is a political process. While any budget contains some “automatic” decision, the important fact is that most decisions relating to capital investments are policy decisions. Economic and other criteria are employed in the capital facilities planning process, but they are defined within and conditioned by the broader political context. Ultimately, the efficiency and effectiveness of the capital facilities plan is measured by the results of executive and legislative action.

ENDNOTES

1. Gregory Vaday, “Planning for Capital Improvements, *MIS Report*, Vol. 25, No. 10 (October, 1993).
2. William B. Rogers, “Fiscal Planning and Capital Budgeting,” *Planning 1954* (Chicago, Ill.: American Society of Planning Officials, 1954), p. 96.
3. Robert E. Coughlin, “The Capital Programming Problem,” *Journal of the American Institute of Planners*, 26 (February 1970), p. 39.
4. CUSIP numbers are named for the Committee for Uniform Securities Identification Procedure, which was established to deal with the securities transfer problems that developed during the late 1960s. These numbers are assigned by the CUSIP Service Bureau, part of Standard and Poor’s, under contract with the American Bankers Association. The first six numbers or letters of the CUSIP number identify the issuer of the security; the next two numbers or letters identify the particular security of the issuer; and the last number is a check digit, used for processing purposes to help ensure the accuracy of the first eight digits.

9

Debt Administration

Debt administration was a relatively routine task when long-term debt was a small part of the overall financial commitments of state and local government. The basic requirement was to ensure that sufficient funds were set aside from general revenue sources to cover debt service obligations or, in the case of term bonds, to cover annual interest charges and to build an adequate sinking fund. New and diverse bond offerings and a growing competition for investors, however, have resulted in increased responsibilities for the marketing of municipal bonds and the administration of public debt.

1 MARKETING MUNICIPAL BONDS

Constitutional provisions, general statutes, special acts, and local charters that regulate the authorization and issuance of municipal bonds vary from state to state. Controlling laws are not always conveniently codified, and as a consequence, procedural steps necessary to secure bond authorization often are confusing to public officials and administrators. Expert legal advice is important to ensure compliance with all applicable legal requirements. Even minor errors may result in annoying delays, expensive litigation, and possible invalidation of the issue or sale.

1.1 Preliminaries to Marketing

Some form of *popular referendum* is required in most states for the authorization of locally issued general obligation bonds. In a few states, governing bodies are permitted to authorize bonds, within certain limits, without popular vote. Experience has shown, however, that this option should be used sparingly and held in reserve for emergencies.

Municipal bonds must be negotiable instruments—that is, they must contain an unconditional promise or order to pay. *Bond ordinances* or *resolutions* should be drawn with precision, setting forth the nature and limits of the security offered. Each issue must be approved by an attorney whose legal opinions satisfies the market where the bonds are to be sold. The official notice of sale should specify that the legal opinion of the firm will be furnished to the buyer. While final approval cannot be given until the sale is completed, preliminary approval before bidding assures prospective buyers that the legal opinion will be furnished without delay. The sale is subject to the satisfactory provision of such legal opinion.

1.2 Notice of Sale

The official notice of sale should be published in *The Daily Bond Buyer* and perhaps in regional bond publications at least two weeks in advance of the date set for opening bids. In some states, notices must also be placed in the official state newspaper. The following information should be included:

1. The correct legal name of the issuing body, the special law (if any) under which it was organized, and the authority for the sale
2. Type of bonds to be issued
3. Amount and purpose of the issue, the maturity schedule, call features (if any), denomination, and registration privileges
4. Date, time, and place of sale; manner of bidding (sealed or oral); and basis for bidding (e.g., at par, discounts allowed, etc.)
5. Limitations as to interest rate, payment dates of interest, and when and where principal will be paid
6. Amount of good faith check
7. Name of approving attorney
8. Provision made for the payment of principal and interest, i.e., from ad valorem taxes, special assessments, revenues of particular enterprise
9. Total tax rate in the governmental unit, rate for each levying body, and constitutional or statutory limits restricting debts or the taxes levied for their payments

Adequate publicity through the notice of sale give prospective bidders the opportunity to form their bidding accounts and to secure information regarding the of-

fering. It also eliminates any suspicion of collusion and demonstrates that the jurisdiction is willing to submit its financial condition to careful inspection.

If the enabling legislation permits, the best practice is to allow the rates of interest to be fixed by the bidding underwriters. When they can determine the coupon rate, underwriters can make a bid that best fits the market. If permissible under controlling state regulations, bidders should be able to bid different rates on various maturities or groups of bonds—known as *split-rate bids*—in order to obtain the most favorable overall net interest cost.

Supplemental coupons have been used to attract dealers where state requirements mandate that municipal bonds be sold at par. Supplemental coupons are additional coupons attached to a municipal bond and covering the same interest period as one or more regular coupons. When a supplemental coupon is in force, the locality is required to make two interest payments for the period. Supplemental coupons are usually detached by the underwriter at the time of original delivery from the issuer and may be held until payment date or sold by the dealer at a discount. These coupons represent the underwriter's profit on the sale of the bond.

1.3 Timing of a Bond Issue

The bond market experiences minor fluctuations within the course of every few months, brought on by an excess of supply over demand, as well as economic and political trends. By following municipal bond publications and consulting investment bankers, the finance officer can often apply these fluctuations to the advantage of the jurisdiction.

The municipality should avoid setting the date of the sale in the midst of a general rush of new offerings (many large school bond issues, for example, reach the market in late spring or early summer), or immediately following large sales by other municipalities. It is unwise to set the sale date for the day before or after a holiday or on Mondays or Saturdays. It is unwise to enter the market too frequently (thus, the advantage of a consolidated issue). And if dealers have not completed the distribution of a previous issue, a less satisfactory price on a new issue may be anticipated.

The due dates for semiannual interest payments are determined by the date on which the bond is sold. There are certain times of the year for each municipality when its funds are low, so the timing of an issue should be scheduled so that interest and principal payments do not come due at a time when funds are not in hand to pay them.

1.4 Bond Prospectus

Publication of all essential facts concerning the financial condition of the municipality is fully as important as any other factor in the successful marketing of

municipal bonds. With the exception of revenue bond issues, however, no elaborate prospectus is necessary. The four-page statistical form, approved by the Investment Bankers Association and the Municipal Finance Officers Association, usually is adequate. This form provides the information that most investors seek regarding debt and the provision for payment, the adequacy of the community's revenue system and the effectiveness of its administration, the recent financial operations in the municipality, total tax rate and statutory limits restricting debts or the taxes levied for their payments, population according to latest census data, and so forth.

The bond prospectus should be ready for distribution at the time of the notice of sale. It should be sent, without request, to the investment bankers and other institutions interested in the municipality's securities. Financial papers that publish the paid notice about the sale will usually carry a news story about the community and, therefore, should also receive copies of the prospectus.

The largest buyers of municipal bonds traditionally have been financial institutions, which usually are exacting in their purchasing requirements. Failure to comply with their "rules of the game" tends to narrow the market with considerable impact in the interest cost to the municipality. Where bonds have a wide market, for example, principal and interest should be payable in a large financial center, preferably at a bank located in a city where there is a Federal Reserve Bank. Most large investors prefer to avoid the expense and inconvenience involved in collection of principal and interest payments outside such centers.

1.5 Costs Involved in Marketing Municipal Bonds

The cost of borrowing involves not only the interest payable over the term of the bonds, but also costs incurred in readying bonds for market and their actual delivery to the initial investors. Such costs reflect the expense of conducting a referendum, fees for various legal and financial advisors, and a variety of miscellaneous costs, including: preparation and publication of bond notices and the bond prospectus; obtaining a bond rating; costs of renting signature machines; filing fees; court fees; registration or recording fees; certification costs; and costs of delivering the bonds. Some marketing expenditures may result in a broader sale, culminating in lower interest costs. Other expenses may add little to the marketability of a bond issue.

Although no single cost incurred is large, in the aggregate, these costs can amount to a considerable sum. A survey by the Municipal Finance Officers Association of 481 governmental units in the United States and Canada revealed that in some instances, total marketing costs amounted to 5.5 percent of the value of the bonds. These costs usually are paid from the bond proceeds. This practice, however, reduces the amount available for the project or requires an increased

borrowing to meet capital costs. In either case, interest costs also attach to that portion of the proceeds used to meet marketing costs.

1.6 Municipal Bonds Ratings

Ratings have assumed considerable significance in determining interest rates and the eligibility of bonds for purchase by certain types of investors. Rating agencies assign a credit rating to bond issues that assesses the risk of nonpayment of borrowed funds. The better the bond rating, the lower the interest cost that the jurisdiction must pay. For a \$1 million bond issued for 20 years at an interest rate of 5 percent, for example, one rating difference amounts to about \$50,000 in interest costs.

Municipal bonds are rated only in terms of credit risk and not in terms of their investment merits. Ratings appraise two basic factors: (1) the risk that bond quality will be diluted by an inordinate increase in debt and (2) the risk that ability to meet principal and interest payments may be impaired under depressed economic conditions. The first risk is within the control of the issuing government, whereas the second is related to the impact of general economic conditions on a given locality.

Rating analysts evaluate a wide range of information concerning economic, debt, financial, and governmental considerations to determine a bond rating. This information is supplied by the jurisdiction and derived independently by the analyst. Rating agencies do not explain completely their reasons for assigning a particular rating, nor do they provide a precise formula for obtaining better ratings.

Three nationally recognized rating services—Moody’s Investors Service, Inc., Standard and Poor’s Corporation, and Fitch Investor’s Service—rate a wide variety of bonds: tax-supported, revenue or enterprise supported, lease-rental, hospital revenue, mortgage-backed housing, higher education revenue, student loan revenue, and refunded bonds. The rate service fees vary according to the size of the prospective bond issue, according to the following general schedule:

Issue Size	Amount of Fee
Under \$3 million	\$ 1,000–\$ 3,000
\$3 million to \$5 million	\$ 2,000–\$ 4,000
\$5 million to \$20 million	\$ 3,000–\$ 6,000
\$20 million to \$50 million	\$ 4,000–\$ 8,000
\$50 million to \$100 million	\$ 6,000–\$12,000
\$100 million and over	\$10,000–\$25,000

The rating services use symbols, arranged in order from bonds with the least credit risk to those with the greatest risk (see Table 9.1). Some issues rated by

TABLE 9.1 Municipal Bond Ratings

	Moody's		Standard and Poor
Best quality; carry smallest degree of risk; generally referred to as "gilt-edged." Interest payments protected by large stable margin; principal is secure.	AAA	AAA	Highest rating assigned to debt obligation; indicates ultimate degree of protection as to principal and interest.
High quality by all standards; known as high-grade bonds; margins of protection may not be as large, fluctuations may be of greater amplitude, or other elements make long-term risks appear larger.	Aa	AA	Also qualify as high-grade obligations; differ from AAA issues only in a small degree.
Possess many favorable investment attributes; considered upper medium-grade obligations. Factors giving security to principal and interest considered adequate, but some elements may suggest susceptibility to impairment sometime in the future.	A	A	Generally regarded as upper medium-grade; have considerable investment strength, but not entirely free from adverse effects of changes in economic and trade conditions. Interest and principal regarded as safe.
Medium-grade obligations; neither highly protected nor poorly secured. Interest payments and principal security appear adequate for the present, but certain protective elements may be lacking or unreliable over any great length of time.	Baa	BBB	Regarded as having adequate capacity to pay principal and interest. Adverse economic conditions or changing circumstances more likely to lead to weakened capacity to pay principal and interest.
Contains speculative elements. Protection of interest and principal payments may not be well safeguarded during good and bad times. Uncertainty of position characterizes bonds in this class.	Ba	BB	Regarded as predominantly speculative with respect to issuer's capacity to pay interest and repay principal according to terms of the obligations.
Generally lack characteristics of desired investment. Assurance of interest and principal payments or maintenance of other terms of the contract over any long period may be small.	B	B	Speculative; quality and protective characteristics outweighed by large uncertainties or major risk exposures to adverse conditions.
Poor standing. Issues may be in default, or elements of danger may be present with respect to principal or interest	Caa	CCC	High degree of speculation; large uncertainties or major risk exposure.
Obligations are highly speculative. Often in default or have other shortcomings.	Ca	CC	Highest degree of speculation.
Lowest-rated class of bonds; extremely poor prospects for attaining any real investment standing.	C	C	Reserved for income bonds on which no interest is being paid.
		D	In default; interest and/or principal payments in arrears

one service are not rated by the other, and the opinions of the rating services may differ on specific issues.

Analysts evaluate various *economic factors*, including the locational advantages of the jurisdiction, its population, wealth, labor factors, the diversity of employers, and the area's economic prospects. Significant economic variables include the percentage of the economy dominated by the ten largest taxpayers (intended to measure the concentration and dependence of the local economy); the rate of unemployment; the tax base per capita; and changes in population. Of the various criteria included in the rating analysis, economic factors are the hardest to improve, because economic development is a long-term proposition for most jurisdictions.

Rating analysts examine various *debt factors*, including the jurisdiction's debt policy, debt structure, debt burden, debt history, and prospective borrowing, to assess the likelihood of meeting its commitments to the bondholders. Planning for future debt and having a solid infrastructure is looked upon favorably. If public indebtedness becomes too high, analysts are concerned that the jurisdiction may be unwilling or unable to honor its debt commitments. Moody's has compiled national averages of net debt per capita and the ratio of net debt to estimated full value of all taxable property. Such averages are used to evaluate the amount of debt burden. Communities with high net debt have cause for concern. On the other hand, low net debt may not necessarily be a good sign if such jurisdictions have ignored needed infrastructure improvements by not issuing bonds.

Two important *governmental considerations* are continuity in management and good fiscal control. An assessment is made as to determine the professionalism of the management team and how long it has been in place; whether managerial and policy-making responsibilities are clearly delineated; the jurisdiction's compliance with the Government Finance Officers Association standards regarding financial reporting and budgeting procedures; and the jurisdiction's independence in terms of overlapping or conflicting intergovernmental relationships.

A number of *financial factors* are examined to (1) determine existing and future fiscal trends, (2) assess if revenues meet or exceed expenditures and if a sufficient fund balance is available to meet unforeseen contingencies, (3) evaluate the diversity of revenue sources, and (4) identify the property tax collection rate. Analysts will also seek to determine the jurisdiction's policies regarding interfund transfers; if generally accepted accounting principles (GAAP) are followed; and if pension liabilities are properly funded.

Generally speaking, there is only one rating for all of the general obligation bonds of a particular governmental unit and for all bonds of a specific revenue project. Some governmental units or revenue projects may have more than one rating because special security has been pledged for some of the bonds. New

issues of a previously rated unit or revenue project usually are assigned the same rating as the outstanding bonds unless there have been material changes in the credit situation. Jurisdictions can pursue better bond ratings by making improvements in one or more of the four areas of evaluation and by proactively promoting the community through ongoing contacts with rating services.

1.7 The Bond Sale and Delivery

All bids should be on a basis that permits a comparison of total cost to the issuer. Officials should insist that all bids comply strictly with the terms of the sale. All bids should be received and opened in public by the governing body at the designated hour, with the bonds awarded to the bidder on the basis of the lowest net interest cost. All paperwork required to complete the bond transcript should be forwarded to the bond attorneys as soon as possible thereafter.

Before the bonds are delivered, information required to establish the *bond register* (sometimes called the bond and interest record) should be recorded. At the time a bond issue is sold, the interest due on each date of maturity should be computed and recorded, as should the payments of principal or payments into a sinking fund. With such records, a complete schedule of debt service requirements can be readily prepared for the current budget and for all outstanding debt obligations.

All of the post-bid requirements should be completed at the earliest practical date after the sale (no later than thirty days). The winning bidder usually has the option to cancel his obligations if these requirements are not completed on or before the date specified in the contract. The issuer of the bonds provides a disclosure statement on the new issue, called an *Official Statement*, which summarizes the issue, giving information on ratings, authority for issue, delivery date and place, security for the issue, maturity amounts, dates, coupon rates, and offering yields or prices. The Municipal Securities Rulemaking Board requires that a final *Official Statement* must be sent to every person who purchases a new issue bond during the underwriting period. A preliminary official statement frequently is distributed to prospective buyers before the sale of larger bond issues.

1.8 Summary

Marketing municipal bonds is a complicated process, the mysteries of which, insofar as the uninitiated are concerned, are comparable to that of the stock market. Local officials must be mindful of the procedures for marketing bonds, from the planning of the issue through the actual delivery of the bonds to the winning bidder. Failure to adhere to these procedures can result in unnecessary delays, higher interest costs, and possible legal ramifications. As a practical matter, almost any bond issue that is in proper technical form can be sold at any time.

However, whether a particular offering is “successful” at the date of sale depends on the congruence of many factors.

The municipal finance officer is caught in the middle—faced, on the one hand, by uncertainties as to the political and economic structure of the community and, on the other, by uncertainties of a marketplace that he or she may not fully comprehend. Adherence to accepted marketing procedures can go a long way to reducing the uncertainties that confront public officials. The success of a given issue may be determined by forces in the marketplace beyond the control of local officials. However, an awareness of these factors can provide important insights in the overall planning of long-term bonds for capital facilities.

2 DEBT ADMINISTRATION

Debt administration is one of the most significant responsibilities of local officials. Comprehensive and systematic procedures must be established for maintaining records, for annual financial reporting, and for the accountability of public funds. Such procedures are essential to develop confidence on the part of investors and the general public as to the overall management of the jurisdiction’s financial affairs.

2.1 Capital Project Funds

Capital project funds account for the resources required to build or buy specific capital facilities. These resources come from the issuance of bonds or other long-term obligations, from intergovernmental grants, or as transfers from other funds. A capital project fund is terminated when the project is completed, and the accounting results are transferred to the *debt service fund*, which is used to track the payment of interest and principal of the long-term debt on each capital project.

Bonds often are not sold on the date of issue. [1] Assume, for example, that bonds with an issue date of July 1, 1999, were not sold until September 1, 1999. Purchasers of these bonds receive semiannual interest payments from the date of issue (that is, on January 1, 2000, on July 1, 2000, and every six months thereafter) and not from the date of purchase. Therefore, when the bonds are sold, the buyer must pay the seller the equivalent of interest for the period from the issue date to the date of purchase (which, in turn, will be included in the interest payment received by the buyer on January 1, 2000).

Accrued interest received on the sale of the bonds cannot be used in the capital project fund to pay for construction. It must be transferred to the debt service fund to be used as part of the resources for the first interest payment—that

is, as a partial offset to the amount needed from the general fund for the first interest payment. Therefore, only funds sufficient to pay the interest from the purchase date to the interest payment date will have to be transferred from the general fund to the debt service fund.

Some states do not permit bonds to be issued at a *premium* or a *discount*—that is, above or below the face value. [2] This prohibition may force the issuing authority to pay a higher interest rate on the bonds to ensure their sale. When a discount is allowed, the full face value of the bonds is still required to complete the authorized project, and the difference may have to be made up from the general fund or the debt service fund. When bonds are sold at a premium, the difference is usually transferred to the debt service fund and used with other resources to pay off the bonds.

The capital project fund often receives proceeds from the sale of bonds or transfers of moneys from other sources (such as state or federal grants) before these resource are needed to acquire the capital asset. These resource should be invested to produce additional revenue. This investment revenue, in turn, is transferred to the debt service fund for payment of the principal or interest of the debt.

Administration of a capital project fund can be best understood by tracing a typical set of transactions. Assume that the City of Rurbana proposes to construct an addition to its existing administration building at an estimated cost of \$1,600,000. Matching grants of \$300,000 from the state and \$300,000 from the federal government are available for this project. The Rurbana taxpayers have approved a bond issue referendum for \$1,000,000 to meet the local share of the project's financing.

Regardless of the method by which moneys are transferred from one governmental unit to another, the results are the same: the capital project fund receives cash from the granting agencies. Assume that the grants are received at the outset of the project and are invested in short-term, sixty-day certificates of deposits at 6 percent interest. The resulting earnings of \$6,000 ($\$600,000 \times 0.06 \times 60/360$) should be deposited in the debt service fund.

Land adjacent to the existing administration building is purchased on which the addition will be constructed. Two landowners agree to purchase prices, totaling \$90,000. A third landowner cannot obtain his desired price; his land is secured through eminent domain, with a court-ordered settlement of \$35,000.

In governmental fund accounting, capital assets are recorded as expenditures in the capital project fund and as fixed assets in the general fixed assets account group. The land sales and the judgment are paid on a proportional basis from three sources: the state grant (3/16), the federal grant (3/16) and the proceeds of the bond sale (10/16). The entry to record this transaction in the fixed assets account group is:

Land	\$125,000
Federal grant	\$ 23,437.50
State grant	\$ 23,437.50
General obligation bonds	\$ 78,125.00

Grant funds are thus reduced to \$553,125. This amount plus previously earned interest is invested in a thirty-day CD, at 5 percent. The resulting earnings of \$2,330 $[(\$553,125 + \$6,000) \times 0.05 \times 30/360]$ are deposited in the debt service fund.

The bonds, dated July 1, 20X1, are issued as 20-year general obligation bonds with an interest rate of 5 percent, payable semiannually on December 31 and June 30. For illustrative purposes, it will be assumed that the issue is for term bonds, wherein interest on the full amount of principal is payable over the twenty-year period to maturity.

The bonds are sold on September 30, 20X1 at a premium of 2 percent, or \$20,000, plus accrued interest of \$12,500 $(\$1,000,000 \times 0.05 \times 3/12)$. The accrued interest and premium on the sale of the bonds are transferred to the debt service fund. From the sale of the bonds, \$78,125 is paid toward land acquisition, and the balance of \$921,875 is combined with the balance of the grant funds $(\$553,125 + \$6,000 + 2,330)$, for a total of \$1,483,330. This amount is invested in a ninety-day CD at 6.5%, yielding \$24,104 on December 29, 20X1.

On October 1, 20X1, a construction contract is let for the addition designed to be built for \$1,300,000, including a contingency allowance of \$100,000 to accommodate any necessary plan changes. The contract calls for completion of the building by November 1, 20X2. The Public Works Department will make the necessary land improvements and landscape the grounds at the completion of the construction phase. The estimated cost of \$75,000 is encumbered at the outset of the project.

The Sunshine Construction Company is to receive quarterly payments on the basis of percentage of completion of the project and approval by the construction supervisor. During the first year, the following payments are approved, based on invoices submitted by the company:

December 31, 20X1	\$350,000
March 31, 20X2	\$225,000
June 30, 20X2	\$225,000

Individual entries are made to record each of these amounts when the invoices are received and approved. The balance of the grant funds and bond proceeds continues to be available for short-term investment in certificates of deposit or other securities. The capital project fund has \$675,00 available at the start of the second fiscal year (July 1, 20X2). Interest that has accumulated in the debt ser-

vice fund to this point amounts to \$66,700. Thus, \$741,700 is still available for short-term investment (see Table 9.2).

On July 10, 20X2, a contract change is approved that increases the construction contract to \$1,350,000. The third quarterly payment of \$225,000 is also made on that date. On September 30, 20X2, another payment is approved for \$400,000. The project is not completed until December 1, 20X2, because of the addition to the contract. At that time, an invoice was received for the balance of the contract. The retained percentage on this project (pending final approval) is 5 percent of the contract price, or \$67,500. Therefore, the December payment to Sunshine Construction is \$82,500 (\$150,000 – \$67,500).

The Public Works Department completes its work at a cost of only \$60,000, releasing \$15,000 of the \$75,000 encumbrance back to the fund balance. By February 28, 20X3, the corrections to the project needed for final approval are made by the contractors, and the retained percentage (\$67,500) is paid. The fund balance account is then closed, and the balance of cash on hand—the \$15,000 unused encumbrance plus \$50,000 unused contingency allowance—is transferred to the debt service fund as a residual equity transfer.

2.2 Debt Service Funds

Debt service funds are used to account for (1) the accumulation of resources from which the principal and interest on long-term debt is paid and (2) the investment and expenditure of those resources. Whenever possible, several debt issues should be accounted for in a single fund because the fewer the number of funds, the less complicated the accounting for long-term debt. One fund needs only one set of financial statements; many funds need many sets of financial statements.

The money required for the repayment of debt, as well as the interest on

TABLE 9.2 Interest Earnings on Short-Term Investments

Investment Period	Funds Available	Rate	Interest Earned	Drawdown
7/03–8/31	\$ 600,000	6.0%	\$ 6,000	\$ 46,875
9/01–9/30	559,125	5.0%	2,330	62,500
10/01–12/29	1,483,330	6.5%	24,104	350,000
12/30–3/31	1,157,434	6.5%	18,808	225,000
4/01–6/30	951,242	6.5%	15,458	225,000
7/01–9/30	741,700	6.5%	12,053	400,000
10/01–11/30	353,752	6.0%	3,538	82,500
12/01–2/28	274,790	6.5%	4,465	127,500
Fund Balance	151,755			
Totals			\$86,755	\$1,535,000

the bonds, may come from several sources. If the locality or authority earmarks a special source for the repayment of bonds, then a special revenue fund may be set up to collect the money and transfer it to the debt service fund. Often revenue is collected from various sources in the general fund and then transferred to the debt service fund. Many bond indentures require that the money needed for servicing the bonds has first claim on the general revenue of the governmental unit.

Since the resources needed to service the principal and interest on serial bonds is received and expended each year, there is no accumulation of resources on which interest can be earned. The resources needed to service the principal on term bonds, however, are not needed until the debt matures and, therefore, can be invested. Thus, the assets and the fund balance increase annually, providing a *sinking fund* that eventually will be used for payment of the debt.

A sinking fund spreads the repayment costs over the life of the bond issue, thereby avoiding large, irregular demands on the annual budget. The amount that needs to be earmarked each year for the sinking fund is determined by (1) the dollar value of the bonds to be retired, (2) the number of payments to be made into the account, and (3) the anticipated rate of earnings on the invested funds. Sinking fund requirements should be recomputed each year. Should a surplus in excess of actuarial requirements develop, it may be possible to lower future requirements. It is sound debt management practice, however, to absorb any significant surplus gradually over several fiscal periods rather than making a large reduction in payments in a single year. Should a deficit arise, adjustments should be made as soon as possible by increasing the level of payments into the sinking fund. New investment opportunities should also be sought to produce a greater return.

The same example used to explain the administration of a capital project fund can also be used to illustrate the operations of a debt service fund. Term bonds with a face value of \$1,000,000 were issued at 5 percent for twenty years. Semiannual interest payments on these bonds are \$25,000 ($\$1,000,000 \times 0.05 \times 1/2$). The bonds were sold three months after the date of issues, however, so only \$12,500 is needed for the first interest payment. The other \$12,500 will come from the accrued interest received upon sale of the bonds. Interest payments may be made to bondholders by a fiscal agent on behalf of the locality. The handling charges made by such agents (usually 1 percent or less) must be included in the annual transfers to the debt service fund for interest payments.

The estimated amount needed to build up the sinking fund can be developed from an annuity table or from the annuity formula. For example, if the fund can earn 6 percent each year on its investments, then an annuity table shows that one dollar invested annually for twenty years at 6 percent will return \$36.786. Thus it would take \$27,184.25 added to the sinking fund each year, invested at 6 percent, to equal \$1,000,000 at the end of twenty years (\$1,000,000 divided by

\$36,786 = \$27,184.25). No long-term investments are purchased in the first year because the payment, as an annuity, is generally not received until the end of the year. During the second and all succeeding years, however, the transfers as well as any earnings made in prior years will be invested.

The interest earned from short-term investments during the construction period is summarized in Table 9.2. The \$65,000 fund balance, transferred to the debt service fund when the capital project fund is closed, is added to the \$86,755 in earned interest for a total of \$151,755. These funds, invested on March 1, 20X2 at 6 percent, earn \$3,035 through June 30. The year-end balance of \$16,720 from the first year of the sinking fund (see Table 9.2) earns \$1,003 during the second year. Thus, at the end of the second year, the sinking fund has a substantial balance of \$172,514. This fund balance invested at 6 percent for an additional 18 years would total \$492,412 when the bonds reach maturity. Therefore, the balance that must be accrued in the sinking fund is reduced to \$507,588. Annual payments of \$15,495, invested at 6 percent over the eighteen-year period, will yield the sum required in the sinking fund to cover the balance of the principal payment, as detailed in Table 9.3. The total debt service costs for this project amount to \$1,278,883 (payments to sinking fund = $17 \times \$15,495 + \$15,468 = \$278,883$ plus interest payments = $20 \times \$50,000 = \$1,000,000$).

2.3 Long-Term Debt Control

Accurate debt records—including auditable ledgers showing the identity, purpose, and amount of debt commitments associated with capital projects and the debt service payments made—are vital to short-term and long-term financial operations. From these records, it should be possible to determine quickly and accurately the principal and interest requirements on the total debt over the full maturity of all issues. Such computations are needed to determine the financial capacity to meet the requirements for future capital improvement and to plan the retirement schedule for any new borrowing.

Long-term debt can best be controlled through a subsidiary ledger, such as a *bond and interest register*. By collecting in one place all pertinent information regarding individual bond issues, this ledger traces the complete history of each issue and assists in establishing a schedule of debt service requirements and in posting transactions to the general ledger, bonded debt ledger, and interest payable ledger.

A subsidiary *bonded debt ledger* contains a sheet for each bond issue, showing the project title and purpose, amount of bond originally outstanding, date of bonds, interest rates, amount retired to date, and balance outstanding. A separate sheet is maintained on each bond issue in an *interest payable ledger*. As interest payments come due, they are entered in the “credit” and “balance” columns. As payments are made, the amount is entered in the “debit” column,

TABLE 9.3 Sinking Fund Requirements on 20-Year Term Bonds

Year	Estimated Transfer for Bond Payments	EstimatedFund Earnings @ 6%	Estimated Yearly Fund Balance Increase	Estimated Year-End Fund Balance
1	\$16,000	\$720	\$16,720	\$16,720
2	151,755	4,038	155,794	172,514
3	15,495	11,281	26,776	199,289
4	15,495	12,887	28,382	227,671
5	15,495	14,590	30,085	257,756
6	15,495	16,395	31,890	289,646
7	15,495	18,308	33,803	323,450
8	15,495	20,337	35,832	359,281
9	15,495	22,487	37,982	397,263
10	15,495	24,765	40,260	437,523
11	15,495	27,181	42,676	480,199
12	15,495	29,742	45,237	525,436
13	15,495	32,456	47,951	573,387
14	15,495	35,333	50,828	624,215
15	15,495	38,383	53,878	678,093
16	15,495	41,615	57,110	735,203
17	15,495	45,042	60,537	795,740
18	15,495	48,674	64,169	859,909
19	15,495	52,524	68,019	927,928
20	15,468	56,604	72,072	1,000,000
Totals	\$446,638	\$553,361	\$1,000,000	

and the balance payable is reduced by a corresponding sum. An overall schedule of debt service requirements can be readily computed from these records, and a maturity and interest calendar for all debt can be compiled to monitor revenue needs for debt service on a month-to-month basis. The calendar must be adjusted and updated as new issues are marketed.

All fixed assets purchased, constructed, or obtained by contract are recorded at cost in the general fixed assets account group. An asset that is sold, destroyed, or otherwise rendered valueless is removed from the account group by debiting the general fixed assets account for the original amount recorded and crediting the particular fixed asset. Improvements to an asset—adding to its value—require an entry comparable to the original entry, but only for the amount of the improvement. General repairs—needed to keep the asset in the same operating condition—are not considered improvements and should not be added to the value of the fixed assets in the account group. Although not maintained for

external reporting purposes, depreciation should be recorded in supplemental records for internal costing purposes.

The long-term debt account group is used to maintain records of long-term liabilities, such as serial bonds, long-term notes, and long-term commitments arising from lease or purchase agreements. Separate records of long-term debt are maintained for special assessment funds, proprietary funds, and profit-type fiduciary funds. Upon recording the matured bonds payable in the debt service fund, the amount in the general long-term debt account group would be closed out.

2.4 Financial Reporting

Financial analysts often point out that the annual financial reports concerning public debt is a major point of weakness in the management of government resources. Such reports are important to the basic credit rating of the governmental unit and are of major interest to bondholders, public officials, and ordinary citizens. If adequate debt records are maintained throughout the year, the preparation of such annual reports can be a relatively simple procedure.

