To the Graduate Council:

I am submitting herewith a dissertation written by David H. Folz entitled "Municipal Productivity and Service Quality: A Regression-Based Fiscal Analysis." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Political Science.

William Lyons, Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:

Vice Provost
and Dean of The Graduate School

MUNICIPAL PRODUCTIVITY AND SERVICE QUALITY:

A REGRESSION-BASED FISCAL ANALYSIS

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

David H. Folz

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DEDICATION

The author would like to dedicate this work to the memory of David W. Mock whose friendship, wit and scholarly dedication will never be forgotten and whose excellence in teaching will long serve as a source of inspiration for his collegues.

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ABSTRACT

This study investigates the meaning, measurement and improvement of municipal service productivity. The focus is on the refinement of a methodology for measuring intercity productivity and its quality of service dimension. An analysis of relative service productivity is performed for the thirty-one full service Tennessee municipalities between 10,000 and 55,000 population.

The regression-based fiscal analysis of intercity productivity employs FY 1983 total expenditure data for six municipal services as the dependent variable and workload, labor costs and relative service quality scores as independent variables. Quality scores are based on the Relative Service Quality Index which is also used to classify cities into high and moderate service quality strata. Regression equations are calculated for the two service quality strata, the product of which is the Relative Productivity Index representing actual municipal expenditure deviations from the regression-based projected expenditures taking into account municipal variations in workload, labor costs and service quality.

Pearson product-moment correlation coefficients are used to analyze the differences in relative service productivity. Six categories of variables were included in the analysis: characteristics of the chief executives, legislative officials and department heads; organizational priorities; organizational characteristics; management techniques; financial factors; and community characteristics. Several

statistically significant relationships emerged from the analysis that help to explain differences in relative productivity.

The findings indicate that some of the important explanatory variables are different for or vary in their impact on the relative productivity of high and moderate quality of service cities. Among the more important explanatory variables for each quality group are: the tenure and education of council members and department heads; the presence of System 3 organizational characteristics, the absence of employee incentives, the extent of service privatization, the total revenue per capita collected, the extent of reliance on intergovernmental revenues versus own-source revenues on a per capita basis, and the percent of the population 65 years or older.

The findings imply that conditions of fiscal stress rather than organizational wealth promote higher productivity. Those cities that rely more extensively on local property taxes rather than intergovernmental revenue are more efficient in their service operations. Cities that contract with private firms or other governmental entities for service provision and those that have a System 3 organizational climate also are the more productive cities in this study.

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CHAPTER I

INTRODUCTION

Few city officials and local citizens have a clear and precise measure of the quality and effectiveness of the services performed in their cities. For most, the prevailing benchmark for the evaluation of municipal service productivity is the annual change in the local tax burden--particularly the local property tax rate. For a variety of reasons, local officials have had to tap local revenue resources in recent years to finance larger proportions of the cost of providing public services. One of the inevitable consequences of this trend is the perpetuation of the popular notion that governmental productivity is a conflict in terms. Another more potentially devisive effect is the widening of a credibility gap about the efficacy of public programs.[1]

Recent public expression of frustration with and rebellion against the continuing rise in public budgets, spiraling inflation, and the perceived wastefulness in the spending of tax resources has taken the form of "balanced budget" campaigns and other citizen initiatives intended to slow the pace of taxing and spending by government. Many of these efforts were initially successful in the wake of the tax revolt commonly associated with the passage of Proposition 13 in California in 1978.[2]

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[1]Jerome B. McKinney, "Process Accountability and the Creative Use of Intergovernmental Resources," Public Adminstration Review, special issue, (January 1981): 144. Also see, Ralph C. Bledsoe, et al., "Productivity Management in the California Social Services Program," Public Administration Review 32 (November-December 1972): 800.

[2]Data from the National Governor's Association indicates that as of 1981, thirty-six states have cut effective income tax rates, twenty-

These political demands for more efficient program management and simultaneous public desires for better quality and more quantity of public services with little or no increase in taxation create serious problems for local service providers and raise the stakes in local budget processes across the country.[3]

Competition for a share of the local fiscal pie has always been keen, but never more so than in this era of fiscal stress when the pie itself has shrunk. This fiscal scarcity has nudged many local government officials along the largely uncharted path of productivity improvement. So it is not surprising to hear talk in many city halls about productivity improvement needs amidst whispered strategies about how best to break the news to council or the public about the need for a local tax increase to finance all needed services and programs.

The improvement of public sector productivity has been heralded by many as an important strategy for "facing up squarely to the disparity between needs and resources" and addressing the key question of whether better management and adoption of innovative technologies can slow down

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two have reduced sales taxes, and seventeen have enacted some form of taxation or expenditure limitation. Source: Dan Bolz, "Cuts in Aid, Taxes Leave States Reeling." Pittsburg Press, June 6, 1981, p. B-3.

[3]David G. Garson, Public Management Research in the United States (New York: Praeger Publishers, 1983), p. 6. Surveys conducted by the Advisory Commission in Intergovernmental Relations (ACIR) indicate sustained support for a "go slow" policy on taxes and spending since 1975. Source: Advisory Commission on Intergovernmental Relations, Changing Public Attitudes on Governments and Taxes, 1982 (Washington, D.C.: U.S. Government Printing Office, 1982), pp. 6-7. On the other hand, the National League of Cities reports that in 1983, 39 percent of all U.S. cities raised user fees on once "free" public services ranging from libraries to recreation facilities; 24 percent of all cities raised business taxes; 30 percent increased property taxes; and 53 percent of

the runaway costs of urban services.[4] While the renewed theoretical and practical interest in productivity improvement may yet produce important benefits in the form of more efficient and effective local government, the recommendations from productivity proponents to date are often confusing and frequently contradictory.[5] Techniques that appear useful in one instance fail in others and the criteria for judging productivity gains and losses are often ill-defined and subjective.[6] For the local politician willing to take the risk, a productivity program "is a chance to build a reputation with the electorate, but to date, productivity programs have made heroes of few, if any politicians.[7]

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all U.S. cities boosted local sewer rates to help meet federally-mandated standards. In addition, the Municipal Finance Officers Association reports that the federal share of the average city budget has been falling steadily for several years. In 1981, federal aid met 8.3 percent of the average city's expenses but by 1983 that proportion dropped to 6.4 percent. Commenting on the combined effect of these factors on cities, Mayor George Voinovich, president of the National League of Cities, explained that, "they place a new responsibility on the backs of mayors, now we must be very creative . . . or reduce services that depend on federal funds or find new sources of revenue for them." Source: Lucia Mouat, "Reagan Second-Term Budget Plan Troubles U.S. Mayors." Christian Science Monitor, December 31, 1984, pp. 1,6.

[4]Dan Cordtz, "City Hall Discovers Productivity," in Marc Holzer, ed., Productivity in Public Organizations (Port Washington, New York: Kennikat Press, 1976), p. 24.

[5]Harry P. Hatry, "Issues on Productivity Measurement for Local Government" in Marc Holzer, ed., Productivity in Public Organizations (Port Washington, New York: Kennikat Press, 1976), p. 99.

[6]David N. Ammons, Municipal Productivity: A Comparison of Fourteen High-Quality-Service Cities (New York: Praeger, 1984), p. 1.

[7]Frederick O'R. Hayes, Productivity in Local Government (Lexington, Massachusetts: Lexington Books, 1977), p. 246.

It is no wonder that some local officials are uncertain what productivity means, unclear as to how best to pursue it, and even less sure that the investment of resources in productivity improvement will produce the desired benefits.

The purpose of this study is to dispel some of the "technical and mysterious aura surrounding productivity management."[8] The focus is on municipal productivity--specifically, its meaning, how it can be measured, and the ways in which it can be improved. As Marc Holzer points out, "the size and complexity of the literature demands a clear, conceptual overview" of these issues.[9] Moreover, particular attention is given to the intercity comparison of municipal productivity. There is little question among urban observers that real productivity differences exist among municipalitites. However, what is not known is "how much of these differences are due to inherent local characteristics not found elsewhere and how much are due to better practices by some jurisdictions."[10] As Harry Hatry explains, "Much closer examination is needed to determine why certain jurisdictions appear to be doing better . . . [because] . . . once this is accomplished, the insights gained can be used to help improve the poorer performing jurisdictions."[11]

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[8]Marc Holzer, ed., Productivity in Public Organizations (Port Washington, New York: Kennikat Press, 1976), p. 4.

[9]Ibid.

[10]Hatry, "Issues in Productivity Measurement for Local Government," p. 98.

[11]Ibid, p. 100.

The systematic study of comparative municipal productivity can help local governments establish reasonable targets or standards for productivity and assist interested citizens in making more informed decisions about the quality and effectiveness of public services and programs. As Ross and Burkhead point out, "The degree of concern over local government efficiency is heightened when one realizes that the principal fact which can be stated is that little is known."[12] The paucity of systematic research dealing explicitly with comparative municipal productivity is especially acute considering the recent reductions in federal funding for productivity research. Termination of the National Center on Productivity and Quality of Working Life and reduced funding for productivity research by the National Science Foundation, the Department of Housing and Urban Development, and the Office of Personnel Management has dampened interest somewhat among the academic community.[13] Ironically, this reduction in federal support for public productivity research has occurred at a time when communities seem most likely to profit from applied research in this field.

In addition to enhancing the potential for more effective management of resources, an examination of comparative local government productivity will help to answer taxpayer's questions regarding the use

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[12]John P. Ross and Jesse Burkhead, Productivity in the Local Government Sector (Lexington, Massachusetts: Lexington Books, 1974), p. 83.

[13]Jerome A. Mark, "Measuring Productivity in Government," Public Productivity Review 5 (March 1981): 41.

of tax dollars. What Edward K. Hamilton wrote more than a decade ago about municipal productivity is, for the most part, still pertinent today:

> The public is now assailed by more irrelevant facts, half-facts, and non-facts on this subject than on any issue in public affairs. For too long, the citizen has been forced to rely for productivity judgments on the whims, the impressions, and the often uninformed opinion of public spokesmen innocent of any real knowledge of the workings of government.[14]

As Ross and Burkhead point out, "any study which removes some of these irrelevant facts, half-facts and non-facts and in the process better equips the citizen to evaluate local government is well worth the effort."[15]

In an effort to help fill gaps in municipal productivity research, this study examines several key variables hypothesized to account for productivity differences between municipalities. Data on selected community, organizational, and managerial characteristics is collected and analyzed in relation to municipal productivity in selected cities in Tennessee. As Hatry notes, "There is surprisingly little theory or research on how such characteristics should be expected to affect efficiency, effectiveness, or productivity of local services."[16]

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[14]Edward K. Hamilton, "Productivity: The New York City Approach," Public Administration Review 32 (November-December 1982): 785.

[15]Ross and Burkhead, p. 4.

[16]Hatry, "Issues in Productivity Measurement for Local Government," p. 99.

By investigating the correlates of service productivity for the selected cities and analyzing the findings in relation to municipal service productivity scores, understanding of the theoretical and strategic linkages between management techniques and organizational characteristics, and productivity improvement is enhanced. Based on these findings, it is expected that several recommendations can be made that help to illucidate the process of municipal productivity improvement. The need for this type of analysis in the public sector is undisputed.[17]

The remainder of this chapter sets the stage for analysis of comparative municipal productivity by exploring the meaning of public productivity and its importance to the national economy. Subsequent sections examine the issue of productivity improvement in municipal government with particular attention to the distinctions between improvement processes in the public and private sectors, the five basic models for productivity improvement, factors common to most successful municipal productivity efforts, the techniques/methods for improving productivity, the major impediments to improving productivity, and a review of relevant findings of social science research on the issues of innovation, job satisfaction, motivation, managerial styles, and productivity improvement.

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[17]See, for example, John P. Frendreis, "Innovation Characteristics as Correlates of Innovation Adoption in American Cities," Midwest Review of Public Administration 12 (June 1978): 67, and Richard D. Bingham, The Adoption of Innovation by Local Government (Lexington, Massachusetts: Lexington Books, 1976), p. 3.

The Meaning of Productivity

The public productivity improvement theme is clearly in vogue. The literature on productivity, burgeoning since the appointment of the National Commission on Productivity in 1970, has been accompanied by a corresponding increase in attention given the subject in conference proceedings and local budget messages.[18] Despite blossoming interest in public productivity during the last decade, a review of the literature on the topic indicates a lack of definitional unanimity on the meaning of the term.[19] In fact, Ross and Burkhead point out that the amount of ambiguity and misinterpretation surrounding productivity "can to some extent be gauged by the wealth of articles written on the meaning and measurement of productivity in recent years."[20] The plethora of articles notwithstanding, Burkhead and Hennigan lament that the subject of government productivity, rather than achieving greater clarity, still seems to be falling into greater conceptual disarray.[21] No doubt some of the misconceptions surrounding the concept of produc-

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[18]Q. Whitfield Ayers and William J. Kettinger, "Information Technology and Models of Governmental Productivity," Public Administration Review (November-December 1983): 561. The authors point out that the topic is not new since one of the first attempts to conceptualize and measure governmental productivity dates back to 1908 when the Bureau of Labor Statistics began a productivity study of the U.S. Post Office.

[19]John W. Kendrick, Understanding Productivity: An Introduction to Dynamics of Productivity Change (Baltimore: The Johns Hopkins Press, 1977), p. 2.

[20]Ross and Burkhead, p. 12.

[21]Jesse Burkhead and Patrick Hennigan, "Productivity Analysis: A Search for Definition and Order," Public Administration Review 38 (January-February 1978): 34.

tivity are "the result of catchy definitions popularized by the press."[22] The intuitively appealing phrase "more bang for the buck" is illustrative.[23]

Even among practitioners in the field "there is no unanimity regarding the appropriate definition of productivity."[24] Balk believes this lack of agreement has evolved "because productivity constructs and terminology are inherited from industrial assembly lines and private sector economic theory."[25] In a similar vein, Robert Quinn observes that a major factor which contributes to a lack of agreement on the meaning of productivity relates to the different orientations of the three major career fields which train productivity specialists--economics, industrial engineering, and public administration.[26] Leathers has identified a "language barrier" between political scientists and planners on the one hand, and economists on the other.[27] Besides the definitional disagreements among academics and practitioners,

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[22]Ross and Burkhead, p. 12.

[23]Ibid.

[24]David N. Ammons and Joseph C. King, "Productivity Improvement in Local Government: Its Place Among Competing Priorities," Public Administration Review (March-April 1983): 115. Ammons and King found that more than one-third of the chief executives in their survey viewed productivity in very vague, imprecise terms.

[25]Walter L. Balk, "Toward a Government Productivity Ethic," Public Administration Review 38 (January-February 1978): 46.

[26]Robert E. Quinn, "Productivity and the Process of Organizational Improvement: Why We Cannot Talk to Each Other," Public Administration Review 38 (January-February 1978): 41-45.

[27]Charles G. Leathers, "Language Barriers in Public Productivity Analysis: The Case of Efficiency and Effectiveness," Public Productivity Review 3 (Spring-Summer 1979): 63-68.

there is also lack of agreement on the meaning of productivity on the part of management and labor representatives.[28] Considering this discord, it is hardly surprising to find sharply differing levels of commitment among local governments to productivity improvement.

The lack of consensus on the meaning of productivity makes it essential to explore competing definitions and to specify the import of productivity in reference to this study. Narrowly defined, productivity is the ratio of outputs, such as goods and services, to inputs, such as materials, energy, labor, and capital.[29] In this sense, productivity is a measure of the efficiency with which inputs are converted to outputs, since the ratio indicates the number of units of real output that can be obtained from a given number of input units. The input measure may include all resources associated with output expressed in terms of physical units or constant money values.[30] Typically, the emphasis of such measures is upon the product with productivity improvement achieved largely by altering outputs or inputs to achieve a more favorable ratio. In the private sector, output to input ratios are common measures of productivity and are reported routinely by the U.S. Bureau of Labor statistics.[31]

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[28]Raymond Katzell and David Yankelovich, Work, Productivity and Job Satisfaction (New York: The Psychological Corporation, 1975), pp. 99-103. See also, Ross and Burkhead, Productivity in the Local Government Sector, p. 12.

[29]Kendrick, p.1.; and Jerome A. Mark, "Meanings and Measures of Productivity," Public Administration Review 32 (November-December 1972): 747-753.

[30]Ross and Burkhead, p. 11.

[31]Ayers and Kettinger, "Information Technology and Models of Government Productivity," p. 561.

The dilemma for public managers consists of defining productivity in a way that is precise, applicable to the distinct nature of public services, and intelligible to the layman. In other words, a definition of productivity is required that encompasses more than just efficiency or popular notions emphasizing cost reductions or getting bureaucrats to work harder.[32] For many public managers, effectiveness is an important dimension of productivity. Effectiveness can be defined simply as the extent to which agency or program objectives are achieved. Marc Holzer explains:

> As in private organizations, public sector inputs are measurable in terms of the common denominator of dollars, or manhours in the case of labor resources. The basic data for the measurement of output and output effectiveness in the private sector is sales; the profit-loss statement is also a rough index of productivity. Similar measures, however, are not generally applicable to the public sector. Thus, the major obstacles to efforts to gauge public productivity are often measurements of output, not input.[33]

The problem of adequately defining output effectiveness is complicated in the public sector by variations in the quality of service or program output.[34] Public officials and chief executives "must be concerned with both the quality of services and the cost of those services" if they are to "walk that narrow line between the demands of those who want

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[32]Ross and Burkhead, p. 12; Hayes, p. 3; Quinn, pp. 41-45.

[33]Holzer, p. 7.

[34]See, for example, Everett E. Adam, Jr.; James C. Herschauer; and William A. Ruch, "Developing Quality Productivity Ratios for Public Sector Personnel Services," Public Productivity Review 5 (March 1981):

government to do more and those who want to pay less for whatever it is that government does. . . ."[35] The lack of attention to the quality of service dimension in public sector productivity is not due to managerial indifference or incompetence, but rather to the difficulty of developing accurate and intelligible measures for the diverse services provided by the typical local government.[36]

Consequently, the definitions of productivity most appropriate for the public sector incorporate the concepts of efficiency and effectiveness with the latter concept encompassing the notion of quality of service, conformance to performance standards and objectives, and client satisfaction or consideration for equity in service provision.[37] A succinct definition of public productivity appropriate for this study is the one advanced by Nancy S. Hayward:

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46. See also, Everett Adam, Jr.; James C. Hershauer; William A. Ruch, Productivity and Quality: Measurement as a Basis for Improvement (Englewood Cliffs: Prentice-Hall, Inc., 1981) pp. 21-38. See also, Harry P. Hatry, "The Status of Productivity Management in the Public Sector," Public Administration Review 38 (January-February 1978): 28. See also, Harry P. Hatry, "Issues in Productivity Measurement for Local Government," pp. 93-104 (in Holzer). See also, Charles R. Wise, and Eugene B. McGregor, Jr., "Government Productivity and Program Evaluation Issues," Public Productivity Review 1 (March 1976): 9. See also, Frederick O'R Hayes, "Leadership and Politics of the Productivity Process," in George J Washnis, ed., Productivity Handbook for State and Local Governments (New York: John Wiley and Sons) p. 16.

[35]Patrick J. Lucy, "Wisconsin's Productivity Policy," Public Administration Review 32 (November-December 1972): 795.

[36]Adam, Hershauer, and Ruch, "Developing Quality Productivity Ratios for Public Sector Personnel Services," pp. 46-47.

[37]Holzer, pp. 7-12.

> Governmental productivity is the efficiency with which resources are consumed in the effective delivery of public services. The definition implies not only quantity, but also quality. It negates the value of efficiency, if the product or service itself lacks value. It relates the value of all resources consumed--human, capital, and technological--to the output of public services or the results achieved.[38]

Ammons notes that "this definition permits the use of an output/input ratio for measuring productivity only if some means is devised to account for differences in output quality or effectiveness."[39]

Hayward's definition of productivity has not imposed universal order on the conceptual confusion surrounding the meaning of the term since opinion still differs with respect to the meaning of collateral concepts such as effectiveness and output quality. In the abstract, few public managers would refute the inclusion of these concepts in a definition of productivity. In practical application, the complexity and diversity of public services and programs often produces a like quantity of perceptions about the meaning of the term. The intangible factors that affect productivity in a variety of organizational contexts and the relative infancy of the state of the art of empirical measurement of quality and effectiveness are unlikely to produce one precise, empirical definition of productivity applicable to all situations, contexts, or units of analysis. Perhaps it is enough to specify the important dimensions of productivity and to continue the search for

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[38]Nancy Hayward, "The Productivity Challenge," Public Administration Review 36 (September-October 1976): 544.

[39]Ammons, p. 8.

multiple means to measure it and techniques to improve it in contexts which are generally similar.

The Importance of Public Sector Productivity

Although few public managers and administrators "lie awake at night worrying about the nation's competitive edge in the world market" it is useful to review the importance of public sector productivity to the U.S. economy.[40] In virtually every major productivity study, the benefits of increased productivity are touted. These benefits include the conservation of scarce resources, higher standards of living, increased real wages, less costly goods and services, lower rates of inflation and unemployment, increased availability of investment capital, and a more competitive international trade position.[41] Productivity growth represented by increases in real output per person is seen by economists as one of the primary means of raising wages and living standards without producing inflation.[42] Moreover, some economists believe that increased productivity accompanied by growth in aggregate demand is one way to reduce unemployment since "it has generally averaged

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[40]Quinn, p. 41.

[41]See, for example, Kendrick, pp. 5-11; Ross and Burkhead, pp. 4-5; Burton G. Malkiel, "Productivity--The Problem Behind the Headlines," Harvard Business Review 57 (May-June 1979): 82; Nancy Hayward and George Kuper, "The National Economy and Productivity in Government," Public Administration Review 38 (January-February 1978): 2-3; Peter G. Peterson, "Productivity in Government and the American Economy," Public Administration Review 32 (November-December 1972): 742-744.

[42]Kendrick, pp. 5-11; Malkiel, p. 82.

lower in periods of rapid productivity advance than when productivity was growing more slowly."[43]

Relatively few observers have questioned these benefits of productivity. Their concern stems not so much with the inherent normative desirability of increased productivity as it does from the underlying premises and implications of prevailing economic models of growth. Frederick Thayer, for instance, examines "some of the problems those addicted to productivity tend to ignore" and finds that the rational model of market economics leads to "Taylorism," alienation of the work force, and unremitted growth "at a time when survival of the plant is likely to require limits on production instead of constant increases in it.[44] Similar critiques focus mainly on the shortcomings of past methods and approaches employed by American managers to enhance short-term productivity and profit at the expense of consistent, long-term improvements in productivity performance.[45]

The United States is still the world's most advanced economy. However, in terms of the rate of productivity growth, the U.S. is being outpaced by Western Europe and Japan, jeopardizing its leadership position and spawning a host of books which purport to have identified

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[43]Kendrick, p. 6

[44]Frederick Thayer, "Productivity: Taylorism Revisited (Round Three)," Public Administration Review 32 (November-December 1972): 833. Also see, Herman E. Daly, "Toward a Stationary State Economy" in John Hart and Robert Socolow, eds., The Patient Earth (New York: Holt, Rhinehart, and Winston, 1971) pp. 245-257.

[45]See, for example, Thomas J. Peters and Robert H. Waterman, Jr., In Search of Excellence: Lessons From America's Best-Run Companies (New York: Warner Books, 1982) p. 86.

a complex of suspected causal factors for the diminished U.S. productivity growth.[46] As analysts search for ways to reverse this downward trend, the public sector, due to its dimensions and rate of growth, has become a logical target. As Table 1 indicates, the growth in public expenditures generally, and as a percentage of the Gross National Product (GNP), and the increases in public sector employment (one of every six Americans is employed by government) would seem to indicate that improved public sector productivity could be an important contribution to enhanced national productivity. One need only consider the fact that in 1982, direct and indirect federal, state, and local taxes consumed the average taxpayer's income for approximately the first third of the year ("Tax Freedom" Day was May 3) to realize that improved governmental productivity could reduce further tax increases thereby freeing capital for investment or consumption for other purposes.

The basic problem in trying to specify the exact impact of public sector productivity on the national economy is that very little relevant data are collected on a national basis for either state or local governments.[47] The GNP accounts merely equate the value of output at the input cost. In other words, when government expenditures increase, output rises accordingly and therefore public productivity is locked in a stationary mode with no statistical indication of change. Given the growing importance of the public sector as a major resource user, the

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[46]Among the more popular of this genre include: William Ouchi, Theory Z (Reading, Massachusetts: Addison-Wesley Publishing Co., 1981); Richard D. Pascale and Anthony G. Athos, The Art of Japanese Management (New York: Warner Books, 1981); and Waters and Peterman, In Search of Excellence.

[47]Hayes, Productivity in Local Government, p. 3.

Table 1

Growth Indicators of American Government

	CY 1955	CY 1982	Percentage Change
DOLLAR EXPENDITURES (ACTUAL) (IN BILLIONS)			
Federal	68.1	762.6	+ 1,019.8
State and Local	29.8	321.8	+ 979.8
Total	98.0	1,084.4	+ 1,006.5
DOLLAR EXPENDITURES (1967 DOLLARS, IN BILLIONS)[a]			
Federal	85.125	266.910	+ 213.6
State and Local	37.250	112.630	+ 202.4
Total	122.375	379.540	+ 210.1
PUBLIC EXPENDITURES AS A PERCENTAGE OF GNP			
Federal	17.0	25.0	+ 8.0
State and Local	7.5	10.5	+ 3.0
Total	24.5	35.5	+ 11.0
EMPLOYMENT (IN MILLIONS)			
Federal[b]	2.248	2.855	+ 27.0
State and Local[c]	4.443	11.154	+ 151.0
All Private Industries	44.260	70.510	+ 59.3
PUBLIC SECTOR EMPLOYEES PER 1,000 U.S. POPULATION[d]			
Federal	13.6	12.4	- 8.8
State and Local	36.9	48.5	+ 80.3
Total	40.5	60.9	+ 50.4

SOURCE: Selected tables in: Tax Foundation of America, Inc., Facts and Figures on Governmental Finance, 22 Edition (Washington, D.C.: Tax Foundation of America, Inc., 1983) pp. 29, 32, 44, 51, 85-87.

[a]These figures were calculated using a consumer price index 1.25 and .35 for 1955 and 1982, respectively. (These index figures have been translated in terms of the purchasing power of a dollar.)

[b]Excludes U.S. military personnel.

[c]Includes persons employed in education. If education employees were excluded, the 1955 and 1981 totals would be 2.528 million and 5.684 million, respectively. This would represent a 124.8 percent increase.

[d]These figures are based on a total U.S. population of 165.275 million in 1955, and 229.807 million in 1981.

stasis assumption of public productivity reflected in the GNP may produce an increasingly distorted picture of the entire economy. Jerome Mark has developed estimates of the effects of alternative assumptions regarding public sector productivity rates on the national productivity rate. His findings (in percentages) indicate that if the private business productivity rate is assumed to be 3.1 and the federal government rate is assumed to be 1.9, and the assumed state and local rate ranges from 0.0 to 4.0, then the implied national rate of productivity will vary between 2.7 and 3.1.[48] One can readily surmise that when no change is assumed in the public sector productivity rate, the aggregate index may pick up increases in private sector productivity that result from increases in public sector investment. However, analysts will attribute this increase to the wrong source and may draw incorrect implications about both sectors.[49]

The paucity of hard data on government productivity, especially at the local level, produces a fertile environment for the perpetuation of popular myths and misconceptions about government workers and programs that has prompted one eminent political scientist to remark in response to a question about ways President Reagan could increase productivity: "First, I would ask him to stop implying that all or most of our

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[48]Jerome A. Mark, "Progress in Measuring Productivity in Government," Monthly Labor Review 95 (December 1972): 5.

[49]Ross and Burkhead, Productivity in Local Government Sector, pp. 33-35.

society's problems are due to the public sector."[50] Generally, the combination of circumstantial evidence in the form of political rhetoric decrying the evils of bureaucratic "red tape," press reports and editorials lamenting the absence of "business-like methods" in government, and widely reported, documented cases of program cost overruns and outrageously expensive spare parts, create the impression of a dismal record of public sector productivity. The rising costs of financing government at all levels lends credence to this impression of poor productivity and may be at least partially responsible for the growing public sector support for the "go-slow" policy on spending and service expansion noted earlier.

Unfortunately, there are few reliable measures currently available that can identify the extent to which government cost increases, above the rate of inflation, are due to the expansion of services and programs, improvements in the quality of services, declining productivity, or some combination of these factors. It seems reasonable to expect that productivity increases in government have occurred due to improvements in both technology and management practices.[51] Yet, the difficulty in measuring these effects has resulted in very few empirical studies which can either support or refute the popular view of governmental ineptitude and inefficiency.

Fabricant's early research suggests that governmental productivity on all levels has increased consistently since the beginning of the

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[50]Amitai Etzioni, "Interview," Public Productivity Review 5 (March 1981): 65.