Annual financial reports concerning debt should cover several basic categories of information:

1. A listing of all outstanding debt by type of issue (general obligation, special assessment, or revenue bonds). The following information should be provided for each bond issue: date of issue, original amount, date of maturity, coupon (interest) rate, total interest, amount of principal and interest currently outstanding, and the amount carried in sinking funds, if any. This information can be taken directly from the bond and interest register.
2. For each broad classification of debt, information should be presented as to the annual schedule of debt service, including interest, amortization requirements, and total debt service requirements. This statement should also include data as to the level of unfunded debt, that is, short-term borrowing that constitutes an obligation payable out of current revenues.
3. The overlapping debt of the jurisdiction—that portion of the debt of the school district, county, township, or special districts payable from taxes levied by the reporting jurisdiction.
4. A computation of the jurisdiction's legal borrowing status.
5. If term bonds are outstanding, a sinking fund balance sheet should be included in the financial report to record the relation of sinking funds to actuarial requirements and a listing of current holdings.

Debt arising from the issuance of revenue bonds in proprietary funds must also be shown, including complete information on the facilities that support such

debt. The report should include, as appropriate, the name of the corporate trustee, consulting engineers, and attorneys approving the legality of the issue. Revenue bond ordinances may require an annual report by an independent certified public accountant, including a current balance sheet and a statement of any contingent liabilities not shown on the balance sheet. Particular types of revenue bonds (e.g., for water or sewer utilities) often require supplemental information, such as average daily supply and consumption, storage capacity, number of customers, consumption per customer, method of billing, legal provisions, and so forth. Special assessment bonds guaranteed by the jurisdiction should also be shown in the schedule of debt.

Accurate and complete reporting on public debt develops confidence on the part of investors and the general public as to the fiscal management of a jurisdiction or public organization. In addition to the annual report, an interim report covering much of the same information should be prepared midway in each fiscal year for distribution to those interested in the financial status of the jurisdiction. The relatively small investment of time and expense in preparing such reports is often repaid many times over through lower interest rates.

2.5 Distribution of Revenues and Issuance of Additional Bonds

All receipts and income derived from the operation of a self-supporting project, in most cases, are deposited in a *reserve fund*. Moneys in the reserve fund are then distributed monthly by the trustee or other handler of funds in the order established by the bond resolution or trust indenture (see Table 9.4). Moneys remaining in the reserve fund after the required distributions have been made may be placed in a *surplus fund*, to be divided among various categories, such as:

- Redemption account to retire bonds in advance of maturity.

- Payment in lieu of taxes: When an authority purchases an operation that had been a corporate unit, payments may be made in lieu of taxes either by legislative requirement or to create good will.

- Other lawful payments, including improvements and extensions to the facility or support of other bond interest.

It may be necessary to increase the size of the facility or to make other improvements that will require additional financing. Sufficient leeway should be provided in the bond indenture or resolution to permit the issuance of additional bonds.

If bonds of equal rank are permitted, safeguards must be established to prevent the undue dilution of the security of the original bonds. The two basic types of trust indentures are (1) closed-end indentures, which do not permit the issuance of parity bonds (bonds of equal rank) except as necessary to complete

TABLE 9.4 Distribution of Revenues from Self-Supporting Projects

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1. *Operations and maintenance* have first claim on the reserve fund. Without proper O&M funds, a facility may experience severe loss of income. Revenue bonds are commonly payable from net revenues—that is, gross receipts less operating and maintenance costs.
 2. The *bond service account* should receive monthly payments sufficient to cover the next semiannual interest payment, as well as the next principal payment on serial bonds.
 3. A *sinking fund* is sometimes required in the case of term bonds, in lieu of principal payments on serial bonds.
 4. The *debt service reserve fund* is gradually built up to equal a full year’s maximum principal and interest in the case of serial bonds, or two year’s interest in the case of term bonds.
 5. A *renewal and replacement fund* (sometimes called a *replacement reserve*) is established to replace equipment and provide necessary repairs beyond normal maintenance. Funds are paid into this account in amounts recommended by the consulting engineer and may be cumulative.
 6. A *reserve maintenance fund* may be established to meet unusual or extraordinary maintenance charges that have not been budgeted. Some jurisdictions combine the reserve maintenance fund with the renewal and replacement fund.
 7. The *working capital fund*, to cover unforeseen contingencies, should be equivalent to about one-tenth of the annual gross revenues.
-

the project if initial financing proves insufficient and (2) open-end indentures, which permit the issuance of additional bonds but provide a formula prescribing the conditions to be met. In the first case, additional bonds must be “junior” in lien to the outstanding bonds, that is, have a secondary claim on the revenues of the facility.

2.6 Debt Service and Retirement

Prompt payment of all principal and interest requirement is the most direct evidence of sound debt administration. Consequently, the way in which a jurisdiction services its debt is one of the most important factors in determining its credit standing for future borrowing. Even temporary defaults may adversely affect a jurisdiction’s ability to borrow at optimal interest rates. Well-defined procedures—including advanced planning regarding the payment calendar and sound management of sinking funds and capital reserves—are essential to ensure regularity in the payment of interest and redemption of principal.

The first step is to establish an information system regarding interest and redemption requirements over the life of the issue. For this purpose, the bond and interest register and the ledgers for bonded debt and interest form a ready ba-

sis for the development of a *payment calendar*. Whenever a new issue is marketed, a schedule should be prepared showing the amount due on each principal and interest date, and this schedule should be incorporated into the consolidated payment calendar to show the timing of total cash requirements. If sinking funds or other debt service funds are involved, these must also be taken into account in the annual budget process.

The allotment of funds for principal and interest payments must be timed to provide cash when it is needed. Budget officials must plan ahead to ensure that early payments required in the following year can be met, that is, that a sufficient fund balance is carried over from the previous fiscal year and/or provision is made in the tax collection system to generate adequate funds in the early part of the new fiscal year.

Payment of all principal and interest requirements should be made through a single agency—for example, the City Treasurer's office or some other designated fiscal agent. In many cities, such payments also require authorization by the Director of Finance or the Controller.

2.7 Sinking Funds

A major problem in the use of sinking funds stems from the technical difficulties of managing the trust accounts. In most states, local governments are restricted by law as to the types of sinking fund investments that can be made—usually being limited to federal, state, and municipal bonds. Within these categories, investments should be limited to high-grade issues and should exclude revenue bonds on projects with unproven earning power. Bonds with equal security at times vary in terms of their yield, and the relationship of maturity to yield tends to vary with changes in market conditions. Analysis of the bond market, therefore, is essential to secure the maximum earnings for sinking funds compatible with the safety of investment.

In addition to security, sinking fund investments must have liquidity—the maturities of the various investments must be so timed that funds will be readily available to retire the term bonds when they come due. Without careful investment planning, it may become necessary to sell the holdings of the sinking fund in the open market, with the possibility of taking a loss. Greater flexibility often can be attained by investing in several different types and sizes of offerings.

To the extent permitted by state law, sinking funds should be consolidated to simplify transactions, to save time in putting the funds to work, and to secure a better investment position. Separate fund accounts should be maintained, however, for administrative purposes in calculating annual contributions. An independent audit of the sinking fund should be made annually in addition to regular auditing by the controller of all sinking fund transactions.

The management of a sinking fund is a complex task that should not be un-

dertaken without adequately trained personnel and proper safeguards to protect the integrity of the funds. As has been noted, a number of states have legislated against term bonds secured by sinking funds insofar as general obligation borrowing is concerned. However, such funds remain as a viable means of financing many revenue-producing projects, whereby annual contributions to the fund are generated by the self-supporting facilities. In such cases, adherence to the guidelines outlined above is especially important because such debts often are outside the protection of the full faith, credit, and taxing power of the jurisdiction.

2.8 Recording Interest Payments and Canceling Bonds

The final step in servicing a municipal debt involves the recording of interest payments and canceling of bonds that have been paid. Following each scheduled payment, bonds must be checked to determine if any have not been redeemed. Some will always be slow in coming in, and occasionally, some may be missing permanently. Records must be maintained for several years after the final maturity date in most cases. Commercial banks and trust companies that serve as paying agents for municipal bonds usually include all phases of recording and cancellation as part of their services.

3 REFUNDING AND CONVERSIONS

When outstanding bonds bear interest rates substantially higher than those currently obtainable in the municipal bond market, it may be appropriate to determine whether new bonds can be issued to retire all or a portion of the outstanding debt. This process is called “refunding.” The refunding bonds may be sold for cash and the outstanding bonds redeemed in cash, or the refunding bonds may be exchanged with the holders of the outstanding bonds. In the case of default or other financial difficulties, a refunding plan is part of the reorganization of debt that may be mandated and supervised by the courts.

3.1 Refunding Callable Bonds

Refunding is generally accomplished through the exercise of the call provision incorporated into the original issue. Bonds may be issued with the provision that they may be “called” for payment prior to their maturity date. While bonds may be made callable at any time after the date of issue, in practice, the call normally is exercised with appropriate notice only on interest payment dates. A bond issue may be made part callable and part noncallable. Bonds may be made callable at par or at a premium.

Callable bonds may afford greater flexibility in the jurisdiction’s debt structure. If the initial retirement schedule provides too rapid, or a period of de-

clining revenues is encountered, bonds may be recalled and refunded at the most favorable terms. During periods of high interest rates, the call feature permits bonds to be issued and then refunded at lower rates at some time during their term if the market changes or the jurisdiction's credit rating improves. The callable feature permits debt retirement to be accelerated if the project's revenue capacity expands.

Investors often insist on a premium for callable bonds. Therefore, the resultant net savings must be carefully considered. Steps required include a determination of:

1. The probable interest rate that could be achieved on the refunding bonds if offered in the prevailing market
2. The gross amount of interest to be saved in terms of (a) current dollars payable in the years in which the savings will occur and (b) present worth of dollars to be saved at future dates
3. The cost of refunding—the call premiums payable and the costs incident to the issuance of refunding bonds.

The apparent difference between gross interest costs on the old and new bonds, after allowance for the refunding costs (including all premiums) is not the most critical consideration. Failure to reduce all factors to a net present worth can result in a refunding that is apparently favorable but that, in fact, is disadvantageous to the issuing jurisdiction. [3]

3.2 Refunding to Adjust Contract Terms

Revenue bond issues often involve complex and lengthy indentures. If it becomes necessary to issue additional bonds prior to the maturity of the outstanding bonds, the terms of the existing contract may be unduly restrictive. Therefore, the issuing authority may find it desirable to arrange for the refunding of the outstanding debt in order to eliminate or modify the restrictive covenants. Such refunding frequently results in substantial additional costs, however, which underlines the importance of holding the restrictive elements in each bond indenture to a minimum, consistent with the original intent of the bond issue.

3.3 Refunding to Consolidate Debt

It may be possible to use refunding to consolidate the jurisdiction's debt. To illustrate this approach, assume that a major addition must be made to a city's sewage treatment facilities to be in compliance with revised state and federal standards regarding effluent discharges. The Sewer and Water Commission and City Council agree that an adjustment should be made in the sewer service charges sufficient to meet the debt service.

In Table 9.5, it is assumed that, with the authorized increase, the annual yield from the sewer service charge will be \$1 million, with an estimated increase

TABLE 9.5 Consolidation of Existing and Proposed Debt through Refunding

Year	Estimated Annual Revenue 2%/Annum	Debt Service Requirement on Existing \$6 Million Debt	Debt Service Requirement on New \$8 Million Debt	Debt Service on \$14 Million at 5% Combined New Debt (\$8 Million) and Refunding (\$6 Million) with \$200,000 Refunding Costs			
				Principal	Interest	Total Debt Service	Outstanding Principal
							\$14,200,000
1	\$1,000,000	\$800,000	\$520,000	\$290,000	\$710,000	\$1,000,000	\$13,910,000
2	1,020,000	775,000	520,000	324,500	695,500	1,020,000	13,585,500
3	1,040,400	750,000	520,000	361,125	679,275	1,040,400	13,224,375
4	1,061,208	725,000	520,000	399,989	661,219	1,061,208	12,824,386
5	1,082,432	700,000	520,000	441,213	641,219	1,082,432	12,383,173
6	1,104,081	675,000	520,000	484,922	619,159	1,104,081	11,898,251
7	1,126,162	650,000	520,000	531,250	594,913	1,126,162	11,367,001
8	1,148,686	625,000	520,000	580,336	568,350	1,148,686	10,786,665
9	1,171,659	600,000	520,000	632,326	539,333	1,171,659	10,154,339
10	1,195,093	575,000	520,000	687,376	507,717	1,195,093	9,466,963
11	1,218,994	550,000	520,000	745,646	473,348	1,218,994	8,721,317
12	1,243,374	525,000	520,000	807,308	436,066	1,243,374	7,914,009

13	1,268,242		520,000	872,541	395,700	1,268,242	7,041,467
14	1,293,607		520,000	941,533	352,073	1,293,607	6,099,934
15	1,319,479		520,000	1,014,482	304,997	1,319,479	5,085,452
16	1,345,868		520,000	1,091,596	254,273	1,345,868	3,993,856
17	1,372,786		520,000	1,173,093	199,693	1,372,786	2,820,763
18	1,400,241		520,000	1,259,203	141,038	1,400,241	1,561,560
19	1,428,246		520,000	1,350,168	78,078	1,428,246	211,392
20	1,456,811		520,000	211,392	10,570	221,962	0
21	1,485,947		520,000				
22	1,515,666		520,000				
23	1,545,980		520,000				
24	1,576,899		520,000				
25	1,608,437		520,000				
26	1,640,606		520,000				
27	1,673,418		520,000				
28	1,706,886		520,000				
29	1,741,024		520,000				
30	1,775,845		520,000				
	\$40,568,079	\$7,950,000	\$15,600,000	\$14,200,000	\$8,862,520	\$23,062,520	

in this yield at a compound rate of 2% per annum. The city still has \$6 million in bonds outstanding from a previous issue for the sewer treatment system, bearing a 5% interest rate and maturing serially in annual amounts of \$500,000. The new sewage treatment facilities will cost \$8 million with the new bonds issued for 30 years with a uniform coupon rate of 5%.

It would not be possible to finance additional bonds under these conditions because the first year debt service would be \$800,000 on the old bonds and \$520,000 on the new bonds, exceeding the total available revenues of \$1,000,000. Refunding the outstanding bonds along with the issue of new bonds might be a viable approach. If the total funding required to achieve this consolidation is \$14,200,000, including the refunding costs, one plan for accomplishing the consolidation is shown in Table 9.5. Under this approach, it would be possible to pay off all of the bonds in 20 years (10 years earlier than under a separate issue), with a cost savings of \$487,480. This plan offers a suitable method of consolidating the old and new debt under the outlined parameters.

3.4 Refunding Mature Bonds

The practice of refunding mature or maturing bonds should be avoided if at all possible, and if necessary, should be undertaken with great discretion. Conditions may arise, however, that force refunding to eliminate irregularities in the existing debt schedule. Such irregularities often result from overly optimistic retirement schedules or from sudden shifts in economic conditions beyond the local control that lead to changes in the jurisdiction's revenue system. Refunding may also be preferable to emergency borrowing, particularly when a good credit relationship has been established in connection with outstanding debt.

Refunded bonds should be scheduled into the debt retirement program as soon as possible within the jurisdiction's fiscal capacity. An excessively long retirement period might seriously limit future borrowing. On the other hand, the retirement period of the refunding bonds should be of sufficient duration to avoid the need for further refunding.

3.5 Forced Refunding

At times, a municipality may find it absolutely necessary to refund outstanding debts to avoid default on bonds or serious disruption of fiscal operations. Unfortunately, such forced refunding often encounter unfavorable market conditions, because the economic factors that give rise to the need for refunding may be widespread. This situation confronted many cities during the depression years of the 1930s. Under such circumstances, a municipality—unable to sell refunding bonds to new investors—may be forced to negotiate with existing bondholders for the exchange of their holdings for new maturities.

Forced refunding should never be unduly postponed. It is a matter of good

fiscal administration to anticipate such emergencies and to take the necessary steps with sufficient lead time to resolve the problem in an orderly and businesslike manner. A frank and open presentation of the jurisdiction's fiscal problems is necessary to secure understanding and cooperation from major bondholders.

3.6 Sale of Refunding Bonds

Five elements need to be considered: (1) timing of the sale, (2) the maturity schedule of the refunding bonds, (3) the time of settlement on the new bonds, (4) refunding costs, and (5) the redemption provisions for the refunding bonds. The security pledged in support of the refunding bonds should be the same as the original issue. Maturities may have to be rearranged to accommodate higher coupon rates on early maturities, or a rate limitation may have to be placed on those maturities to bring the debt service within the bounds determined in the planning of the issue. It may be appropriate to accelerate the maturity schedule on the refunding bonds to increase the interest savings at some future date. Such an acceleration is desirable if the issuing jurisdiction can afford to pay the refunding costs from current funds and is willing to forgo the realization of the savings for a number of years.

Settlement on the refunding bonds should be a few days in advance of the due date on the called bonds in order that the issuing jurisdiction may be assured of having the cash in hand to meet the requirements for paying off the called bonds. Assuming no debt limit problems, the jurisdiction may prefer to complete settlement on the refunding bonds prior to the issuance of the call of the outstanding bond. This procedure is particularly appropriate in cases in which the likelihood of litigation might delay the delivery and settlement of the refunding bonds beyond the date for the redemption of the old bonds. Although prior settlement involves the payment of overlapping bond interest, the net amount of such duplication can be reduced through short-term investments of the revenue from the new issue.

If state laws permit, it might be appropriate to increase the amount of the refunding issue by the amount of the refunding costs. Although this approach reduces the net savings in current dollars, it should have little effect on the overall savings realized in terms of present worth dollars.

Including a call option will increase interest costs and thereby decrease the amount of interest savings that can be attained. On the other hand, a call option on bonds that will mature in several years (e.g., at least five) may be justified if the refunding is in a market of medium interest rates.

3.7 Advanced Refunding

In the early 1960s, some jurisdictions engaged in the practice of "advanced refunding," that is, refunding bonds to take advantage of falling interest rates.

Some jurisdictions had three sets of bonds outstanding on the same project—the original bonds, an initial set of refunding bonds, and a secondary set of advanced refunding bonds issued to refund a portion of the first set of refunding bonds. The effect was to have three sets of tax-exempt interest being paid on the same basic improvement. However, in August 1966, the U.S. Treasury ruled that the interest on such bonds would not be considered tax-exempt if:

1. All or a substantial part of the proceeds of the issue (other than normal contingency reserves) are only to be invested in taxable obligations that are, in turn, to be held as security for the retirement of the obligations of the governmental unit.
2. The proceeds of the issue are to be used to refund outstanding obligations that are first callable more than five years in the future, and in the interim, are to be invested in taxable obligations held as security for the satisfaction of either the current issue or the issue to be refunded.

4 DEFAULTS

No matter how satisfactorily resolved, defaults are likely to result in a decline in the jurisdiction's credit standing, producing skepticism among lenders and major difficulties in negotiating favorable interest rates on future bond issues. Even temporary defaults, if allowed to extend beyond the normal 90-day grace period, may result in the removal of a city from the listing of securities approved for fiduciary investments.

4.1 Defaults During the Depression

By far the largest number and most severe municipal defaults took place during the Great Depression era, from 1929 through 1938. The total debt of all governmental units whose defaults were recorded during this period was approximately \$5.5 billion, or about 30 percent of the average net municipal debt outstanding at the time. The most prominent default of this period was that of the City of New York, with total indebtedness of slightly over \$2.5 million. Lasting only a few days, the New York City default involved some general obligation notes issued in anticipation of delinquent tax collections. The \$5.5 billion figure included approximately \$160 million in default by the state of Arkansas, \$190 million in default by local governmental units with less than 5,000 population, and \$400 million in default by special purpose and special assessment districts.

Prior to the Depression, municipal debt had increased at a very significant rate, in large measure due to speculative over-development of real estate in the 1920s and the lack of realistic debt limits. In some cases, officers of real estate companies became municipal officials and promoted bond issues to enhance their real estate holdings. Special assessment or local improvement dis-

tricts often were created to finance the improvement of undeveloped and speculative areas. The issuance of debt in the name of an overlapping unit made debt limits ineffective.

The capacity of local government to pay these debts did not increase nearly as rapidly as the debts themselves. Municipal revenues rapidly declined as wealth, income, and assessed values plunged downward in the early years of the Depression. The decrease in local tax revenues was not accompanied by commensurate declines in expenditures. Many local governments, burdened with rising debt service charges as a result of unwieldy debt structures contracted in the past, also were faced with increased demands for unemployment relief payments.

Encouraged by the availability of capital at fairly low interest rates in the late 1920s, many municipalities with unbalanced budgets were able to borrow enough to cover their operating deficits. This borrowing added to the already large fixed charges of many communities. In 1932 and 1933, however, municipal borrowing was greatly curtailed as a consequence of rapidly rising interest rates, bank failures, and the loss of public confidence in municipal bonds. Therefore, many local governments with deficit budgets were forced to default.

The defaults of the Depression led to the enactment of the Federal Municipal Bankruptcy Act. Under this act, any local government that has defaulted on its debt because of its inability to meet its commitments can apply for relief to the applicable Federal District Court, which can approve a plan for the reorganization of the debt of the issuer. After World War II, several large bond issues to finance toll roads ran into difficulties in terms of covering debt service payments from net earnings. Such entities as the West Virginia Turnpike and the Calumet Skyway were eligible for reorganization under the Federal Municipal Bankruptcy Act. However, they did not resort to this course of action, relying on more conventional refunding procedures instead.

4.2 Types of Defaults

Minor or temporary defaults involve failure to meet the maturity payment of a single security or temporary postponement of interest payments. Such minor defaults may be the result of unanticipated declines in revenue collections, the shutting off of normal lines of bank credit, and/or a temporary inability to market refunding bonds. They usually can be corrected without disturbing the general debt structure or further interrupting debt service. Adjustment strategies include (1) payment during the grace period from belated tax receipts; (2) short-term bank loans; (3) small issues of refunding bonds; or (4) security exchanges. This latter strategy is particularly effective for relatively recent bond issues. Bondholders are contacted and negotiations are conducted to effect an exchange of outstanding bonds for new securities that more closely fit the community's long-term ability to pay.

A second, more serious class of defaults involves municipalities that have encountered such fiscal problems as peak debt service in period of low-paying capacity, serious breakdowns in the local economic base, and/or abnormally high tax delinquency. Under such circumstances, the municipality may experience difficulties in meeting current accounts as well as long-term obligations. Adjustments usually are effected by refunding or partial refunding of a few years' obligations in order to free up some fiscal resources to meet current operating costs. It may be possible to accomplish this adjustment without a major disturbance of the general debt structure and without any scaling of debt. Once current obligations are returned to a more balanced basis, attention can be redirected toward long-term obligations that may require further readjustments to reflect sound principles of debt administration.

The third class of debt involves situations in which the jurisdiction is confronted by abnormally high debt, severely curtailed revenues, and significant accumulation of operating deficits, with little or no prospect for correction except through a comprehensive refunding plan. Such a plan usually involves a complete reconstruction of the entire debt retirement schedule and a scaling down of interest and even principal payments.

Scaling of debt, involving the actual reduction in the jurisdiction's commitments, becomes necessary when the total obligation is clearly beyond the local government's capacity to pay. Investors naturally are reluctant to forgo any portion of their contractual rights and particularly so with regards to principal. Unless the situation is hopeless, they tend to prefer extensive postponements, with the expectation that subsequent community growth and development will eventually bring protection to their investment. Thus, when necessary, scaling can be more readily accomplished through a reduction in interest rates.

4.3 Steps in Readjustment

Insofar as possible, the jurisdiction should take the initiative in readjustment and in planning and implementing the refunding plan. Serious defaults require time for careful deliberation before commitments are made, but by exercising such initiative, the jurisdiction may gain the necessary cooperation from investors to successfully resolve the pending financial crisis. Attempting to cover up the fiscal crisis merely exacerbates the uncertainty, increases expenses, and ultimately may result in the municipality being placed in receivership. At this point, local officials no longer can control the readjustment process.

When it is evident that readjustment is unavoidable, an official statement should be issued to the jurisdiction's creditors, giving notice of its inability to meet its obligations, identify the causes and probably duration, and outline the steps contemplated to correct the situation as expeditiously as possible. Financial records should be opened to bondholders, and a summary analysis should be dis-

tributed, outlining the jurisdiction's financial status and capacity to pay. This analysis should be followed by frequent reports of financial and economic conditions and trends. Only by such means can the local government retain the initiative and assure the most constructive negotiations with its creditors.

A complete investigation of all relevant factors—financial, administrative, and economic—is a prerequisite to the planning of corrective action. Reliable experts should be consulted and a competent fiscal adviser retained. The relationship between outstanding obligations and normal capacity to pay must be ascertained, and operating costs should be examined to determine if they afford any basis for adjustments. The jurisdiction must evaluate its financial status and relation to resources and liabilities, both immediate and future. In short, the creditors should be approached with full knowledge of where the jurisdiction stands and the reasonable expectations regarding the capacity to recover from its financial difficulties.

To be successful, the refunding plan must provide (1) mechanisms to release current accounts from accumulated deficiencies and (2) financing procedures that will assure the maintenance of balanced operations. Although a brief hiatus from full debt service obligations may be necessary, such postponement is valid only if it is used as a means of systematically adjusting current accounts. Such refunding as is necessary should postpone the retirement of as little debt service as possible. The replanning of the debt structure should not trade a difficult immediate situation for an impossible future one. Callable bonds should be used to the extent possible to permit the re-refunding at lower interest rates if justified by market conditions, as well as the potential of accelerating the retirement process when conditions improve.

Adjustment of serious defaults, at best, involves a process of compromise, in which there is little opportunity for impartial settlement. Furthermore, refunding arrangements may contain the potentialities for recurring financial difficulties for several decades in the future. The experiences of many communities in the 1930s offer ample support for the necessity of sound debt policies.

5 SUMMARY

Prompt payment of all debt service charges is the most direct evidence of sound debt administration. The establishment of an information system to track interest and redemption requirements over the life all outstanding bond issues is essential to achieve this objective. The effective management of sinking funds and other debt service funds forms a critical part of the debt administrator's responsibilities. Interest payments must be recorded and retired bonds must be canceled in an orderly manner to ensure the proper closeout of debt obligations.

The procedures of refunding and the safeguards against defaults should be clearly understood by local officials. Most states have adopted legislative

measures to circumvent the financial catastrophe faced by many governments in the 1930s. The ultimate responsibility, however, still rests with local officials to adopt debt administrative procedures that will protect their community from “mortgaging its future.”

ENDNOTES

1. Municipal bonds often are underwritten by large investment syndicates that provide the funds to the issuing jurisdiction and, in turn, reoffer the bonds to individual investors. For a discussion of the underwriting of municipal bonds, see Alan Walter Steiss, *Local Government Finance* (Lexington, MA: D.C. Heath, 1975), Chapter 7.
2. Underwriters of municipal bonds must perform several calculations on the stated interest rates to determine the bid that they will make on the bonds. Net interest cost (NIC) equals the total cost of interest over the life of the bond issue (less any premiums) divided by the total number of “bond years”—that is, the sum of the number of years to maturity for each separate bond. True interest cost (TIC) is the present value, expressed as a nominal annual rate, compounded semi-annually, which discounts the future cash flows of the bond issue to equal the bid amount. In financial analysis, this calculation is known as the internal rate of return. The percentage of new issues awarded on the basis of true interest cost has increased with the advent of computers to carry out the series of successive approximations necessary to arrive at the TIC.
3. Refunding merely to effect a temporary tax reduction has no justification. The motivation is usually political. In some flagrant cases, bonds have been refunded just prior to elections to “improve” the record of incumbent office holders even though existing debt commitments could be readily met under the established schedule. Such practices result in unstable fluctuations in the tax levy, rising debt trends, and serious disruptions of the jurisdiction’s debt structure.

10

Accounting Systems: Traditional Mechanisms of Management Control

Henri Fayol has provided one of the better-known definitions of management control: “Control consists of verifying whether everything occurs in conformity with the plan adopted, the instructions issued, and principles established. It has for an object to point out weaknesses and errors in order to rectify and prevent recurrence.” [1] Application of financial control mechanisms, which emphasize the need for corrective action when deviations occur from some predetermined course of events, has traditionally fallen within the purview of accountants and auditors. The primary objective of this chapter is to provide a basic understanding of financial accounting procedures in the public sector so as to equip the financial manager who is not trained as an accountant or auditor with a vocabulary sufficient to be conversant with and benefit from the information derived from accounting systems.

1 INTERNAL CONTROL SYSTEMS

An internal control system consists of those measures taken to provide management with reasonable assurance that the fiscal operations of an organization are functioning efficiently and effectively. Such controls include (1) assurances that financial transactions are properly authorized, classified, and recorded on a timely basis, in correct amounts, and for proper purposes, (2) procedures for

approving the commitment of organizational resources, (3) limited access to assets, and (4) checks and balances among key fiscal duties (for example, the billing function versus the receipt of revenue). Good accounting procedures are the cornerstone of an effective internal control system, helping management achieve greater operating efficiencies.

1.1 Checks and Balances

Internal controls should encompass the proper accountability for assets from the initiation of financial transactions to financial reporting. Functional responsibilities for fiscal operations—such as the expenditure of funds, custody of revenue, and accounting for financial transactions—should be clearly delineated and segregated. Authorization procedures (signature authority) should be established to ensure reasonable control over assets, liabilities, revenues, and expenses. These checks and balances form the basis of an internal control system.

A primary objective of an internal control system is the prompt discovery of unintentional errors or irregularities, so that appropriate corrective action can be initiated on a timely basis. Good internal controls provide reasonable (but not absolute) assurance that errors and irregularities will be prevented or detected. This oversight provides more reliable financial records and discourages fraud.

It is important to recognize, however, the inherent limitations of any internal control system:

1. The extent of the internal controls adopted by any organization is limited by cost considerations.
2. Any system of internal controls can be circumvented by employee collusion and management fraud.

An internal control system so perfect to preclude any possibility of fraud would be impractical to operate and would likely cost more than it would save. Thus the concept of *reasonable assurance* must be used in weighing the costs and benefits associated with such internal controls.

The development and maintenance of adequate internal controls are primary responsibilities of financial managers. To meet those responsibilities, management must remain cognizant of changing times and their impact on the organization's control environment. Internal controls must be adapted as circumstances dictate. Flexibility is critical to the continued operations of any entity that seeks to achieve overall success at acceptable levels of risk.

1.2 Financial Accounting as an Internal Control System

Accounting procedures traditionally have served as the major mechanisms of internal control in both public and private organizations. An effective accounting

system provides quantitative information for three broad purposes: (1) *external reporting* of an organization's financial status to various constituencies or client groups (for example, stockholders, elected officials, regulatory bodies, and the general public); (2) *internal reporting* for use in planning and controlling routine operations; and (3) assisting in the formulation of overall *policies* and long-range *plans*. Traditional accounting procedures have served the first two purposes reasonably well but have provided relatively little direct assistance in the activities of long-range, strategic planning.

An accounting system measures and records financial data and converts these data to information that is then analyzed, interpreted, and reported to various groups both within and outside the organization. These functions are closely associated with the control aspects of *financial accounting*—procedures for ensuring efficient progress toward achieving predetermined fiscal objectives. Financial accounting is concerned with the historical results of fiscal transactions and the consequent financial position of the organizational entity. Financial transactions and events are systematically recorded in accounting ledgers and are classified according to some predetermined *chart of accounts*. Periodically, the data are summarized through the preparation of *financial statements* and reports that describe the past financial operations of an organization as a whole.

One of the basic assumptions in providing financial statements to both internal and external users is that the information comes from a particular *accounting entity*. The life of the entity is divided into accounting periods (usually not more than a year in length) so that measurements can be made at relevant intervals (i.e., quarterly, monthly, weekly). In both business and nonbusiness applications, the accounting entity often is related to the legal organization. The identity of the legal organization—the corporation, partnership, or individual proprietorship—is more clearly recognized in the private sector than in government and other nonbusiness situations. A city, for example, is not the appropriate accounting entity for financial reporting purposes. Neither is a college or university, hospital, health or welfare agency, labor union, or voluntary organization considered an appropriate accounting entity.

Within such public organizations, other accounting entities—called funds—are established for the purposes of maintaining records and preparing financial statements. A *fund* is an independent accounting and fiscal entity (and often a legal entity) to which resources are assigned, together with all related liabilities, obligations, reserves, and equities. Financial transactions are made between funds. Separate financial statements are prepared for each of the major funds, and combined statements of funds with similar purposes often are distributed.

A sound accounting system for governmental and other not-for-profit organizations generally is built around four central components:

1. *Funds*—fiscal and accounting entities with self-balancing sets of accounts, together with all related liabilities, obligations, reserves, and equities.
2. Major nonfund, self-balancing groups of accounts that focus on *general fixed assets*: and *general long-term debt*.
3. Unified records systems consisting of a *general ledger* that contains summary accounts (posted as totals), with supporting details maintained in *subsidiary ledgers*.
4. Basic *accounting classifications* that record revenue by fund and source and expenditures by fund, organizational unit, function, activity, character, and/or object.

The fund categories and account groups most commonly found in public organizations are summarized in Table 10.1.

1.3 External Financial Statements

Financial statements—the end product of an accounting system—provide a good starting point to begin to understand the accounting process. Financial statements are used to convey to managers and other interested parties information regarding the operating results and financial position of an entity at the selected points of measurement.

The three important financial statements in the private sector are (1) an income statement, (2) a balance sheet, and (3) a statement of changes in financial position. An *income statement* reflects the profit performance of an entity for some specific period of time. *Revenue* represents an inflow of money or other representations of value in return for the sale of goods or the provision of some type of service. Revenue in the private sector includes sale receipts, commissions, fees, rents, and dividends. Tax assessments, legislative appropriations, grant receipts, endowments and gifts represent revenue in the public sector. *Expense* represents the outflow of resources, or the incurring of obligations, for the goods and services required to generate revenue. *Net income* (or profit) is simply the excess of revenues over expenses. In the private sector, net income or net loss provides some indication of how well management has carried out its responsibilities. While income statements seldom are appropriate in governmental accounting, some public organizations do operate with proprietary funds and therefore, may generate *retained earnings* (i.e., funds that are carried over from one fiscal period to the next).

For purposes of financial accounting, a distinction is made between a cost and an expense. *Costs* are incurred by an entity when expenditures and obligations are made. These costs are recognized as expenses when their value or utility has been consumed in generating revenue. Therefore, an *expense* is

TABLE 10.1 Standard Funds and Account Groups

<i>Standard Funds</i>	
Governmental funds track the basic activities of government:	
General funds are used to account for all financial resources, and activities financed by them, that are not accounted for in some special fund. Among the revenues normally included are property taxes, licenses, fees, permits, penalties, and fines. Expenditures are authorized in the general budget.	
Special revenue funds are used to account for taxes and other revenues that are legally restricted for a particular purpose (such as, schools, street improvements, parks).	
Debt service funds are used to account for the financing of interest and retirement of principal of general long-term debt.	
Capital project funds are used to account for the major improvements financed either on a “pay-as-you-go” basis or out of capital reserves, grants-in-aid, or transfers from other funds. Such funds are limited to an accounting of receipts and expenditures on capital projects paid out of current revenues.	
Permanent funds report resources legally restricted so that only their earnings, and not their principal, may be used to finance operations.	
Proprietary funds report activities generally financed and operated like private businesses:	
Enterprise funds account for activities for which a fee is charged to external users, such as an electric utility.	
Internal service funds report activities that provide goods or services to other funds, departments, or agencies of the government, such as a motor pool.	
Fiduciary funds report assets that are held for others and that cannot be used to support the government’s own programs:	
Trust funds (for pensions and other employee benefits) account for resources held in trust for the members and beneficiaries of various employee benefit plans.	
Investment trust funds track the portion of the government’s investment pools that belongs to others.	
Private-purpose trust funds report all other trust arrangements benefiting those outside the government.	
Agency funds contain resources held by the government in a temporary, purely custodial capacity.	
<i>Account Groups</i>	
General Fixed Assets Account Group records all fixed assets—long-term resources of the governmental unit—acquired through Governmental Funds.	
Long-Term Debt Account Group records general long-term liabilities assumed by the governmental unit involving the commitment of Governmental Funds (except those associated with Special Assessment Funds).	

recognized when a complete transaction takes place rather than when cash is paid for the goods or services.

Any unused utility in costs that have been incurred continues to be recognized as an *asset* until it is consumed. Items purchased and held as inventory, for example, continue to be tracked as an asset until they are actually consumed, even though the purchase of these items represents a cost to the organization. The cost of equipment and buildings used in the operations of an organization usually have a high initial cost and are used over an extended time period. As these resources are committed to operations, a portion of their usefulness is consumed, and a part of the original cost is allocated as an expense. This type of expense is called *depreciation*.

A *balance sheet* shows the financial position of an entity at a particular time—that is, the amount of resources available (assets) and liabilities (obligations and debts) outstanding. As the name implies, assets and liabilities in this financial statement must balance. In the public sector, the fund balance sheet provides information regarding the current financial resources (assets, liabilities, and fund balances) of each major government fund and for the nonmajor funds in the aggregate. An example of a balance sheet for the Rurbana Sewer and Water Utility Commission is shown in Table 10.2.

Some of the terminology in this exhibit may require further definition. *Assets* may be in the form of actual cash on hand, amounts owed to the entity by others, equipment and facilities, or other things of value owned by the entity. A balance sheet does not necessarily reflect the fair-market value of assets. Under prevailing accounting practices, assets are recorded on the basis of their total cost at the time of acquisition because restating the value of assets each fiscal period would require frequent and difficult estimates. *Liabilities* represent obligations or debts of an entity and include amounts owed for goods and services purchased on credit, accounts or notes payable, salaries and wages owed to employees, taxes due, bonds payable, and other forms of debt.

Owner's equity is an important concept in commercial accounting and is sometimes called net worth, capital, or proprietorship. This equity comes from two sources: (1) earnings that have been retained in the business or commercial entity and (2) investments that have been made in the entity (for example, through the sale of stock). The concept of *fund equity* is substituted for owner's equity in accounting for governmental agencies. Fund equity represents the residual amount in the fund after the various obligations have been deducted. *Equity* is always equal to the assets minus the liabilities of an entity.

The *statement of changes in financial position* has come into general use because of the need for information concerning the financing and investing activities of an entity. Such statements can be derived from analyses of the income statement and balance sheet. This statement provides information about inflows, outflows, and balances of current financial resources, including sources of funds, operations (revenue minus expenses), sales of equipment used in operations,

TABLE 10.2 City of Rurbana Fund Balance Sheet December 31, 200x

	General Fund	Special Revenue Fund: Education	Special Revenue Fund: Federal	Sewer & Water Fund	Other Governmental Funds	Total Governmental Funds
<i>Assets</i>						
Cash and cash equivalents	10,245,734	2,003,050	1,225,333	929,283	684,148	15,087,549
Investments	2,561,434	140,214	61,267	292,928	34,207	3,090,049
Receivable, net	61,474,404			10,325,371	4,104,889	75,904,664
Receivables from other funds				222,072	406,216	628,288
Receivables from other governments	6,122,569	22,213,730	7,352,000		3,788,860	39,477,159
Total Assets	80,404,141	24,356,994	8,638,600	11,547,582	8,612,105	133,559,422
<i>Liabilities</i>						
Accounts Payable	57,291,578	22,657,500	7,351,982	9,477,282	7,118,623	103,896,963
Payable to other funds	5,456,789			125,000	275,000	5,856,789
Payable to other governments	7,005,987					7,005,987
Deferred revenue	3,073,720				650,000	3,723,720
Total Liabilities:	72,828,074	22,657,500	7,351,982	9,602,282	8,043,623	120,483,459
<i>Fund Balances</i>						
<i>Reserved for:</i>						
Nonrecurrent assets				100,000		100,000
Encumbrances	1,256,000		950,000			2,206,000
Debt Service	2,557,724			1,450,000		4,007,724
Other purposes				395,300	568,482	963,782
<i>Unreserved, reported in</i>						
General fund	1,302,750					1,302,750
Special revenue funds		1,699,494	336,618			2,036,112
Capital projects funds	3,788,597					3,788,597
Total fund balances	8,905,071	1,699,494	1,286,618	1,945,300	568,482	14,404,965
Total liabilities and fund balances	81,733,145	24,356,994	8,638,600	11,547,582	8,612,105	134,888,424

long-term loans, additional investment by the governing group, distribution of income, purchase of equipment, and payment of loans. In local government, this combined statement is generally referred to as the Statement of Revenues, Expenditures, and Changes in Fund Balances (see Table 10.3).

2 BASIC ACCOUNTING EQUATION

The elements reported in financial statements form the basic accounting equation, which can be expressed as follows:

$$\text{Assets} = \text{Liabilities} + \text{Fund Equity} + \text{Revenue} - \text{Expense}$$

Whereas profit-seeking entities strive to generate net income, not-for-profit organizations seek to “break even,” that is, to balance revenues and expenses.

2.1 The Double-Entry or T-Form

The so-called *double-entry* or *T-form* provides a standardized method for recording increases and decreases in the components of the accounting equation. A T-form account has a *debit* (or increase) side and a *credit* (or decrease) side. Debits must equal credits—the effect on the accounting system is described in terms of double-entry mechanics.

According to W. A. Paton, considered by many to be the father of modern accounting principles:

The terms *debit* and *credit* are doubtless etymologically related to the expressions *debtor* and *creditor*. The latter words have a more definitive intrinsic meaning than the others, however, particularly from a legal point of view. A debtor is one who owes, is indebted to the particular party or enterprise through whose eyes, or from whose standpoint, the situation is being viewed. . . . The borrower is a debtor; the lender is a creditor. Those who owe are debtors and the amount owed are their debts. Those who are owed are creditors, and the amounts due measure their claims. [2]

As used in modern accounting, however, debit does not connote the debtor status, or at least is not restricted to such meaning. Similarly, credit does not exclusively, or even commonly, indicate the creditor status. A *debit* indicates (1) an increase in assets to the organization and (2) a decrease in equities. A *credit* indicates (1) a decrease in assets and (2) an increase in equities. As Charles Horngren has observed:

Debit means one thing and one thing only—“left” (not “bad,” “something coming,” etc.). *Credit* means one thing and one thing only—“right” (not “good,” “something owed,” etc.). The word *charge* is often used instead of *debit*, but no single word is used as a synonym for *credit*. [3]

TABLE 10.3 Statements of Revenues, Expenditures, and Charges in Fund Balances for the Fiscal Year Ended June 30, 200x

	General Fund	Special Revenue Fund: Education	Special Revenue Fund: Federal	Sewer & Water Fund	Other Funds Funds	Total Governmental Funds
<i>Revenue Category</i>						
General Revenue	126,016,782	45,316,009	14,998,080	26,204,211	15,787,499	226,322,581
From Local Sources	111,771,644	888,549	294,080	25,704,211	8,209,779	146,868,263
Property Taxes	60,858,888				6,890,982	67,749,870
Residential	41,605,217				4,740,849	47,408,490
Commercial	8,465,878				944,436	9,444,355
Industrial	8,245,062				918,884	9,188,839
Vacant Land	2,542,731				286,814	2,868,135
Other Taxes	38,593,170					38,593,170
Sales Taxes	20,144,937					20,144,937
Franchise Tax	4,112,430					4,112,430
Wage Tax	11,391,786					11,391,786
Mercantile Tax	2,944,017					2,944,017
Sewer & Water Fees				20,650,741		20,650,741
Miscellaneous Fees & Charges	10,115,521			964,144	812,431	11,892,096
Fees and fines	4,034,944			520,000	190,630	4,745,574
Licenses and permits	3,541,137				621,801	4,162,938
Miscellaneous	2,539,440			444,144		
Intergovernmental Revenues	12,245,138	44,427,460	14,704,000	500,000	7,577,720	79,454,318
Federal			14,704,000			
State						
Interest	2,204,065	888,549	294,080		506,366	3,893,060
From Capital Reserves				4,089,326		4,089,326

TABLE 10.3 Continued

	General Fund	Special Revenue Fund: Education	Special Revenue Fund: Federal	Sewer & Water Fund	Other Governmental Funds	Total Governmental Funds
OPERATING EXPENSES						
<i>Department</i>						
General Government	5,741,506					5,741,506
Public Safety	13,232,204					13,232,204
Public Works	5,838,785				1,730,785	7,569,570
Community Development	1,692,623					1,692,623
Corrections					1,687,818	1,687,818
Parks & Recreation					3,755,486	3,755,486
Libraries					3,489,677	3,489,677
Public Health	3,344,767		7,515,211			10,859,978
Public Welfare	2,983,048		7,188,752			10,171,800
Sewer & Water				19,161,517		19,161,517
Sanitation					3,573,479	3,573,479
Education	42,504,765	45,315,000				87,819,765
Total: Operating Expenses	75,337,698	45,315,000	14,703,963	19,161,517	14,237,245	168,755,423

Debt Service

Principal	25,883,158			2,000,000		27,883,158
Interest	8,245,276			900,000		9,145,276
CAPITAL OUTLAYS	17,848,485			4,089,326		21,937,811
General Funds	17,848,485					17,848,485
Capital Reserves				4,089,326		4,089,326
TOTAL	127,314,617	45,315,000	14,703,963	26,150,843	14,237,245	227,721,668
Expenditures/General Revenues	-3,297,835	1,009	294,117	53,368	1,550,254	-1,399,087
OTHER FINANCING SOURCES (USES)						
Proceeds of refunding bonds				38,050,000		38,050,000
Payment to bond refunding escrow agent				(37,584,144)		(37,584,144)
Transfers in	247,290			551,187	250,076	1,048,553
Transfers out	(2,100,303)		(294,117)	(250,076)	(551,187)	(3,195,683)
Total other financing sources (uses)	(1,853,013)		(294,117)	766,967	(301,111)	(1,681,274)
SPECIAL ITEMS						
Proceeds from sale of public lands	3,482,500					3,482,500
Net change in fund balance	(1,668,348)	1,009		820,335	1,249,143	402,139
Fund balances—beginning	3,007,078	35,367	14,567	31,500	(456,980)	2,631,532
Fund balances—ending	\$1,338,730	\$36,376	\$14,567	\$851,835	\$792,163	\$3,033,671

A common impression is that the double-entry method is duplicate book-keeping—that it is a scheme whereby each fact is recorded twice, with the resulting advantage that one record may be checked against another to ensure accuracy. Double-entry is not duplicate, carbon-copy accounting, however. Rather, it is a method by which each significant fact regarding a transaction is recorded once, and only once. The two-fold aspect is vested in the fact that every transaction involves at least two separate elements.

To illustrate the double-entry mechanisms of the basic accounting equation, considered the following scenario. The City of Rurbana decides to establish an agency to make travel arrangements for city employees. At the beginning of the fiscal year, \$60,000 is allocated to the agency from the general fund budget. The agency purchases equipment costing \$30,000 and leases office space, paying \$2,400 in advance on the lease. Stationery and other forms are purchased from the city print shop at a cost of \$1,000. These printing charges are recorded (billed) on an interdepartmental service form.

In recording these transactions, the initial budget allocation of \$60,000 would be decreased (credited) by \$30,000 for the equipment purchase and \$2,400 for the prepaid rent. This would leave the “cash position” of the agency at \$27,600. However, equivalent entries would record (debit) assets of \$30,000 for equipment and \$2,400 for the rented space. The forms and stationery would also represent an asset worth \$1,000, offset by a liability in accounts payable of \$1,000.

In the first month, the agency receives \$10,000 in revenue for tickets sold and pays out \$9,000 in expenses for personnel and in payments to airlines and other service providers. The \$10,000 in revenue is recorded as a debit under assets, and the \$9,000 is shown as a credit, for a net of \$1,000, increasing the cash position to \$28,600. To bring the accounting equation into equilibrium, fund equity is recorded as \$60,000 for the initial budget allocation, plus \$10,000 for the revenue, minus \$9,000 for the expenses (for a total of \$61,000). Thus the assets of the agency at the end of the first month of operation are \$62,000, balanced by a like amount in liabilities and equities, as follows:

$$\text{Assets} = \$28,600 + \$2,400 + \$1,000 + \$30,000 = \$62,000$$

$$\text{Liabilities and Equities} = \$1,000 + \$61,000 = \$62,000$$

Note that the \$1,000 in inventory (forms and stationary) is shown as both an asset (unused utility) and a liability (account payable).

Each of these accounting transaction would be recorded in a *general journal* which includes information as to the date of the transaction, accounts to be debited and credited, an explanation of the nature of transaction, account number, and the financial effect on the accounts involved. Special journals often are established for various agencies to separate duties and responsibilities and to improve management control.

2.2 Trial Balances

Trial balances provide proof that account ledgers are in balance. A trial balance does not verify that transactions have been correctly analyzed and recorded in the proper accounts, however. By comparing trial balances at the beginning and ending of a fiscal period (such as each month), it is possible to determine income and expense items that have been incurred during that period. A trial balance for the Rurbana Sewer and Water Utility Commission at the end of May is shown in Table 10.4.

It may be noted that there is a difference of \$292,410 between the trial balance at the end of May and the year-end balance sheet at the end of June (see Table 10.5). The value of the inventory was decreased by \$5,350 in the year-end balance sheet to account for repair parts that were withdrawn in June and used in the maintenance of the physical plant. This amount is charged as an expense. Thus, expenses totaled \$40,310 (that is, the \$34,960 in expenses shown in the trial balance plus the \$5,350 for the reduction of inventory). These expenses were subtracted from operating revenue, leaving a balance of

TABLE 10.4 Rurbana Sewer and Water Utility Commission Trial Balance May 31, 200x

Accounts	Debit	Credit
Cash	\$104,500	
Accounts receivable	1,010,000	
Parts inventory	20,000	
Prepaid expense	32,000	
Land	400,000	
Building	4,850,000	
Acc. depreciation (building)		\$222,290
Equipment	120,000	
Acc. depreciation (equipment)		9,600
Salary expense		850,500
Accounts payable		344,540
Customer deposits		260,000
Residual Interest		4,264,050
Retained earnings		520,210
Operating revenue		100,270
Energy expense	20,000	
Truck expense	1,520	
Office expense	12,000	
Accounting expense	1,440	
Totals	\$6,571,460	\$6,571,460

TABLE 10.5 Rurbana Sewer and Water Utility Commission Balance Sheet
June 30, 200x

<i>Assets</i>		
<i>Current Assets</i>		
Cash	\$ 104,500	
Accounts Receivable	1,010,000	
Parts Inventory	14,650	
Prepaid Insurance	32,000	
Total Current Assets		\$1,161,150
<i>Property, Plant, & Equipment</i>		
Land	\$ 400,000	
Building	4,850,000	
Equipment	120,000	
	\$5,370,000	
Less: Depreciation	\$252,100	
Total Property, Plant, & Equipment		\$5,117,900
Total Assets		\$6,279,050
<i>Liabilities and Fund Equity</i>		
<i>Current Liabilities</i>		
Salaries & Wages	\$ 850,500	
Accounts Payable	379,500	
Customer Deposits	260,000	
Total Current Liabilities		\$1,490,000
<i>Fund Equity</i>		
Residual Interest	\$4,264,050	
Retained Earnings	525,000	
Total Equity		\$4,789,050
Total Liabilities and Equity		\$6,279,050

\$59,960. This balance, in turn, is added to the \$520,210 in retained earnings shown in the trial balance.

The other adjustments reflected in the year-end balance sheet include (1) an additional \$20,210 in accumulated depreciation for the physical plant not recorded in the May trial balance, (2) an increase of \$34,960 in accounts payable, and (3) a new employee hired at the beginning of June with an annual salary of \$48,000 (or an additional \$4,000 in monthly salaries and wages). Thus, the retained earnings on June 30 totaled \$521,000 [\$520,210 + \$59,960] – (\$20,210 + \$34,960 + \$4,000), as reflected in the year-end balance sheet. Cash on hand was increased by \$100,000 to reflect the equivalent reduction in accounts receivable.

3 FUND ACCOUNTING

Internal fiscal control for governmental activities is carried out through *fund accounting*. Funds are established within public organizations for the purposes of maintaining accounting records and preparing financial statements. The National Council on Governmental Accounting (NCGA) has defined a fund as:

a fiscal and accounting entity with a self-balancing set of accounts recording cash and other financial resources, together with all related liabilities and residual equities or balances, and changes therein, which are segregated for the purpose of carrying on specific activities or attaining certain objectives in accordance with special regulations, restrictions or limitations. [4]

3.1 Major Funds

Many local governments manage and account for their financial activities in a limited number of funds, designated as *major funds*. The Governmental Accounting Standards Board (GASB) has recommended [5]:

1. The main operating fund (the general fund or its equivalent) should always be reported separately.
2. Other governmental funds and proprietary funds be reported as major funds if total assets, liabilities, revenues, or expenditures/expenses of that fund are at least 10 percent of the corresponding total for the relevant *fund category* (governmental fund or proprietary funds) and at least 5 percent of the corresponding total for all governmental and proprietary funds combined.
3. Any other funds that public officials believe are particularly important to financial statement users (for example, because of public interest or consistency) be reported as major funds.

The sources and uses of financial resources and the balances remaining in the nonmajor funds are reported in the aggregate. Combining statements for these nonmajor funds are not required but, if presented, should be included as supplementary information.

Accounting and budgetary requirements tend to vary widely among these funds. These requirements can be summarized, however, by considering four general groupings of funds.

Current operations involve appropriated or allocated moneys that currently are expendable from general funds, special revenue funds, debt service funds, and certain expendable trust funds. Fixed assets and long-term liabilities are excluded from the balance sheets of these funds. These funds often are accounted for on a modified accrual or encumbrance basis in order to record

liabilities (expenditures) as they are incurred. However, most types of revenue are not recorded until they are received in cash. This approach results in a rather conservative statement of the balance of funds currently available for approved activities.

Capital spending involves capital project and debt service funds and special assessment funds. Ordinances that create these funds normally include specific budget restrictions regarding the conditions under which such funds can be expended. As a consequence, these funds typically are not included in the annual appropriation ordinance. The GASB proposed new definitions of capital projects and debt service funds in 1997. However, concerns arose that new definitions may cause some governments to change their fund reporting practices, and as a consequence, the Board agreed to adopt definitions that are derived from current generally accepted accounting principles (GAAP) requirements. The new definition of capital project funds will be based on guidance provided in NCGA Statements 1 and 2.

Commercial-type funds record activities that are expected to earn a profit or, at least recover costs. This category includes proprietary or enterprise funds, internal service funds, and trust funds concerned with invested principal that earns an income. These funds have complete balance sheets that include both fixed assets and long-term liabilities. Revenue and expenditures are recorded on an accrual basis. Budgets for these funds usually serve as guidelines for operations, rather than as legal limits on expenditures.

Custodial funds are self-balancing liability accounts that record assets held for other entities. In some states, for example, certain fines collected by municipal courts are paid over to the school district or some other single-purpose authority. A custodial fund would account for these fines during the interval between collection and their transfer to the school district. Budgetary controls are unnecessary for such funds.

Two self-balancing groups of accounts constitute a second major component of governmental accounting. These accounts are not funds because they do not contain resources that can be appropriated. They are “holding areas” that (1) segregate fixed assets and long-term liabilities from each other, avoiding meaningless data on capital surplus, (2) permit most funds to be operated on the basis of current assets and liabilities only, and (3) bring together related accounts in one accounting compartment for control purposes.

General fixed assets account group records all fixed assets—long-term resources of the governmental unit—acquired through governmental funds. *Long-term debt account group* records long-term liabilities assumed by the unit involving the commitment of governmental funds (except those associated with special assessment funds). The use of these nonfund accounts can be illustrated by tracing the transactions that occur when a general obligation bond is issued and subsequently matures.

The bond is recorded initially as part of the general long-term debt account where it represents an obligation that must be paid at some time in the future. The revenue generated by the issuance of the bond is recorded in an appropriate capital project fund. When the project funded by the bond issue is completed, the facility is recorded as a capital asset in the general fixed assets account. When the bond reaches maturity, the liability (in terms of a principal payment) becomes a current obligation of a debt service fund. Therefore, it is removed from long-term debt account, and the total long-term debt is reduced accordingly. Should the capital facility (asset) subsequently be sold, the revenues would be recorded in the general fund, and the total general fixed assets of the government entity would be reduced accordingly.

In fund accounting, revenues are controlled through an *appropriation process*, and proposed expenditures are controlled through a *line-item budget*. Expenditures from any line item—such as salaries, supplies and materials, travel, contractual services, or equipment—cannot exceed the dollar amount appropriated or allocated to that particular line item (usually within a 10% range) without further authorization. Both revenue and expenditures can be cross-referenced through basic accounting classifications (or charts of accounts). Revenue is classified by fund and by source (sometimes by collecting agency). Expenditure classifications are more elaborate, often providing details by fund, organizational unit, function, program, activity, character, and object (see Table 10.6). Standard accounting classifications, promulgated by the NCGA, have helped bring about a degree of uniformity among state and local governments in the use of terminology and in account titles.

Fund accounting has built-in controls through the use of budgetary transactions along with actual financial transactions. The accounting system tracks expenditures categories (line items or object codes) and will show when any category is about to exceed the amount appropriated or allocated for that purpose. When an order is placed for goods or services, for example, a legal commitment is made. By encumbering the funds necessary to meet that commitment, the organizational unit will be assured that the allocation will not be overspent when the time comes to pay for the goods or services. Otherwise, funds may not be available to pay for the ordered goods when they arrive, along with an invoice.

3.2 Subsidiary Ledgers

Most of the information needed to control expenditures—by department, function, or line items/objects—is maintained in subsidiary ledgers. Other functional categories or departments and other line items and/or objects of expenditure could be added to this subsidiary ledger.

Personnel services include not only salaries and wages but also such employee benefits as the city's share of retirement contributions, FICA payments,

TABLE 10.6 Budget and Accounting Classifications

Function	Broad classification of government responsibilities, such as public safety, health, education, welfare, recreation, and general government.
Program or Subprogram Classification	Used in program budgeting to group similar activities, often involving several organizational units, for purposes of analysis and evaluation, as well as the allocation of funds.
Activity Classification	Expenditure data organized according to the responsibilities of governmental units. The Police Department, for example, is responsible for crime investigation, traffic control, crowd control, and so forth.
Organizational Unit	Designated units or subunits within the organization, such as Police Department or Department of Parks and Recreation, authorized to hire personnel and make expenditures.
Character of Expenditure	Aggregates of expenditures that have certain specific qualities such as current operating expenditures, capital expenditures, and debt service. Current operating expenditures represent the aggregate of personal services, contractual services, materials and supplies, and some types of equipment expenditures.
Object of Expenditure	Lowest level of classification. Objects of expenditure are the particular types of goods bought or services received for the expenditures. Examples are as follows: personnel services (salaries, wages, and related employee benefits), contractual services, materials and supplies, equipment, property improvements, and debt service.

and hospitalization insurance. In addition, the city withholds state and federal taxes. As a rule, *agency funds* are established to account for withholding and retirement contributions for all funds, instead of accounting for these items separately in each fund.

Salaries and wages usually are not encumbered, because the amounts are fairly constant for the payroll periods as well as for the year. If the city budget reflects salaries and wages for the entire year, rather than for a fiscal year ending on pay periods, then an amount for salaries owed can be accrued at the end of the year.

Detailed information on the amount of withholding for individual employees should be kept in a subsidiary ledger in the agency fund, so that W-2 forms can be prepared. Information concerning pensions and retirement for each employee must also be drawn from these subsidiary ledgers.

Materials and supplies can be tracked in one of three ways: (1) as a perpetual inventory, shown as expenditures when consumed, (2) as an expenditure when purchased, with physical inventory taken at the end of the year to determine the amount remaining in the inventory account, or (3) as an expenditure when purchased, with no inventory account shown. Often a central purchasing agency (e.g., central stores) is established in public organizations to maintain detailed inventory accounts, allowing operating agencies to treat the acquisition of materials and supplies as an expenditures at the time the transaction occurs.

The accounting for *contractual services* (services purchased outside the organizational unit, including telephone services, maintenance agreements on equipment, insurance, and the like) and travel (sometimes included under contractual services) is fairly straightforward. Funds for such services may be encumbered when the purchase order is issued or the contract is let. Alternatively, these expenses may be recorded on an “as billed” basis, that is, when the actual invoice is received and paid.

Equipment funds are usually encumbered when the purchase order is issued. The equipment category may be broadened to include all expenditures and encumbrances for fixed assets that have a relatively long life and cost more than a certain dollar amount (i.e., capital outlays). Such items as machinery, capital expansion or renovations of existing facilities, improvements and repairs of a capital nature, and land acquisitions may be included in this category.

Most of the money used for *debt servicing*—to pay off principal and interest on long-term debt—is transferred from the general fund to the debt service fund. Long-term liabilities and interest are then paid from this fund. Usually, the debt service fund is included in the budget and appropriation of only one department (for example, general government). The amounts to be paid are usually known, so there is seldom any reason to accrue or encumber any of the funds.

As shown in Tables 10.7 and 10.8, subsidiary ledgers can be used to summarize expenditures by function or organizational unit. As these data show, expenditures in support of education are over-budget in every line item except equipment. Public safety also shows a negative balance overall as a consequence of the overcommitment for personal services. Other functional categories show positive balances, and as a result, the budget as a whole shows a positive balance, as summarized in Table 10.9.

4 GASB FINANCIAL REPORTING MODEL: STATEMENT 34

Annual financial statements of local jurisdictions currently focus on the funds of government in order to provide information about various activities or sources of revenue. The number of funds established in any jurisdiction can run into dozens or even hundreds. Therefore, it is sometimes difficult to understand what the var-

TABLE 10.7 Expenditure Ledger Fiscal Year 200X

Object of Expenditure by Function	Budget CR	Expend. DR	Encumb. DR	Under or (Over)
<i>Personnel Services</i>	800,000	790,000	0	10,000
General Government	70,000	68,000	0	2,000
Public Safety	60,000	62,000	0	(2,000)
Public Works	150,000	140,000	0	10,000
Education	450,000	455,000	0	(5,000)
Health & Welfare	70,000	65,000	0	5,000
<i>Materials & Supplies</i>	200,000	205,000	6,000	(11,000)
General Government	25,000	26,000	1,000	(2,000)
Public Safety	25,000	24,000	1,000	0
Public Works	40,000	38,000	2,000	0
Education	90,000	95,000	1,500	(6,500)
Health & Welfare	20,000	22,000	500	(2,500)
<i>Travel</i>	50,000	50,000	1,500	(1,500)
General Government	10,000	10,000	500	(500)
Public Safety	10,000	9,000	500	500
Public Works	10,000	11,000	0	(1,000)
Education	12,000	12,000	500	(500)
Health & Welfare	8,000	8,000	0	0
<i>Contractual Services</i>	60,000	54,000	4,000	2,000
General Government	16,000	12,000	2,000	2,000
Public Safety	10,000	9,000	1,000	0
Public Works	10,000	8,500	0	1,500
Education	18,000	19,000	1,000	(2,000)
Health & Welfare	6,000	5,500	0	500
<i>Equipment</i>	300,000	150,000	120,000	30,000
General Government	50,000	0	25,000	25,000
Public Safety	40,000	0	40,000	0
Public Works	150,000	130,000	20,000	0
Education	30,000	20,000	10,000	0
Health & Welfare	30,000	0	25,000	5,000
<i>Debt Servicing</i>	250,000	225,000	25,000	0
General Government	250,000	225,000	25,000	0

ious financial statements mean, how they interact with one another, and how they relate to the overall financial well-being of the local jurisdiction.