[51]Solomon Fabricant, The Trend of Governmental Activity in the United States Since 1900 (New York: National Bureau of Economic Research,

century. However, he notes that "whether governmental productivity rose more or less rapidly than productivity in private enterprise is another matter, and one on which lack of information makes it idle to speculate."[52] On the other hand, William Baumol makes just such a speculation in his two-sector economic model which forecasts a scenario of productivity decline known as "Baumol's disease."[53] To reach this conclusion, Baumol postulates the existence of a technologically innovative economic sector and a low-productivity economic sector tied to services where labor output is the primary quality criterion. Baumol suggests that most services provided by state and local governments fall into the low-productivity sector of the economy. According to Baumol's theory, wage rates in the two sectors are tied together with those in the low productivity sector following the lead of wages set in the technologically progressive sector. This assumption means that cost per unit of output would remain approximately the same in the technologically progressive sector but would rise rapidly in the nonprogressive sector due to the lack of similar productivity improvement. This prediction, combined with what Baumol terms the "static externalities" of urban life--sprawl, congestion, and pollution--will consume an ever greater proportion of resources, thus exacerbating what Baumol and others

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1952) pp. 100-101; Mark, "Progress in Measuring Productivity in Government," p. 751; Haywood, "The Productivity Challenge," pp. 547-542.

[52]Fabricant, p. 100.

[53]William J. Baumol, "Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis," American Economic Review 57 (June 1967): 415-426.

thought of as the urban crisis of the late 1960's. This hypothesis of a constant increase in the cost of municipal services exacerbated by the dynamics of maturing urban areas is what has been termed "Baumol's disease." In sum, it casts considerable doubt on the prospects for municipal productivity improvement.

There is some empirical evidence, albeit scanty and burdened with speculation, that supports Baumol's hypothesis. In one of the first empirical investigations of aggregate local government productivity, D. F. Bradford, R. A. Malt, and W. E. Oates found that "local [especially large city] governments can probably expect costs to rise cumulatively and at a more rapid rate than those in the rest of the economy even if there is no increase either in the quantity or quality of services provided."[54] The authors note that major technological improvements have occurred and the quality of output has increased, but they contend that most of these improvements have not been of a cost-saving nature.[55] They believe that the major reason for the increases in local government budgets is lagging productivity.

Many public managers and employees across the nation would probably look with disdain at Baumol's and Bradford, Malt, and Oates's assumption that government workers' pay and benefits are generally adjusted to keep pace with the compensation package for similar occupations in the private

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[54]D. F. Bradford, R. A. Malt, and W. E. Oates, "The Rising Cost of Local Public Services: Some Evidence and Reflections," National Tax Journal 22 (June 1969): 202.

[55]Ibid.

sector even with no increase in productivity. In terms of compensation for those in the top grades of the federal service and for most of those employees in state and local governments, several studies have found that public sector salaries and wages, in fact, lag behind those in the private sector.[56] For the reasons cited earlier regarding the complexity in measuring public service output and the general lack of productivity data comparable to that gathered for the private sector, claims by employees similar to those of Fabricant that public sector productivity has increased, unfortunately have not been fully evaluated.

The few comparative local government productivity studies performed to date appear to indicate that productivity is falling or at least not keeping pace with private sector service industries. If the public sector continues to grow absolutely in terms of expenditures and relatively as a proportion of total economic activity, declining public productivity can only inhibit the national realization of social and economic goals essential for the broad improvement of the quality of life for all U.S. citizens. Accordingly, the political salience of the cost and quality of public services likely will increase as many urban governments attempt to juggle client demands for better service, cuts in federal domestic spending, and the popular aversion to local tax increases. The two facets of this "urban crisis" scenario are danger and opportunity. The political danger is clear, but less apparent are

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[56]George J. Gordon, Public Administration in America (New York: St. Martin's Press, 1982), p. 320.

the ways managers can capitalize on the possible opportunities for increasing municipal productivity.

Productivity Improvement in Municipal Government

The process of improving productivity in municipalities is a complex, multifaceted endeavor, fraught with popular misconceptions, political challenges, and managerial trauma. It requires substantive technical knowledge as well as patience, persistence, persuasive ability, and a high tolerance for ambiguity and paradox. The following sections examine some of the key issues and dimensions of municipal productivity improvement and help to chart pathways to productivity improvement, bordered as they are with relevant social science research findings.

Comparison of Public/Private Sector Productivity Improvement

One of the recurring themes echoed in the press, council chambers, and public meeting halls is that "government should be more business-like" and "run on the same basis, with the same methods as a private corporation" if it wants to improve productivity. This common assumption is subject to challenge especially in light of the less than sterling record of some of America's largest corporations in international market competition.[57] There is much that public managers can learn from private sector productivity improvement efforts that should serve as both a lesson and a warning. Certainly, local government is not a

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[57]This conclusion draws upon: Joseph L. Bower, "Effective Public Management: It Isn't the Same as Effective Business Management," Harvard Business Review 55 (March-April 1977): 131-140; Brian W. Rapp, "You

business in the traditional sense of the term, and there are several reasons why it often does not behave as though it were one.

Chief among the important differences between the public and private managerial and political environments is the general lack of competition and absence of a profit motive for driving the public performance engine. The monopolistic nature of many public services deemed essential by the public has enabled some municipal service systems to survive despite the lack of high quality performance. Moreover, the absence of incentives for public employees often produces no economic gain commensurate with increased output per worker.[58] Consequently, there is no significant and sustained economic pressure on many local governments to improve productivity in order to stay in existence and there is even less motivation for comparing performance rates with other jurisdictions.[59] This observation does not mean local government is immune to pressures for increased productivity or that public managers are insensitive to the widespread citizen resistence to increased taxation. It merely highlights the distinguishing nature and dynamics of public sector service delivery and the fact that "public

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Can't Manage City Hall the Way You Manage General Motors," Good Government 92 (Summer 1975) 12-15; Michael Murray, "Comparing Public and Private Management," Public Administration Review 35 (July-August 1975): 364-371.

[58]Robert W. Poole, Jr., Cutting Back City Hall (New York: Universe Books, 1980), p. 22.

[59]U.S. General Accounting Office, State and Local Government Productivity Improvement: What is the Federal Role? (Washington, D.C.: U.S. Government Printing Office, 1978), p. 6.

organizations may pursue goals that do not necessarily coincide solely with the achivement of greater service efficiency and effectiveness.[60]

Whereas private sector managerial performance is frequently measured in terms of profit or loss, public managers are evaluated, if at all, in terms more diverse and complex. The distinction between the two sectors is important in the context of productivity improvement because the interest in achieving results in the public sector must compete for attention with other issues, and with procedural concerns grounded in democratic values, that often fundamentally alter the nature of the decision-making process.[61] Values such as public participation and accountability, separation of powers, and plural decision centers create a political decision-making environment which forces public managers to juggle competing, frequently conflicting interests within the goldfish bowl of scrutiny by press and public. As Gordon observes, "It is difficult to achieve maximum economy and efficiency while keeping a wary eye on possible political repercussions--and many public managers must do just that."[62] This message holds little surprise for the city manager or mayor who has tried to dismiss the archetype inefficient service chief who has a strong public or city council following. The

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[60]Robert K. Yin, Karen A. Heald, and Mary E. Vogel, Tinkering With the System (Lexington, Massachusetts: Lexington Books, 1977), p. 90.

[61]Contrary to popular and academic opinion, productivity improvement does not enjoy top priority among issues which most concern local government chief administrators. See survey results in David N. Ammons and Joseph C. King "Productivity Improvement in Local Government: Its Place Among Competing Priorities," Public Administration Review 43 (March-April 1983): 113-120.

[62]Gordon, p. 22.

important point is that the bedrock values peculiar to the public sector contribute to fragmented authority, diffused responsibility, a shortened decision time horizon, and a host of political constraints that are apparently not as widely shared by the private sector. Understanding this distinct local government milieu lends poignancy to Hayes's assertion that local government is a low-change system by design, ill-suited to the swift adoption of innovative ideas for improving productivity.[63] As managers in both the public and private sectors are becoming increasingly aware, improved productivity is not something which just can be "ordered done" through the chain of command.[64] It requires an understanding of the underlying values, distinct mission, personnel resources and characteristics, and organizational milieu involved in the process of productivity improvement. Therefore, the systemic differences between the public and private sectors in service provision currently impose some limits on how much and to what extent local governmental managers can borrow advantageously from the methods and techniques of productivity improvement employed by private firms.

Becoming more "business-like" to improve municipal productivity may require a reevaluation of the traditional limits imposed on the city as a democratic polity with respect to finance, personnel, and organization. A fundamental question is whether the urban polity simultaneously can be a competent service provider and an effective vehicle for

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[63]Hayes, Productivity in Local Government, p. 13.

[64]Waters and Peterman, p. 44.

democratic representation. The privatization of urban services in some cities may be an emerging partial response that implicitly recognizes a desire to minimize collective investment in city government for all but the most essential functions best performed by the public sector. These functions include at least the basic issues of who pays what taxes, at what rate, for what mix of services. Rather than directly providing some services for which their organization may not be optimally suited, city officials assume responsibility for holding private vendors accountable for the proper execution of service contracts.

The financial attractiveness of service privatization in many instances is not based on the superior managerial competence of the private sector per se, although that is a common assumption. It depends more on the federal tax code provisions regarding accelerated depreciation and investment tax credits--tax breaks that make contracting with private vendors often more cost-efficient than direct service provision. However, tax reform proposals in the 99th Congress may eliminate these tax provisions enabling private contractors to employ state of the art technology and equipment that enhances their relative productivity. Consequently, cities will be forced to reevaluate the advantages of service privatization as a part of the continuing pursuit of "business-like" competence and maximum productivity in service delivery.

Models of Productivity Improvement

Perhaps one source for the blurring of the distinctions between the public and the private sectors and the issue of productivity

improvement is the fact that both share a common modular framework in terms of the relationships between input and output. Holzer explains that increased productivity can occur in the public and private sectors under any one of four general situations or models.[65] First, productivity can be increased if output remains constant while input decreases. Maintaining a given level of service with fewer employees is an example. Second, productivity is improved if output increases at a constant level of input. In other words, a set number of employees expands or increases service with no change in resource input--they may just work harder or better due to process or management improvements. Third, output may increase while input declines. This model is the optimal situation for increasing productivity where greater services are produced at less cost. Fourth, input and output may both increase but output increases at a faster rate. This model is the most likely one for local government because it reflects the need to invest in productivity improvement in order to realize significant service enhancement. Ayers and Kettinger note a fifth scenario for productivity improvement where output and input levels decline but input declines at a faster rate.[66] In other words, input (costs) deline but service levels (output) decline less than would otherwise be expected.

Within these models for productivity improvement, one or more of which may be pursued by local government service managers, a veritable

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[65]Holzer, p. 6.

[66]Ayers and Kettinger, "Information Technology and Models of Governmental Productivity," p. 563-565.

laundry list of strategies and techniques have been identified, recommended, or used to help improve local government productivity. While an evaluation of all municipal productivity improvement efforts is beyond the scope of this study, it is useful to review the relevant literature in order to highlight the major approaches frequently used by cities, the key prerequisites for success which many jurisdictions appear to share, and the major techniques and methods suggested for improving productivity. To avoid any misconception that productivity improvement efforts occur in a tidy, Tayloresque paradigm of local decision-making, some of the major impediments and barriers to improving municipal productivity are also explored.

Key Attributes for Productivity Improvement Success

Approaches to improving productivity vary from borrowing selected techniques used in private firms and other public organizations to adopting tailor-made programs developed by in-house staff, outside consultants, or some mixture of the two. The types of productivity improvement efforts undertaken by cities vary in scope, structure, and sophistication and occur in jurisdictions of differing size, financial condition, socioeconomic composition, and governmental form. Not surprisingly, the degree of success in meeting productivity expectations varies considerably between cities.

Despite the diversity of programs and differential results, several key factors appear to operate as important prerequisites or attributes of many successful productivity improvement efforts:[67]

- leadership by the chief executive;
- at least modest support from the legislative body and department heads;
- managerial recognition of a performance gap and a desire to close it;
- sufficient staff analytic capability assigned to productivity improvement and supported by senior managers;
- establishment of a performance measurement system for monitoring progress, gauging citizen satisfaction with services, and identifying productivity improvement opportunities;
- awareness of state-of-the-art service delivery methods and experimentation in other cities; and
- clear, two-way communications with employees, unions, and citizen groups to capitalize on employee talents and suggestions and to assuage fears of employees by maintaining job security to the extent possible.

Robust political leadership is crucial to the initiation and success of municipal productivity programs because as Hayes explains:

> Productivity programs are a product of choice, rather than necessity. There is no evidence of any underlying logic in the development of local government that would lead to their creation. . . . Not even the increasingly numerous and vociferous opponents of higher taxes and spending have picked up the cudgels to fight for productivity improvement.[68]

In fact, Hayes notes that there are some very good reasons why a mayor, city manager, or a city council may not even want a productivity program

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[67]These key factors for productivity improvement success were drawn from: George P. Barbour, Jr., "Key Factors Influencing Productivity of State and Local Government Activities," Public Productivity Review 4 (September 1980): 273-280; Hayward, "The Productivity Challenge," pp. 544-550; and Hayes, Productivity in Local Government, pp. 243-249.

[68]Hayes, Productivity in Local Government, p. 243.

since "they are potential sources of trouble, [and] can only be implemented by disturbing the status quo.[69] Such sources of trouble include public employee unions, citizen groups concerned with a change in character or magnitude of services, friction caused by increasing exercise of authority by the chief executive's office, and the risk of failure and subsequent damage to employee careers.[70] Since the political deck often seems to be stacked against productivity improvement efforts, innovative leadership employing either high or low-profile political implementation strategies is a key ingredient for the initiation, survival, and success of many productivity programs.

No less important a part of the chief executives' political leadership is the ability to marshall the support of the city council as well as department heads and mid-level managers. Sustained legislative involvement in and backing for productivity improvement efforts is difficult to achieve, especially considering the less than transparent and immediate benefits produced through some of the productivity improvement scenarios previously discussed. Nonetheless, it is an important part of all improvement efforts that range beyond the transitory "one shot" attempts. It is rare that productivity improvement efforts are initiated by department heads or a middle-level manager without some encouragement or pressure from the chief executive.[71]

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[69]Ibid.

[70]Ibid.

[71]Ibid., p. 244.

Therefore, it is incumbent on the chief executive to garner at least modest support from department heads and mid-level managers and to select the most propitious time and appropriate department for initiating the new productivity improvement effort.

Recognition of and a willingness to close a performance gap seems elementary but managerial perception of the difference in utility between the actual and satisfactory level of performance of the organization is essential to the introduction of a productivity program.[72] The existence of this perception by managers should not be taken for granted since "a crisis environment in local government provides insufficient time for analysis and evaluation of the service delivery function."[73] Moreover, the immediate savings from a change in existing operations may be too small to produce vocal support since employees and clients affected by a proposed change often can mobilize substantial opposition against it.[74] Thus, the manager's willingness to assume a certain amount of risk in overcoming the forces of inertia appears to be a basic prerequisite for organizational change.[75]

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[72]Anthony Downs, Inside Bureaucracy (Boston: Little, Brown, and Company, 1965), p. 191.