4.1 Enhancing the Big Picture

In response to these issues, the Governmental Accounting Standards Board (GASB) has developed a new “model” for state and local government financial

TABLE 10.8 Expenditure Ledger by Function/Organizational Unit Fiscal Year 200X

Object of Expenditure by Function	Budget CR	Expend. DR	Encumb. DR	Under or (Over)
<i>General Government</i>	421,000	341,000	28,500	51,500
Personnel Services	70,000	68,000	0	2,000
Materials & Supplies	25,000	26,000	1,000	(2,000)
Travel	10,000	10,000	500	(500)
Contractual Services	16,000	12,000	2,000	2,000
Equipment	50,000	0	25,000	25,000
Debt Servicing	250,000	225,000	0	25,000
<i>Public Safety</i>	145,000	104,000	42,500	(1,500)
Personnel Services	60,000	62,000	0	(2,000)
Materials & Supplies	25,000	24,000	1,000	0
Travel	10,000	9,000	500	500
Contractual Services	10,000	9,000	1,000	0
Equipment	40,000	0	40,000	0
<i>Public Works</i>	360,000	327,500	22,000	10,500
Personnel Services	150,000	140,000	0	10,000
Materials & Supplies	40,000	38,000	2,000	0
Travel	10,000	11,000	0	(1,000)
Contractual Service	10,000	8,500	0	1,500
Equipment	150,000	130,000	20,000	0
<i>Education</i>	600,000	601,000	13,000	(14,000)
Personnel Services	450,000	455,000	0	(5,000)
Materials & Supplies	90,000	95,000	1,500	(6,500)
Travel	12,000	12,000	500	(500)
Contractual Services	18,000	19,000	1,000	(2,000)
Equipment	30,000	20,000	10,000	0
<i>Health & Welfare</i>	134,000	100,500	25,500	8,000
Personnel Services	70,000	65,000	0	5,000
Materials & Supplies	20,000	22,000	500	(2,500)
Travel	8,000	8,000	0	0
Contractual Services	6,000	5,500	0	500
Equipment	30,000	0	25,000	5,000

statements. The purpose of this project was to make annual financial reports easier to understand and more useful to those who apply these data in making decisions. A draft, disseminated for comments in 1997, was finalized as *Statement 34* and was released in June 1999, accomplishing many of the objectives initially set forth in GASB Concepts Statement No. 1, *Objectives of Financial Reporting*, published in 1987.

The new model calls for financial statements to be integrated with govern-

TABLE 10.9 Expenditure Ledger Fiscal Year 200X

	Budget CR	Expend. DR	Encumb. DR	Under or (Over)
<i>By Object of Expenditure</i>				
Personnel Services	800,000	790,000	0	10,000
Materials & Supplies	200,000	205,000	6,000	(11,000)
Travel	50,000	50,000	1,500	(1,500)
Contractual Services	60,000	54,000	4,000	2,000
Equipment	300,000	150,000	120,000	30,000
Debt Servicing	250,000	225,000	0	25,000
Totals	1,660,000	1,474,000	131,500	54,500
<i>By Function/Organizational Unit</i>				
General Government	421,000	341,000	28,500	51,500
Public Safety	145,000	104,000	42,500	(1,500)
Public Works	360,000	327,500	22,000	10,500
Education	600,000	601,000	13,000	(14,000)
Health & Welfare	134,000	100,500	25,500	8,000
Totals	1,660,000	1,474,000	131,500	54,500

ment-wide reporting and enhanced fund reporting. The model also requires a section that focuses on management’s discussion and analysis (MD&A) and seeks to clarify a number of previously troublesome issues. In response to users’ need for a summary of a government’s operations and financial position, GASB broadened the number of subjects that the MD&A must address to include:

- An objective discussion of the basic financial statements and condensed financial information comparing current and prior years
- An analysis of the overall financial position and results of operations, including all known facts, decisions, or conditions expected to have a significant impact
- Analysis of balances and transactions of individual funds
- Analysis of significant variations between the original and final budget and the final budget and actual results for the general fund
- A description of significant capital-asset and long-term-debt activity during the year

The model’s most dramatic change is in the handling of government-wide reporting. Government activities, business-type activities, and individually presented component units are brought together, with each category reported upon with a measurement focus on the flow of economic resources and using an accrual basis of accounting—a major step because most governments have traditionally followed the modified-accrual basis. The change is important to

potential lenders and taxpayers because of the need to capitalize and depreciate general capital assets.

The requirements of GASB Statement 34 are effective in three phases based on a government's total annual revenues, as follows:

Governments with total annual revenues of \$100 million or more will apply the Statement beginning with fiscal years beginning after June 15, 2001.

Governments with total annual revenues of \$10 million or more, but less than \$100 million, will apply the Statement beginning with fiscal years beginning after June 15, 2002.

Governments with total annual revenues below \$10 million will apply the Statement beginning with fiscal years beginning after June 15, 2003.

In short, the new GASB guidelines change the way financial information is communicated to legislative oversight bodies, creditors, citizens, the media, organizations that rate municipal bonds, and anyone else interested in how a government is doing financially. Annual financial statements will show for the first time information about the full cost of providing government services and will include information about a government's infrastructure—its buildings, bridges, and roads. The GASB guidelines also require an analysis, in narrative form, of the jurisdiction's financial activities during the fiscal year. Important new data are added to the current fund accounting approach, and information is provided from a total government perspective—a new concept in government finance—for those interested in the big picture.

4.2 Components of the New Financial Statements

The annual financial report begins with an analysis of the government's overall financial position and the results of the previous year's operations. This section of the report, known as the *management's discussion and analysis* (MD&A), is designed to assist in assessing whether the government's finances have improved or deteriorated and includes a comparison of the current year to the prior year, based on information about assets, liabilities, revenues, and expenses. Significant variations in fund-based financial results and budgetary information should be explained. Capital asset and long-term debt activity during the year should also be described. The MD&A should include currently known facts, decisions, or conditions expected to have a significant effect on the government's future financial position and operations.

Government-wide financial statements report all of the assets, liabilities, revenues, and expenses of the government (see Table 10.10). Each statement should distinguish between the governmental and business-type activities of the primary government and between the total primary government and its

TABLE 10.10 Important Features of Government-wide Financial Statements

<p>Capital assets, including infrastructure, are to be reported in the government-wide statement of net assets and depreciation expense—the cost of “using up” capital assets—are to be reported in the statement of activities.</p> <p>Infrastructure assets are not required to be depreciated if (1) an asset management system is used that has certain characteristics and (2) the government can document that the assets are being preserved approximately at (or above) a condition level established and disclosed by the government. Disclosures about infrastructure assets are made in required supplementary information (RSI), including the physical condition of the assets and the amounts spent to maintain and preserve them over time.</p> <p>Net assets are to be identified in three categories: (1) invested in capital assets, net of related debt, (2) restricted, and (3) unrestricted. Restricted net assets are those whose use is constrained by law (for instance, by constitutional provisions or enabling legislation) or externally (such as by creditors or the laws of other governments).</p> <p>Statement of activities is to be presented in at least the same level of detail provided in the governmental fund statements—generally, expenses and program revenues by function (for example, public safety). Governments are encouraged to provide more detailed information where relevant (for example, fire protection).</p> <p>Program expenses will include all direct expenses.</p> <p>Overhead and other indirect expenses, if allocated to individual programs, will be shown in a separate column.</p> <p>Special and extraordinary items are to be reported separately from other revenues and expenses to permit users to determine if the government’s conventional, recurring revenues and expenses balanced.</p> <p>Special items are significant transactions or other events within the control of management that are either unusual or infrequent in occurrence, such as the proceeds from a sale of park land.</p> <p>Extraordinary items are beyond government’s control and are both unusual and infrequent, such as the cost of cleaning up a natural disaster.</p>

component units. Each of these activities should be reported in separate columns. Fiduciary activities—resources not available to finance the government’s programs—should be excluded from the government-wide statements.

Annual financial statements of local governments traditionally have divided financial information among a variety of funds established by governing bodies to show restrictions on the use of resources and/or to measure, in the short term, the revenues and expenditures arising from particular activities. Because these financial statements continue to be used to assess government accountability by determining compliance with finance-related laws, rules, and regulations, Statement 34 requires that information about funds continue to be presented. The focus of these fund-based statements has been sharpened, however, by requiring

information to be reported in greater detail (and disaggregation) concerning the most important or major funds.

Two new fund types are identified in the model—*permanent funds* (governmental) and *private-purpose trust funds* (fiduciary). Financial statements for the general fund and special revenue, debt service, capital projects, and other permanent funds should include a balance sheet and a statement of revenues, expenditures, and changes in fund balances. A summary reconciliation to the government-wide financial statements must be presented at the bottom of fund statements or in a separate schedule. For government funds, this reconciliation will be extensive because of the difference in the measurement focus and basis of accounting.

Separate statements are required for each fund category (governmental, proprietary and fiduciary). However, major funds, as defined in the standard, are reported in separate columns, with nonmajor funds of that category reported in another column, labeled “other.” Reporting fund types (such as special revenue and capital projects) is no longer required for governmental funds in the basic financial statements. For fund reporting, the current measurement focus and basis of accounting will continue to be applied (that is, the measurement focus on the flow of current financial resources and the modified accrual basis of accounting for governmental funds).

The conditions under which enterprise and fiduciary funds are used have been made more restrictive because, in many cases, past practices were inconsistent. An *enterprise funds* may be used when a fee is charged to external users for goods or services. An enterprise fund also is required if, by law or regulation, the cost of providing services must be recovered with fees, or if an activity is financed with debt secured solely by a pledge of its net revenues from fees. *Fiduciary funds* should be used only to report assets held in a trustee or agency capacity for others (e.g., pension funds)—not when used to support the government’s own programs (which should be reported in another fund category).

All *internal service funds* should be reported in total in a separate column in the proprietary fund financial statements. For government-wide reporting, however, jurisdictions often eliminate most internal service fund amounts to avoid “grossing-up” the financial statements; amounts that are not eliminated are generally reported as government activities. Financial statements for enterprise funds and internal service funds should include a statement of net assets, a statement of revenues, expenses, and changes in fund net assets, and a cash flows statement.

Reporting on *infrastructure assets* (long-term capital assets such as roads and bridges) has been a contentious issue. Some authorities maintain that the value of the information does not justify the cost, complexity, and effort involved to collect it. After extensive discussions, the GASB concluded that infrastructure reporting is vital to demonstrating accountability for all government

assets and the cost of services. However, implementation of infrastructure-asset reporting has been delayed, and estimated costs will be allowed for infrastructure assets acquired before the effective dates of the model. However, Statement 34 does require prospective reporting of major general infrastructure assets acquired after the model is implemented.

The model provides practical guidance on how to report general infrastructure assets, to estimate historical costs, and to calculate accumulated depreciation and depreciation at transition. Condition assessments must be carried out every three years, and the results of the three most recent assessments must show that the assets are being preserved at about the established condition level. The results of these assessments must be included in the required supplementary information (RSI). In addition, annual information must be provided regarding the estimated amount needed to maintain the established condition level and the amounts actually expensed for the past five years.

Although retroactive reporting of general government infrastructure assets is not required until four years after the model's implementation, any debt related to such infrastructure will be included in the government-wide statement of net assets upon implementation. Capital-asset records will need to support the opening balances at transition and to enable the calculation of depreciation for government-wide reporting of general capital assets. Governments that do not report the depreciated value of infrastructure assets will report fewer net assets, with some governments conceivably reporting more liabilities than assets.

4.3 Full Accrual Accounting

Under the provisions of Statement 34, *full accrual accounting* should be used to prepare financial statements for all activities of government—not just those for which costs are covered by charging a fee for services, as was previously required. Full accrual accounting currently is used by most governmental utilities and private-sector companies. This approach includes not just current assets and liabilities (such as cash and accounts payable, respectively), but also capital assets and long-term liabilities (such as buildings and infrastructure, including bridges and roads, and general obligation debt). Accrual accounting also reports all revenues and costs of providing services each year, not just those received or paid in the current year or soon thereafter.

Full accrual accounting procedures generate the information needed to assess (1) whether services received were paid for from current year revenues, or if costs of these services were shifted, in part, to future-years and (2) whether a government's financial position has improved or deteriorated as a result of the year's operations. In addition, the government-wide statements should help determine the extent to which the government has invested in capital assets, including infrastructure. In short, the new financial statements should give government

TABLE 10.11 Important Features of Fund-based Financial Statements

<p>A summary reconciliation should show the relationship between fund-based and government-wide financial statements</p> <p>Major funds should be reported in separate columns. Major funds are those for which revenues, expenditures/expenses, assets, or liabilities are at least 10 percent of the total for their fund category or type (governmental or enterprise) and at least 5 percent of the aggregate amount for all governmental and enterprise funds.</p> <p>Other fund may be reported as a major fund if officials believe the fund is particularly important to financial statement users.</p> <p>Nonmajor funds should be aggregated in a separate column.</p> <p>Internal service funds should also be aggregated in a separate column on the proprietary fund statements.</p> <p>Fund balances for governmental funds should be segregated into reserved and unreserved categories.</p> <p>Proprietary fund net assets should be reported in the same categories required for the government-wide statement of net assets. Proprietary fund balance sheets should distinguish between restricted and unrestricted assets and current and noncurrent assets and liabilities.</p> <p>Proprietary fund statements of revenues, expenses, and changes in fund net assets should distinguish between operating and nonoperating revenues and expenses.</p> <p>Cash flows statements should be prepared using the direct method.</p> <p>Interfund activities—loans, services provided and used, transfers, and other interfund activity—should be reported separately in the fund-based financial statements and generally should be eliminated in the aggregated government-wide statements.</p>
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officials the means to demonstrate their stewardship in the long term in addition to the short-term fund or budgetary focus.

An important objective of annual financial reports is to provide a comparison of the inflows and outflows of a jurisdiction’s resources. Therefore, fund-based statements for governmental activities (i.e., those supported by tax revenues) should continue to report the flow of *current financial resources* (generally, cash and other assets that can easily be converted to cash). These statements should show the short-term performance of individual funds, applying the same measures that most governments use to manage their money (as opposed to the long-term focus of the full accrual-based government-wide statements).

The new government-wide *statement of activities* reports expenses and revenues in a format that focuses on the net cost of each of the government’s functions. The approach is based on a format developed by the AICPA state and local government accounting committee, published in 1981 as *Accounting and Financial Reporting by State and Local Governments—An Experiment*. The expenses of individual functions are compared to the revenues generated directly by the function (e.g., through user charges or intergovernmental grants) to iden-

tify the financial benefit or burden that each function places on the government's constituency. In other words, this statement is designed to show, for example, the extent to which secondary education or public safety either contributes to or draws from the general revenues of the government.

4.4 Required Supplementary Information

Under the provisions of GASB Statement 34, certain *supplementary information* is required in addition to the basic financial statements:

A *budgetary comparison schedule* is required to show original, final, and actual information on the budgetary basis for the government's general fund and major special revenue funds. These budgetary comparisons may be reported as a basic financial statement.

Governments that elect to use the modified approach to reporting infrastructure will be required to disclose (1) the assessed physical condition of infrastructure assets (to be performed at least every three years), (2) descriptions of the criteria used to measure and report asset condition, (3) the condition level at which the government intends to maintain the assets, and (4) a comparison of the estimated annual dollar amount required to maintain and preserve the assets at the condition level established by the government with actual expenses for at least the last five years.

Special purpose governments that are engaged in only governmental activities (such as some library districts) or that are engaged in both governmental and business-type activities (such as some school districts) generally will report in the same manner as general purpose governments. Special purpose governments engaged only in business-type activities (such as a public utility) should present the financial statements required for enterprise funds as well as MD&A and other required supplementary information.

4.5 Reconciliation

A primary objective of presenting information about major funds is to develop an understanding of how these funds relate to the government as a whole. A concise way to demonstrate that relationship is to provide a "crosswalk" explanation or reconciliation on the face of the fund financial statement or in an accompanying schedule. This approach has been recommended by the GASB as part of the new standards.

This reconciliation should focus on reclassification and differences arising from the use of different bases of accounting and related measurement techniques, beginning with *total fund balances* for the combined governmental funds (Balance Sheet) and *net change in fund balances* for the combined governmental

funds (Statement of Revenues, Expenditures and Changes in Fund Balances). The information presented on the face of the financial statements will be highly aggregated. Additional discussion of these reclassifications and difference may be required in the notes to the financial statements if the summarized reconciliation obscures the nature of the individual elements of a particular category.

Demonstrating compliance with the adopted budget is an important component of public accountability. Therefore, governments will continue to provide budgetary comparison information in their annual reports. An important change, however, is the inclusion of the original budget in the current comparison of final budget and actual results. Many governments revise their original budgets over the course of the year for a variety of reasons, so this requirement adds a new analytical dimension and increases the usefulness of the budgetary comparison.

As state and local governments strive to meet increasing public services demands in an era of continuing technological complexity, expectations of greater accountability will undoubtedly grow. The new model provided by GASB Statement 34 will serve as the linchpin in meeting these demands for more-relevant financial reporting.

5 BUDGETARY ACCOUNTING

It is important that data presented in budget requests and subsequently reflected in appropriations be compatible with data available within the accounting system. This compatibility facilitates comparisons between actual expenditures in previous fiscal periods and proposed future expenditures and is essential for performance evaluation and financial reporting purposes. The Government Accounting Standards Board can only establish the format for budgetary comparisons, however. It cannot mandate the measurement focus or basis of accounting used to adopt the original budget and budget amendments or to present actual results. The budget comparison represents the only non-GAAP information currently found in basic financial statements. However, the budgetary process plays a unique role in the government financial environment. Therefore, many experts believe that a clear understanding of the financial position or changes in financial position cannot be achieved without budgetary comparisons. Presenting this information outside audited financial statements may diminish the importance associated with the annual financial report for some users.

5.1 Objects of Expenditure

Governments may present the budgetary comparison statement using the same format, terminology, and classification as the budget document. Or the comparison may be made using the format, terminology, and classifications applied in a statement of revenues, expenditures, and changes in fund balances. The revenue

and expenditure data for the General Fund presented previously in Table 10.3 are shown as a budget comparison in Table 10.12.

Generally accepted accounting principles (GAAP) require that expenditures be classified by functions or programs. When a budget is used to appropriate moneys to funds, GAAP also require a comparison of *actual* revenue and expenditures with *budgeted* revenue and expenditures. Therefore, whenever possible, the budget classifications should follow the accounting classification system. [6]

Objects of expenditure—the fundamental elements of an organization's operations in terms of the goods and services procured—are the basic control devices of budgetary accounting. Object or class codes are three- or four-digit numbers that are used to budget and record expenditures in considerable detail. These object codes (or class codes) provide uniformity in the tracking of expenditures through financial accounting procedures. Object codes can be further subdivided into sub-object classifications—for example, object code 1300: supplies and materials might be broken down into: 1310 office supplies; 1320 fuel supplies; 1330 maintenance supplies; 1340 operating supplies; 1350 chemicals and drugs; 1360 food supplies; and so forth.. Categories of supplies and materials can be further enumerated; for example, 1310 office supplies might be further delineated as follows:

- 1311 general office supplies (stationery, bond paper, pens, etc.)
- 1312 data and word processing supplies (floppy disks, CDs, etc.)
- 1313 copying and duplicating supplies
- 1314 binders, notebooks, folders
- 1315 storage boxes, file boxes, hanging files
- 1316 laser and ink jet printer supplies
- 1317 special order supplies

A comparison at the object level of actual expenditures at the end of eight months with the budgeted amounts for the Rurbana Sewer and Water Utility Commission is provided in Table 10.13.

Objects of expenditures, in turn, can be aggregated under broad expenditure characteristics such as for current operations, capital expenditures, and debt service. They can also be assigned to and recorded as the expenditures of a specific organizational unit, activity classification, program or subprogram, and/or basic function of government. For example, the following sixteen-digit code:

21-01-102-1312-24560

might be used to record the requisition of data and word processing supplies (1312) by the Financial Management Department (102) under the general government function (21) in conjunction with the preparation of the annual budget report (24560). The code 01 might be used to designate the funding source

TABLE 10.12 Statement of Revenues, Expenditures and Changes in Fund Balances Budget and Actual Federal Fund For the Fiscal Year Ended June 30, 200x

	Budgeted Original	Amounts Final	Actual Amounts Budgetary Basis	Budget to GAAP Differences Over/(Under)	Actual Amounts, GAAP Basis
<i>REVENUES</i>					
Property Taxes	62,018,838	61,164,712	60,858,888		60,858,888
Residential	42,667,641	41,814,288	41,605,217		41,605,217
Commercial	8,499,920	8,508,420	8,465,878		8,465,878
Industrial	8,269,955	8,286,495	8,245,062		8,245,062
Vacant Land	2,581,322	2,555,509	2,542,731		2,542,731
Other Taxes	38,685,133	38,748,163	38,593,171		38,593,171
Sales Taxes	20,025,585	20,225,841	20,144,937		20,144,937
Franchise Tax	4,213,210	4,128,946	4,112,430		4,112,430
Wage Tax	11,414,707	11,437,536	11,391,786		11,391,786
Mercantile Tax	3,031,631	2,955,840	2,944,017		2,944,017
Miscellaneous					
Fees & Charges	10,067,256	10,125,646	10,115,520		10,115,520
Fees and fines	4,026,902	4,038,983	4,034,944		4,034,944
Licenses and permits	3,523,540	3,544,681	3,541,137		3,541,137
Miscellaneous	2,516,814	2,541,982	2,539,440		2,539,440
Intergovernmental					
Revenues	13,568,020	12,889,619	12,245,138		12,245,138
Interest	2,221,885	2,226,329	2,204,065		2,204,065
Total revenue	126,561,132	125,154,469	124,016,783		124,016,783
<i>EXPENDITURES</i>					
Current operating:					
General					
Government	5,850,653	5,868,205	5,750,841	(9,335)	5,741,506
Public Safety	13,109,640	13,148,969	13,162,118	70,086	13,232,204
Public Works	5,795,274	5,815,557	5,821,373	17,412	5,838,785
Community					
Development	1,765,179	1,729,875	1,695,278	(2,655)	1,692,623
Public Health	3,220,805	3,236,909	3,240,146	104,621	3,344,767
Public Welfare	3,080,894	3,096,298	3,105,587	(122,539)	2,983,048
Education	42,209,048	42,462,302	42,504,765		42,504,765
Total: Operating					
Expenses	75,031,493	75,358,117	75,280,108	57,590	75,337,698
Debt Service					
Principal	25,883,158	25,883,158	25,883,158		25,883,158
Interest	8,245,276	8,245,276	8,245,276		8,245,276
CAPITAL OUTLAYS	18,400,500	17,848,485	17,848,485		17,848,485
Total expenditures	127,560,427	127,335,036	127,257,027	57,590	127,314,617

TABLE 10.12 Continued

<i>REVENUES</i>	Budgeted Original	Amounts Final	Actual Amounts Budgetary Basis	Budget to GAAP Differences Over/(Under)	Actual Amounts, GAAP Basis
Excess (deficiency) of revenues over expenditures	(999,295)	(2,180,567)	(3,240,244)	(57,590)	(3,297,834)
<i>OTHER FINANCING SOURCES</i>					
Transfers in	245,323	246,304	247,290		
247,290Transfers out	(2,164,759)	(2,132,288)	(2,100,303)		(2,100,303)
Total other financing sources (use	(1,919,436)	(1,885,983)	(1,853,014)		(1,853,014)
<i>SPECIAL ITEMS</i>					
Proceeds from sale of public lands	3,476,488	3,500,000	3,482,500		3,482,500
Net change in fund balance	557,757	(566,550)	(1,610,758)	(57,590)	(1,668,348)
Fund balances— beginning	2,908,322	2,908,322	2,908,322	98,756	3,007,078
Fund balances— ending	\$3,466,079	\$2,341,772	\$1,297,564	\$41,166	\$1,338,730

(general funds) to which this expenditure is to be charged. The five-digit project code might also be used to designate the program or subprogram (24xxx) and the activity classification (xx56x). Using such multi-digit codes, accounting entries can be retrieved and sorted to meet a variety of fiscal management and reporting purposes.

5.2 The Accounting Equation for Governmental Funds

While budgetary accounting can be applied to any governmental funds, it is most appropriately used in connection with those funds in which broader accountability is required, such as the general fund and special revenue funds.

As noted previously, the basic accounting equation used in double entry accounting for business activities is:

Assets = Liabilities + Owner’s Equity + Revenue – Expense

In dealing with governmental funds, the basic accounting equation must be changed to show expenditures instead expenses. An expense is a resource consumed during the accounting period—once written off as an expense, the resource has expired as an asset. An expenditure, on the other hand, is an amount

TABLE 10.13 Comparison of Actual and Budgeted Expenditures for Rurbania Sewer and Water Utility Commission Through 8 Months

Object Classification	Approved Budget	Expend to Date	Est. Annual Expend.	Difference
<i>Personnel Services</i>				
1110 Salaries	2,680,200	2,025,00	2,700,800	-20,600
1120 Wages	0	12,380	16,507	-16,507
1130 Special Payments	22,500	16,875	22,500	0
1140 Overtime Payments	88,740	69,540	92,720	-3,980
		0	0	0
Subtotal Personal Services	2,791,440	2,124,395	2,832,527	-41,087
<i>Contractual Services</i>				
1210 General Repairs	2,200	1,500	2,000	200
1220 Utility Services	235,400	181,300	241,733	-6,333
1230 Motor Vehicle Repairs	5,500	4,000	5,333	167
1240 Travel	23,210	14,395	19,193	4,017
1250 Professional Services	34,100	20,000	26,667	7,433
1260 Communications	3,525	2,745	3,660	-135
1270 Printing	2,750	2,000	2,667	83
1280 Computing Services	1,155	900	1,200	-45
1290 Other contractual Services	90,060	65,200	86,933	3,127
Subtotal Contractual Services	397,00	292,040	389,387	8,513
<i>Supplies and Materials</i>				
1310 Office Supplies	19,215	13,006	17,341	1,874
1320 Fuel Supplies	11,525	9,000	12,000	-475
1330 Operating Supplies	59,950	45,655	60,873	-923
1340 Maintenance Supplies	54,670	40,930	54,573	97
1350 Drugs & Chemicals	58,500	44,750	59,667	-1,167
1360 Food Supplies	0	0	0	0
1370 Clothing & Linens	22,030	15,000	20,000	2,030
1380 Education & Recreation Sup	5,500	3,600	4,800	700
1390 Other Supplies	12,760	9,000	12,000	760
Supplies & Materials	213,410	180,941	211,913	1,497
<i>Equipment</i>				
1410 Office Equipment	2,200	1,650	1,800	400
1420 Electrical Equipment	5,500	4,125	5,600	-100
1430 Motor Vehicles	22,000	16,500	23,000	-1,000
1440 Highway Equipment	88,000	66,000	86,750	1,250
1450 Medical & Lab Equipment	4,400	3,300	4,500	-100
1480 Data Processing Equipment	38,500	28,875	36,000	2,500
1490 Other Equipment	0	0	0	0
Subtotal Equipment	160,600	120,450	157,650	2,950

TABLE 10.13 Continued

Object Classification	Approved Budget	Expend to Date	Est. Annual Expend.	Difference
<i>Current Obligations</i>				
1530 Rental Charges	0	3,000	4,000	-4,00
1540 Insurance	21,275	15,956	21,275	0
1550 Dues & Subscriptions	550	400	533	17
1560 Electrostatic Reproduction	3,300	2,400	3,200	100
1590 Other Obligations	2,200	1,500	2,000	200
Subtotal: Current Obligations	27,325	23,256	31,008	-3,683
<i>Employee Benefits</i>				
1610 Retirement & Pension Bene	281,420	212,687	283,583	-2,163
1620 Social Security Contributions	186,275	140,780	187,707	-1,432
1640 Group Insurance	53,605	40,513	54,017	-412
1650 Medical/Hospital Insurance	388,630	293,713	391,617	-2,987
Subtotal: Employee Benefits	909,930	687,693	916,924	-6,994
TOTALS	4,500,605	3,428,775	4,539,409	-38,804

of cash spent or to be spent during the accounting period. Because government funds usually do not include long-term assets or liabilities, expenditures and not expenses are measured in these accounts.

In addition, there is no owner’s equity as such in governmental funds. Instead of owner’s equity, the residual portion of the equation would be the fund equity or fund balance. Thus, the equation for governmental funds would read:

$$\text{Current Assets} = \text{Current Liabilities} + \text{Fund Balance} + \text{Revenue} - \text{Expenditures}$$

Only those assets that can be converted into cash in a relatively short period of time—no more than one year—are included in governmental funds. Similarly, *liabilities* in governmental funds are only those that would be paid in cash in a relatively short period of time. Exceptions to this general rule are bonds payable over an extended time period, which may be found in Special Assessment Funds.

Revenue is the equity in resources (other than proceeds from bond issues or transfers from other funds) that is received during the fiscal period and is available to be spent in that fiscal period. *Expenditures* are the resources that are expended during the fiscal year. Thus, if an agency has only a certain amount of resources available to expend, management must make certain that this amount is not overspent, or overcommitted for expenditure, during that fiscal period.

The *fund balance* is the difference between assets and liabilities and is de-

terminated by the excess of revenue over expenditures during the current or prior fiscal year. The fund balance may also include other resources, such as bond proceeds or transfers from other funds. This remaining fund balance can be used to provide resources for expenditures in the current or future years.

For budgetary accounting, four new items must be added to the equation. *Estimated revenue* is the amount of revenue anticipated over and above current assets that can be used as expendable resources for the fiscal period. *Appropriations* are the amounts of estimated resources provided by the legislative body for expenditure during the period and should be included on the liability and fund balance side of the equation. *Encumbrances* are used to obligate amounts for goods and services ordered but not yet received. Encumbrances are subtracted (shown as a minus figure) from the liability and fund balance side of the equation, just as are expenditures. The *reserve for encumbrances* is used to allocate a portion of the appropriations for the goods and services ordered but not yet received—shown as an addition to the fund balance side of the equation.

A new equation for budgetary accounting of governmental funds can be developed using these new budgetary terms. The fund balance account often includes budgetary amounts, and therefore, it is shown as a budgetary element. Thus, the expanded equation is:

$$\begin{aligned} \text{Assets} + \text{Estimated Revenue} &= \text{Liabilities} + \text{Fund Balance} \\ &+ \text{Revenue} - \text{Expenditures} + \text{Appropriations} \\ &+ \text{Reserve for Encumbrances} - \text{Encumbrances} \end{aligned}$$

Estimates revenue is added to the left-hand side of the equation: appropriations, and the net between the reserve for encumbrances and actual encumbrances is included on the right-hand side of the equation. The minus on the right-hand side of the equation can be shifted to the left-hand side to express all terms as positive values as follows:

$$\begin{aligned} \text{Assets} + \text{Estimated Revenue} + \text{Expenditures} + \text{Encumbrances} \\ = \text{Liabilities} + \text{Fund Balance} + \text{Revenue} + \text{Appropriations} \\ + \text{Reserve for Encumbrances} \end{aligned}$$

The debit and credit conditions are summarized in Table 10.14.

5.3 Bases for Accounting

An accounting basis provides the fundamental rules governing how and when revenues and expenditures are to be recorded. On the revenue side, two bases are possible: (1) cash basis and (2) accrued revenue basis. Four bases are used on outflow side: (1) cash, (2) obligations, (3) accrued expenditure, and (4) accrued cost.

Under a *strict cash basis*, revenues are recorded only when they are ac-

TABLE 10.14 Debits and Credits to Accounts Under Budgetary Accounting

Debits	Credits
Increases in: Assets (A) Estimated Revenue (ER) Expenditures (E) Encumbrances (EN)	Decreases in: Assets (A) Estimated Revenue (ER) Expenditures (E) Encumbrances (EN)
Decreases in: Liabilities (L) Fund Balance (FB) Revenue (R) Appropriations (AP) Reserve for Encumbrances (RE)	Increases in: Liabilities (L) Fund Balance (FB) Revenue (R) Appropriations (AP) Reserve for Encumbrances (RE)

tually received, and expenditures are recorded when payments are made (as a cash disbursement). In short, accounting on a cash basis captures the flow of funds into and out of a budgetary account—it is simple, direct, and easy to understand. If the revenue received is not adequate to meet its needs, the government is short of cash and is forced to borrow. The impact of cash transactions on the money supply and credit markets is easy to identify under a strict cash basis.

Accounting on a cash basis, however, fails to give a complete picture of the funds available for expenditure. When purchase orders are issued for various goods and services, the government incurs *obligations* that eventually must be met. To make certain that sufficient funds are set aside to pay for such commitments, governments frequently encumber, or earmark, part of the budgetary account. Encumbrance or obligation accounting distinguishes between expenditures and obligations (commitments against the budget appropriation) and unexpended and unencumbered balances (free balances).

Under a *strict accrual basis*, revenues are recorded as soon as they are levied, billed, or earned, regardless of the fiscal period in which the funds are collected. Expenditures are recorded when goods are received or services are performed, when a liability is incurred, or when an invoice is received. The strict accrual approach includes not just current assets and liabilities (such as cash and accounts payable, respectively), but also capital assets and long-term liabilities (such as buildings and infrastructure, including bridges and roads, and general obligation debt). In short, any cost incurred, even if it is not yet paid, is reflected in the accounting system. Accrual accounting also reports all revenues and costs of providing services each year, not just those received or paid in the current year or soon thereafter. Accrual accounting involves a number of complex issues,

however, such as the treatment of equipment depreciation, tracking of inventory items in central stores, the recording of employee benefits (sick leave, vacation, pension benefits), and so forth.

Various combinations are possible. Under a *modified accrual basis* (1) revenues are recorded when actually received in cash, except for revenues susceptible to accrual (e.g., intergovernmental transfers) and (2) expenditures are recorded on an accrual basis except for disbursements for inventory-type items, prepaid expenses, and long-term debt. Under a *modified cost basis*, property taxes and other receivables are placed on the books for control purposes when they are levied, but are not accounted for as revenue until actually collected. A municipality may record revenues on a cash basis, for example, but accrue current expenditures and incurred obligations.

An example may help to clarify the distinctions among the various bases of accounting. The general fund of the city has \$15 million in taxes receivable during the year, of which \$12.5 million has been collected. During the year the following transactions took place:

Expenditures	Paid	Owed	Total
Salaries and wages	7,500,000	200,000	7,700,000
Equipment acquisition	3,000,000	500,000	3,500,000
Contractual services	1,000,000		1,000,000
Materials & supplies	1,000,000	500,000	1,500,000
Totals	\$12,500,000	\$1,200,000	\$13,700,000

Table 10.15 illustrates how these transactions would be recorded. Accounting becomes more refined as procedures shift in the following sequence: cash basis, modified cash basis, modified accrual basis, accrued expenditure basis, and finally, accrued cost basis. Reliable unit cost data cannot be developed on a strict cash basis. Most governments have adopted a system under which obligations are recorded (as encumbrances) at the time they are incurred. The Government Accounting Standards Board’s Statement 34 requires the use of *full accrual accounting* in the preparation of financial statements for all activities of government—not just those for which costs are covered by charging a fee for services, as was previously required. Most private-sector companies and public utilities currently use full accrual accounting.

5.4 Use of Subsidiary Ledgers

A running comparison of actual revenue and expenditures with budgeted revenue and expenditures should be maintained in any organization. Therefore, in addition to recording the journal entries in general ledger accounts, individual amounts are also recorded in a subsidiary ledger. Accounts would be kept in the

TABLE 10.15 Transactions Recorded Under Cash Versus Modified Accrual Bases for Accounting

<i>Cash Basis</i>		<i>Modified Accrual Basis</i>	
Receipts	\$12,500,000	Revenue	\$15,000,000
Expenditures:			
Salaries	\$ 7,500,000		\$ 7,700,000
Equipment	3,000,000		3,500,000
Contract Services	1,000,000		1,000,000
Materials & Supplies	1,000,000		1,500,000
Total Expenditures	\$12,500,000		\$13,700,000
Net Difference	\$ 0	Excess of Revenue over Expenses	\$ 1,300,000

subsidiary ledger for the particular budgeted revenue, appropriations, actual revenue, expenditures, and encumbrances accounts.

The Municipal Finance Officers Association, in its *Governmental Accounting, Auditing, and Financial Reporting*, provides an excellent statement concerning the purpose of subsidiary ledger accounts.

The General Fund of most governments has many sources of revenue and, hence, a need for numerous general ledger revenue accounts. A great many expenditure accounts are also normally required. Excessive general ledger accounts are very inconvenient to work with. Most governments, therefore, use general ledger control accounts and subsidiary ledgers.

A subsidiary ledger includes numerous detailed accounts, balances of which in total agree with the balance of a particular general ledger account. A general ledger account supported by a subsidiary ledger is called a general ledger control account. Through the use of subsidiary ledgers, a government can maintain a large number of individual accounts without cluttering up its general ledger. [7]

Records must be kept in much greater detail in the subsidiary ledgers for a breakdown of classes of revenue and expenditures than those usually shown in the general ledger. The general fund might include separate accounts for revenues from taxes, licenses and fees, intergovernmental transfers, and other financing sources. Local government revenues, for example, may include several types of licenses and permits—automobile licenses, business licenses, dog licenses, building permits, food vendor permits and so on—requiring subsidiary ledgers to track each of these sources. A single expenditure general ledger account often will also be supported by several different expenditure subsidiary ledgers to provide multiple expenditure classifications—by fund, function or program, organizational unit, activity, character, and object code.

By using subsidiary ledgers, it should be possible to provide the required detail on almost any revenue source and category of expenditure. Maintaining this level of detail in the general ledger would be almost impossible, even for a small municipality. Computerized databases for financial operations usually included a structured chart of accounts that permits data to be “rolled up” from subsidiary ledgers to various levels of aggregation for financial management oversight and control.

5.5 Budget Adjustments

At times during the fiscal year, the budget may need to be adjusted to reflect additional information concerning estimated revenues and appropriations. Suppose, for example, that during the fiscal year it is determined that the estimated revenue for the Rurbana Sewer and Water Utility Commission will be \$4.6 million instead of \$4.5 million. The increase could be reflected in the fund balance account at the end of the year, and the estimated revenue account would not have to be adjusted. However, assume at the end of eight months that the annual expenditures for the Commission are projected to exceed \$4,539,400. Unless a sufficient amount is available in the fund balance to meet agency commitments, the estimated revenue account would have to be adjusted before making any additional allocations.

During the fiscal year, it may become apparent that revenues are falling short of the initial estimates. If the fund balance is insufficient to cover the amount appropriated, it becomes necessary to decrease the appropriation. Assuming that the estimate of the amount of revenue to be collected during the fiscal year is revised from \$4,500,000 to \$4,400,000, then the appropriation should be revised by the same amount. Assuming a projected fund balance of \$50,000, the amount that can be spent would be only \$4,350,000 instead of the original \$4,450,000.

5.6 Closing Entries

In many governmental accounting systems, accounts are closed out at the end of the fiscal year and appropriated funds revert to the general fund. Under such procedures, agencies may be tempted to over-obligate or overspend to ensure that no moneys are “left on the table.” This practice can have significant consequences, however, if encumbrances are added to the accounting system. Suppose a piece of equipment is ordered near the end of the fiscal year at an estimated cost of \$10,000. The \$10,000 is encumbered and cannot be spent for other commitments. The equipment is not delivered before the end of the fiscal year, however, and the encumbered funds revert. A new encumbrance is processed in the next fiscal year, and in effect, the agency has paid for the equipment twice—once in terms of the reverted funds and secondly, when the

new encumbrance is liquidated. This problem is minimized under an accrued cost basis, however, because unspent funds and encumbered obligations are carried over to the next fiscal period.

Closing entries at the end of the fiscal year may be made (1) by reversing the budget adoption transactions or (2) by closing the actual revenue account to the budget revenue account (estimated revenue) and the actual expenditures account to the appropriation account. Any differences are then closed to the fund balance account.

6 SUMMARY

This chapter has attempted to provide a fundamental understanding of basic accounting procedures, particularly as they are applied to governmental funds. Fund accounting serves as the foundation for the internal control system used to produce financial statements and reports that can be audited in accordance with generally accepted accounting principles. Budgetary accounting permits comparisons to be made between the actual revenues and expenditures recorded during the fiscal year and the revenues and expenditures included in agency budgets, as established through the appropriation process. The intent has not been to prepare managers to carry out the complex duties and responsibilities of accountants, but rather to provide a basic vocabulary and appreciation of the role of accounting in the management planning and control process. [8] Budgetary and related accounting systems can also be further adapted to appropriate managerial accounting systems useful for decision making and control processes in government and other not-for-profit organizations—the focus of the next chapter.

ENDNOTES

1. Henri Fayol, *General and Industrial Management* (New York: Pitman Corporation, 1949), p. 107.
2. W. A. Paton, *Accounting* (New York: The Macmillan Company, 1926), p. 71.
3. Charles T. Horngren, *Introduction to Management Accounting* (Englewood Cliffs, N.J.: Prentice-Hall Inc., 1978), p. 555.
4. Municipal Finance Officers Association of the United States and Canada, *Statement 1. Governmental Accounting and Financial Reporting Principles* (Chicago, Ill.: 1979), pp. 5–6.
5. Governmental Accounting Standards Board, *State and Local Government Reporting Model: Exposure Draft Proposal* (1997), Paragraph 118. The notion of major funds is not applicable to fiduciary funds (trust and agency), including pension trust funds used to report defined benefit pension plans. The GASB has also concluded that internal service funds should be exempt from the major fund reporting requirements.
6. The Governmental Accounting Standards Board continues to support a requirement to provide budgetary comparisons but has altered its position that the statement should

be a *basic* financial statement. Rather, the GASB believes that this information is more appropriately presented as *required supplementary information*. The purpose of budgetary comparisons is to show whether resources were obtained and used in accordance with the entity's legally adopted budget.

7. Municipal Finance Officers Association of the United States and Canada, *Governmental Accounting, Auditing and Financial Reporting* (Chicago, Ill.: 1981), p. 37.
8. For a more comprehensive discussion of the principles and practices of accounting in the public sector, see: Leo Herbert, Larry N. Killough, and Alan Walter Steiss, *Accounting and Control for Governmental and Other Nonbusiness Organizations* (New York: McGraw-Hill, 1986).

11

Managerial and Cost Accounting

Financial accounting is concerned primarily with the accurate and objective recording of fiscal transactions and with the preparation of financial reports largely for external distribution. Although these traditional outputs of financial accounting may be used to guide certain types of internal decisions, many management decisions must be based on other types of information. In recent years, the techniques of managerial and cost accounting have been developed and refined to fulfill this need. Linkages among these accounting systems and other critical components of the management planning and control processes are illustrated in Figure 11.1. This discussion will focus on the decision support to be derived from cost accounting and managerial accounting procedures.

1 COST ACCOUNTING

Cost accounting encompasses a body of concepts and techniques that support the objectives of both financial accounting and managerial accounting. It involves the assembly and recording of the elements of expense incurred to attain a purpose, to carry out an activity, operation, or program, to complete a unit of work or a project, or to do a specific job. Cost accounting systems can be found in both profit and nonprofit organizations and in both product- and service-oriented entities. Cost allocation methods provide a means for accumulating and

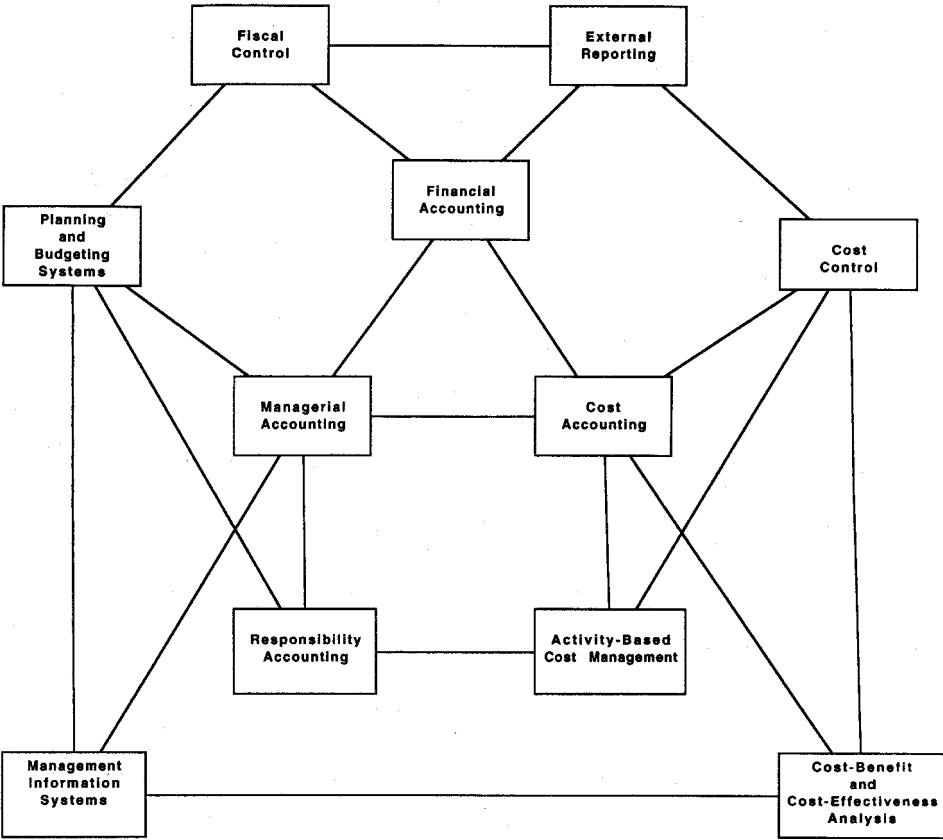


FIGURE 11.1 Accounting System Linkages

determining the necessary costs of the service or product. The expense of obtaining cost data must be maintained at a reasonable level, and the allocation of costs should not go beyond the point of practical application for more efficient and effective operations.

1.1 Basic Concepts of Cost

Cost can be defined as a release of value required to accomplish some goal, objective, or purpose. [1] In the private sector, costs are incurred for the purposes of generating revenues in excess of the resources consumed. This profit motive is not applicable to most public organizations, the test as to whether a cost is appro-

priate and reasonable is still the same: Did the commitment of resources advance the organization or program toward some agreed-upon goal or objective?

Five basic cost components are involved in any activity, operation, project, or program: (1) labor or personnel services (salaries, wages, and related employee benefits), (2) contractual services (packages of services purchased from outside sources), (3) materials and supplies (consumables), (4) equipment expenses (sometimes categorized as fixed asset expenses), and (5) overhead. Various direct cost components, such as direct labor and materials, are classified as *prime costs*, whereas indirect labor and overhead are classified as *conversion costs*. In the private sector, *overhead* is defined as all costs, other than direct labor and materials, associated with the production process. Used in this context, overhead may involve variable costs (for example, power, supplies, contractual services, and most indirect labor) or fixed costs (for instance, supervisory salaries, property taxes, rent, insurance, and depreciation).

Decisions must be made in cost accounting as to the distribution of direct and indirect costs. A *direct cost* represents a cost incurred for a specific purpose that is uniquely associated with that purpose. In analyzing the overall operations of a day care center, for example, the salary of the center's manager would be considered a direct cost. The center might be divided into departments according to different age groups of children, with a part of the manager's salary allocated to each department. Then the manager's salary would be considered an indirect cost of each department. *Indirect cost* is a cost associated with more than one activity or program that cannot be traced directly to any of the individual activities. In the public sector, the terms indirect cost and overhead often are used interchangeably.

Costs can also be defined by how they change in relation to fluctuations in the quantity of some selected activity—for example, number of hours of labor required to complete some task, dollar volume of sales, number of orders processed, or some other index of volume (see Figure 11.2). *Fixed costs* do not change in total as the volume of activity increases but become progressively smaller on a per unit basis. Utility costs involved in operating a public health clinic, for example, remain the same regardless of the number of patients treated by the clinic. However, the more patient visits, the lower the per patient cost for utilities. *Variable costs* are more or less uniform per unit, but their total fluctuates in direct proportion to the total volume of activity. The cost for medical supplies in the public health clinic will increase in direct relation to the number of patients treated.

Costs may also be *semi-fixed*, described as a step-function, or *semi-variable*, whereby both fixed and variable components are included in the related costs. Salaries of supervisory personnel might be described as semi-fixed costs; at some level of increased activity, additional supervisory personnel may be required. Maintenance costs often exhibit the characteristics of semi-variable

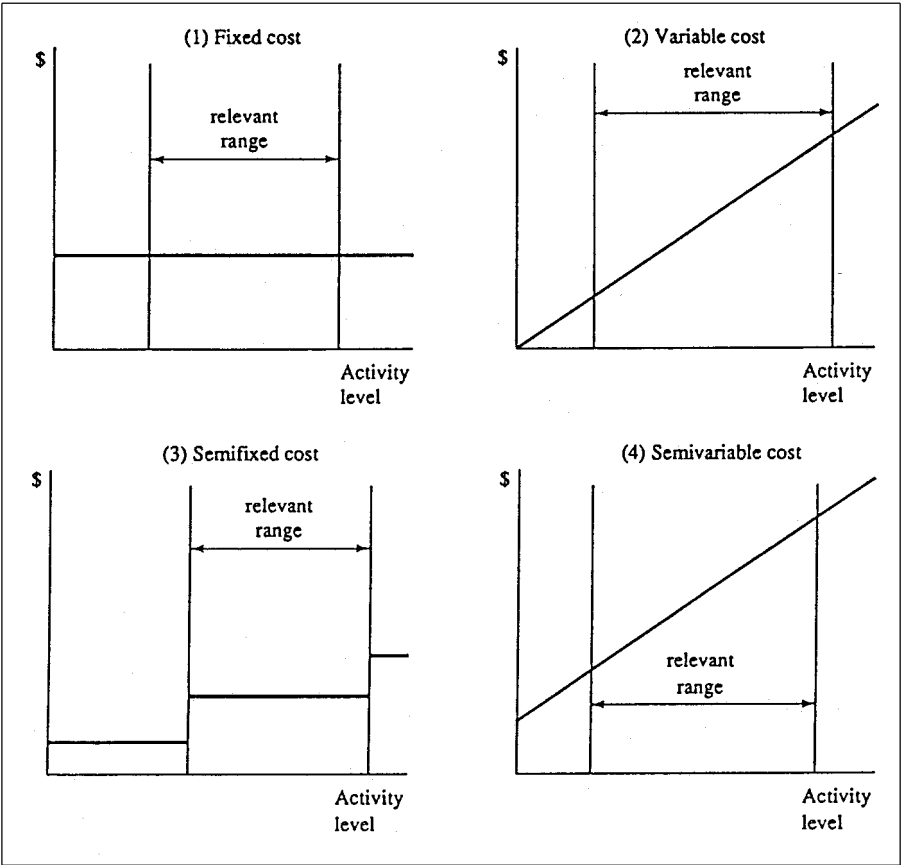


FIGURE 11.2 Graphic Illustration of Cost Concepts

costs. A fixed level of cost is initially required, after which maintenance costs may increase with increases in the level of activity. Costs are usually classified as either fixed or variable, the incremental character of these mixed categories often is a determining factor. If the increments between levels of change are large, the costs may be classified as fixed; if the increments are relatively small, the costs are usually defined as variable.

1.2 Measurement of Costs

A basic objective of cost accounting is to identify and measure costs incurred in achieving some program goal or objective. Several approaches to the measure-

ment of costs may be relevant, however, depending on the informational needs of management.

Full costing, for example, attempts to delineate all costs associated with some operation or activity. In the governmental and nonprofit areas, full costs are often called *program costs*. Patient care costs, for instance, involve hospital room costs, meals, laundry, drugs, surgery, therapy, and other items that are more or less directly attributable to the patient. But what about admission and discharge costs, nursery care, or heat, light, and other utilities? Several problems may be encountered in considering all the fixed and variable costs associated with particular activities unless an accrual accounting system has been adopted to track these costs over several fiscal periods. [2]

One of the more controversial aspects of the full-costing approach is the method of assigning overhead or indirect costs to operating departments. As noted, overhead includes the cost of various items that cannot conveniently be charged directly to those activities or operations that are benefited. General administrative expenses are included in this concept of indirect costs. It can be argued, for example, that the cost of a personnel department, an accounting department, and other service or auxiliary units should be assigned in some fashion to the operating departments. By the same logic, utility costs, building maintenance costs, depreciation, and so forth should also be assigned to specific operating units. These indirect costs are often distributed (prorated) on a formula basis, as determined by the number of personnel hours, labor costs, or total direct costs associated each activity or operation. The allocation of some of these indirect costs may appear to be fairly arbitrary because they cannot be traced directly to the individual organizational units.

Assume, for example, that the total annual costs of a public health clinic is \$3 million, of which \$2 million can be identified as direct cost. The ratio of direct to indirect cost, therefore, is 2 to 1, or for every \$1 of direct costs incurred, the clinic records \$0.50 of indirect costs. If the direct costs associated with the prenatal health care program of the clinic is \$250,000, then the full cost of this program would be \$375,000 ($\$250,000 \times 1.5$).

Many indirect costs are clearly beyond the control of the managers of the operating programs or departments, however. In recognition of this fact, *responsibility costing* assigns to an operating unit only those costs that its managers can control, or at least influence. Many argue that this approach is the only proper measure of the financial stewardship of an operating manager. Accounting procedures for responsibility costing will be discussed further in a subsequent section.

A useful approach to cost accounting is to consider only the variable or *incremental costs* of a particular activity or operation. For example, a city manager might want to know how much it would cost to increase the frequency of trash collection from once to twice a week, or how much extra it would cost to keep

the community's public swimming pools open evenings. The same type of questions might be raised by the management of any organization that delivers a service on some regularly scheduled basis. This approach, called *direct costing*, is relatively easy to associate with an organization's budget. Direct costing can be very helpful in making incremental commitments of resources.

Process costing is most often found in organizations characterized by the production of like units, which usually pass in continuous fashion through a series of uniform production steps called operations or processes. Costs are accumulated by departments (often identified by the operations or processes for which they are responsible), with attention focused on the total department costs for a given period in relation to the number of units processes. *Average unit costs* may be determined by dividing accumulated department costs by the quantities produced during the period. Unit costs for various operations can then be multiplied by the number of units transferred to obtain total costs applicable to those units. Process costing creates relatively few accounting problems in those instances where this approach can be applied to various types of service organizations, including public agencies. This method cannot be used to determine cost differences in individual products or outputs, however.

Unit costs often can be determined for many activities simply by dividing total program costs for a given period by the number of persons served (or tons of trash collected, number of inspections made, miles of road patrolled, or some other applicable measure of the volume of activity during some fiscal period). It is important to reduce unit costs to some measure that can be applied consistently over a variety of situations, however. Remember the eighth grade algebra problem? "If a farmer and a half can plow a field and a half in a day and a half at a cost of \$75, how much will it cost to plow 200 acres, assuming that the farmer's field is 10 acres?" First it is necessary to determine how much it costs to plow one acre. The farmer can plow a ten-acre field in one day at a cost of \$50. Therefore, it costs \$5 an acre, and to plow 200 acres would cost \$1,000.

This classic problem illustrates one of the dilemmas frequently encountered in developing unit costs: Is it important to consider the number of persons required to carry out the task or deliver the service? If it takes two people three hours to paint a flagpole, should unit costs be expressed in terms of both individuals? Or should the costs be translated into an hourly cost, since some flagpoles may be higher than others and consequently, may take more hours to paint? This question has to be considered and carefully resolved for each situation for which unit costs are being developed. There are no hard-and-fast rules by which this determination can be made other than the logic of consistency.

In some public programs, unit costs are often determined simply by dividing the current budget allocation for a given activity by the number of performance units. If the annual budget of the welfare department is \$2 million and the caseload is 5,000, then the "unit cost" is \$400 per case. This approach may pro-

duce rather misleading results, however. Important variables that may influence the cost of providing agency services may be masked by such an aggregate method. Therefore, it may be appropriate to further subdivide the case load into more detailed categories, for example, by various client groups, by the relative ease (or difficulty) to deliver the requisite service, by the level of staff skills or other resources required to handle the cases, and so forth.

Budgetary appropriations may not always be a good measure of current expenses, since encumbrances for items not yet received may be included in such allocations. At the same time, expenditures to cover outstanding encumbrances from the preceding fiscal period may be excluded. Even if costs are limited to expenditures, current unit costs may be overstated if new capital equipment is included in the expenditures or if there is a large increase in inventories. Conversely, in many organizations, unit costs may be understated because of a failure to account for the drawing down of inventories or for depreciation (or user costs) of equipment.

Each activity should be examined in terms of the cost components that go to make up the total cost. In some cases, it may be appropriate to determine a unit cost for each component—personnel, materials and supplies, equipment, and so forth—and then sum these costs in the appropriate mix to determine an aggregate unit cost for the particular activity or task.

1.3 Cost Allocation

Cost allocation is necessary whenever the full cost of a service or product must be determined. In particular, the variable, fixed, direct, and indirect cost components must be considered in making these allocations. Examples of this requirement in the public sector include the costing of governmental grants and contracts, the establishment of equitable public utility rates, the setting of user rates for internal services expected to operate on a “break-even” basis (that is, recover full costs), and the determination of fees (such as for inspections, processing of licenses and permits, use of public recreational facilities, and so forth).

Variable costs directly associated with a given service or activity usually do not present an allocation problem. As a rule, such costs can be measured and assigned to appropriate activities or programs that generate such expenses. As additional units of work are undertaken, variable costs usually increase in some predictable and measurable fashion.

A given organizational unit may also experience direct fixed costs (such as rent or utility costs). The allocation of such costs to specific services or projects can be more problematic, however, because these direct costs do not vary with the activities being measured. They might be allocated by assuming some level of operation, such as number of persons to be served. To arrive at a unit rate, the total annual cost can then be divided by the estimated level of activity. In other

instances, direct fixed costs may have to be allocated on the basis of some arbitrary physical measure, such as the floor space occupied by various activities. In either case, it is important that full accrued costs are allocated to avoid the problem of encumbrances.

In determining full unit costs, it is important to allocate to various departments or programs those costs identified as direct to the total organization. This represents a major cost allocation problem. The salaries of various administrative and support personnel in a hospital, for example, are direct costs to the hospital as a whole. When allocated to various separate departments or service functions—such as the intensive care unit, nursery, surgery, cafeteria, laboratories, and other components of the hospital—these administrative and support salaries become indirect costs to these operating units. Although often arbitrary, the basis for such allocations should be reasonable and should be based on services provided to these related units.

Overhead often is divided into two categories. Actual overhead costs that can be identified with a specific organizational unit typically are recorded by means of an overhead clearing account and some type of subsidiary record, such as a departmental expense analysis or overhead cost sheet. Allocated or applied overhead (indirect costs that cannot be traced directly to individual organizational units) is distributed through the use of predetermined rates.

One approach to the allocation of indirect costs involves the identification of a number of indirect cost pools. Each pool represents the full costs associated with some specific administrative or support function that cannot be allocated directly to individual projects or activities. Examples of these indirect cost pools include the operation and maintenance of the physical plant (including utility costs); general building and equipment usage (depreciation); central stores, mo-

TABLE 11.1 Step-Down Method for Determining Indirect Cost Rates

Indirect Cost Pool	Operations & Maintenance	Computing Center	General Administration	Personnel	Financial Management
Use Allowance (Depreciation)	5,255	7,883	788	158	263
Operations & Maintenance	145,992	19,970	5,255	4,204	4,887
Computing Center		69,895	263	5,255	7,883
General Administration			56,494	2,628	3,153
Personnel				60,751	158
Financial Management					58,597
Other Internal Service Units					
Community Relations					
TOTAL	151,248	97,749	62,801	72,996	74,941
Direct Costs					
Indirect Cost Rate					

tor pool, computing center, or other internal service units; and central administrative functions (financial management, purchasing, personnel, and so forth). Some costs associated with internal service units often can be assigned directly as operating units draw upon these services (e.g., when materials and supplies are drawn from central stores). Indirect costs often represent the “fixed” costs of these service units (that is, the basic cost of having the services available).

Once these indirect cost pools have been identified, they can be arrayed from the most general to the most specific with regard to the particular programs or activities for which indirect cost rates are to be established. Costs from the more general pools are allocated (or stepped down) to the more specific pools and, finally, to the primary functions or activities of the organization. Of the eight indirect cost pools shown in Table 11.1, the equipment use allowance (depreciation) and operation and maintenance pool are “stepped down” to each of the other pools as well as having distributions to the four primary functions of the organization. The computing center and general administration pools include distributions to the remaining four pools as well as to the primary functions. An indirect cost rate is determined by dividing the total direct costs associated with a given program or activity into the total indirect costs allocated to that primary function. Of the total indirect costs of \$525,539, for example, \$136,638 is attributed to primary function #3, which, in turn, accounted for \$267,800 in direct costs. Therefore, the indirect cost rate for this function of the organization is 51%. It is possible through this method to determine the impact of changes in these indirect costs on the full costs of individual programs, projects, or activities.

Under- or over-application of indirect costs may develop when predetermined rates are used, and significant differences may arise from month to month.

Other Service Units	Community Relations	Primary Function #1	Primary Function #2	Primary Function #3	Primary Function #4	TOTAL
4,204	53	8,987	14,379	11,683	9,885	44,933
10,511	1,314	21,021	33,634	27,328	23,123	105,106
5,255	1,577	15,503	24,805	20,154	17,053	77,516
10,511	1,051	9,092	14,547	11,819	10,001	45,458
1,051	53	14,347	22,955	18,651	15,782	71,735
10,511	53	12,875	20,601	16,738	14,163	64,377
50,766	53	18,551	29,682	24,117	20,406	92,756
	19,699	4,730	7,588	6,149	5,203	23,649
92,809	23,851	105,106	168,170	136,638	115,617	525,530
		250,200	317,330	267,800	240,850	1,076,180
		42.01%	53.00%	51.02%	48.00%	48.83%

However, if the cost allocation methods have produced reliable estimates, these accumulated differences should become relatively insignificant by the end of the fiscal year.

1.4 Posting to Cost Accounts

Procedural steps for summarizing and posting data to cost accounts are outlined in Figure 11.3. Field reports provide the primary record of work performed and expenses incurred. The particular design and maintenance of such reports often depends on local circumstances. A job ordering system may be installed, for example, to monitor and record street maintenance costs. A crew foreman or pro-

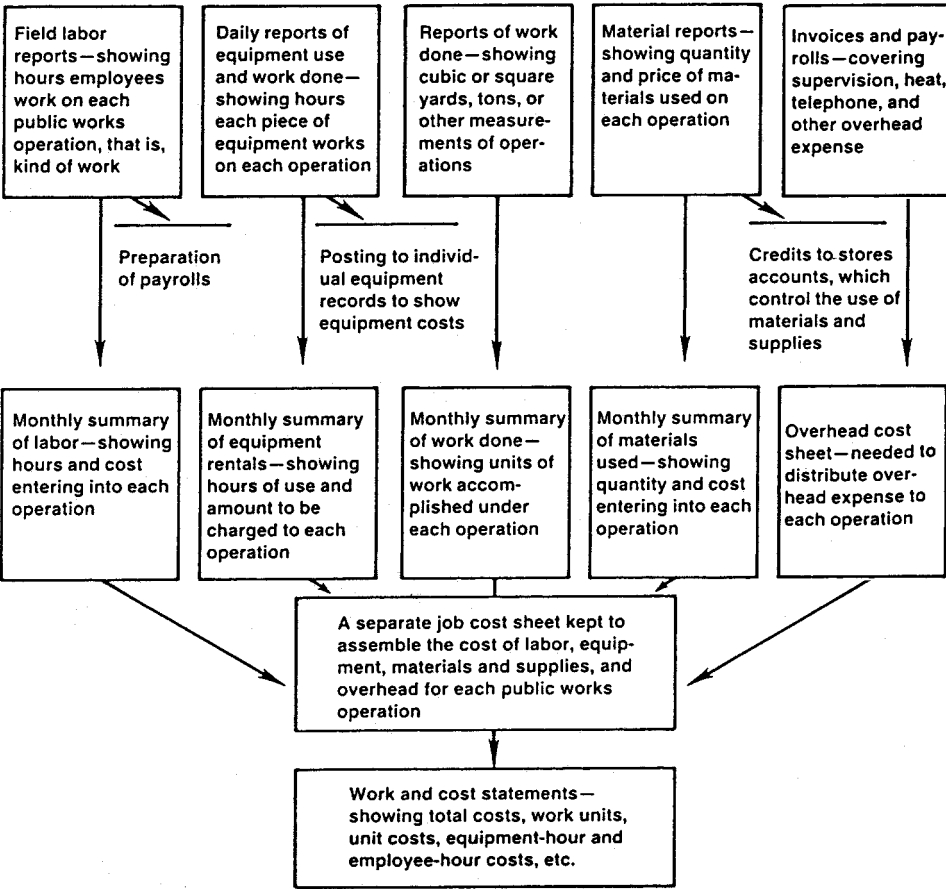


FIGURE 11.3 Posting Data to Cost Accounts

ject supervisor may prepare the field report. Or it may be desirable to have each employee prepare a daily or weekly “time and effort report,” indicating specific work assignments and the time spent on each operation. Separate bills of materials used and statements of equipment used for each job or operation would have to be provided by supervisory personnel. Field reports should be summarized before posting to job cost sheets or work and cost ledgers.