[73]Rackham S. Fukahara, The Status of Local Government Productivity (Washington, D.C.: International City Management Association, 1977) quoted in Barbour, "Key Factors Influencing Productivity of State and Local Government Activities," p. 274.

[74]U.S. General Accounting Office, State and Local Government Productivity Improvement: What is the Federal Role? pp. 22-23.

[75]Downs, pp. 195-197.

Consequently, the manager's belief that a significant discrepency exists between what an organization is currently doing and what it "ought" to be doing and a commitment to the alteration of sub-par performance in one or more service delivery functions are fundamental in explaining the causes of organizational change and service improvement.[76]

Successful productivity improvement efforts, like earlier attempts to raise the quality of management in local government (such as PPBS) place an emphasis on the development of an analytical staff capacity.[77] Staff capacity to identify performance deficiencies, devise means for accomplishing the work better, and assume responsibility for tracking performance through a measurement system is critical for program success. As Hayes explains:

> The history to date is an almost total vindication of those arguing the necessity of an analytical staff. The best performers in the productivity game are those who have taken the straightforward position that productivity improvement requires work. The successful cities and counties have all made an investment in the additional staff needed to develop and administer the program. There is simply no evidence of cheap or effortless government-wide productivity programs. . . . Most cities have followed the practice of the better state and local budget offices in recruiting from recent public administration graduates [since] advanced and esoteric analytic techniques are rarely used, and there is little indication that they have been needed. . . . While most cities prefer to do their own work . . . the outside consultant will often provide added credibility with the operating agency involved or skills not available on the city payroll.[78]

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[76]Ibid., p. 191.

[77]Hayes, Productivity in Local Government, pp. 247-248.

[78]Ibid.

To minimize employee, union, and citizen opposition, the final key ingredient for success in productivity improvement requires an emphasis on communicating proposed changes regarding labor force reductions (through attrition, if possible), retraining requirements, and any actions which may be perceived as affecting safety, service levels, and quality of the work environment. This effort requires more than just monthly newsletters and weekly metings between the chief executive and department heads. It necessitates frequent communication with and participation by employees from each service function. Employee meetings with department heads and senior management are essential for circumventing misinformation transmitted through the irrepressible local government grapevine.

Productivity Improvement Techniques and Methods

The literature on local government productivity is replete with specific techniques and methods for improving productivity in virtually every city service function. For almost every local government performance problem, be it simple or complex, a rich panoply of tested ideas exists from which the chief executive or manager can draw for possible solutions. The massive Productivity Improvement Handbook for state and local governments, edited by Washnis is probably the most comprehensive compilation of ideas on productivity in existence.[79] Although its chapters vary in quality and in intelligibility to the

[79]George J. Washnis, Jr., ed., Productivity Improvement Handbook for State and Local Governments (New York: John Wiley and Sons, 1980).

nontechnical administrator, it remains the definitive expression of the state-of-the-art in productivity improvement as of 1980. However, its length is perhaps its greatest drawback in terms of being widely read by practitioners. In fact, much of the literature on productivity may be largely ignored by busy chief executives. This contention is supported by the findings of Ammons and King in their survey of 298 local government chief administrators:

> The evidence suggests that current productivity literature may be reaching only a small fraction of the audience toward which it should be targeted. Such a meager result raises questions of the effectiveness of the current mode of information dissemination. Writers bemoan the lack of progress in the improvement of public sector productivity and strive to offer useful suggestions, but their conversation may in fact be almost entirely among themselves.[80]

Thus it appears that most productivity research findings and all but the most widely publicized methods and techniques for productivity improvement may go undiscovered by many of the people in local government who are responsible formaking productivity improvement efforts successful. As Hayes notes, "If we were to eliminate refuse collection from the list of productivity improvements, the accomplishments of the typical productivity program would shrink to half its size.[81] No doubt, the publicity in public management journals regarding the major improvements in refuse collection productivity in cities such as Dallas, Detroit, Flint, Milwaukee, New York, Phoenix, Scottsdale, Tacoma, and

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[80]Ammons and King, p. 119.

[81]Hayes, Productivity in Local Government, p. 255.

Wilmington, along with its relative ease in output measurement helped to spur improvements in this local government function. However, wider distribution of information on productivity improvement techniques and information, as has been recently suggested,[82] is "unlikely to materially strengthen productivity in local government."[83] Ammons and King suggest that "before the demand for such information can be expected to increase, there must exist a strong incentive for local government administrators to sponsor productivity efforts."[84] As explored later in this study, one of those incentives could be the development of a state-wide system for comparing municipal productivity and annually publishing the results as a way to stimulate intergovernmental competition.

The problem of listing, categorizing, and widely distributing information on the systematic evaluation of productivity improvement experiences remains largely unsolved. There is neither consistency in the reporting of this information, nor has there been any attempt to develop a common format easily understandable by busy administrators often preoccupied with competing daily priorities. An attempt should be made, perhaps at the state or national level, to develop a diagnostic index or matrix of productivity improvement where commonly encountered

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[82]Marc Holzer, "Sharing Productivity Information," Public Productivity Review 4 (June 1980): 143.

[83]Ammons and King, p. 119-120.

[84]Ibid., p. 120.

productivity problems by service category are cross-referenced with tested improvement techniques or methods which are, in turn, categorized by dimensions such as personnel factors, management factors, and workload/process factors. Distribution of such a "ready reference guide for productivity improvement" may at least pique interest further in reading case studies relevant to problems frequently encountered by many local governments. The rudiments of such a matrix must begin with an attempt to identify and categorize types of productivity improvement methods and techniques. While not a completely exhaustive list, Table 2 contains many of these methods and techniques based on a review of the literature. Many of those listed could be placed under more than one category but this fact merely imples that the method or technique might have an impact in multiple areas. It does not preclude classification by the major dimension addressed by the method or technique. Obviously, some of the methods and techniques could be contradictory when used in tandem. This fact underscores the importance of cross-referencing methods and techniques with identified needs or problems commonly experienced in the range of municipal services.

Barriers to Productivity Improvement

While many of the barriers and impediments to improving productivity have already been alluded to in preceding paragraphs, it is useful to summarize some of the major potential obstacles which can threaten the success of productivity improvement efforts. To paraphrase Peter Drucker, no one can guarantee the performance of a public sector

Table 2

Productivity Improvement Methods and Techniques--
Focus of Method/Technique

Personnel Factors	Management Factors	Workload/Process Factors
- Improve vertical and horizontal communication within the organization. - Recognize outstanding employee performance. - Train/retrain employees to improve/expand skills. - Improve working conditions. - Revise personnel policies in order to maximize productivity in use of public resources (i.e. in retirement pensions, sick leave accumulation, health insurance, wage setting formulas, disability payments, and longevity payments. - Use techniques of Productivity Bargaining. - Include performance standards and targets for each employee position. - Use monetary and motivational incentives to stimulate productivity increases (i.e. performance-based wage increases, gain-sharing plans, educational benefits, flextime, suggestion awards, safety incentives). - Employ job restructuring and job enrichment techniques.	- Modify Organizational structure to improve responsiveness, communication, and efficiency in service delivery. - Promote economies of scale via annexation, consolidation, metro government, and intergovernmental agreements. - Decentralize selected service components and permit a greater range of public choice. - Refine service objectives and prioritize services within functional categories. - Monitor performance through the use of a productivity measurement system. - Modify programs and services based on the results of analysis and evaluation techniques. - Institute Total Performance Management (TPM). - Increase accountability through dissemination of information on unit costs and service effectiveness. - Monitor employee and citizen satisfaction and diagnose problem causes. - Mandate cost reductions such as across-the-board allocation cuts, hiring freezes,	- Utilize improved, cost-effective technology. - Improve operating procedures. - Civilianize police activities not requiring a sworn officer. - Expand use of volunteers. - Improve match between service levels and citizen preferences to avoid overproduction. - Encourage "self-help" as an alternative to growing reliance on government. - Tie selected services to user fees in an effort to match service quality with demand and minimize overproduction. - Contract with private firms for selected services when cost effective. - Match facility operating hours with times of maximum utilization. - Shift responsibilities for selected service components to private sector (i.e. curbside waste pickup instead of backdoor pickup; prohibit disposable bottles and cans; more stringent sprinkler

Table 2 (Continued)

Personnel Factors	Management Factors	Workload/Process Factors
- Rotate jobs. - Perform work distribution analysis.	and delays in hiring and expenditures. - Increase worker participation in developing performance standards and criteria. - Employ the process of Organizational Development (OD) to increase organizational effectiveness. - Site and/or locate capital facilities with long-term operating and maintenance costs in mind. - Target productivity improvements based on pay-off, minimal political and employee opposition and ease of solution.	system requirements, etc.).

Sources: George J. Washnis, ed. Productivity Improvement Handbook for State and Local Governments (New York, John Wiley and Sons, 1980), pp. 1-1492; John S. Thomas, So Mr. Mayor, You Want To Improve Productivity (Washington, D.C.: U.S. Government Printing Office, 1974); Price Waterhouse and Company, Productivity Improvement Manual for Local Government Officials (New York: Price Waterhouse, 1977); Robert W. Poole, Jr., Cutting Back City Hall (New York: Universe Books, 1980), pp. 25-36; Raymond Katzell and Daniel Yankelovich, Work, Productivity and Job Satisfaction: An Evaluation of Policy-Related Research (New York: The Psychological Corporation, 1975); Harry P. Hatry and Daniel M. Fisk "Local Government Productivity Improvement Possibilities" in Marc Holzer, ed., Productivity in Public Organizations (Port Washington, New York: Kennikat Press, 1976), pp. 295-308; The Joint Federal Productivity Report, "Factors That Have Caused Productivity Change," in Marc Holzer, ed., Productivity in Public Organizations (Port Washington, New York: Kennikat Press, 1976), pp. 309-315; Frederick O'R. Hayes, Productivity in Local Government (Lexington, Massachusetts: Lexington Books, 1977), pp. 243-253; Harry P. Hatry and Donald M. Fisk, Improving Productivity and Productivity Measurement in Local Governments (Washington, D.C.: The Urban Institute, 1971); John M. Greiner, et al, Productivity and Motivation: A Review of State and Local Government Initiatives (Washington D.C.: The Urban Institute Press, 1981); Nancy S. Hayward, "The Productivity Challenge," Public Administration Review 38 (January-February 1978): 2-5; George P. Barbour, Jr., "Key Factors Influencing Productivity of State and Local Government Activities," Public Productivity Review 4 (September 1980): 273-282; Robert J. Doyle, Gainsharing and Productivity (New York: AMOCOM Book Division, 1983), pp. 232-239.

service program, but there are certainly some sure-fire ways to ensure that a productivity improvement effort will fall far short of expectations.[85] These include inattention to Drucker's "deadly sins of public adminstration" and ignoring the impediments to productivity improvement listed below:

- nature of political decision-making in local government and the lack of political appeal for productivity improvement programs;[86]
- resistance by public employees and public employee unions;[87]
- insufficient staff analytical skills;[88]
- longer-term payoffs and savings from large initial investments in productivity that conflict with the short time horizons of elected officials;[89]
- difficulty in measuring municipal service productivity and sparsity of information on intra- and intercity productivity;[90]
- lack of public appreciation for productivity benefits and ease of mobilization against change;[91]

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[85]Peter Drucker, "The Deadly Sins of Public Administration," Public Administration Review 40 (March-April 1980): 103-106.

[86]Balk, "Toward a Government Productivity Ethic," p. 49.

[87]David Stanley, Managing Local Government Under Union Pressure: Studies of Unionism in Government (Washington, D.C.: The Brookings Institution, 1972), p. 20.

[88]Harry P. Hatry and Donald M. Fisk, Improving Productivity and Productivity Measurement in Local Governments (Washington, D.C.: The Urban Institute, June 1971), p. 8-9.

[89]Hayes, Productivity in Local Government, p. 244.

[90]The Urban Institute and the International City Management Association, "Improving Productivity Measurement in Local Government," in Marc Holzer, ed., Productivity in Public Organizations (Port Washington, New York: Kennikat Press, 1976), pp. 119-120.

[91]Ammons, p. 129.

existence of perverse rewards system where large staff and budget are equated with power and prestige level;[92]

- restrictions regarding legal use of state and federal funds which adversely affect efficiency (i.e. contract specifications, federal wage and hour laws, EEO requirements);[93]

- perpetuation of myths regarding the duties, character, and performance of public employees;[94]

- difficulty in discontinuing ineffective programs due to the political influence or power of certain individuals or groups;[95]

- perception of productivity as a threat to employee job security;[96]

- lack of commitment to productivity improvement due to the perceived high risk of failure, personal unpopularity, and career stagnation;[97]

- tendency for managers to be judged not on how much savings can be achieved through increased productivity but on the quantity of additional federal and state grant funds secured annually for the municipality;

- lack of recognition or rewards for innovative ideas and increased productivity due to managerial indifference and/or lack of public fiscal resources;[98] and

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[92]Balk, p. 48.

[93]Greiner, et al, Productivity and Motivation: A Review of State and Local Government Initiatives, p. 385.

[94]Balk, pp. 48-49.

[95]Drucker, pp. 105-106.

[96]Hayes, Productivity in Local Government, p. 252.

[97]Ibid.

[98]Balk, p. 48.

— high turnover of employees in crucial management and technical positions.

The list of potential barriers to productivity improvement is different for each city but is probably long enough to provide plenty of ammunition to resident pessimists. Consequently, the importance of high-caliber political leadership in overcoming the barriers peculiar to each jurisdiction assumes even greater significance. As a report by the General Accounting Office indicates, the major barriers to productivity improvement:

> are political, not technical in nature and relate to the lack of strong incentives necessary for state and local managers to overcome the significant internal barriers to change. Technical problems, such as inadequate measurement systems and lack of trained expertise, constitute important barriers, but are secondary to basic political problems.[99]

Hayes's findings, based on an in-depth study of eight local government productivity programs, reinforce the critical role of political leadership in making productivity programs work.[100] He explains that the single most important factor in slaying the "reluctant dragons among department heads" and in persuading and, in some cases, coercing key personnel to undertake productivity improvements is that "rarity in all pursuits . . . the innovative manager."[101]

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[99]U.S. General Accounting Office, State and Local Government Productivity: What is the Federal Role? (Washington, D.C.: U.S. Government Printing Office, 1978), p. 23.

[100]Hayes, Productivity in Local Government, pp. 242-247.

[101]Ibid., pp. 224-245.