The information gathered through these field reports can serve several purposes. Reports used to determine the cost of labor entering into each operation or job can also provide a basis for payroll preparation (a general accounting function). Daily reports by equipment operators provide summaries of the pro-rated costs (equipment rental charges) to be distributed to the various jobs on the cost ledger. These reports can also be used to post individual equipment records (showing, for each piece of equipment, the expenses for labor, gasoline, oil, and other supplies, repair costs, overhead, and depreciation). Materials and supplies reports indicate stores withdrawn from stockrooms, providing credit to central stores accounts as well as charges to operating costs accounts.

Many indirect costs can be reported in substantially the same manner as direct costs—from time reports, store records, and so forth. Certain indirect costs can also be determined from invoices on such items as travel expenses, utility services, and general office expenses. These indirect costs are initially posted to an overhead cost sheet and then allocated to jobs and activities on some predetermined basis.

The job cost sheet is the final assemblage of the information with respect to all work performed and all costs incurred. Accounts in the work and cost ledger are generally posted monthly and closed upon completion of a specific job or at the end of the regular accounting period, when unit costs on an activity or program are recorded.

Monthly summary statements of work completed, expenses, units costs, and employee-hour production can be compiled readily from information on the job cost sheets. Other statements may be prepared periodically, according to management needs, on such subjects as total labor costs, employee productivity, equipment rental costs, non-effective time and idle equipment, and loss of supplies through waste or spoilage.

1.5 Standard Costs and Variance Analysis

Standard costs relate the cost of production to some predetermined indices of operational efficiency. If actual costs vary from these standards, management must determine the reasons for the deviation and whether the costs are controllable or noncontrollable with respect to the responsible unit. Misdirected efforts, inadequate equipment, defective materials, or any one of a number of other factors can be identified and eliminated through a standard cost system. In short, standard

costs provide a means of cost control through the application of methods of variance analysis.

Standard cost systems have been widely used in the private sector, but have been relatively limited in their government and other not-for-profit applications. Nevertheless, such standards have relevance in a number of organizational environments.

In setting up standards, optimal or desired (planned) unit costs and related workload measures are established for each job or activity. Workload measures usually focus on time-and-effort indices, such as number of persons served per hour, yards of dirt moved per day, or more generally, volume of activity per unit of time. After these measures have been established, total variances can be determined by comparing actual results with planned performance. Price, rate, or spending variances should then be determined for the differences between standard and actual costs. Quantity or efficiency variances can be developed for measured differences between the anticipated and actual volume of activity. Knowledge of differences in terms of cost (price) and volume (efficiency) enables the manager to identify more clearly the cause and responsibility for significant deviations from planned performance.

If, for example, the anticipated volume of a city bus system is 600,000 riders at a fare of \$0.50, but only 525,000 riders actually use the service, the bus system's *volume variance* is \$37,500 (75,000 riders times \$0.50). If the actual fare charged is \$0.55 instead of \$0.50, the total variance is only \$11,250 $[(600,000 \times \$0.50) - (525,000 \times \$0.55)]$. The volume variance is still \$37,500. However, there is a favorable *price variance* of \$26,250 $[(525,000 \times \$0.55) - (525,000 \times \$0.50)]$. A *mix variance* would result if different routes call for different fares, and the actual mix of routes is different from the mix anticipated (and budgeted).

There are no hard-and-fast methods for establishing cost standards. However, workload and unit cost data from prior years serve as a logical starting point. More detailed studies may be required to determine the quantity and cost of personal services, materials, equipment, and indirect costs associated with particular kinds of effort or volumes of activity. Unit costs can be estimated for each cost element by adjusting trend data for expected changes during the next fiscal period. Standards should be established for each cost element entering into a given job or operation. These standards can be combined to establish an overall cost standard for the particular type of work, activity category, or program element.

Standard costs should be systematically reviewed and revised when found to be out of line with prevailing cost conditions. Changes in these standards may be required when new methods are introduced, policies are changed, wage rates or material costs increase, or significant changes occur in the efficiency of operations. Furthermore, standard costs are "local" in their application. Such stan-

dards often differ from organization to organization, reflecting different labor conditions, wage rates, service delivery problems, and operation methods. It may be inappropriate, for example, to evaluate regional offices of a state health department using a single standard cost for delivery of key services. Program costs in more rural areas may be higher because of transportation distances, or may be higher in urban areas because of “hard-to-reach” cases.

2 OBJECTIVES OF MANAGERIAL ACCOUNTING

A basic objective of managerial accounting is to improve the effectiveness of the management planning and control functions. Plans should be developed on the same information base as the mechanisms of control. Planning depends on the same reporting and control mechanisms that make central oversight possible and decentralized management feasible. [3] Building the mechanism of control on one database (financial accounting) and the planning process on another (program analysis) places too great a burden on the management system as the intermediary. Managerial accounting involves the formulation of financial estimates of future performance (the planning and budgeting processes) and, subsequently, the analysis of actual performance in relation to those estimates (performance evaluation and control).

2.1 Functions of Managerial Accounting

Managerial accounting is concerned primarily with four basic functions: management planning, cost determination, cost control, and performance evaluation. Significant features of managerial accounting are summarized in Table 11.2. Component costs must be determined before decisions can be made regarding the commitment of resources in support of particular programs or objectives. Costs must be evaluated, both in the immediate future and in the long run, and must be weighed against anticipated benefits. Once commitments have been made, costs must be monitored and controlled to ensure that they are appropriate and reasonable for the activities performed. And the overall performance of a program, activity, or subunit must be evaluated to improve future decisions regarding resource allocation.

The informational boundaries of managerial accounting are not rigid or predetermined by standards of “general practice.” There is little point in collecting data, however, unless their value to management exceeds the cost of data collection. [4] Managerial accounting provides financial interpretations that can assist in the formulation of policies and decisions and in the planning and control of current and future operations. Such internal reporting to management often requires the collection and presentation of financial information in formats that are completely different from those followed for external reporting purposes. [5]

TABLE 11.2 Components of Managerial Accounting

<i>Experimentation</i> and <i>innovation</i> are encouraged in the types of management information provided.
Information generated for <i>planning</i> and <i>programming</i> purposes to establish a better balance with the control function of accounting.
<i>Cost consciousness</i> is increased among operating units through the identification of cost and responsibility centers and the use of performance standards.
<i>Cost analyses</i> facilitate the linkages among management control, program budgeting, and performance auditing.
Emphasis on <i>cost estimation</i> for planning or control purposes, rather than on financial reporting.
<i>Costs are monitored</i> to determine if they are reasonable for the activities performed.
<i>Performance standards</i> (workload and unit cost data) added to traditional accounting control mechanisms by which legal compliance and fiscal accountability are evaluated.
<i>Crosswalks</i> of financial data accommodate various external and internal reporting needs.

Managers often need information on a *real-time basis*—that is, as problems occur and opportunities arise. They may be willing to sacrifice some precision to gain currency of data. Therefore, in managerial accounting, approximations often are as useful as—or even more useful than—numbers calculated to the last penny. In spite of the mystique that often surrounds its data, financial accounting cannot be absolutely precise. Thus, the difference is actually one of degree.

The success of a decentralized management system depends on an understanding at the department level of the rules of the game, as well as the incentives and expectations that govern the planning and budgeting functions. An important task of managerial accounting is to enlarge the circle of those familiar with the processes of planning, budgeting, and control through the communication of pertinent management information as well as financial data.

The cost categories frequently encountered in managerial accounting are listed and defined in Table 11.3. Many of these cost categories operate in opposing pairs; for example, product and period costs, investment and recurring costs, out-of-pocket and sunk costs.

Managerial accounting provides information to internal users in making decisions about the development of resources and the exploitation of program opportunities. Although managerial accounting reports contain financial data, much of the information in these reports is nonmonetary—for example, number of employees, number of hours worked, quantities of materials used, purpose of travel, and so forth. As discussed later in this chapter, managerial accounting in-

TABLE 11.3 Cost Categories Used in Managerial Accounting

Engineered costs are any costs that have an explicit, specified physical relationship with a selected measure of activity. Most variable costs fit this classification. Direct labor and direct material costs are prime examples.

Discretionary costs are fixed costs decided upon by management at the beginning of a budget period as to the maximum amounts to be incurred. Examples include research and development, advertising, employee-training programs, and day-care services for employees' children.

Committed costs consist of those fixed costs associated with the physical plant and equipment of the organization. Examples include depreciation, rent, property taxes, and insurance. Salaries of key personnel may also be considered committed costs. Such costs often cannot be reduced without adversely affecting the ability to meet long-range goals.

Product costs are initially identified as part of the inventory on hand. They become expenses only when the inventory is sold.

Period costs are deducted as expenses during a given fiscal period without having been previously classified as product costs (for example, general administrative expenses).

Out-of-pocket costs involve current or upcoming outlays of funds as a result of some decision

Sunk costs have already been incurred and, therefore, are irrelevant to the current decision-making process. Allocation of costs based on depreciation and amortization schedules are examples of sunk costs.

Marginal costs represent the cost of providing one additional unit of service (or product) over some previous level of activity. An example would be the cost of keeping the library open an extra hour each evening.

Differential costs (or incremental costs) represent the difference in total costs between alternative approaches to providing some product or service.

Opportunity costs involve the maximum return that might have been realized if resources had been committed to an alternative investment; that is, the impact of having to give up one opportunity to select another.

Associated costs are incurred by beneficiaries in using programs or services. An example is the cost incurred by individuals in traveling to a public recreational facility.

Investment costs vary primarily with the size of a particular program or project but not with its duration.

Recurring costs are operating, maintenance, and repair costs that vary with both the size and the duration of a program. Recurring costs may include salaries and wages, equipment maintenance and repair, and materials and supplies.

Life-cycle costs are incurred over the useful life of a facility or duration of a program, including investment costs, research and development costs, operating costs, and maintenance and repair costs.

cludes estimates and plans for the future of cost centers and responsibility centers, as well as information about the past.

Public organizations often must operate under an accounting system developed to satisfy externally imposed legal requirements, rather than to meet their own management needs. A state university, for example, may have to operate under an accounting system that meets the financial reporting requirements of state government. Such an accounting system may track revenue and expenditures on a cash basis and require account close-outs at the end of the fiscal year. Externally funded, sponsored research projects within the university, however, do not operate on a cash basis and do not conveniently match the fiscal year cycle anticipated by the state accounting system. These sponsored programs may produce as much as one-third of the university's total financial resources and may have a multiplicity of reporting requirements not easily served by the state accounting system. Managerial accounting techniques make it possible to "crosswalk" data from the accounting system mandated by the state to formats more applicable to sponsor requirements. Local governments may face similar requirements to crosswalk data when programs are funded by federal grants or from private sources and/or when projects begin at times other than the beginning of the fiscal year.

2.2 Cost Approximation Methods

Cost approximation, or cost estimation, involves efforts to find predictable relationships between a dependent variable (cost) and an independent variable (some relevant activity), so that costs can be estimated over time based on the behavior of the independent variable. This cost function is often represented by the basic formula:

$$y = a + bx,$$

where y is the dependent variable (cost), x is the independent variable, and a and b are approximations of true (but unknown) parameters. For example, if the cost of inoculating 20 children is \$50, and the cost of inoculating 50 children is \$80, then the fixed costs (a) are \$30 and the variable costs (b) can be calculated as \$1 per child.

In practice, cost approximations typically are based on three major assumptions: (1) linear cost functions can be used to approximate nonlinear situations; (2) all costs can be categorized as either fixed or variable within a relevant range; and (3) the true cost behavior can be sufficiently explained by one independent variable instead of more than one variable. Problems of changing price levels, productivity, and technological changes also are assumed away under this approach. The analytical task is to approximate an appropriate slope coefficient (b)—defined as the amount of increase in y for each unit increase in x —and a

constant or intercept (a)—defined as the value of y when x is 0. The analyst may use goodness-of-fit tests, ranging from simple scatter diagrams to full-fledged regression analysis, to ensure that the cost function is plausible and that the relationship is credible.

Four major types of cost functions are suggested by the previous discussion of fixed and variable costs (see Figure 11.2):

1. Total fixed cost does not fluctuate as x changes: $y = a$, because $b = 0$.
2. A proportionately variable cost fluctuates in direct proportion to changes in x : $y = bx$, because $a = 0$.
3. A step-function (or semi-fixed) cost is nonlinear because of breaks in its behavior pattern: $y' = a'$, $y'' = a''$, $y''' = a'''$, and so forth.
4. A mixed or semi-variable cost is a combination of fixed and variable elements; that is, total cost fluctuates as x changes within the relevant range, but not in direct proportion: $y = a + bx$.

The first three of these cost functions are relatively straightforward and simple to resolve. The mixed-cost situation is the most common, however, and the most problematic. The fixed portion of a mixed cost typically is the result of providing some initial capacity. The variable portion is the result of using the capacity, given its availability. A photocopying machine, for example, often has a fixed monthly rental cost plus a variable cost based on the number of copies produced.

Ideally, mixed costs should be subdivided into two accounts—one for the variable portion and the other for the fixed portion. In practice, however, such distinctions are seldom made because of the difficulty of assigning day-to-day cost data to variable and fixed categories. Even if such distinctions were possible, the advantages might not be worth the additional effort and costs.

Several basic methods are available for approximating cost functions—the five most commonly applied are listed in Table 11.4. These methods are not mutually exclusive and frequently are used in tandem to provide cross-checks on assumptions.

Whatever method is used to formulate cost approximations, it is important in managerial accounting to have reasonably accurate and reliable cost predictions. Such cost estimates usually have an important bearing on a number of operational decisions and can be used for planning, budgeting, and control purposes. The division of costs into fixed and variable components (and into engineered, discretionary, and committed categories) highlights major factors that influence costs. Although cost functions usually represent simplifications of underlying true relationships, the use of these methods depends on how sensitive management decisions are to the errors that may be introduced by these simplifications. In some situations, additional accuracy may make little difference in the decision; in others, such accuracy may be very significant. Selection of a cost function is often a trade-off between the cost and the value of information. [6]

TABLE 11.4 Methods for Approximating Cost Functions

Analytic or industrial engineering methods	entail a systematic examination of labor, materials, supplies, support services, and facilities—sometimes using time-and-motion studies—to determine physically observable input-output relationships.
Account analysis	involves a classification of all relevant accounts into variable or fixed cost categories by observing how total costs behave over several fiscal periods.
High-low methods	call for estimations of total costs at two different activity levels, usually at a low point and a high point within the relevant range. The difference in the dependent variable is divided by the difference in the independent variable to estimate the slope of the line represented by b .
Visual-fit method	is applied by drawing a straight line through the cost points on a scatter diagram, which consists of a plot of various costs experienced at various levels of activity.
Regression methods	refer to the measurement of the average amount of change in one variable that is associated with unit increases in the amounts of one or more other variables.

2.3 Responsibility and Cost Centers

The concept of *responsibility accounting* has emerged to accommodate the need for management information at a more specific level of detail than can be provided by financial accounting procedures. Responsibility accounting attempts to report results (actual performance) in such a way that (1) significant variances from planned performance can be identified, (2) reasons for variances can be determined, (3) responsibility can be fixed, and (4) timely action can be taken to correct problems.

Under this approach, pertinent costs and revenues are assigned to various organizational units—departments, bureaus, and programs—designated as responsibility centers. In the private sector, responsibility centers may take several forms:

1. *Cost centers* are the smallest segment of activity or area of responsibility for which costs are accumulated.
2. *Profit centers* are segments of a business, often called divisions, that are responsible for both revenue and expenses.
3. *Investment centers*, like profit centers, are responsible for both revenue and expenses, but also for related investments of capital.

Outside of relatively large corporations, the cost center is the most common building block for responsibility accounting. In fact, the terms cost center and responsibility center are often used interchangeably.

Responsibility accounting places emphasis on specific costs in relation to

well-defined areas of responsibility. Managers often inherit the effects of their predecessors' decisions. Long-term effects of such costs as depreciation, long-term lease arrangements, and the like seldom qualify as controllable costs on the performance report of a specific manager.

Most performance models in the private sector are tied to profits—for example, profit percentage (profit divided by sales), return on investment (profit divided by initial investment), or residual income (profit minus a deduction for capital costs). Profits are seldom a viable measure at the cost center level, however. Rather, performance is most often measured by comparing actual costs against a budget. A *variance* is defined as the difference between the amount budgeted for a particular activity and the actual cost of carrying out that activity during a given period. Variances may be positive (under budget) or negative (over budget).

Performance data can be developed for management purposes independent of the budget and control accounts. This kind of performance reporting has been used in the justification of resource requests and in the assessment of cost and work progress where activities are fairly routine and repetitive. Under this approach, units of work are identified, and changes in quantity (and, on occasion, quality) of such units are measured as a basis for analyzing financial requirements. The impact of various levels of service can be tested, and an assessment can be made of changes in the size of the client groups to be served. This approach is built on the assumption that certain fixed costs remain fairly constant regardless of the level of service provided and that certain variable costs change with the level of service or the size of the clientele group served. *Marginal costs* for each additional increment of service provided can be determined through such an approach. With the application of appropriate budgetary guidelines, these costs can then be converted into total cost estimates.

Variances, budgeted results, and other techniques of responsibility accounting are relatively neutral devices. When viewed positively, they can provide managers with significant means of improving future decisions. They can also assist in the delegation of decision responsibility to lower levels within an organization. These techniques, however, are frequently misused as negative management tools—as means of finding fault or placing blame. This negative use stems, in large part, from a misunderstanding of the rationale of responsibility accounting.

Passing the buck is an all-too-pervasive tendency in many large organizations. This tendency is supposedly minimized, however, when responsibility is firmly fixed. Nevertheless, a delicate balance must be maintained between the careful delineation of responsibility, on the one hand, and an overly rigid separation of responsibility, on the other. Many activities may fall between the cracks when responsibility is too strictly prescribed. This problem is particularly evident when two or more activities are interdependent. Under such circumstances,

responsibility cannot be delegated too far down in the organization but must be maintained at a level that will ensure cooperation among the units that must interact if the activities are to be carried out successfully.

2.4 Responsibility Center Management

Principles and techniques of responsibility accounting and activity-based costing have been borrowed and combined in what has come to be known as Responsibility Center Management (RCM). Under the traditional approach to fund accounting, operating units are responsible only for the management of their direct costs. Direct costs can be narrowly or broadly defined; the more narrow the definition, the larger the aggregate amount of indirect costs. Under RCM, a series of centers have primary responsibility for the management of resources and costs (as well as the broader mission for which these resources and costs are allocated). These centers, for the most part, are equivalent to existing organizational units.

Under Responsibility Center Management, all of the sources of financial support (revenue or income) are attributed to the responsibility centers on some consistent basis. All costs—direct and indirect—also are allocated to each responsibility center. Not all units receive revenue or income from external sources, however. Costs associated with internal service units are either charged to the responsibility centers on a “*fee for service*” basis or are recovered from the responsibility centers through some form of assessment.

Traditional cost accounting models use direct cost factors (e.g., labor hours, machine hours, material dollars) as surrogates to allocate the costs of service units as *overhead*. These allocation factors tend to vary proportionately with the volume of goods produced or services provided. Cooper and Kaplan have argued that this approach is flawed because certain cost behavior is a function of the activities carried on in support departments and should not be driven by volume-related allocation factors. [7]

The Activity-Based Costing (ABC) model, which Cooper and Kaplan developed, assigns costs to activities—the processes or procedures that cause work to be performed in an organization. Cost management and cost control can then focus on the sources of cost rather than on where the costs are incurred or reported. By focusing on the root cause of a cost rather than addressing symptoms, managers can learn how to identify and eliminate waste.

Costs must be traced from the traditional cost accounting structure (which identifies *what* resources are being used) to the activities (which relates *why* the resource is being consumed—for *what purpose*). Tracing costs can involve actual (historical) costs or budgeted costs. Some costs can be directly associated with an activity (most labor costs, for example), whereas other costs have to be allocated (such as utilities or rent). Costs of supporting or service

units are initially accumulated in overhead cost pools and are then allocated to appropriate activities.

The volume of each activity's output must be quantified, either as an actual (historical) volume or as a projected volume (defined as an *output measure*). The total cost of each activity is then divided by its total volume to determine the average cost per unit of output. The total costs of individual activities then are allocated to responsibility centers or activity centers (i.e., groups of activities having a common objective). Finally, *performance measures* are identified to determine the results achieved by an activity or responsibility center (e.g., average cost per patient treated for a particular ailment).

The ABC method for allocation costs is more complex and requires additional time and effort to determine the attribution of indirect costs. In many situations, it is uncertain whether marked difference results are obtained by using the ABC method instead of more traditional approaches. The more complex ABC approach may be appropriate, however, if the costing system is used to determine fees or prices or to measure performance of selected activity centers or indirect cost pools.

3 MULTIPURPOSE ACCOUNTING SYSTEM

As discussed previously, the object-of-expenditure budget and accounting classification—with its detailed enumeration of object and subobject codes—offers two distinct advantages over other accounting systems: (1) *accountability*—a pattern of accounts is established that can be controlled and audited and (2) *personnel management information*—the control of personnel requirements can be used to control the entire budget. These two characteristics have sustained the object-of-expenditure format for more than 80 years. More recent efforts to develop financial information that is more responsive to the needs of management have found these features somewhat intransigent to other objectives, however.

3.1 Data Crosswalks

The budget allocation for the Financial Management Department of the City of Rurbana can serve to illustrate a multipurpose accounting system that builds on the two basic characteristics of an object of expenditure classification. The Financial Management Department consists of five agencies: City Treasurer's Office, Accounting Division, Budget Division, Data Processing Section, and Purchasing Office. Program budgeting has been adopted on an experimental basis as part of the Rurbana's efforts to develop improved financial management and accounting procedures. Four major programs have been identified for the Financial Management Department: Cash and Debt Management, Program Budgeting, Financial and Managerial Accounting, and Procurement and Inventory

Maintenance. Because these programs cut across the organizational lines of the five agencies, expenditure data must be “crosswalked” to provide an accounting summary on a program basis. A *crosswalk* refers to any data conversion that involves a change in classification systems (for example, from objects of expenditures to programs, or vice versa).

The objective is to record expenditures by agency and by program. An initial distribution was accomplished in the budget-building phase and is reflected in the administration of the budget in terms of allocations and allotments. Line-item budget allocations to the five agencies of the Financial Management Department are summarized in Table 11.5. These budget allocations, in turn, have been “crosswalked” to the four programs that have been identified for the department’s operates during the current fiscal year, as shown in Table 11.6.

Program expenditures at the end of nine months of the current fiscal year are summarized in Tables 11.7 and 11.8 by the four programs and five agencies

TABLE 11.5 Budget Allocations by Agencies

Line Items	City Treasurer	Budget Division	Accounting	Data Processing	Purchasing	Totals
Personnel Services	\$105,232	\$176,164	\$152,389	\$198,421	\$95,319	\$727,525
Overtime	2,301	1,330	4,104	3,433	1,922	13,090
Benefits	21,046	35,233	30,478	39,684	19,064	145,505
Contractual Services	7,310	12,240	10,600	175,610	6,630	212,390
Supplies & Materials	10,071	16,851	14,597	18,986	9,120	69,625
Equipment	0	0	2,240	24,000	0	26,240
Current Obligations	2,750	3,421	2,960	3,850	1,844	14,825
Totals	148,710	245,239	217,368	463,984	133,899	1,209,200

TABLE 11.6 Budget Allocations by Programs

Line Items	Cash & Debt Management	Program Budget	Accounting	Procurement	Totals
Personnel Services	\$163,300	\$202,467	\$208,143	\$153,615	\$727,525
Overtime	3,872	2,188	4,250	2,780	13,090
Benefits	32,660	40,493	41,629	30,723	145,505
Contractual Services	52,969	57,899	56,259	45,263	212,390
Supplies & Materials	15,701	19,262	19,960	14,702	69,625
Equipment	6,240	6,240	8,480	5,280	26,240
Current Obligations	3,343	4,101	4,250	3,131	14,825
Totals	278,085	332,651	342,969	255,494	1,209,200

TABLE 11.7 Expenditures by Programs at the End of 9 Months

Line Items	Cash & Debt Management	Program Budget	Accounting	Procurement	Totals
Personnel Services	\$124,171	\$153,953	\$158,269	\$116,807	\$553,200
Overtime	3,394	1,919	3,725	2,437	11,475
Benefits	24,834	39,791	31,654	23,361	110,640
Contractual Services	46,714	51,061	49,616	39,919	187,310
Supplies & Materials	14,275	17,512	18,146	13,367	63,300
Equipment	6,944	6,944	8,437	5,875	26,240
Current Obligations	3,208	3,935	4,078	3,004	14,225
Totals	223,540	266,115	274,925	204,770	969,350

TABLE 11.8 Expenditures by Agencies at the End of 9 Months

Line Items	City Treasurer	Budget Division	Accounting	Data Processing	Purchasing	Totals
Personnel Services	\$77,040	\$128,560	\$114,800	\$160,800	\$72,000	\$553,200
Overtime	1,800	1,170	3,555	3,150	1,800	11,475
Benefits	15,408	25,712	22,960	32,160	14,400	110,640
Contractual Services	5,980	10,800	8,230	156,000	6,300	187,310
Supplies & Materials	8,550	14,050	14,000	17,950	8,750	63,300
Equipment	0	0	2,200	27,000	0	29,200
Current Obligations	2,500	3,300	2,780	3,750	1,895	14,225
Totals	111,278	183,592	168,525	400,810	105,145	969,350

of the Financial Management Department. Multi-digit account codes facilitate the assignment of expenditures in such a crosswalk of accounting data from programs to agencies. As expenditures are recorded to the program accounts, a parallel record is easily maintained at the agency level.

From the data in Tables 11.7 and 11.8, it may be noted that, at the three-quarter point in the fiscal year, the rate of expenditures for each of the programs exceed the 80 percent level. Overall departmental spending at the end of nine months is at the 80.2 percent level. By examining the expenditure data by agency, it may be seen that commitments under the Data Processing Section are a major contributor to the fact that the rate of expenditures is running ahead of expectations. Salaries and related personnel costs in this unit are 81 percent expended, while the budget allocation for contractual services is 89 percent expended. At the program level, these expenditures are spread across all four programs because of the range of data processing requirements. Thus, it is important for program managers to have

timely data on expenditures both by programs and by the agencies authorized to make such commitments.

3.2 Expenditures Versus Costs

In order to determine where the costs come from, it is necessary to know the amount of costs from each department or agency that goes into each program. These *cost allocations* are illustrated in Table 11.9. In this context, program entities represent cost centers or responsibility centers.

It is important to note that total costs exceed recorded expenditures by \$100,000. From the discussion of the basis of accounting, it may be recalled that expenditures are measured by the amount of actual cash paid out during a given fiscal period. On an accrued cost basis, however, adjustments must be made for inventories, depreciation of fixed assets, and other accounts. Such adjustments are critical in answering the basic question: How much does a program actually cost?

The major adjustment occurs in capital outlay (\$80,000), which is assigned to the Data Processing Section and distributed equally across all four programs. Other adjustments are evident in supplies (\$5,000) under Purchasing; travel (\$5,000) by the City Treasurer under Cash and Debt Management; and contractual services (\$10,000) incurred by the Budget Division under the Program Budget.

From an accounting standpoint, the most valuable type of program cross-walk is one that brings together the types of costs by cost center or department for each program. Therefore, in order to compare program costs with the overall effectiveness of program activities, it is essential that a program budget be based on costs rather than expenditures.

TABLE 11.9 Operating and Capital Costs by Programs at the End of 9 Months

Cost Centers	Cash & Debt Management	Program Budget	Accounting	Procurement	Totals
City Treasurer	\$105,950			\$10,328	\$116,278
Budget Division	3,214	170,746	16,418	3,214	193,592
Accounting	13,816		154,709		168,525
Data Processing	125,559	125,369	123,798	106,084	480,810
Purchasing				110,145	110,145
Totals	248,539	296,115	294,925	229,771	1,069,350

4 SUMMARY: FUTURE-ORIENTED ACCOUNTING INFORMATION

The primary concern of financial accounting is the accurate and objective recording of past events (financial transactions). The basic objective of cost and managerial accounting is the provision of information for improved financial management decisions.

This discussion has focused on the techniques of cost accounting, on the basic functions of managerial accounting—and especially cost determination and cost control—and on responsibility accounting that support these basic functions. Five basic cost components involved in any activity or program are (1) labor (personnel), (2) contractual services, (3) materials and supplies, (4) equipment expenses, and (5) overhead or indirect costs. Various accounting mechanisms must be used to ensure the proper recording of costs. These mechanisms, for the most part, are embodied in the procedures of cost accounting.

Whenever the full cost of a service or product must be determined, costs must be allocated according to their variable, fixed, direct, and indirect components. Fixed costs of any project remain constant as the volume of activity increases; on a per unit basis, these costs become progressively smaller. Variable costs are more or less uniform per unit, but the total of these costs increases as the volume of activity increases. A direct cost is incurred in support of a specific, identifiable purpose. An indirect cost is associated with more than one activity or program and cannot be traced directly to any individual activity.

An important step in controlling costs is to determine how they function under various conditions. This process, called cost approximation or cost estimation, involves efforts to find predictable relationships (cost functions) between a dependent variable (cost) and one or more independent variables (organizational activities). Several methods for approximating cost functions were discussed in this chapter, the most reliable being the regression method.

Responsibility accounting seeks to assign accountability to those sectors of an organization (cost centers and responsibility centers) in which day-to-day influence can be exercised over the costs in question. The concept of controllable costs—that is, any cost that can be influenced by a given cost center manager during a given period—is a key to responsibility accounting. The emphasis on controllable costs and budgeted results makes responsibility accounting an excellent supporting component of the financial management process.

Activity-Based Costing techniques are designed to provide more definitive bases by which to allocate costs—and in particular, overhead costs—to activities and clusters of activities through the identification of *cost drivers*. The ABC approach provides a more accurate representation of indirect cost attributions than

can be obtained by using surrogate measures, such as direct labor hours or direct material costs.

Under Responsibility Center Management, primary responsibility for the management of all sources of external financial support and all costs—direct and indirect—associated with achieving the goals and objectives of an organization are assigned to various centers. Internal service units are supported either on a “fee for services” basis or through some form of assessment.

Finally, a multipurpose accounting system was presented to show how accounting data can be crosswalked between agencies and programs to provide important management information during the fiscal year on which to base cost allocation and cost control decisions. Such information is essential to an evaluation of the overall effectiveness of program activities.

ENDNOTES

1. Leo Herbert, Larry N. Killough, and Alan Walter Steiss, *Governmental Accounting and Control* (Monterey, CA: Brooks/Cole Publishing, 1984), p. 212.
2. For a fuller discussion of accrual accounting procedures, see Leo Herbert, Larry N. Killough, and Alan Walter Steiss, *Accounting and Control for Governmental and Other Nonbusiness Organizations* (New York: McGraw-Hill Book Company, 1987), chapter 1.
3. Robert Zemsky, Randall Porter, and Laura P. Oedel, “Decentralized Planning: To Share Responsibility,” *Educational Record* 59 (Summer 1978): 244.
4. Robert N. Anthony and James S. Reese, *Management Accounting: Text and Cases* (Homewood, IL.: Richard D. Irwin, 1975), p. 422.
5. James H. Rossell and William W. Frasure, *Managerial Accounting* (Columbus, OH: Charles E. Merrill, 1972), p. 4.
6. Charles T. Horngren, *Introduction to Management Accounting* (Englewood Cliffs, NJ: Prentice-Hall, 1978), p. 225.
7. Robin Cooper and Robert Kaplan, “Activity-Based Costing,” *Journal of Cost Management* (Summer 1988).

12

Management Information and Performance Evaluation Systems

Effective management of any project or program requires relevant information. Timely information is essential to understand the circumstances surrounding any problem and to evaluate alternative courses of action to resolve any issue. Information is the raw material of intelligence that reduces uncertainty in problem situations and triggers the recognition that decisions need to be made.