Innovation Research: Strategic Findings for Productivity Improvement

The innovation research findings which illuminate the processes of organizational change and decision-making in municipal government can aid researchers in the formulation of strategies designed to improve productivity. Relevant innovation studies typically employ independent variables that can be grouped into two broad categories: community variables, and organizational variables. The former include demographic, economic, attitudinal, and cultural characteristics. The latter consist of factors such as organizational structure, nature of local government decision-making, governmental size, resource availability, staff composition and professionalism, demand or perception of need for innovative change, intergovernmental and private sector influence, and client participation. A number of innovation researchers also distinguish two states of the dependent variable: innovation initiation and adoption.[102]

In terms of the influence of community characteristics, the innovation studies generally agree that innovation adoption is related to larger community size, greater wealth, higher occupational and educational status of citizens, a higher degree of urbanization, and a stable rate of population turnover.[103] Adoption of technological innovations is less likely to occur in cities where conservative political values dominate.[104]

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[102]Robert K. Yin, Karen A. Heald, and Mary E. Vogel, Tinkering With the System (Lexington, Massachusetts: Lexington Books, 1977), p. 69.

[103]Yin, p. 69.

[104]Richard D. Bingham, The Adoption of Innovation by Local Government (Lexington, Massachusetts: Lexington Books, 1976), p. 8.

Research on the relationships between organizational characteristics and innovation initiation and adoption has produced several interesting findings. Organizations which are highly diverse (in terms of tasks, specialists, technologies, incentives, and rewards), and have little formalized task structure, weak communication hierarchies, and greater staff participation in decision-making are more likely to initiate innovations.[105] Organizations with a higher degree of centralization and an emphasis on strict hierarchy of authority are more likely actually to adopt and implement innovations.[106] While the link has not been firmly established, there is some evidence which suggests that high levels of staff participation in decision-making foster the generation of innovative ideas but make their adoption and implementation more difficult by diffusing responsibility for the innovation.[107] Organizational size by itself has "little value in explaining the innovative process and . . . probably serves as a proxy for other factors such as the availability of excess resources or the presence of a more professional staff."[108]

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[105]Yin, p. 69.

[106]Ibid.

[107]Ibid., p. 70.

[108]Ibid.

Some innovation researchers contend that it is the pain of forced budget cuts which is the primary motivator of innovation adoption while others argue that organizational slack, indicative of excess resources, enhances the likelihood of innovativeness.[109] The paucity of empirical evidence makes it difficult to gauge whether conditions of scarcity or slack catalyze innovation and productivity programs in municipal government. Under conditions of fiscal stress, cities may engage in highly focused searches to find a "quick fix" method for solving a pressing problem. In organizations operating under slack conditions a research and development unit may have resources to investigate new ideas and develop a more comprehensive productivity improvement program. Notwithstanding the lack of consensus on whether fiscal scarcity or resource slack is a better predictor of innovation adoption, most researchers probably would agree that a sound financial base is crucial to municipal innovativeness and productivity improvement.

The relationship between professionalism of public agency staff and innovativeness occupies a central place in the innovation literature. Professionalism is defined as "the orientation to the norms and values of an extraorganizational professional group.[110] Several innovation

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[109]For example, Robert Quinn (1978) and Frederick O'R. Hayes (1977) argue that conditions of fiscal stress spur productivity improvement efforts. On the other hand, Jack L. Walker, "The Diffusion of Innovations Among the American States," American Political Science Review 63 (September 1969): 880-899; and Bingham (1976) argue that slack resources enhance the likelihood of the adoption of innovations.

[110]Yin, p. 72; and Bingham, p. 9.

studies indicate that "the higher the proportion of professionals on the agency's staff, the more receptive will be the agency to innovative efforts."[111] On the other hand, public organizations with higher levels of active employee unionization are less likely to adopt innovations.[112]

Additional findings from innovation research indicate that initiation of an innovation is associated with the existence of a prior demand or perceived need for a specific change.[113] Intergovernmental grants, transfers, or technical assistance are also related to the innovativeness of the recipient government, "although the desired results are not always achieved."[114] Municipal receptivity to private vendors' attempts to sell goods and services corresponds to the adoption of innovations by local government.[115] This finding has particular import for productivity research since increased privatization of service provision may be related to enhanced municipal productivity. Another potential source of influence on a community's adoption of innovation may be the exchange of information and ideas between specialists and professionals from locally situated private firms and the city

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[111]Yin, p. 72.

[112]Ibid.

[113]Yin, p. 76; Bingham, p. 8; John P. Frendeis, "Innovation Characteristics as Correlates of Innovation Adoption in American Cities," Midwest Review of Public Administration 12 (June 1978): 84.

[114]Bingham, p. 9.

[115]Ibid.

staff.[116] This interaction may occur informally at social events or more formally through representation of private professionals on the city council or public committees and boards. Furthermore, the likelihood of implementation of an innovation appears to be enhanced under conditions of client participation and when the aim is to improve services rather than merely to reduce costs.[117]

The parallel between many of the independent variables in innovation research and the attributes believed to contribute to improved productivity is striking. One important common feature, for instance, is the key role that individual managers and professionals play in innovation and productivity improvement. This close correspondence will be exploited in the selection of independent variables for the analysis of municipal productivity that follows.

Motivation and Job Satisfaction Research: Strategic Findings for Productivity Improvement

The relationship between motivation, job satisfaction, and productivity also has important implications for developing productivity improvement strategies. The aspiration of many public sector managers is, of course, to maximize the productivity of individual employees, groups of workers, and the organization as a whole. It is intuitively

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[116]See, for example, Deborah D. Roberts, "Government, Industry, and Urban Innovation: Public-Private Interchange in Technology Transfer" (Ph.D dissertation, Syracuse University, 1982).

[117]Yin, p. 80.

pleasing to believe that happy, highly satisfied and motivated employees will be more productive workers. Much scholarly work has explored the enhancement of job satisfaction, motivation and individual or organizational effectiveness. The results of this voluminous research are, unfortunately, inconclusive. However, the enlightened manager would do well to heed the findings of research on job satisfaction and productivity since traditional assumptions and intuitive beliefs are often refuted.

Katzell and Yankelovich have synthesized most of the high quality research on job satisfaction and productivity.[118] Not surprisingly, most of the studies they reviewed involve private organizational settings. Nonetheless, their distillation of research findings are of interest to public managers committed to developing strategies to improve job satisfaction and productivity.

In summarizing the evidence from the vast literature on factors affecting job satisfaction and worker productivity, Katzel and Yankelovich dispel the popular myth that improvement in job satisfaction automatically produces productivity gains (i.e. a happy worker is a productive worker). The two goals are not necessarily incompatible or independent of one another. The crux of the dilemma is that many techniques and methods improve either job satisfaction or productivity but substantial and enduring improvement simultaneously in both is much more

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[118]Raymond A. Katzell and Daniel Yankelovich, Work, Productivity, and Job Satisfaction (New York: The Psychological Corporation, 1975).

elusive. As Katzell and Yankelovich conclude, "Job satisfaction and productivity do not necessarily follow parallel paths" and there is no "single-target program or standard formula that can be applied uniformly" in order to solve the dilemma.[119]

Katzell and Yankelovich suggest that improving job satisfaction and productivity is analogous to achieving the physicist's notion of "critical mass."[120] It requires management to take the initiative and responsibility for achieving organizational change of sufficient depth and breadth over time to alter fundamentally both satisfaction and performance. The key ingredient in forging a link between the twin goals is motivation--which is not the same as job satisfaction.[121] If managers can arouse and maintain employees' desire and will to work effectively, productivity will increase because workers are committed, not because they are coerced.[122]

The principal factor which leads simultaneously to high motivation, job satisfaction, and high productivity appears to be adequate recognition and meaningful rewards for effective performance.[123] A system for effectively rewarding employees can include financial or psychological components, or both, as long as the employees' worth, ability, and

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[119]Katzel and Yankelovich, pp. 12-13.

[120]Ibid., p. 24.

[121]Ibid., p. 25.

[122]Ibid., p. 26.

[123]Ibid.

performance are perceived by employees to be adequately appreciated by the employer. In addition, Katzell and Yankelovich found the following patterns relating to employee compensation:

- Well-paid employees have a higher motivation and productivity but only if pay is linked to performance--the absolute amount of pay, in and of itself, is not related to performance;
- Reduced absenteeism, less turnover, and higher job satisfaction is positively associated with highly paid employees;
- Job satisfaction is higher when pay is related to job performance and employees are less satisfied when their pay is perceived to be inequitable;
- The beneficial effects of improved compensation patterns are negated if they have an adverse impact on employee job security and social relations.[124]

Even though worker motivation is important for improved job satisfaction and productivity, Katzell and Yankelovich report limited success with several major strategies intended to enhance it. In their summary of the literature on job enlargement, enrichment, and redesign, they point out that the incidence of success for each strategy varies to such an extent that none alone is a sure-fire means for improving motivation, and hence, satisfaction and productivity.[125] Success seems to depend on organizational context and employee characteristics such as need for security, desire to assume more responsibility and capacity for self-regulation.[126] In a review of municipal and state

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[124]Ibid., pp. 27 and 36.

[125]Ibid., p. 28.

[126]Ibid., pp. 27-31.

experiences with these strategies, Greiner, et al, also report mixed results.[127] In a survey of 365 job enrichment programs (of which 39 percent utilized the team approach, 33 percent used job redesign, and 19 percent employed increased participation), 15 percent of the programs had been terminated, and the remaining jurisdictions reported only slight or modest improvements in employee satisfaction and productivity.[128]

Management Style and Productivity Improvement

A distinguishing characteristic of the strategies reviewed above is the emphasis on the "humanistic treatment" of employees as well as concern for improving efficiency and effectiveness. This same characteristic is also attributed to a participatory style of management.[129] However, Katzell and Yankelovich warn against assuming that there is a causal relationship between participative management and increased productivity. They offer the following observations concerning the nature of the relationship:

- Employees who believe they have an influence on activities which are related to their jobs, work groups and organization as a whole are more motivated, satisfied, and productive;
- Equalization of control among hierarchial levels is not related to productivity improvement;
- Employee participation in defining work goals, methods, and compensation at individual and group levels is associated with productivity improvement;

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[127]John M. Greiner, et al., Productivity and Motivation: A Review of State and Local Government Initiatives (Washington, D.C.: The Urban Institute Press, 1981), pp. 340-346.

[128]Greiner, et al, p. 340.

[129]Renis Likert, The Human Organization: Its Management and Value

> Organizations which employ participative management have employees who are typically more motivated, satisfied, and productive; however, it is not clear whether participative management is the cause or the effect of having high motivation.[130]

In other words, the research findings are indeterminate. A participative management style may positively affect motivation which in turn favorably influences productivity, or highly motivated employees may simply be more receptive to the idea of participatory management which then merely reinforces higher productivity levels. There may even be a case for arguing that situational or contextual peculiarities affect the relationship thereby indicating interaction. Consequently, moderation in application of the participative approach as a strategy to increase productivity seems warranted, especially considering the finding that equality of control between organizational levels does not have an effect on productivity.

In sum, the review of the literature on job satisfaction, motivation, management style and productivity by Katzell and Yankelovich underscores the importance of individual performance incentives and some opportunity for employee participation in decision-making as factors in individual, group, and organizational productivity. The research findings indicate mixed results for single-shot efforts involving

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(New York: McGraw-Hill Book Co., 1967), pp. 78-79 and 94-95. Likert's research indicated that a more participative management style, as opposed to a more authoritarian one, is more likely to result in long-range productivity improvement.

[130]Katzell and Yankelovich, p. 35.

performance targeting and incentives, Management by Objectives (MBO), job enrichment, and job redesign or enlargement. More likely to succeed is an "integrated combination of methods that relate the human to economic concerns . . . adapted patiently and skillfully to each work setting . . . [in order to overcome] . . . multiple sources of resistence [and] political barriers."[131]

Summary

This chapter explored several aspects of an elusive yet vitally important issue in local government: productivity improvement. Consensus on the meaning of public productivity continues to elude public administration scholars and practioners. There is general agreement that productivity includes the notions of efficiency and effectiveness, but serious definitional questions remain that can be likened to Lasswell's classic phraseology of who gets what, when, and how. For municipal officials, the questions often boil down to effectiveness for whom, in terms of what services, and how or when it can be accomplished.

Hayward succinctly defines productivity as the efficiency with which resources are consumed in the effective delivery of public services. While not imposing conceptual order among competing notions of productivity, this definition is particularly useful for research in municipal service productivity because it emphasizes the equal importance of the quantity and quality dimensions of public service delivery.

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[131]Ibid., pp. 13-14.

The issue of public productivity improvement raises important political questions regarding how local governments define their responsibilities, make decisions, and relate to their clients and employees. The salience of these questions is heightened by the continued growth in public expenditures as a percentage of the Gross National Product, the public sector's expanding role in the lives of citizens, and the popular impression that public sector productivity lags behind that of the private sector. Public reluctance to accept increasing tax burdens or reduced service levels has forced some city officials to reevaluate how, and indeed whether, the city as a unique component of the American democratic landscape can maximize service productivity and serve as an effective vehicle for democratic representation. The trend toward privatization of some public services may be halted abruptly if federal tax reform proposals are enacted thus forcing many cities to redouble efforts to increase the productivity of municipal service delivery.

Five basic models for productivity improvement were identified to help establish a framework for pursuing multiple approaches to productivity enhancement within the diversity of services offered by cities. No matter which approach or combination thereof is chosen, the practical experiences gained from productivity improvement efforts to date suggest several keys to success. Chief among these are the importance of political leadership, the value of the innovative manager, and the significance of staff analytic capability.

A wide variety of methods and techniques for improving productivity have been tested through experience or recommended in the literature on

productivity. The ultimate effectiveness of these methods and techniques depends to a great extent on the city's fiscal condition and the local capacity for overcoming the potentially numerous barriers and impediments identified.

Since all productivity improvement requires some change in the local status quo, the findings of the innovation literature are useful for the light they shed on the processes of organizational change and decision-making in local government. Several community characteristics and organizational environment variables have been found to be positively correlated with innovation initiation and adoption. Likewise, public managers can profit from an awareness of the social science research findings on the relationships between job satisfaction, motivation, management style, and productivity improvement. The findings from high quality studies underscore the importance of meaningful recognition of and compensation for employee performance, and the value of some employee participation in several types of "management" decisions as part of the process of improving municipal productivity.

The need to demystify productivity management, refine productivity measurement, and explain the differences in productivity between municipalities is important for helping cities to establish reasonable productivity targets or standards. It will also help city officials to profit from the productivity improvement experiences of other jurisdictions. In addition, comparing municipal productivity will assist interested citizens in making more informed judgments about the quality and effectiveness of public services and programs.

The research design framing the analysis of comparative municipal productivity is presented in Chapter II. This chapter reviews the literature germain to the key issue of municipal productivity measurement as a means to an end, rather than an end in itself. It also explores more fully the value of making intercity productivity comparisons and the need to control for quality of service differences between cities. The criteria used to account for service quality and the methodology for measuring intercity productivity are presented. The data collection and analysis techniques are described and the limitations of the research are also reviewed. Chapter III examines the selected characteristics used as independent variables in the analysis of variations in municipal productivity, presents a profile of the survey cities, and explores the presence or absence of linkages between the selected characteristics and relative municipal productivity for the selected cities. Finally, Chapter IV presents the conclusions based on the findings and summarizes the study both in terms of its theoretical import for subsequent research and the its practical merit for the continuing pursuit of excellence by municipal government officials.