1 MANAGEMENT INFORMATION SYSTEMS

Vast amounts of facts, numbers, and other data are processed in any organization. What constitutes management information, however, depends on the problem at hand and the particular frame of reference of the manager. The American Accounting Association asserts that:

Essentially, accounting is an information system. More precisely, it is an application of general theory of information to the problem of efficient economic operations. It also makes up a large part of the general information expressed in quantitative terms. In this context accounting is both a part of the general information system of an operating entity and a part of the basic field bounded by the concept of information. [1]

Accounting data can provide important management information when arrayed appropriately in balance sheets and financial statements. Traditional accounting

data may be relatively meaningless, however, if the objective is to evaluate the overall performance of a new program. Quantitative data concerning previous financial transactions may be insufficient to assess the effectiveness of program activities designed to bring about a qualitative change. To achieve better management decisions, the information available must be both *timely* and *pertinent*.

1.1 The Objectives of an Management Information System (MIS)

As a concept, management information systems often are vaguely described and broadly misunderstood. Management information systems are equated by some to electronic data-processing, the assumption being that the all-knowing computer will provide the answers to complex problems *if* and *when* we simply learn to press the right buttons. Most management information systems make effective use of modern data- and word-processing software and hardware. However, a MIS is much more than an electronic marvel—a “black box” to direct and control the operations of complex organizations.

First and foremost, a management information system is a process by which information is organized and communicated in a timely fashion to resolve management problems. Traditionally, management information systems have been developed as tools for operational management. Data are tracked in some detail to record and measure various aspects of an organization’s day-to-day operations. Strategic decisions differ from operational decisions, however, along several dimensions. Therefore, the information necessary for effective strategic management differs from the more traditional MIS used for operational control.

The concept of MIS can best be understood by examining separately three terms: management, information, and system. This understanding may be enhanced by taking these words in reverse order.

A *system* is fundamentally a set of two or more elements joined together to attain a common objective. A system often is made up of a number of smaller systems or *subsystems*, which, in turn, are composed of basic *elements* that define the purpose and capacity of the total system. Failure to penetrate beyond the surface is one reason why “systems” often are misunderstood.

A properly functioning system is characterized by *synergy*. That is, all elements and subsystems in a system work more effectively together than if they were operating independently. The *output* of an integrated system may be expected to be far greater than the sum of the outputs of its component elements. To understand these output relationships, however, it is first necessary to identify and understand the elements and subsystems that serve as the components of the larger system.

Information is different from data, and this distinction is very important. Data are facts and figures that are not currently being used in a decision process.

Files, accounting records, reports not under immediate consideration are examples of data. By contrast, information consists of classified and interpreted data that are being used for decision-making. Thus, the “memory” of a management information system is a repository for information concerning past experiences, for programmed decisions, for information by which “right” decisions can be tested for acceptability, as well as for raw data.

Organizational “memory,” like human memory, is characterized by a selective process—items are retained that may have some future application. And because the future is uncertain, organizations tend to retain more data than can possibly be used as information, thus complicating the retrieval process. Organizational memory also is *dissociative* and *combinatorial*—stored information can be reassembled into new patterns that meet the overall needs of the organization (and particular decision situations) more effectively.

For purpose of a MIS, *management* consists of those activities necessary to plan, organize, implement, and control specific operations within a defined realm of responsibility. Strategic, tactical, and technical decisions must continually be developed, adapted, and implemented to enhance the capacity of the organization to meet the demands that impinge upon it. The specific objective of a MIS is to communicate information for decision making in a synergistic fashion—where the whole becomes greater than the sum of the individual parts.

1.2 MIS, DBMS, and Computers

Computers—through their ability to store, retrieve, and carry out rapid computations on data—have made possible the collection and dissemination of ever greater quantities of information. Computerized databases provide the basic source of information for organizations in today’s fast-paced decision environment. A MIS is composed of *databases* and the *software packages* (computer programs) required to manage them. A database is a collection of structured and related information stored in the computer system. Different software packages permit access to and management of these data, along with the tools necessary to generate analyses and reports.

Organizational data may suffer from significant incompatibilities across different computing platforms (i.e., hardware and supporting software), however. Multiple users must be able to share much of the same accurate, consistent, and up-to-date information in an efficient and secure manner, regardless of the purpose and origin of such information. The primary objective of a *database management system* (DBMS) is to facilitate this sharing function. Bassler defines a DBMS as:

A software system that provides for a means of representing data, procedures for making changes in these data (adding to, subtracting from,

and modifying), a method for making inquiries of the data base and to process these raw data to produce information, and to provide all the necessary internal management functions to minimize the user effort to make the system responsive. [2]

A DBMS should include (1) a high-level, interactive query language facility, (2) a financial package that permits “what if” calculations to be made, (3) modeling and simulation software, (4) a statistical analysis package, (5) word-processing software, and (6) customized software related to specialized management needs. In the past, such systems—with collections of extensive and often expensive software packages—have been limited to large mainframe computers. This limitation is one major reason why management information systems have been used mainly for operational decisions and not for strategic management decisions.

Data sharing has been achieved to some degree through file servers housed in local area networks (LAN). Files are shipped from a DBMS, residing centrally on the network, to be processed locally. Whole files may be downloaded and selectively accessed. This approach can be inefficient, however, especially when only a few records are required by the requesting applications. Moreover, the integrity, security, and recovery of such files can be difficult to manage under this approach.

Unfortunately, many popular so-called DBMS are not database management systems at all. They are, at the core, programmable filers, leaving most of the job of managing data to the users and providing relatively unproductive tools to assist in this undertaking. Except for the simpler data manipulations, the results often cannot be accessed directly, and internal procedures must be created for the system to follow to obtain the desired results. Much of the procedural detail consists of explicit references to addressing mechanisms, internal storage structures, and so on, which are irrelevant to logical database tasks. Users must become involved in machine complexities and performance considerations, which most people are ill-equipped to handle and should not have to bother with anyway.

Often technical personnel are required to mediate between end users and their data. The natural language of the end user differs from the procedural machine-oriented tools that traditional DBMS products provide. Therefore, communication between the user and the DBMS often is time-consuming, inefficient, and frequently ineffective. The development of procedural applications frequently is difficult and error-prone. A database that tracks the research proposals and awards of a major university, for example, may require the attention of a programmer/systems analyst for 20 to 30 hours a week, not only to access the data for various administrative reports but to ensure that data consistency is maintained so that the information generated from this database is consistent over time.

Database products have been developed largely on an ad hoc basis, resulting in a proliferation of different solutions to a general set of problems. Furthermore, these products are proprietary, and despite some similarities, each one approaches the same data tasks in its own unique way. As a consequence, users must fill the gaps with their own programs and often must accept disruptive revisions that may result in additional programming requirements to deal with further incompatibilities.

Various attempts have been made to overcome these limitations within the constraints of the personal computer environment. In these approaches, however, the overall purpose of the data operations is not obvious to the database system, and thus, it is very difficult to optimize these operations. In addition, these PC-oriented systems lack critical information about the current state of the decision environment and the intelligence on which to base optimal decisions.

Issues of integrity, security, concurrency, and recovery must be addressed in the development of more effective database management systems. The *power to ease-of-use ratio* must be significantly improved, and maintenance burdens must be minimized while performance is maximized, especially over networks. Moreover, a variety of non-database software packages, which store and manage their own disparate data in different formats, must be more fully integrated into the DBMS.

1.3 The Relational Model

E. F. Codd, an IBM mathematician, developed a relational theory of data in 1969, which he proposed as a universal foundation for database systems. [3] His model, based on the mathematics of relations, covers the three primary aspects that any DBMS must address—*structure*, *integrity*, and *manipulation*. The meaning and implications of Codd's relational model, as originally presented, were largely misunderstood by others. Therefore, Codd supplemented his model with the now-famous Fidelity Rules to guide the implementation and evaluation of relational DBMS software. [4] Since then, the model has been refined, clarified, and extended in many ways, but the initial features remain as valid as ever.

A relational DBMS presents databases to the user as collections of tables that must obey a certain discipline: (1) they must have unique rows (the storage addresses or ordering of which are not necessary to access their data) and (2) their cells must be single-valued. The DBMS—and not the user—must ensure that all database tables comply with these requirements. When they do, mathematical operations and strict logic can be applied to them, as if they were “relations.”

This characteristic eliminates traditional deficiencies and offers significant practical benefits. The tabular structure is simple; it is general enough to represent most types of data; it is independent of any internal computer mechanisms;

and it is flexible, because the user can readily restructure tables vertically, horizontally, or both ways, through either splitting or joining. In fact, table manipulation always yields results that are tables themselves. Therefore, unlimited nesting of operations is also possible for relationally disciplined tables. Data manipulation by relational DBMS consists of a well-defined, complete set of mathematical operations. Data access no longer needs to be procedural if the DBMS can support the basic operations and some useful combinations—restrict, project, natural join, division, product, union, difference, and intersect.

A data request can be specified in terms of the operations that must be performed on other tables to derive the desired information (as a table). The system then transparently translates these logical requests into an efficient internal-access strategy. A relational DBMS is built upon a catalog—a set of tables dynamically maintained by the system—and can use information about the database (e.g., statistics) in its catalog to optimize the logical operations.

The relational approach requires that strict and comprehensive integrity constraints be enforced in the database to ensure data accuracy and consistency. Thus, the user is relieved from having to develop or maintain integrity code in his or her applications, and as a consequence, the relational DBMS offers a level of productivity and reliability superior to that of traditional database management systems.

For the practical benefits of the relational model to materialize, the structure, integrity, and manipulative features must be incorporated in the DBMS engine. These features are highly interdependent, and the lack of any one feature affects the support of the others. It is not possible to provide all of the intended benefits by arbitrarily implementing only some of the features or by simply adding an interface to non-relational DBMS engines. The fidelity rules were devised to clarify this important point.

A standard based on the relational model would yield the best of both worlds: relational fidelity and standard compatibility. The underlying database functions would be the same for all products, regardless of whether they are stand-alone or multi-user or what kind of front-end tools and applications they have. In addition, front-end tools, such as spreadsheets and word processors, could then all operate on databases, not on disparate files.

1.4 Centralized Data Processing Centers

Computers can help to achieve better management information if used to process properly designed information flows. Computers are not the automatic answer to the need for better information, however. In fact, undue preoccupation with how data will be processed and with the characteristics of the processing hardware and software often can inhibit the design of an effective management information system.

Hardware should be the last matter to be considered when thinking about a MIS. It is first necessary to decide what kind of information is needed—how much, how soon, and how often. Management information must include explicit attention to nonquantifiable inputs, as well as those that result from computerized data processing applications. The kind of equipment that will best serve these needs is a secondary, although important, consideration. Many early wrong notions about data processing can be dispelled by concentrating first on the information and communication requirements. In so doing, plans for computer hardware often shrink to a more realistic size.

The desirability of large centralized data processing centers depends more on the nature of the organization than on the purposes of a MIS. Many excellent management information systems are serviced by relatively simple, local data processing operations, tailored to the particular needs of the users. Through the introduction of more and more powerful desk-top computers, the power of the computer is now readily available to managers at all levels in most organizations.

A MIS goes beyond the objectives of centralized data collection and retrieval, however. As Kennevan suggests, a MIS is:

an organized method of providing past, present, and projection information relating to internal operations and external intelligence. It supports the planning, control and operational functions of an organization by furnishing information in the proper time frame to assist in the decision-making process. [5]

1.5 Storage of Information—The Function of the Memory Bank

Information is not subject to the basic laws of conservation of matter and energy. Information can be both created and wiped out—although it cannot be created from nothing nor completely destroyed. Because information has physical reality, its storage—memory—is a physical process which can be represented in seven distinct stages:

1. Incoming information is abstracted/coded into appropriate symbols.
2. These symbols are stored by means of some appropriate recording device—distribution of written symbols on paper, activity patterns of cells in nerve tissues, or patterns of electric charges.
3. Some of the information is dissociated from the rest.
4. Some of the dissociated items, as well as the combination of items into larger assemblies, are recalled.
5. Some of the recalled items may be recombined into new patterns that were not among the inputs into the system.

6. Recombined items are further abstracted/coded, preserving their new pattern, but obliterating their combinatorial origins.
7. The new items are transmitted to storage or applied to achieve some desired action.

Only part of past experience is selected for storage. In human memory, a selection of what we would like to remember is combined with a selection of what our subconscious mind chooses to emphasize. Information and experience can be broken down into their component parts for storage, and then reassembled into new patterns quite different from the intake from the outside world. If improbable combinations and associations turn out to be highly relevant to a particular situation and lead to significant actions, they may be called strokes of genius, flashes of insight, or innovations. Putting information together and estimating that particular combinations are worth pursuing is one of the fundamental activities of management, resulting in outputs that better meet the needs of the organization.

Memory serves a number of important functions in the processes of financial planning and management control. It is a major component in the screening and selection of *inputs* (the myriad data that impinge on the processes) to *intakes* (information that is taken into the system). The selected information is transmitted to memory and stored for possible recall at later stages in the process. In defining a problem, selective recall serves to classify the general nature of the problem and to identify the constraints and boundary conditions of possible solutions. Combined information may be recalled from the system's memory bank, and further input is generated and stored for future recall.

Once a preliminary decision is reached as to the appropriate actions to be initiated, selective information combinations are recalled and applied to modify the decision in light of what is judged acceptable and feasible. In this process, a normative decision (what ought to be done) is measured against past experiences (drawn from memory) as to what might be the limit of appropriate action. This process of combining selected data and memories with the "right decision" to achieve an acceptable decision might be thought of as a second screening process. The screen is continuously modified by the outputs of the system, i.e., by the results of decisions that are translated into action.

2 PERFORMANCE EVALUATION

Evaluation has been a watchword in government for over nearly four decades. The systematic assessment of public programs, however, has remained more a promise than a practice. Public goals and objectives often are nebulous and ill-defined. Consequently, the identification and measurement of program results is even more elusive. The first major task of evaluation is to decide what to evalu-

ate and how to evaluate it. Not all programs or projects need to be, can be, or should be evaluated in depth. Less expensive, short-term programs or programs that may be politically vulnerable, for example, may not warrant a costly, multi-layered statistical analysis. As Wholey has noted, "From the point of view of decision-makers, evaluation is a dangerous weapon. They don't want evaluation if it will yield the 'wrong' answers about programs in which they are interested." [6] In such situations, political pressures frequently override empirical evidence available from formal evaluations. Nevertheless, decision-makers, who may be operating in the dark, may welcome evaluations that provide useful data on a consistent basis. Evaluation of program results should be a critical component of financial planning and control. Conducting such assessments is, in fact, what management control ultimately is all about.

2.1 Evaluation: A Many-Splendored Thing

Evaluation activities range from simple inquiries to complex analyses and include (1) *program monitoring*—analyses of data that count the number and/or frequency of activities and operations; (2) *process evaluations*—analyses of data to assess program processes and procedures and the links between various program activities; and (3) *outcome evaluations*—analyses of data regarding program results. Evaluations may look at specific program aspects or at whole programs. Components may be compared across programs or a number of programs may be compared across sites. Such comparisons provide the basis for determining if a program worked or if one program worked better than something else. Comparisons also can simply track program differences. Complex comparative evaluations can be expensive to conduct, involving consultants, programmers, and statisticians who may not be readily available on agency staffs. Good, useful, credible evaluation research carried out on a more limited scale often can yield critical program data.

The term evaluation has been applied to many different activities. Perkins has identified six basic types of evaluations [7]:

1. *Strategic evaluations* are concerned with underlying causes of social problems and focus on "implicit theories" as a basis for broad ameliorative programs.
2. *Intervention effect assessments* attempt to establish the relation between program intervention and outcomes; or, in some cases, the processes involved in producing those outcomes.
3. *Compliance evaluations* examine the consistency of program objectives with broader legislative aims and attempt to ensure that public funds are allocated in accordance with policy guidelines.
4. *Program design evaluations* test the measurability of program assumptions, the overall logic of the program approach, and the assignment of responsibility and accountability for program results.

5. *Management evaluations* focus on the efficiency and effectiveness by which available resources are deployed to achieve program objectives.
6. *Program impact evaluations* deal with program delivery systems and the relation between program results and the legislated goals and program objectives.

The last three types of evaluations are perhaps most relevant in the context of financial planning and management control.

2.2 A Working Definition of Evaluation

Some authors have suggested that the term evaluation should be reserved for relatively high-order assessments of the effectiveness of policy decisions—the focus of many early efforts of what has been labeled *evaluation research*. “In its humble beginnings . . . evaluation research was much like the buzzard, attacking only dead programs. These postmortems were useful in developing a conceptual basis for evaluations but did little to improve policy formulation.” [8] Such full-blown scholarly research sometimes evolved over a number of years, so significant improvements to ongoing programs often were impossible to achieve. Even when the programs continued, the results of these evaluations seldom were utilized because (1) program evaluators were “outsiders”—academic types—often with different perceptions and opinions about the goals of the program and (2) evaluators tended to focus on the negative aspects of a program and rarely offered constructive advice. [9]

The scale and time frame of evaluations must be such that management is assisted in formulating viable program improvements. Moreover, such evaluations must specify program problems in a way that provides clear indications of alternative courses of action to resolve these problems. As Clark has observed, unless evaluation is keyed to meeting specific information requirements and decision needs in a timely fashion “. . . it risks being irrelevant—a monument to what might have been.” [10]

An evaluation can focus on *process*—the extent to which programs are implemented according to predetermined guidelines—or on *impact*—the extent to which a program produces change in the intended direction. It also is necessary to decide whether the program or the organization responsible for the program is to be evaluated. A program may be evaluated in terms of its effectiveness and costs, but an organization should not be evaluated solely on the basis of its success (or failure) in carrying out a particular program. As Quade has observed, an organization should be judged not by an initial program failure, but by its capacity to learn from failure and to improve the operation of the program. [11]

For the purposes of this discussion, an evaluation is (1) an assessment of the effectiveness of ongoing and proposed programs in achieving agreed-on goals and objectives and (2) an identification of areas needing improvement

through program modification (including the possible termination of ineffective programs), which (3) takes into account the possible influence of external and internal organizational factors.

The purpose of many evaluations has generally been to improve efficiency. Questions of efficiency often are defined and answered strictly in *least-cost* terms, with minimal consideration of priorities or of the relative worth of the programs pursued. It is possible to do things very efficiently, but if they are the wrong things to do, they will have little positive impact on the problems to which a program is directed. Improving efficiency may not require any drastic changes in program strategies. Increasing effectiveness, however, often entails radical program adjustments—one reason why evaluations that focus on effectiveness may not be fully utilized.

The notion of a *criterion of efficiency*, first formulated by Herbert Simon, asserts that a choice among alternatives should be made in favor of the course of action that produces the largest result for a given application of resources. [12] To guide this choice, however, Simon notes that it is necessary to determine appropriate levels of goal attainment or program adequacy (e.g., a minimum acceptable level of performance). In the absence of such definitive statements of goals and objectives, measures of efficiency cannot provide the insights necessary to make appropriate judgments about program achievements or benefits.

2.3 Formative and Summative Evaluations

The highest priority in evaluations often is given to instrumental outcomes that are related to goals and objectives and serve as indicators of program effectiveness. Other measurable outcomes can be critical, however. The key product of an evaluation may be knowledge about the implementation of the program (rather than the program itself) or the quality of the larger system in which the program is located. Evaluation also may produce understanding about constituents at odds or factions of the system under scrutiny. This information, in turn, may make consensus-building another important outcome.

A comprehensive evaluation should be based on both formative and summative techniques (see Figure 12.1). *Formative evaluations* provide the information necessary to design and/or modify service delivery systems. Such evaluations include (1) analyses of the needs to be met or the problems to be solved, (2) determination of whether or not a public program should be initiated to meet such needs, and if so, (3) how the program should be designed. *Summative evaluations* measure performance and program impacts. These two types of evaluations are closely interrelated. Information derived from summative evaluations of program impacts provides input for continuing formative evaluative efforts.

At first glance, designing a measurement system capable of providing this evaluative information might appear to be an awesome undertaking. When seen

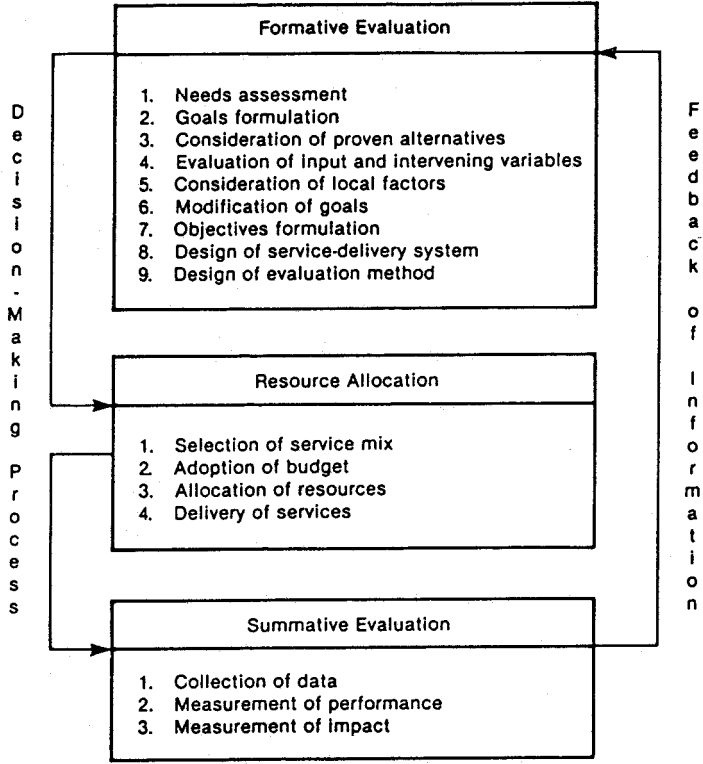


FIGURE 12.1 Comprehensive Evaluation System

in a historical context, however, practically all public services are provided as a result of decisions made over time, based on such formative and summative information. The mix of services provided by local government reflects a variety of commitments made by the governing body, regulations imposed by other levels of government, and administrative decisions made by appointed officials.

Formative decisions are expressed through budget documents, local ordinances, state statutes and regulations, intergovernmental agreements, federal laws, and so forth. While administrators can make important contributions to these decisions, formative evaluations will more likely be useful in developing better decisions concerning the improvement of service delivery systems once these broader commitments are made. As Weiss notes: "The analysis of program variables begins to explain why the program has the effect it does. When we know which aspects of the program are associated with more or less success, we have a basis for recommendations for future modifications." [13] In short, an ef-

fective evaluation describes what is happening and helps determine which features of a program are successful and which are not.

In order to make such determinations, both input and intervening variables must be measured. *Input variables* include information that might be considered extraneous to the program itself. Analysis of input variables, however, can provide information necessary to identify more clearly why a program might or might not be successfully implemented in a particular jurisdiction. Data collection on input variables should be undertaken with the limitations of time and cost constraints in mind. As Weiss suggests, “. . . most evaluations have limited resources, and it is far more productive to focus on a few relevant variables than to go on a wide-ranging fishing expedition.”[14]

Two kinds of *intervening variables* must be measured: (1) program operation variables and (2) bridging variables, i.e., the intermediate steps selected as a means to achieve program objectives. A clear understanding of the causal relationships between intermediate activities and their consequences has a direct impact on the ability of a government agency to meet its objectives. A poorly conceived program, no matter how effectively implemented, contributes relatively little to the overall effectiveness of an organization.

Organizational constraints again will limit the time and resources that can be devoted to the analysis of intervening variables. One approach is to involve program managers, either through formal or informal procedures, in seeking answers to such questions. Whether or not the connections between program design and objectives are formally determined, “there are almost always some prevailing notions, however unexplicit, that certain intermediary actions or conditions will bring about the desired outcomes.”[15]

2.4 Clarifying Program Objectives

Complete clarity as to the anticipated program impacts seldom comes from an examination of the final statements of the program planning process. Therefore, before an evaluation can be initiated, it often is necessary to determine the exact character and intent of specific program goals and objectives. Shortell and Richardson have identified ten criteria for clarifying program objectives (see Table 12.1).

The final products of the formative evaluation process should be (1) a *service delivery plan*, based on an understanding of the causal relations between the activities to be performed and the desired results, (2) a set of *goal statements*, outlining a course of action in broad terms, and (3) *supporting objectives*, which provide for the quantification of progress toward the achievement of stated goals. Goals and objectives developed through formative evaluation techniques should represent the best available solution for a particular problem (within the constraints of available resources). They should also provide a foundation for the

TABLE 12.1 Criteria for Clarifying Program Objectives

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1. **Nature or content of the objective.** It is important to determine the intended changes to be brought about by the program.
 2. **Ordering of objectives.** Objectives should be clearly presented at each level of abstraction, with corresponding operational indicators to determine if the objectives have been met.
 3. **Target groups.** The specific group(s) to which the program is directed should be identifiable in terms of age, sex, ethnic categories, geographic boundaries, etc.
 4. **Short-term versus long-term effects.** The short-term impacts and the long-term effects of any program should be documented.
 5. **Magnitude of results.** It is necessary to determine how large (or small) an effect will be acceptable as a positive indicator of success.
 6. **Stability of outcomes.** For many programs, the effects are meant to be lasting; for others, particularly programs involving behavioral changes, additional exposure (reinforcement) to the program may be necessary.
 7. **Multiplicity of objectives.** It is important to clarify objectives to the extent that possible conflicts among them can be identified and dealt with.
 8. **Importance.** While objectives often differ in importance, and individuals may disagree on their relative value, some attempt should be made to place objectives in some general priority order.
 9. **Interrelatedness.** Linkages should be identified especially when a set of lower-order objectives may serve as an important component in the achievement of higher-order objectives.
 10. **Second order consequences.** It is important to identify possible side effects of the program—effects not intended but anticipated, or even unanticipated, by the initiators of the program.
-

subsequent development of mechanisms with which to measure the actual performance of public programs and their impacts on the community. The complexities inherent in an analysis of the relationships that exist between government programs and desired results, and the difficulties surrounding the development of adequate goals and objectives represent a significant challenge to the program manager, however.

2.5 Traditional Performance Measures

It is important to carefully choose what is to be measured and how it is to be measured. The tendency to measure everything and then to attempt to sort the wheat from the chaff can result in considerable waste of time and money. In this regard, the computer can be a dangerous instrument. There may be a fine line between what is interesting and even useful and what really needs to be known.

Whenever possible, measures should be pared down and selected to tie in with the goals and objectives of the program and its implementation. Another se-

lection criterion is accessibility of the data. Measures have to be selected that have a high probability of being generated by the program. This requires some advanced preparations.

Program objectives should include (or be capable of being translated into) explicit measures of performance. When a workload measure is related to a unit of input (e.g., cost), it is transformed into an *efficiency measure*. Output can be related to input costs, to units of labor (such as staff-hours), or to units of time. Efficiency measures might include miles of street paved per unit of dollars expended, acres of park land mowed per staff-hour, or number of buildings inspected per month.

Traditional performance measures also include *work standards*, that is, measures of the amount of effort that should be required to complete specific tasks. In an evaluation system, performance is recorded relative to such standards. If the work standard for reading electric meters is 200 per day, for example, a meter reader collecting data from 175 meters would have met 87.5 percent of the standard. The use of such measures requires service outputs that are characterized by fairly routine procedures, which themselves are standardized. Minimum quality standards also are required.

Utilization statistics provide another kind of performance measure—for example, percentage of total capacity utilized, equipment downtime, unbillable hours or nonproductive staff time, and so forth. Utilization statistics should be integrated into the evaluation system by being linked directly to goals and objectives.

Finally, performance measures may include some effectiveness criteria. For example, rather than stating police patrol performance in terms of arrests made per officer, the number of arrests might be further qualified in terms of those clearing the initial judicial screening. Instead of measuring the number of households provided with a given service, an assessment might be made in terms of those households satisfied with the service. Such information can also be related to units costs; for example, the number of households satisfied per input dollar.

2.6 Basic Approaches to Evaluation

Ideally, program evaluation seeks to compare *what actually happened* to *what would have happened* if the program had not been initiated. It often is difficult, if not impossible, to determine exactly “what would have happened if . . .,” however. Therefore, the objective is to apply evaluative procedures that can approximate this state. Standard approaches for conducting an evaluation include (1) before-and-after comparisons, (2) time-trend-data projections, (3) with-and-without comparisons, (4) comparisons of planned versus actual performance, and (5) controlled experimentation.

Each approach begins and ends with the same procedural steps. The first step is to identify the *relevant objectives* of the program or activities under evaluation and the corresponding evaluative criteria or effectiveness measures. The final step should include an explicit and thorough search for *other plausible explanations* for the observed changes and, if any exist, an estimate of their effects on the data.

The major purpose of evaluation is to identify changes in those criteria that can be reasonably attributed to the program or activities under study. However, other factors—such as external events or the simultaneous introduction of other related programs—may have occurred during the time period covered by the evaluation. One of these factors may have been the significant cause of the observed changes and not the program under evaluation. Explicit provisions for controlling at least some of these exogenous factors are included in the second, third, and fifth approaches described below.

Rossi and his colleagues have identified a number of “competing processes” that may influence program effects [16]:

1. *Endogenous change*: The condition for which the program is seen as a remedy or enhancement may change of its own accord. In medical research, the phenomenon is known as “spontaneous remission.”
2. *Secular drift*: Relatively long-term trends in the target population or in the broader community may produce changes that enhance or mask the effects of the program.
3. *Interfering events*: Short-term events also may produce enhancing or masking changes.
4. *Program-related effects*: The actual evaluation effort may contribute to a bias in the program results—the problem for the evaluator is to maintain the role of the “uninvolved observer.”
5. *Stochastic effects*: Chance or random fluctuation in any measurement effort may make it difficult to judge whether a given outcome, in fact, is large enough to warrant attention. Sampling theory can identify how much variation can be expected by chance.
6. *Unreliability*: Data collection procedures are subject to a certain degree of unreliability. The measurement instrument itself may be a major source of the problem.
7. *Self-selection*: Segments of the target population easiest to reach are those most likely to change in the desired direction for other reasons. Similar processes in the opposite direction may lead to differential attrition. Dropout rates vary from project to project but are always troublesome in evaluations.
8. *Maturation trends*: Programs directed toward changing persons at various stages in their life cycle must cope with the fact that considerable changes also are associated with the process of maturation.

The outcome of any program is a function of net program effects and these confounding elements. These competing processes must be isolated and addressed in each of the approaches described in the following section.

Evaluators need to be aware of the history, trends, politics, policies, values, and philosophies behind service programs. For example, programs that deal with juvenile justice may reflect bias toward treatment or punishment or may focus on the youth or on the family. It is necessary to know the impact of all the factors on whatever services are being evaluated. Evaluators may have to deal with client groups that receive services from many different programs. Such multiple service systems may have competing and contradictory orientations.

Before-and-after comparisons are the simplest, least costly, and most common evaluative approaches. Such comparisons involve the examination of conditions in a given target population immediately before a program is introduced and at some appropriate time after its implementation. The assumption is that any change in the “after” data, as measured by appropriate evaluation criteria, have occurred as a consequence of the new program. This approach is valid only in situations where program-related changes are clearly measurable and where comparisons are not likely to reflect short-term fluctuations.

Time-trend-data projections draw comparisons between actual program data and extrapolated data that suggest conditions that would have prevailed without the program. Data on each evaluative criterion should be obtained at several intervals before and after the initiation of the program activities. Pre-program data are projected to the end of the evaluation period by means of standard statistical methods. Actual and projected estimates are then compared to determine the amount of change resulting from the program’s introduction. This approach is most appropriate when an underlying trend, identified over a period of time, would likely continue if the new program had not been introduced.

With-and-without comparisons examine a population to which a particular program has been applied and one or more “control groups” to which comparable programs have not been applied. This approach can be used, for example, if some segment of the population is to be served by a given program while others are not, as is the case when a pilot program is tested. Changes in the values of the evaluative criteria (rates of change as well as amounts) for the “with” and the “without” groups form the basis for this comparisons. The characteristics determining the choice of comparative groups will vary with the types of programs under evaluation. The choice ultimately is based on the judgment of the evaluator as to what nonprogram-related factors might influence the effectiveness of the program under study. Although this approach controls for some important external factors, it generally is not a fully reliable measure of program effects. It is best applied in conjunction with other evaluative methods.