CHAPTER II

RELATIVE SERVICE QUALITY AND PRODUCTIVITY MEASUREMENT

The purpose of productivity measurement is to encourage the kinds of performance comparisons and public scrutiny of service operations that can lead to improvements in the productivity of local government service delivery. By themselves, productivity measures are not the "magic bullets" capable of curing conditions of fiscal stress or rescuing cities plagued by poor management and ineffective leadership. However, a productivity measurement system can supply local government officials and citizens with some of the prerequisite information for systematically assessing how well services are provided. Specifically, productivity measures offer a more precise means for comparing performance over time within a single jurisdiction and when similar measures are used by several jurisdictions, relative service productivity between jurisdictions can be assessed and used to refine judgments about "best practices" and service innovations. The promising potential of productivity measurement is far from realization in most jurisdictions. Nonetheless, initial efforts to establish a productivity measurement system in a locality at least will begin to reduce reliance on subjective impressions and intuitive judgments as the primary basis for assessing the strengths and weaknesses of municipal service operations.

Clearly, the value of productivity measurement is only as great as the extent to which the information generated is used to improve results. These results ultimately include better management of local government,

enhanced public accountability, and greater value for the tax dollar. There is no guarantee that measuring service productivity will produce these results, but substantial and enduring improvements are unlikely to occur without some systematic means for measuring progress.

Productivity measures can provide reliable yardsticks for quantifying and assessing productivity improvements. However, productivity measurement has little value outside of a programmatic context. In other words, merely adopting multiple measures of productivity for each city service is insufficient. Measurement adoption must be succeeded by careful performance evaluation to properly inform managerial decisions and to reduce the potential for encouragement of perverse behavior caused by poorly crafted or inadequate measures of service productivity. Productivity measurement must be part of a continuing program that emphasizes accuracy in reporting, measurement refinement, and employee feedback.

Within the context of a productivity improvement program, productivity measurement has several potential applications. Some of these are identified below:

-- To provide an index of progress or lack of progress.
-- To develop standards of performance based on aggregate data for similar communities.
-- To dramatize diversity and generate efforts to determine the reasons for success and whether these reasons can be applied more widely to treat causes of a poor showing.
-- To serve as the basis for performance incentives that can be used by governmental management and labor in wage and working condition establishment.[1]

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[1]The Urban Institute and the International City Management Association, "Improving Productivity Measurements in Local Government," in Marc Holzer ed., Productivity in Public Organizations (Port Washington, New York: Kenikat Press, 1976), pp. 120-121.

Likewise, Hatry suggests several useful comparisons that can be made with productivity measurement data:

- -- To compare actual performance against performance standards.
- -- To compare current performance measurements to performance in previous time periods.
- -- To compare the performance of different units where a service is being delivered by more than one unit doing essentially the same activities.
- -- To compare the outcomes for various client groups within the jurisdiction.
- -- To compare performance to that of other jurisdictions.
- -- To compare performance to that of . . . similar activities carried out by the private sector.
- -- To compare performance against pre-set and planned targets.[2]

Awareness of some of the inappropriate applications of productivity measures is just as important as knowledge of the proper uses. For instance, productivity measures are not the equivalent of workload measures.[3] In addition, productivity measures are related to but cannot be equated with cost measures.[4] Consequently, cost reductions in services are not always the result of increased productivity since such cost savings can be accomplished by reducing the quality of service.

Clearly, productivity measurement is a challenging task frequently encumbered by ambiguity and burdened with the risk of producing unintended consequences. The following section addresses some of the major hurdles in developing a sound system of productivity measurement.

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[2]Harry P. Hatry, "Performance Measurement Principles and Techniques," Public Productivity Review 4 (December 1980): pp. 336-337.

[3]John P. Ross and Jesse Burkhead, Productivity in the Local Government Sector (Lexington, Massachusetts: Lexington Books, 1974) pp. 13-14.

[4]Ibid.

The Challenge of Productivity Measurement

One of many challenges in measuring the productivity of public services is the determination of the unit of analysis that will produce productivity information of the greatest utility to elected officials, managers, and citizens. Productivity data on a pothole repair crew, for instance, may be of considerable importance to a public works director but of less interest to elected officials and citizens who may be more concerned with the productivity of the entire street maintenance program. Once a locality identifies what to measure, the major challenge is how to measure it.

Productivity measurement in the public sector should take into account the three primary dimensions of service output: efficiency, effectiveness and quality of service. The efficiency of a service indicates the extent to which the government produces a given output with the fewest input resources. The effectiveness of a public service refers to the extent that local service objectives are fulfilled or, in other words, "whether the service achieves its purpose."[5] Linked to effectiveness is service quality which encompasses the concepts of service level, timeliness, convenience, accuracy and responsiveness.[6]

Clearly, the simple ratio of service output to inputs does not explicitly account for variations in service effectiveness or quality. Various alternate formulas for measuring productivity have been developed, but most are unsatisfactory due to problems in defining and

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[5]Hatry, p. 312.

[6]Brian Usilaner and Edward Soniat, "Productivity Measurement," in Productivity Improvement Handbook for State and Local Government, ed. George J. Washnis (New York: John Wiley and Sons, 1980), p. 93.

measuring the output side of the equation.[7] Among the public productivity formulas developed by researchers are the following:

$$\text{Productivity} = (O/I) + (O/S)$$

where O equals output, I equals input, and S equals the degree to which outputs are deemed satisfactory.[8]

$$\text{Productivity} = (W/R)(Q_1 \times Q_2)$$

where W equals workload; R equals resources; Q_1 equals quality defined as the percentage of consumer satisfaction; and Q_2 equals quantity defined as the percentage of community need satisfied.[9]

$$\text{Productivity} = 100E\sqrt{(C^2 + S^2)d}$$

where E equals an efficiency index, C equals consistency, S equals user satisfaction, and d equals employee dependability.[10]

$$P = \frac{A}{pU + cE}$$

where P equals process productivity, A equals number of acceptable units processed, E equals number of rejected units, and C equals cost per unit for correction processing.[11]

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[7]The formulas for productivity measurement listed in this section are also reported in the following work: David N. Ammons, Municipal Productivity: A Comparison of Fourteen High-Quality Service Cities (New York: Praeger, 1984), pp. 8-9.

[8]Walter L. Balk, "Technological Trends in Productivity Measurement," Public Personnel Management 4 (March-April 1975): p. 130.

[9]Rackham S. Fukuhara, "Productivity Improvement in Cities," The Municipal Year Book 1977, Vol. 44 (Washington, D.C.: International City Management Association, 1977): pp. 193-194.

[10]This formula was developed for Nassau County, New York, and is reported in: Frederick O'R. Hayes, Productivity in Local Government (Lexington, Massachusetts: Lexington Books, 1977), pp. 84-85.

[11]Everett E. Adam, Jr., James C. Hershauer, and William A. Ruch, "Developing Quality Productivity Ratios for Public Sector Personnel Services," Public Productivity Review 5 (March 1981): p. 47.

Ideally, it would be very useful to have one measure of service productivity that accurately quantifies the concepts of efficiency, effectiveness and quality. However, the complexity of public services usually precludes precise, comprehensive measurement of productivity with a single formula. If such formulas lack precision, it is obvious that reliance on single measures of service productivity entertain considerable risk of producing unwanted or perverse behavior on the part of municipal employees. Efforts to measure public service productivity are complicated by several factors that also exist in the private sector but seem to be especially characteristic of the public sector. These include:[12]

- -- The absence of discrete and easily measured units of public output.
- -- The absence of a clearly specified, production function which specifies, for example, the contributions of a community's infrastructure to public output.
- -- The existence of multiple and sometimes competing political goals and objectives which pose aggregation problems in weighting conflicting objectives within or between departments.
- -- The presence of reciprocal externalitites that mediate departmental interdependence and complicate accurate performance measurement of programs or departments. (An example would be the relationship between the fire department's performance and the effectiveness of the local electrical wiring inspection program.)

Many of these measurement difficulties are illustrated in the following example that draws on municipal experience in solid waste

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[12]Jesse Burkhead and Patrick J. Hennigan, "Productivity Analysis: A Search for Definition and Order," Public Administration Review 38 (January - February 1978): pp. 34-35.

collection -- one of the easiest to measure types of service outputs. Typically, refuse collection service output is measured in tons of solid waste collected per man-hour. This ratio measures service efficiency when compared to an established performance standard or to departmental performance in previous years. However, this ratio does not measure output effectiveness which may relate to the level of street cleanliness or citizen satisfaction with the timeliness, neatness, or frequency of the collection service. Furthermore, the efficiency of the waste collection service may be affected by different political objectives of newly elected officials that are more responsive to certain groups such as older widows or the disabled. These groups might demand, for instance, an increased quality of service (i.e. back-door waste pickup). Moreover, the effectiveness of the waste collection service could be affected by other service operations such as frequency of street-cleaning or level of police enforcement of litter laws.

Rarely can a single productivity measure or formula provide a reliable linkage between resource inputs and all three dimensions of service output (efficiency, effectiveness and service quality). A central problem is how to adjust productivity measures for variations in service effectiveness and quality that may occur over time. Productivity standards and measures should account for changes in political goals and objectives and the mediating effects of reciprocal externalitites. Unfortunately, productivity formulas that satisfactorily account for all of these variations have yet to be developed.

Local government productivity measurement is still in a relative state of infancy. Despite measurement difficulties, Ross and Burkhead

admonish researchers to "stop protesting and get on with solving the [measurement] problems."[13] Yet the volume of research devoted to the refinement of productivity measurement is scanty. In many respects, the challenge of developing more precise and affordable measurement techniques for productivity evaluation is a largely unmet one.[14] The major contemporary efforts to measure local government productivity are reviewed in the next section.

Approaches to Measuring Municipal Service Productivity

The empirical research in municipal productivity measurement can be classified into one of three general approaches: the efficiency and effectiveness measurement approach spear-headed by Harry Hatry and the Urban Institute; the vector approach developed by Bradford, Malt, and Oates; and the fiscal analysis approach represented mainly by the work of Ross and Burkhead, and by the work of Ammons in intercity productivity.[15] The fact that these major approaches can be linked with specific individuals is testament to the paucity of empirical studies of local government productivity. Subsequent sections examine each of the three approaches.

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[13]Ross and Burkhead, p. 45.

[14]Burkhead and Hennigan, p. 39.

[15]The works referred to include: Harry Hatry, Louis H. Blair, Donald M. Fisk, John M. Greiner, John R. Hall, Jr., and Philip S. Schaenman, How Effective Are Your Community Services: Procedures for Monitoring the Effectiveness of Municipal Services (Washington, D.C.: The Urban Institute, 1977); D. F. Bradford, R. A. Malt, and W. E. Oates, "The Rising Cost of Local Public Services: Some Evidence and Reflections," National Tax Journal 22 (June 1969); John P. Ross and Jesse

Efficiency and Effectiveness Measures

Hatry and collegues at the Urban Institute have conducted or inspired several research efforts aimed at measuring the efficiency and effectiveness of a variety of local government services.[16] In fact, those local governments that have adopted various measures as part of a productivity improvement program, have profited from the work of Hatry and his associates.

Hatry identifies a variety of different types of efficiency and effectiveness measures. Included among these are:

-- cost measures;
-- workload accomplished measures;
-- effectiveness/quality measures;
-- efficiency/productivity measures;
-- actual unit-cost to workload standard ratios;
-- efficiency measures and effectiveness quality;
-- resource utilization measures;
-- productivity indices;
-- pseudo measures;
-- cost-benefit ratios; and
-- comprehensive, performance measurement.[17]

Not all of these measures are appropriate indicators of municipal service performance and their utility for some types of services varies. Therefore, each of the eleven measures listed is briefly reviewed.

Burkhead, Productivity in the Local Government Sector (Lexington, Massachusetts: Lexington Books, 1974); and David N. Ammons, Municipal Productivity: A Comparison of Fourteen High-Quality Service Cities (New York: Praeger, 1984).

[16]See source in footnote above and Harry Hatry, S. N. Clarren, T. Van Houten, J. P. Woodward, and P. A. Donvita, Efficiency Measurement For Local Government Services (Washington, D.C.: The Urban Institute, 1979).

[17]Hatry, "Performance Measurement Principles and Techniques," p. 315.

As Hatry recognizes, cost measures alone are not indicators of service efficiency or effectiveness.[18] Comparisons of actual service costs with budgeted amounts are common; however, claims that service efficiency or effectiveness have improved as a result of expenditures less than budgeted amounts are inappropriate and misleading.

Workload accomplished measures represent the quantity of work accomplished during a specified period. This is the most frequent type of measure reported by municipal service departments.[19] Total tons of waste collected, tons of asphalt used for street maintenance, and number of housing inspections accomplished are typical examples. Nevertheless, workload accomplished measures do not address service quality or effectiveness and when used as standards to be met or exceeded without an appropriate linkage to cost or need, they actually can encourage perverse, "make-work" behavior by employees. Using total tons of asphalt applied annually in street maintenance, for instance, may serve only as an incentive for wastefulness in the use of this expensive road repair material.

Effectiveness/quality measures are frequently the most difficult and expensive type of productivity measures. They attempt to assess the quality level of a service, the extent to which service objectives are fulfilled, or the level of satisfaction of the target clientele. Such measures may also attempt to address the degree of service equity

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[18] Ibid.

[19] Ibid.

between neighborhoods. Surveys of citizen opinions regarding service effectiveness may also serve as indicators of desired levels of service quality. Examples of effectiveness quality measures include: level of citizen satisfaction with a wide range of city services offered; percentage of arrests by police officers that survive initial judicial screening or lead to a conviction; number of fires prevented through inspection and prevention programs; and road surface conditions based on trained observer ratings or mechanical measurement readings.

Efficiency/productivity measures help to define the relationship between resource input and service output. Hatry explains that ratios of input to output are referred to as "efficiency or unit cost measures" as opposed to productivity ratios."[20] However, both ratios basically measure similar characteristics using the same mathematical function.[21] These measures are similar to those used in the private sector with inputs expressed in labor or capital and output measured in work units accomplished. Data for these ratios can be collected without great expense but still problematic is the quality level of the service.

Actual unit-cost to workload standard ratios are a special form of efficiency measurement. They are used commonly in the private sector but are gaining in popularity in the public sector for certain types of jobs.[22] These jobs usually involve a repetitive task(s) as found

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[20]Ibid, p. 317.

[21]Ibid.

[22]Ibid. p. 318.

frequently in data processing, keypunching, and various types of inspections. Standards for workload performance sometimes are based on industrial engineering methods such as those involved in time and motion studies. Actual performance, as measured by labor costs, are compared with these standards in a ratio format.

Measures of efficiency and effectiveness quality attempt to account for efficiency at a given level of service quality. Workload measures are used as the output units for ratios but formal quality controls are built in to help ensure that only outputs passing a prespecified quality standard are included in the productivity analysis.[23] Examples include "number of satisfied clients helped per dollar," "cost per household that used a recreation facility and also expressed satisfaction with their experience" or, "percent of institutionalized placements found inappropriate after documented review."[24] Such measures are very useful but require considerable survey and data collection efforts for each jurisdiction.

Resource utilization measures report the amount of down-time or unused capacity for equipment or personnel. The primary value of these measures is to indicate the potential for greater efficiency by more fully utilizing existing resources.

Productivity indexes represent a form of performance measurement that can be calculated readily from many of the previously identified

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[23]Ibid. p. 319.

[24]Ibid.

measures. An index shows "the relative change of a measure from a base period to another time period."[25] The actual value of whatever performance measure used is assigned a value of 100 for the base year with the performance in succeeding years measured as a ratio in comparison with the base year. If a future year's performance is 7 percent higher than the base period, for instance, then the index for that year would be 107.[26] "Productivity indexes are commonly used for national assessments of private sector productivity" but have rarely been used in the public sector."[27]

Hatry categorizes a number of measures frequently misused as indicators of performance under the rubric of "pseudomeasures."[28] These include such ambiguous and potentially misleading measures as cost per capita, cost per dollar of assessment value, number of books per capita and staff-client ratios.[29] These measures are indicators primarily of input and not service efficiency or effectiveness.

Cost-Benefit ratios often are touted by economists as the ultimate type of performance measure.[30] Traditionally, the output or benefit side of the ratio is converted by some means into a dollar value.

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[25]Ibid. p. 320.

[26]Ibid., pp. 330-321.

[27]Ibid., p. 321.

[28]Ibid.

[29]Ibid., pp. 321-322.

[30]Ibid., p. 322.

Presumably a program or service is worth its cost as long as benefits exceed costs. In practice, it is extremely difficult to determine a meaningful dollar value for many, if not most, government services. As a result, such measures are not generally useful for routine performance measurement.

Comprehensive Performance Measurement is an approach that uses a combined set of workload, quality, and employee attitude measures in order to assess municipal productivity. Often referred to as Total Performance Management or TPM, this approach has been employed in a few cities such as Sunnyvale, San Diego, and Long Beach, California and Cincinnati, Ohio with some success.[31] This multiple measure approach to analyzing service productivity requires some effort and expense but as Hatry points out, "good information does not come for nothing."[32]

Different municipalities may find merit in different combinations of the eleven types of performance measures described. Despite the multiplicity of measures and municipal needs, Hatry identifies four basic measurement trends that have emerged in recent years.[33]

1. Renewed efforts to measure efficiency using ratios of work accomplished to inputs defined in either employee hours or dollars.
2. Greatly increased use of engineered work standards.
3. Development of effectiveness measurement procedures that appear to use either citizen or client surveys, or pre-developed performance scales and trained observer ratings of various service characteristics.
4. Increased use of comprehensive measurement systems such as TPM.

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[31]Ibid., pp. 322-323.

[32]Ibid., p. 339.

[33]Harry Hatry, "The Status of Productivity Measurement in the Public Sector," Public Administration Review 38 (January-February 1978): 29-33.

To assist local government managers in judging various performance measures, Hatry suggests that the following eight criteria be considered:[34]

1. Validity/Accuracy. Is the measure valid and does it measure what it should measure accurately?
2. Understandability. Will the measure reasonably be understood by government officials and local citizens?
3. Timeliness. Can the required information be gathered in time to aid decisions?
4. Potential for encouraging perverse behavior. Will the measure produce behavior contrary to organizational objectives?
5. Uniqueness. Does the measure reveal some aspect of performance that no other measure indicates?
6. Cost of Data Collection. Is the cost to collect and analyze the data related to a specific measure justified by its potential value as a decision-making aid?
7. Controllability. To what extent is the object of measurement controllable by the agency whose performance is being evaluated and is accountability matched with the extent of control?
8. Comprehensiveness. Do the selected measures evaluate the most important aspects of a service department's performance?

Estimation of service productivity through a variety of efficiency and effectiveness measures should not ignore the important quality of service dimension.[35] Aggregating multiple measures into meaningful indicators of service productivity must consider possible changes in the quality of service over time, otherwise serious misinterpretation of measurement data will occur. Also, local managers must assess the interorganizational and interdepartmental influences on an individual

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[34]Hatry, "Performance Measurement Principles and Techniques," pp. 313-314.

[35]Harry Hatry, "Issues in Productivity Measurement for Local Governments," Public Administration Review 32 (November-December 1972): 778; and Hatry, "The Status of Productivity Measurement in the Public Sector," p. 28.

service department's productivity. Unfortunately, there are no easy methods for accomplishing these tasks that are widely applicable to the variety of local governments in the United States. Despite these possible difficulties, the efficiency and effectiveness approach to evaluating service productivity can provide a large amount of information useful for judging whether productivity has improved or declined. Along with analysis of the potential causal factors for these changes, this approach to measuring local government service productivity is very useful to elected officials, local administrators, and citizens for making more informed decisions about urban services.

The Vector Approach

The second major approach to productivity measurement of municipal services was developed by Bradford, Malt, and Oates in 1969.[36] Their study has the distinction of being the first empirical investigation of aggregate local government productivity. The vector analysis framework consists of the conceptual distinction between direct outputs (referred to as the "D" output or vector) and service consequences or the "things of primary interest to the citizen" (referred to as the "C" output or vector).[37] The authors underscore the importance of this distinction

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[36]Bradford, Malt, and Oates, "The Rising Cost of Local Public Services: Some Evidence and Reflections," National Tax Journal (June 1969): 185-202.

[37]Ibid.

because the costs of the "D" vector and the costs of the "C" vector proceed at different rates and are influenced by different factors.[38]

This vector framework is an attempt to refine measurement of service output so that some conceptual consistency will prevail in local government productivity analysis. In police services, for example, the "I" vector consists of inputs such as police officers, equipment, and capital costs. The "D" vector consists of such things as number and frequency of city blocks patrolled by foot and by car.[39] The "C" vector involves consequences of those activities of concern to the citizen such as the degree of safety from criminal activities.[40]

The distinction between "D" and "C" vectors is basically an effort to distinguish between the efficiency and effectiveness dimensions of productivity. However, not all of the problems associated with measuring public sector output are resolved. Bradford, Malt, and Oates point out that:

> Even when the distinction between D- and C-concepts of output is carefully drawn and maintained, a multi-dimensional vector of output remains . . . the perennial problem of quality change.[41]

In their longitudinal study of various municipal services, the authors make some adjustment for quality of service changes in education, police, and fire services by applying crude quality proxies such as teacher-pupil ratios, and the number of police officers and

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[38]Ibid., pp. 186-187.

[39]Ibid.

[40]Ibid.

[41]Ibid.

firefighters per capita. Considering the fact that this study was the first effort to measure aggregate municipal productivity (using a variety of cost indicators) crude measures of quality are understandable. The real value of the Bradford, Malt, and Oates research is that it promises a new direction for future productivity research -- the refinement of measures of direct output and service quality, and the exploration of the theoretical linkages between service inputs and consequences.

This vector approach never has been replicated. However, it has inspired other researchers to explore ways to quantify the quality of service dimension of productivity and to analyze possible causal factors for changes in productivity over time within a single organization. The works of Hirsch and Burkhead, and Fox and Holland are early examples followed by the later work of Ross and Burkhead who employ the fiscal analysis approach to productivity measurement.[42]

The Fiscal Analysis Approach

The fiscal analysis approach to the measurement of local government service productivity includes two primary methods: per capita expenditure comparisons and determinants analysis. Studies that employ determinants analysis can be classified further into three basic categories: analysis of the expenditure effects of political and socio-economic variables, the Ross-Burkhead approach to intraorganizational

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[42]See, for example: Werner Z. Hirsch, The Economics of State and Local Government (New York: McGraw-Hill, 1970); Burkhead, Fox, and Holland, Input and Output in Large-City High Schools (Syracuse, New York: Syracuse University Press, 1967); and Ross and Burkhead, op. cit.

productivity measurement, and the Ammons approach to interorganizational productivity measurement.

Per Capita Expenditure Analysis

Per capita expenditure comparisons are a fairly common method for estimating the quantity of public services. Essentially, this method of fiscal analysis involves the implicit assumption that service output can be measured by calculating the value of inputs on a per capita basis. Accordingly, "many municipal administrators make such comparisons on a limited and highly selective basis to defend budget proposals."[43] Inferences about relative municipal productivity likewise are made on the basis of these per capita expenditure comparisons.

Several problems are associated with using per capita expenditure comparisons as indicators of relative municipal productivity. First, only a single factor -- workload, as measured by population -- is accounted for in the comparison of municipal expenditures. However, cities also may differ dramatically in labor costs, service levels, and service quality. As Ammons notes, "it is reasonable to assume that such differences are relevant to performance comparison."[44] Second, per capita expenditure comparisons for various services frequently involve the need to reconcile diverse expenditure reporting documents in order to assure consistency for purposes of analysis. Workload, as measured by a city's total population, may account for the largest variance in

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[43]Ammons, p. 98.

[44]Ibid.

expenditure differences between cities but per capita expenditures do not actually measure service productivity. With this method, the value of outputs equals the value of inputs and thus productivity (by definition) does not change. Even among cities matched for service mix and quality, per capita expenditure comparisons are treated as a simple linear relationship; factor price differences or the locational variations in inputs such as labor costs are ignored entirely.[45]

Determinants Analysis

Of the three types of determinants analysis, studies focusing on the political and socioeconomic variables that influence expenditure levels are the most common. This particular approach employs expenditures (either total or per capita) to estimate output. The technique used is usually multiple regression analysis with expenditures as the dependent variable and a wide range of political and socioeconomic factors designated as independent variables. Cross-sectional or longitudinal data can be used with this approach.[46] The purpose of this analysis is to specify the importance of those factors that determine the expenditure level in individual or aggregate municipal services.

These studies are useful for explaining differences in expenditure levels over time or among units of government but they do not really

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[45]Ibid., p. 100.

[46]See, for example: Robert L. Lineberry, and Edmund P. Fowler, "Reformism and Public Policies in American Cities," American Political Science Review 61 (September 1967): 707-717; and William Lyons, "Reform and Response in American Cities: Structure and Policy Reconsidered," Social Science Quarterly 59 (June 1978): 119-132.

measure changes in public sector output for productivity analysis.[47] The reason is that these studies do not usually account for variations in service effectiveness, factor prices, service level and quality of service.

A more limited amount of research, generally of a longitudinal nature, has been directed toward accounting for differences in factor prices, service quality, and performance output. The Ross-Burkhead approach to intraorganizational productivity is the most outstanding example of this type of determinants analysis. Their approach to the longitudinal study of aggregate expenditure changes in a municipality involves a methodology that accounts for differences in workload, factor costs, quality of service, and productivity.[48] They employ the following straightforward formula in their longitudinal analysis of intraorganizational productivity changes:

$$\frac{E_{t_2}}{E_{t_1}} = \frac{W_2}{W^1} \times \frac{C_2}{C^1} \times \frac{R_2}{R^1}$$

where, E = expenditures
W = workload
C = factor costs
R = a residual term representing productivity and quality changes and an error term
t_1, t_2 = initial and terminal years of the study.[49]

Ross and Burkhead define workload as population served. Costs are defined in terms of an index based upon the entry-level salaries of primary workers such as police officers, firefighters, welfare caseworkers,

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[47]Ross and Burkhead, p. 47.

[48]Ibid., pp. 101-106.

[49]Ibid., p. 102.

and elementary and secondary school teachers.[50] Changes in city service expenditures not attributable to workload or cost changes are assumed to be a result of a residual element in the formula representing productivity changes, quality of service changes, and an error term reflecting inaccuracies in cost and workload measurement.[51] In other words, the difference between the actual and estimated expenditure in the terminal year, based only on changes in the workload and cost factors over the study period, comprises the residual portion attributable to productivity and quality changes. An increase in the residual is assumed to reflect an increase in the quality of services, a decline in productivity, or a combination of the two. Conversely, a decline in the residual is assumed to reflect declining service quality, increased productivity or some mixture of the two.[52]

Clearly, the challenge is to distinguish quality of service changes from productivity changes in the residual term. Ross and Burkhead suggest three alternatives for accomplishing this distinction but concede that "there are no completely satisfactory ways to separate the quality-productivity component.[53] The three alternatives involve: assuming that quality remains constant, developing quality proxies for

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[50]Ibid., p. 101.

[51]Ibid., pp. 101-102.

[52]Ibid., p. 103.

[53]Ibid., p. 113.

each service, or separating quality from productivity by deflating the residual to account for increases in quality. Based on their analysis of the service productivity in selected New York municipalities, Ross and Burkhead suggest that the second method, developing quality proxies, yields the best insights into the quality dimension of productivity.[54]

Ammons summarizes the Ross and Burkhead approach in the following manner:

> The Ross-Burkhead approach to measuring productivity change is useful and relatively simple. It reduces the need for massive data collection and relies instead upon a few relevant, easily accessible variables for gauging productivity change . . . .
>
> As acknowledged by Ross and Burkhead, some difficulties are involved in the selection of appropriate workload and cost measures . . . . Furthermore, the productivity change model assumes that cost, workload, and the residual are independent, but Ross and Burkhead acknowledge that "in the operational world of local government they are most certainly not independent."
>
> Two further weaknesses . . . are more substantial. The Ross-Burkhead approach is restricted to measuring change in a single organization or an aggregate of organizations over time. It is impossible for citizens or city officials using this approach to determine whether their local government performs better or worse than other local governments. They may only gauge the status of the organization against itself at an earlier time.
>
> A second major weakness is the problem of separating quality changes from productivity changes in the residual. Normally, from one year to the next the impact of quality changes will not be as great as over several years. When multiyear analysis is attempted, the problem of assessing quality change and distinguishing it from productivity change grows to fairly major proportions.[55]

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[54]Ibid., p. 114.

[55]Ammons, p. 103.

Determinants Analysis and Intercity Productivity Measurement

The Ammons approach to intercity productivity measurement is the third type of determinants analysis. This approach involves three basic steps. First, through an elaborate screening process, Ammons controls for quality of service differences and matches cities for service mix and quality. Quality proxies are developed for police, fire, parks and recreation, libraries, refuse collection, and general government, and are applied to all U.S. cities over 10,000 population. Fourteen full-service, high-quality cities survive this screening process that is designed to address and minimize the problem of separating quality of service differences from productivity differences in a cross-sectional study of intercity productivity.