After-the-fact comparisons involve rather straightforward procedures and yet are surprisingly rare in their use. This approach requires that specific, measurable objectives or targets be established prior to the initiation of the program. Targets should be identified for a specific achievement within specific time periods (for example: “a reduction in the incidence of juvenile delinquency by 15 percent in two years,” rather than “the elimination of juvenile delinquency”). The actual performance (program outcomes) is then compared to these targets. Such evaluations can be readily undertaken if program targets are expressed in terms of effectiveness measures. This method provides no direct means of indicating the extent to which the changes in values of the effectiveness criteria can be attributed solely to the new program.

The task of setting objectives may not be taken seriously if the evaluations are not used seriously—a problem with all evaluation techniques. Targets may be overstated and, therefore, unattainable, or they be understated to make the program achievements look better. However, if the evaluation findings are used appropriately by decision makers, a valuable spin-off of this approach is that establishing targets is likely to become an important issue. Higher-level officials, as well as program managers, should participate in this process, and the targets should explicitly encompass all key program effects.

The after-the-fact approach can be applied more widely once provision is made for the regular collection of the data necessary for measuring effectiveness. This approach is particularly useful for annual evaluations. Targets can be set each year for one or more future years. Much can be learned from a careful, systematic examination of the immediate, short-term consequences of a program, even if a more elaborate evaluation method is not applied.

Controlled experimentation is by far the most potent approach to evaluation. Unfortunately, it also is the most difficult and costly to undertake. The procedures may involve many steps of experimental design techniques and can become very complex with respect to a particular program evaluation. The basic steps, however, are as follows:

1. Identify relevant objectives and corresponding evaluation criteria.
2. Select target populations that have similar characteristics in terms of their likelihood of being effectively treated by the program.
3. Assign target population (or a probability sample) to control and experimental groups in a scientifically random manner.
4. Measure the pre-program performance of each group using the selected evaluation criteria.
5. Apply the program to the experimental group but not to the control group.
6. Continuously monitor the operations of the experiment to determine if any actions occur that might distort the findings.

7. Adjust any such deviant behavior, if appropriate and possible; if not, at least identify and estimate its impact on eventual findings.
8. Measure post-program performance of each group using the selected evaluation criteria.
9. Compare pre- and post-program changes in the evaluation criteria of the groups.
10. Search for plausible alternative explanations for observed changes, and if any exist, estimate their effects on the data. [17]

The controlled experiment is most appropriate for the evaluation of programs directed toward specific individuals, such as health programs, manpower training, and so forth, and for a variety of treatment programs, such as those of drug and alcohol abuse, correction and rehabilitation, or work-release. It is not likely to be appropriate, however, for programs requiring large capital investments in equipment or facilities.

The use of the controlled experiment approach generally costs considerably more than the other evaluation techniques because of (1) the greater time required to plan and conduct the experiment and to analyze the data and (2) the higher level of analytical and managerial skills required. This approach implies certain indirect costs arising from the temporary changes made in the way the program operates in order to achieve differential benefits. Innovative projects can be evaluated more readily because pools of “unexposed” potential targets usually are available. Established projects, on the other hand, may require statistical methods that measure the effects in degrees of exposure, as well as by reflective controls that utilize time-series analysis. [18]

The selection of an appropriate approach will depend on the timing of the evaluation, the costs involved and resources available, and the desired accuracy. These approaches are not either/or choices; some or all of the methods can be used in combination. The before-and-after method is relatively weak when applied alone, but becomes much more useful in combination with other methods. The after-the-fact approach, involving comparisons of planned versus actual performance, is likely to be used more extensively once management information systems become more widely accepted and implemented. Although the experimental approach provides the most precise evaluation, its costs and special characteristics result in its being applied on a very selective basis.

Decisions about public programs inevitably are made under conditions of considerable uncertainty. Evaluations can reduce this uncertainty but cannot eliminate it totally. Even though it may not be possible to isolate the effects of a program from other concurrent events, it may not be necessary to be overly concerned if the evaluation indicates significant program benefits to the community or target population.

2.7 Applications of Evaluation Findings

The most comprehensive evaluations are little more than academic exercises if their findings have no impact on the processes by which policies are made and programs are developed. As Rossi has observed, “Evaluations cannot influence decision-making processes unless those undertaking them recognize the need to orient their efforts toward maximizing the policy utility of their evaluation activities.” [19] At the same time, the need for evaluation must be recognized and accepted by those responsible for the development and implementation of programs and policies. Management and performance audits, sunset legislation, and program reconstruction are examples of mechanisms for the further application of findings of evaluations.

The traditional emphasis of auditing has been on an assessment of fiscal transactions for accuracy, legality, and fidelity—on the issues of financial compliance. Gradually, more emphasis has been placed on audits that ask “Were the program milestones achieved in the most efficient and economical way possible?” *Management audits* involve an assessment of resource utilization practices, including an examination of the adequacy of management information systems, administrative procedures, and organizational structure. A *performance audit* extends the focus of a management audit to include an examination of program result to determine whether (1) the desired benefits were achieved, (2) program objectives were met, and (3) alternatives were considered that might yield the desired results at a lower cost. A performance audit generally is undertaken when a program or project has been completed or has reached a major milestone in its funding.

The distinctions among three basic types of audits, as described by the U.S. Comptroller General, are shown in Table 12.2. Regardless of the scope or emphasis, an audit must include the following elements:

1. *Audit criteria*—appropriate standards that can be used to measure the actions of management, employees, or their delegated agents in any audit situation.
2. *Causes*—actions that took place or that should have taken place to carry out assigned program responsibilities.
3. *Effects*—results achieved as determined by comparing actions taken (causes) with the appropriate standards (criteria).

Audit evidence represents facts and information used by an auditor as a basis to come to a conclusion on the audit objective. The information must be relevant, material, and competent. The auditor cannot reach a conclusion from evidence unless fairly specific guidelines are available as to the nature of what is to be audited. Evidence should only be gathered relating to the specific objectives of the audit. The *audit objective* is a question or a statement at the start of the detailed examination concerning the results expected. The evidence

TABLE 12.2 Types and Characteristics of Audits

1. **Financial and compliance**—determines (1) whether financial operations are properly conducted, (2) whether the financial reports of an audited entity are presented fairly, and (3) whether the entity has complied with applicable laws and regulations.

Sufficient audit work must be carried out to determine whether the audit entity (1) is maintaining effective control over revenue, expenditures, assets, and liabilities, (2) is properly accounting for resource liabilities and operations, (3) is providing financial reports which contain accurate, reliable, and useful financial data that are fairly presented, and (4) is complying with the requirements of applicable laws and regulations.

2. **Economy and efficiency**—determine whether the entity is managing or utilizing its resources (personnel, property, space, and so forth) in an economical and efficient manner and the causes for any inefficiencies or uneconomical practices, including inadequacies in management information systems, administrative procedures, or organizational structure.

A review of efficiency and economy shall include inquiry into whether the audited entity, in carrying out its responsibilities, is giving due consideration to conservation of its resources and minimum expenditure of effort. Example of uneconomical practices or inefficiencies include (1) procedures, whether officially prescribed or merely followed that are ineffective or more costly than justified, (2) duplication of effort by employees or between organizational units, (3) performance of work that serves little or no useful purpose, (4) inefficient or uneconomical use of equipment, (5) overstaffing in relation to the work to be done, (6) faulty buying practices and accumulation of unneeded or excessive quantities of property, materials, or supplies, and (7) wasteful use of resources.

3. **Program results**—determine whether the desired results or benefits are being achieved, whether the objectives established by the legislature or other authorizing body are being met, and whether the agency has considered alternatives that might yield desired results at a lower cost.

The auditor should consider (1) the relevance and validity of the criteria used by the audited entity to judge effectiveness in achieving program results, (2) the appropriateness of the methods followed by the entity to evaluate effectiveness in achieving program results, (3) the accuracy of the data accumulated, and (4) the reliability of the results obtained.

Adapted from: The Comptroller General of the United States. *Standards for Audit of Governmental Organizations, Programs, Activities, and Functions* (Washington, D.C.: General Accounting Office, 1974), pp. 2, 11, 12.

gathered should permit the auditor to reach a conclusion on the statement or to answer the question.

Adoption of *sunset legislation* by various states and localities has provided added impetus for more systematic evaluation procedures. This mechanism of legislative oversight requires periodic evaluations of programs and the termination of those programs for which continuance cannot be justified. Although differing from state to state, most sunset legislation provides for the following:

1. Agencies and/or programs are assigned a mandatory termination date, and if the legislative body takes no formal action, the enterprise is concluded (that is, the sun sets) on that date.
2. The agency is given an opportunity to justify its continued existence (or the continuance of certain programs) prior to termination. This justification may entail any number of evaluation indices (and may involve a performance audit or may be undertaken in conjunction with zero-base budgeting or service level analyses).
3. The legislative body has the option to reinstate or to reconstruct the agency or programs, or to terminate it. Reinstatement may leave the agency/program unchanged, whereas reconstruction may lead to significant modifications in the mandate and responsibilities of the agency/program.
4. If reauthorized or reconstructed, the agency or program will again be subject to review and possible termination at the end of the next cycle. [20]

As initially conceived (in Colorado and Florida), sunset laws were to be relatively selective in application, focusing for the most part on state regulatory agencies. Otherwise if applied across-the-board, legislators are likely to take the safe route and allow the agencies/program to continue. Sunset laws could be a much more pervasive tool, but their application remains highly dependent on previously constituted management decisions.

The real art of program improvement is not bold guillotining of unpromising programs, but instead the reconstruction of the program developing process. The concept of *program reconstruction* is based on the feedback stage of the systems model, wherein initial program outputs are modified in response to the reactions of affected groups and sources of support. Reconstruction suggests a refining and retargeting of programs (and policies) rather than setting totally new directions.

Program terminations are rare; curtailment is likely to be a more common approach. Complex organizations have an uncanny instinct for survival, and as a consequence, programs may be constantly adapted to emerging situations in order to avoid termination. Given the hard-fought battles necessary to obtain a policy or program in the first instance, public officials have a natural reluctance to consider the issue of termination. Significant political and/or client groups often support programs beyond their span of effectiveness, and programs have certain rights of "due process." Thus, mounting campaigns for termination often can be costly, both monetarily and politically.

Strategic reconstruction often is possible with public programs, particularly if such adjustments are amenable to entrenched interests. Peter de Leon offers several guidelines for program modification:

1. Modification and/or termination should not be viewed as the end of the world; rather it is an opportunity for program improvement.
2. Modification and/or termination should coincide with systematic evaluation.
3. Policies and programs have certain “natural points”—times and places in their life spans—where reconsiderations are more likely and more appropriate.
4. The time horizon for gradual change is a significant factor.
5. The structure of incentives might be changed to promote modifications; for example, agencies might be permitted to retain a portion of the program funding that they voluntarily cut.
6. Agencies might employ a staff of “salvage specialists,” trained in real-locating resources. [21]

Increasingly, government activities are constrained by impending fiscal crises. Therefore, terminations, or at least reconstructions, are becoming more viable.

3 DESIGNING A MANAGEMENT INFORMATION AND PERFORMANCE EVALUATION SYSTEM

Some writers view performance evaluation as a separate process outside the management information system. Others recognize the importance of incorporating data and information developed through such evaluations into a *management information and performance evaluation system* or MIPES. [22] A MIPES must be flexible and adaptive and must have the capacity to accommodate deficiencies as the system evolves. Procedures should be developed to detect these deficiencies and to make adjustments in the system to eliminate or reduce them. Managers, as well as information specialists and systems analysts, should participate in each phase of the design of a MIPES.

3.1 Decision Classification

The design of a MIPES should begin with an identification of the important types of strategic, managerial, and operational decisions required by the organization. Relationships among decisions should be defined and the flow of decisions should be determined. Such a *decision-flow analysis* often reveals that important decisions are being made by default. For example, past decisions often may still be binding on the operations of an organization even though they are no longer applicable to current problems and procedures. When asked, “Why do you follow these procedures?” all too often the answer is “Well, that’s the way we have always done it.”

An analysis of decision flows may also uncover situations in which important interdependent decisions are being made independently. Frequently, it is possible to identify changes that should be made in the flow of decisions to correct information deficiencies that may involve (1) the responsibilities of management, (2) the organizational structure, or (3) measures of performance.

The next step involves an analysis of the information requirement of the major classes of decisions. Ackoff has suggested that organizational decisions can be grouped into three types: (1) decisions for which adequate models exist or can be developed and from which optimal solutions can be derived; (2) decisions for which models can be constructed but from which optimal solutions cannot be readily extracted; and (3) decisions for which adequate models cannot be constructed. [23]

In response to type-1 decisions, the model should have the capacity to identify the relevant information required for a solution to the problem. The decision process should be readily incorporated into the MIPES (thereby converting it, at least partially, to a management control system). In the second case, a further search process may be necessary, including the examination of alternative approaches, to fully explicate these information requirements.

Further research is required in the third category to determine what information is relevant and how this information can be organized to address the decision situation. It may be possible through such research, to make implicit models used by decision makers more explicit and in so doing, to treat such problems as type-2 decision situations.

In each of these categories it is appropriate to provide feedback by comparing actual decision outcomes with those predicted by the models. It is important that the MIPES have the capacity not only to answer the questions that might be addressed to it but also to report any deviations from expectations (that is, actual decision outcomes that differ from those predicted). Each decision made, along with its predicted outcome, should become an input to the management control system. [24]

3.2 An MIPES for Financial Planning and Management Control

The basic components of a MIPES applicable to the needs of financial planning and management control are illustrated in Figure 12.2. Three specific data areas provide inputs for the formulations of strategic decisions: (1) *environmental intelligence*—data about the broader environment of which the organization is a part, including assessments of client needs, (2) *autointelligence*—data about the component elements of the particular organization, including an evaluation of its resources and its capacity to respond to client needs, and (3) *historic data*, which bring together and analyze the lessons of past experience. These data are stored in the memory banks of the organization to be retrieved when particular decision

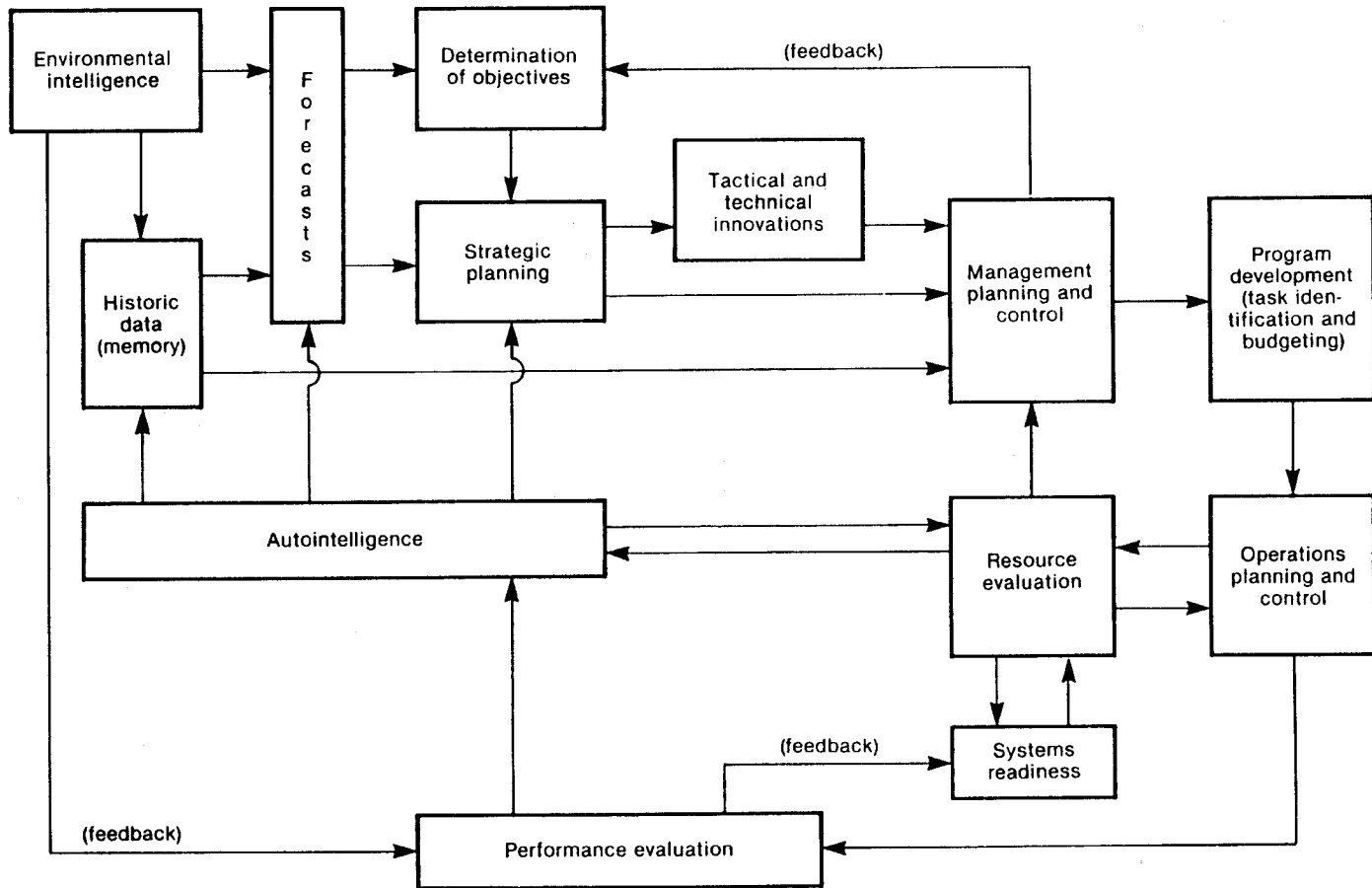


FIGURE 12.2 Components of an Information Management System

situations arise or when a broader assessment of overall goals and objectives is appropriate.

Basic research and analysis are essential to effective financial planning and management control. Data must be systematically collected and stored for future use and reference. Data can be generated externally (e.g., macro-trend analyses, census data, etc.) or internally (e.g., accounting and other financial management data). Basic analysis can be carried out using various modeling programs available in a well-constructed MIPES. The results can be stored in the database for reference and updating. The diagnosis of trends can be aided, in part, by the modeling and simulation programs and statistical analysis packages.

Forecasts of the probable outcomes of events can be developed on these data foundations. Probable happenings are outlined by assuming the continuance of existing trends into hypothetical futures. These forecasts provide an important inputs in determining organizational objectives—an initial impetus for strategic planning.

While computer-based data have not been used extensively in the formulation of goals and objectives, a MIPES can aid in the development and evaluation of such statements. Objectives can be written so as to take fuller advantage of available information in the system. Additionally, written objectives can be stored, permitting easy access, change, and output. Once objectives have been determined (at least in preliminary fashion), the planning process can begin to suggest possible directions that the organization can take in response to client needs in the broader environment. Two important initiatives are important in this regard: (1) the search for possible new courses of action to improve the overall performance of the organization and (2) a framework for resource management and control.

The same system components used in the basic research and analysis phase can be applied in the formulation and *analysis of alternatives*. Significant use must be made of the storage and query capabilities of the MIPES, since the assessment of alternative must build on the basic analyses previously carried out. The results of previous decisions and program actions are combined through policy and resource recommendations. In this capacity, the MIPES can be useful in the storage and retrieval of needed information and in report generation.

Tactical and technical innovations must be sought to improve the overall responsiveness of the organization (in the private sector, these innovations also improve the competitive position of the organization). Various “what if” scenarios may be tested through analytical subroutines contained within the MIPES.

Management plans must translate the overall intent of strategic plans into more specific programs and activities. These management plans are both information demanding and information producing. The budget process provides important managerial feedback in terms of evaluations of prior program decisions

and actions. Feedforward information emerges from the various projections and forecasts that are required by financial analysis and budgeting processes.

Management control activities draw on the memory banks of the organization in search for *programmed decisions*—decisions that have worked successfully in the past. Timely resource evaluations also provide important inputs into the management control process. These evaluations include information regarding the current financial status of the organization (accounting data), as well as the overall response capacity of other organizational resources (systems readiness). Financial planning and management control processes should provide critical feedback to the further refinement of objectives. In some cases, this feedback will require a recycling of the processes before proceeding to the next phase.

Program development involves the activities of task identification and budgeting. Specific operations are detailed within the framework provided by the strategic plan and financial planning decisions. Responsibilities for carrying out these operations are assigned, as are the resources required by these operations. Specific operations may be further detailed through the procedures of *operations planning and control* (which may include such techniques as Critical Path Method (CPM) and Program Evaluation Review Technique (PERT)). *Programming and scheduling procedures* usually require further information regarding resource capabilities. They also may precipitate a recycling of the financial planning process.

The final component of the MIPES involves the information derived from *performance evaluations*. Performance evaluation draws data from the broader environment regarding the efficiency and effectiveness with which client needs are met, problems are solved, opportunities are realized, and so forth. The effectiveness of ongoing and proposed programs is assessed in terms of agreed-on goals and objectives, and areas needing improvement through program modification are identified, including the possible termination of ineffective programs. An evaluation must take into account the possible influence of external as well as internal organizational factors.

A basic problem of organizations today—whether in the public or private sectors—is to achieve an appropriate balance in programs and decisions to ensure *systems readiness*. Systems readiness defines the response capacity of the organization in the short-, mid-, and long-range futures. Sufficient flexibility is required to meet a wide range of possible competitive actions. The development and maintenance of a MIPES that includes the basic components outlined herein can contribute significantly to meeting this challenge.

Feedback is a basic requirement of any MIPES. Feedback must be obtained in terms of quality (effectiveness), quantity (efficiency of service levels), cost, and so on. Programs must be monitored to maintain process control. Evalu-

ations of resources (inputs) provide feedback at the earliest stages of program implementation.

Feedback data must be collected and analyzed at various stages of program implementation and the maintenance of ongoing operations. These analyses involve processing data, developing information, and comparing actual results with plans and expectations. Routine adjustments may be programmed into the set of ongoing procedures, and instructions can be provided to those individuals who must carry out specific tasks. Feedback from the operating systems provides an information flow within the management control procedures to initiate and implement program changes in a more timely basis. Thus, procedures are modified and files updated simultaneously with routine decision making and program adjustments.

Summary and exception reports may be generated by the MIPES and become part of higher-level reviews and evaluations. These evaluations, in turn, may lead to adaptations or innovations of goals and objectives. Subsequent management activities should reflect such feedback, and the entire process is recycled.

Managers must seek data and information that will permit actions to be taken before problems reach crisis proportions. Historic data provided by conventional accounting systems may be insufficient to meet these decision needs (even when the time lag is only a few weeks). Resource evaluations on the input side and resource monitoring as programs or projects progress can provide the more timely information required to anticipate rather than merely to react to problems.

An information system appropriate for financial planning and management control must use *feedforward* as well as control based on feedback. Feedforward anticipates lags in feedback by monitoring inputs and predicting their effects on output variables. In so doing, action can be taken to change inputs and, thereby, to bring the outputs into equilibrium with desired results before the measurement of outputs discloses a deviation from accepted standards.

In time, an organization “learns” through the processes of planning, implementation, and feedback. [25] As the organization’s value system evolves, approaches to decision making and the propensity to select certain means and ends may undergo significant changes.

3.3 MIPES Reporting Formats

Key to the development of a MIPES is a consistent format in which the data and analyses are presented. At the outset, likely users of the data should be interviewed to gather suggestions as to which indices to include in the system and how best to report these indicators. A list of topics and a presentation format should be agreed upon, but some flexibility should be afforded during the

initial iterations to add to or refine the indices as new topics are suggested by the review of these data. Year-to-date figures often provide the most useful basis for comparisons, but monthly figures, comparisons with budgeted amounts, and year-end totals may also be important in monitoring certain activities. Targeted estimates, projections, and data extrapolations to identify trends may also be appropriate.

Time spent up-front in designing reporting format to facilitate data entry and analysis and to ensure quick turnaround in the access of information is effort well invested. Data are likely to be drawn from a number of sources within the organization, and some manipulation of these data may be necessary to ensure that comparisons will be valid and consistent. Preprinted data collection forms may assist in the gathering of these data. These forms should include the data reported by the unit in several previous time periods and provide space for comments regarding any notable changes in the latest data entries when compared to previous time periods. When changes are deemed to be significant, representatives from areas of the organizations responsible for the activities may be called upon to make a further presentation to explain these data.

Periodic meetings (e.g., monthly) to discuss the key indicators are important. The data should be provided a few days before these meetings, with an executive summary of the key issues to be discussed. The participants can then focus on those items most pertinent to their areas of responsibility and should be prepared to discuss problems and to comment on trends that are evident from their perspectives.

It is likely that some of the data deemed appropriate for inclusion as key indicators do not exist or are not readily available in the format desired. Where monthly data have not been collected in the past, it may be necessary to reconstruct such data or at least start collecting it in order to have the necessary data points from which to draw comparisons. When data are not consistent from one year to the next (for example, because of a change in data categories), it may be necessary to recompute (or “crosswalk”) the prior year’s data to make them more comparable. In some cases, the units that provide the data may feel that the presentation format should be modified, and some negotiations may be necessary to arrive at an agreed-on format that both satisfies users’ needs and meets the perceptions of the source authorities.

Two or more units within an organization may track the same data and may provide different analyses and even conflicting information based on these data. In many instances, these different perspectives are useful, provided that the assumptions on which the data analyses are based are clearly identified and understood. In some cases, it may be necessary to agree upon one data set over another to avoid misunderstanding and confusion among the information users.

Particular effort should be made from the outset to maintain the accuracy of the data to ensure the credibility of the reports from the MIPES. Data presen-

tations should be focused and to the point to maintain everyone's attention. The main purpose is to raise questions at an early stage before problems get "out of control" and to alert senior management to significant trends that need to be factored into future decision-making. Major changes in an index should prompt questions and may lead to changes in policies or procedures.

The MIPES encourages officials to focus on the same information and helps to educate senior managers concerning areas of the organization outside their direct responsibility. Those who attend the periodic meetings should become more attuned to areas of concern for the overall organization. Officers providing data should become more aware of their accountability and should develop a sense of participation by providing not only data but answers to important questions in areas for which they have responsibilities. As with many of these management techniques, the process of developing the MIPES may provide valuable contributions to the overall well-being of the organization.

4 IMPLEMENTATION OF A MIPES

Implementation of a MIPES can be a traumatic experience. At a minimum, changes in procedures will affect the ways in which plans are made, programs are developed, and performance is evaluated within the organization. New patterns of communications will emerge, and new—presumably better—information will be available to assist in carrying out decision-making and administrative responsibilities. Efforts to improve the MIPES may also uncover the need for organizational changes that may be even more unsettling than the procedural changes necessary to implement the system. The introduction of a MIPES may represent substantial change in the established way of doing business, which can be viewed with considerable alarm (and generate significant resistance) by those within the organization.

4.1 Commitment of Top Management

Anthony and Herzlinger have suggested that "the driving force behind a new system must come from top management, . . . it is unlikely that a majority of operating managers will voluntarily embrace a new system in advance of its installation, let alone be enthusiastic advocates of it." [26] The support of top management means more than mere acquiescence to the system as a "necessary evil." Senior managers in the organization must be willing to devote sufficient time and effort to fully understand the general concepts and objectives of the MIPES. They must explain to principal subordinates how these procedures will help them and the organization as a whole. If problems arise during the design and implementation of these procedures, top management must listen to opposing viewpoints and then make decisions to resolve such problems and remove

any impediments. The organization's leadership may also have to "do battle" with outside interest groups, which might otherwise seek to prevent the adoption of such systems. It often is tempting to fall back on the old saw: "We have no choice but to implement these procedures to meet externally imposed requirements." In so doing, however, the basis has been laid for less-than-enthusiastic support (and perhaps organized resistance) from within the organization.

Top management must set the example in terms of the system design effort by the willingness to take time away from other pressing problems to clearly articulate goals and objectives and to discuss information management needs and expectations. Top management's participation in these efforts will help to convince personnel at the various operating levels to devote the necessary and appropriate time and effort to the task.

4.2 Education Through Participation

Advocates of MIPES "should understand that the installation of a new system is a political process. It involves pressure, persuasion, and compromise in proper proportions as in the case with any important political action." [27] Operating managers will be more likely to support the system if they are convinced that, on balance, it will benefit them in carrying out their assigned responsibilities. The new system should provide operating managers with better information about the activities and performance of those staff members for whom they are responsible. With this information, the operating managers should have a better basis for directing and controlling the efforts of subordinates. On the other hand, uncertainty about the manager's performance is also likely to be reduced, and depending on personal interpretations of how such information will be received by "higher ups," an operating manager may resist the system.

The preparation of manuals of procedures and other explanatory materials is a necessary part of the educational process. These materials are not the most important part of the process, however. Management at all levels within the organization must be convinced that the new system, in fact, is going to be used and that it will help them do a better job. The best way to "pass the word" is to have managers teach managers—that is, top management should discuss the new system with subordinates, who then carry the message to their subordinates, and so on. Because the teachers must themselves become more fully indoctrinated, this process aids in the education of all those involved.

The president of a major northeastern university, for example, initiated a new management information system by installing computer terminals in the offices of all the vice presidents, substituting electronic mail messages for the more traditional written memoranda. The vice presidents quickly adapted to this system (as a matter of survival) and began communicating with academic deans and other administrators through the same process. Once a system goes into opera-

tion, even on a trial basis, the use of the information that it generates is the best educational device available.

It may not be feasible to install a MIPES across the whole organization all at one time. Initial efforts may be concentrated on those segments of the organization where the results of such improvement will be most visible. Demonstrated success in one area often can lead to more general acceptance of the system throughout the organization.

It is difficult to be specific about an appropriate period required to successfully design and implement a MIPES. In a large, complex organization, two to three years may elapse from the time the decision is made to initiate systems development and the date that the system is fully implemented. The time available is never quite enough. There always will be worthwhile refinements that could be made. However, if enough time were allowed for all the fine-tuning efforts, the system might never go into operation.

4.3 A Final Caveat

It is important not to oversell the potential of the new system. Aaron Wildavsky offers a number of “rules” that are applicable to the implementation of any new management system. [28] The *rule of skepticism* suggests that a good deal of skepticism should be exercised when the initial concept of an improved management system is presented. The *rule of delay* cautions officials to give the system adequate time to develop and to be prepared to face periodic setbacks in its implementation. As Wildavsky observes, “if it works at all, it won’t work soon.” The rule of *anticipated anguish* is essentially a restatement of Murphy’s law—“most of the things that can go wrong, will.” Wildavsky suggests that management must be prepared to invest personnel, time, and money to overcome breakdowns in the system as they occur. And the *rule of discounting* suggests that anticipated benefits to be derived from the new management system should significantly outweigh the estimated costs of mounting the system. Much of the cost must be incurred before the benefits are achieved. Therefore, the tendency is to inflate future benefits—to oversell the system—to compensate for the increased commitment of present resources.

Even with the best system, data must still be analyzed and interpreted by managers. And based on this information, judgment must be exercised in decision making. Allowance must be made for the inadequacies or unavailability of data. Although the system can provide certain decision parameters, it cannot make decisions. Managers must continue to exercise judgment regarding the exceptions that prove the rules. Such caveats must be emphasized during the educational processes. Otherwise, managers who are aware of such limitations will regard the whole effort as the work of impractical theorists.

Around the turn of the twentieth century, Clerk Maxwell, an English physi-

cist, suggested a very clever way to overcome the second law of thermodynamics. Maxwell envisioned a small, but very intelligent creature—a demon—who could see molecules and could serve as a “gatekeeper” between two containers of gas at equal temperature and pressure. By carefully opening and closing the gate, the demon could permit faster-moving molecules to pass into one container, while slower molecules remained in the other. Over time, one container would get hotter and the other cooler. The available energy in the system, as measured by the temperature differential between the two containers, would be increased without adding any new energy to the system (other than Maxwell’s smart demon). Thus, the second law of thermodynamics would be circumvented.

Maxwell’s demon, of course, is an allegory for anything that contributes *organization* to a disorganized or chaotic situation. In this context, the term “demon” refers to a positive genius, designed to address a host of problems within an organization. The objective is to reduce management costs as a percentage of total organizational costs and to satisfy the “increasingly voracious appetite for decision-influencing management information. . . .” [29] On the other hand, Maxwell’s demon can become a resource-demanding devil—an organizational black hole that can absorb considerable energy with little apparent payoff. The careful design and implementation of a management information system can contribute significantly toward the demon-genius—or at least can help avoid the demon-devil.

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