Secondly, Ammons converts the algebraic expression used by Ross and Burkhead to a curvilinear, multiple regression equation of the form:

$$E = a + b_1W + b_2W^2 + b_3W^3 + b_4C$$

where E is the projected expenditure, a is a constant, W is workload or population, C is a labor cost index based on entry level salaries and b_1, b_2, b_3, and b_4 are weights.[56] This regression equation can be calculated for expenditures in a single service or for several services in aggregate form. It represents a projection of a city's dependent variable (expenditures) based upon the knowledge of the explanatory variables (population and labor cost). Presumably, Ammons's analysis of the residuals from a simple linear equation led to the

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[56]Ibid., p. 105.

inclusion of polynomial terms to help account for the suspected economies of scale present in the range of city populations. The squared and cubed workload terms reflect this suspected curvilinear relationship between city size and expenditures.

Once cities are matched for service mix and quality through the screening process, the actual observations for the expenditure, workload, and cost variables for each city can be introduced into the regression computation. As Ammons explains:

> The resulting computation identifies a line from which many, if not all, of the actual observations will vary to some degree or another. The direction of variation, or the sign of the residual, identifies the positive or negative nature of the relative productivity of a particular observation. The magnitude of the residual compared to the fitted estimate, or formula-based expenditure projection, indicates the magnitude of the positive or negative relative productivity value.[57]

The third step in the Ammons approach is to calculate a relative productivity index for each city. By simply reversing the sign of the residual to associate a negative value with lower productivity and a positive value with a higher productivity, and calculating the ratio of the residual to the formula-based or fitted estimate, Ammons produces a Relative Productivity Index defined by the formula:

$$P_i = -1(R_i/F_i)$$

where P_i is the Relative Productivity Index score for a particular city, R_i is the residual for that city, and F_i is its fitted or formula-based projection of expenditure.[58]

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[57]Ibid., p. 104.

[58]Ibid., p. 105.

Ammons finds that the variation in aggregate expenditures explained by the three population factors and the cost factor is 98.8 percent (R^2 = .988) for the 14 high-quality, full-service cities.[59] The percentage of variance explained by population (W) alone, as in a per capita expenditure approach, is a slightly lower 98.1 percent (R^2 = .981). He concludes that "more than one-third of the variance left unexplained by an assumed, simple linear relationship is explained by the curvilinear regression approach."[60] Moreover, the impact of choosing a regression-based percentage deviation ranking over the per capita expenditure ranking indicates considerable shifting in the relative productivity of the 14 cities.[61] This demonstrates "a rather systematic inadequacy of the per capita expenditure approach as a means of assessing managerial proficiency."[62]

The high percentage of variance in aggregate expenditures explained by the population or workload factors in the Ammons analysis leaves very little remaining variance for the labor cost factor to explain in the equation. Since virtually all variance is explained by the workload variable, one can conclude the obvious that the larger the population, the higher will be city expenditures. Using per capita expenditures instead of total expenditures for city services would permit the researcher to see the effects of the labor cost factor more

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[59] Ibid., p. 111.

[60] Ibid.

[61] Ibid., pp. 111-115.

[62] Ibid., pp. 112-113.

clearly. However, the resulting rankings of city productivity based on the Relative Productivity Index would differ based on the selection of per capita expenditures as the dependent variable. The rankings produced by the per capita approach would differ very little from a nonregression-based per capita expenditure ranking since labor costs would still have a much smaller impact than workload or population. Using total expenditures as the dependent variable has the advantage of refining the differences in the magnitude of the residuals from the formula-based expenditure projections. In other words, the Relative Productivity Indexes will result in rankings that reflect a better fit for the observations when total expenditure is used as the dependent variable.

The Ammons approach to the fiscal analysis of local government service productivity provides a new method for controlling quality of service differences between cities which facilitates the interorganizational comparison of aggregate service productivity taking workload and labor costs into account. In the absence of agreed-upon standards for various qualty levels of city services, Ammons develops quality indicators derived from mostly published data sources.[63] The use of multiple regression to produce a Relative Productivity Index also provides an interval level measure that permits statistical analysis of numerous potential explanatory variables for productivity differences between jurisdictions.

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[63]Ibid., p. 73. Ammons uses the following criteria to distinguish high-quality service cities: police -- less than the national average

The preceding sections have examined the challenges related to measuring productivity, the potential applications and uses of productivity measurement data and the major approaches to measuring local government service productivity. Clearly, precise measures of input unit costs and service output efficiency, effectiveness and quality are needed in order to gauge progress in service improvements. In this regard, the measures developed by Hatry and the Urban Institute perhaps are the most precise. However, the absence of uniform collection and compilation of rigorous performance measures on a national basis requires that researchers develop alternative but admittedly somewhat less precise means to measure service productivity -- especially when intercity productivity comparison is the research focus. Accordingly, the Relative Productivity Index serves as a useful diagnostic tool and dependent variable that permits analysis of municipal productivity and numerous managerial, organizational, and community characteristics. With refinements in accounting for quality of service differences between municipalities through formulation of a relative quality index, the regression approach to measuring interorganizational productivity is the basic productivity measurement methodology employed in this study. This methodology is explained in detail following the subsequent section

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rate of motor vehicle thefts in 1979; fire -- ISO classification of 4 or better; refuse collection -- twice-a-week backdoor collection; streets -- a pavement and curb index of 2A + B/3 where A = the percentage of streets paved and B = the percentage of paved residential streets; library services -- per capita circulation of 4.5 or greater; parks and recreation -- at least one lighted tennis court per 5,000 population; and, receipt of an MFOA Certificate of Conformance for Financial Reporting as an indicator of the level of quality of financial administration.

that specifies the value and potential of intercity productivity comparisons.

The Value of Intercity Productivity Comparisons

> Those who would improve productivity in local government must . . . create artificially a milieu that is equivalent, in effect, to the role of profit and competition in the private economy.[64]

Hayes's challenge strikes at the heart of the rationale for overcoming the problems related to intercity comparisons of service productivity: the motive power of intercity performance competition may be the key to more extensive and rapid productivity improvement. Stimulating competition to improve service productivity may be one way to break the hold of what Hayes refers to as "the law of presumptive perpetuation of established practice" that seems to prevail in some local government service delivery systems.[65] In other words, the rate of change and productivity improvement will tend to be low and unsatisfactory until the decision-making environment is more effectively penetrated by relevant nonlocal information on best practices in various city services. Intercity comparisons of individual service and aggregate municipal productivity may be one effective stimulant for piquing interest in and accelerating the rate of productivity improvement.

The effectiveness of intercity productivity comparisons in stimulating competition among jurisdictions to improve performance is partly

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[64]Hayes, p. 13.

[65]Ibid., p. 228.

a function of the frequency of measurement and the extent and type of media coverage. State-wide newspaper publications of municipal productivity comparisons and rankings, for instance, are likely to have some motive effect on the poorer performing jurisdictions. One can imagine certain individuals and groups such as local newspaper editors, candidates for city council, the League of Women Voters, and other civic groups using the published productivity rankings to pressure local government for improved performance and more value for precious tax dollars. At the very least, making productivity a local political issue offers the potential for stimulating positive changes in service practices that might otherwise be too politically risky to attempt. Conceivably, the local political agenda may begin to include such diverse and seemingly intractable problems as reducing the size of overstaffed service departments, closing poorly located fire stations, closing underutilized schools, removing incapable service chiefs, eliminating certain rigid or questionable personel practices, purchasing new equipment, increasing compensation and benefits to attract and retain highly productive personnel, and altering outmoded but entrenched operational practices. Even if widespread publication of intercity productivity comparisons has only a minimal impact on spurring competition to improve performance, such information may at least enhance local officials' awareness of the need to adopt measures of local productivity, now largely absent, in order to answer certain citizens' concerns about this issue.

Despite potentially significant savings through productivity improvement efforts, important problems exist in making municipal

service productivity comparisons and in accounting for productivity differences between cities. If these hurdles can be overcome, the potential benefits of widely publicized productivity comparisons for stimulating intercity competition can begin to be realized. Hatry observes that:

> Officials often want to be able to compare their own performance with those of other, similar jurisdictions. A major problem here is the lack of similar performance measurement by local governments. Another problem lies in the hidden assumptions that are made when saying that two jurisdictions are similar. Population and density similarities do not necessarily mean that the type and difficulty of incoming workload as well as other factors that affect measurement are the same. Also, data collection procedures are likely to differ, and special factors unique to individual jurisdictions abound. However, when local governments are using approximately the same procedures such comparisons can be made. Even now some comparisons are possible on crime and clearance rates, and citizen ratings of certain services can be made among a few governments that have been using similar questionnaires.[66]

The complexities and pitfalls related to intercity productivity analysis are problems of comparability and measurement. Standardization of municipal performance measurement and data reporting on a statewide or national level certainly would facilitate interorganizational comparisons. In the absence of sophisticated productivity measures uniformly reported by cities, less precise but still highly informative data can be generated through alternative methodologies for comparing municipal service performance. Ammons suggests that:

> Intercity comparisons relying on cross-sectional analysis may be expected to lack the precision possible in a carefully structured longitudinal study involving a single organization with a single

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[66]Hatry, "Performance Measurement Principles and Techniques: An Overview for Local Government," pp. 336-337.

> system of performance measurement and a greater opportunity for complete familiarity by the researcher. Differences in municipal services and performance measures pose a difficult but not insurmountable problem that, in an effort to achieve compatibility, will require assumptions and generalizations that may adversely impact precision. Some loss of precision, however, may not seriously impair the analysis, depending upon the nature of the inquiry.[67]

Despite their relative lack of precision, cross-sectional studies of intercity productivity offer the potential for stimulating productivity competition, sharpening municipal rivalries, and replicating, perhaps as closely as possible, Hayes's "private market milieu" where consumers have comparison yardsticks and providers have political profits and losses depending on relative productivity. Analysis of the potential causes of variations in relative productivity such as management style and approaches, organizational characteristics, and socioeconomic characteristics promises to help answer the crucial question of why certain jurisdictions are more productive than others. Strategies for productivity improvement can then be refined with the help of this empirical evidence of best practices and "what works" in terms of service improvements.

Intercity productivity comparisons also can complement but not replace other types of performance analysis. Comparing a city service department's productivity with goals, targets, or standards over time certainly enables local officials and citizens to discover whether performance is improving, declining, or remaining stable. Comparing the productivity of a city's service department with that of a private firm

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[67]Ammons, pp. 97-98.

offering a similar product would also be desirable if certain legal, technological and financial reporting variations are taken into account. While the information produced by such analyses is very useful, neither intraorganizational nor public-private sector productivity comparisons offer as strong an incentive for improving productivity as do intercity comparisons.

Interorganizational productivity measurement is still in a relative state of infancy in the public sector. The disparity in measurement between what is theoretically desirable and what is currently practical is considerable. This consideration informs the task of accounting for variations in quality of services between jurisdictions in order to facilitate valid comparisons of relative productivity. The suggested methodology for measuring the important quality of service dimension in municipal productivity is described in the following section.

Quality of Service and Municipal Productivity

As previously indicated, service quality is linked to the effectiveness dimension of productivity and refers specifically to the concepts of service level, timeliness, convenience, accuracy, and responsiveness. In this respect, quality of service is a function of how well services are provided in these terms. In a broader sense, quality of service is the extent to which the local government's desired outcomes or service objectives are achieved. The distinction between these two perspectives of service quality is similar to the one previously described by Bradford, Malt, and Oates regarding the appropriateness

of direct outputs or consequences in productivity measurement. As Ammons explains:

> Strong philosophical reasons for selection of either measure of quality can be made. Given the reality of limited measures of municipal output, the prudent analyst is likely to worry less about whether immediate products or ultimate consequences are measured than about the validity and reliability of the measure at whichever level is available.[68]

Whether based upon the narrow or broad interpretation, service quality is primarily a characteristic of municipal output in the output-to-input ratio used to measure productivity. Productivity is improved by various actions that increase this ratio as long as service quality is not diminished. Service productivity can be increased in several ways: by reducing inputs such as labor and capital while maintaining the same level of service output, by maintaining a constant level of inputs while increasing service output, or by some combination of the two that produces a higher ratio. However, input reductions achieved by lowering the quality of service do not constitute productivity improvement. For example, a shift in residential collection service from twice-a-week backdoor collection to once-a-week curbside collection reduces input requirements but only through a decrease in service quality. The transfer of responsibility for a portion of labor input from the municipality to the residents enhances the output-input ratio but lowers the quality of service without productivity improvement.

Logically, changes in service quality affect both input requirements and the level or nature of service output. Generally, higher

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[68]Ibid., p. 52.

quality service levels cost a municipality more to provide. Yet this fact does not mean that there is a perfect one-to-one correspondence between expenditures and service quality. Ammons explains that:

> Although greater than average expenditure is no guarantee of higher than average quality of service (hence the inappropriateness of the use of input as a proxy for quality of service), it is likely that an alteration in quality of service output will have a direct impact on the magnitude of required resource input.[69]

In the fiscal analysis approach to intercity productivity comparisons, accounting for quality of service differences is important because such differences affect municipal service expenditures. The challenge is to devise some means for comparing service productivity while taking into account the impact of different quality of service levels. This task is made more formidable since relatively few specific measures of service quality exist for the diverse range of municipal services, hardly any municipalities have adopted those measures that have been developed, and no agency regularly collects data on the quality of services in U.S. municipalities.

The approach used by Ammons to account for quality of service differences between municipalities involved developing high-quality service criteria for seven city services, screening out all U.S. cities that did not meet at least six of the seven criteria, and then employing multiple regression to develop a relative productivity index for the 14 full-service cities matched for their high quality of urban services.[70]

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[69]Ibid., p. 54.

[70]Ibid., pp. 59-82.

By using this approach, Ammons explains that "the quality of service problem that has plagued so many earlier studies at the data-analysis stage has been addressed and neutralized prior to arrival at that stage."[71] This same approach could be used to develop criteria for several levels of service quality enabling comparisons of the relative productivity of cities within each identified quality level.

However, a different methodology has been developed in this cross-sectional productivity analysis of the thirty-one full-service Tennessee cities with 1982 populations between 10,000 and 55,000. In this study, an attempt has been made to account for differences in the quality of services among cities by constructing a Relative Service Quality Index that helps to determine a city's quality score for each service, the sum of which constitutes the city's aggregate quality index score. This quality index is also used to classify cities into either a high quality or moderate quality service category. These quality scores are inserted into the regression equations for the high quality and moderate quality groups along with workload and the labor cost index for each city to produce a Relative Productivity Index.

The reasoning behind this approach is that if the quality of service factor for each city can be quantitatively accounted for along with workload (1982 population) and the labor cost index (salaries of selected entry-level workers), then comparisons of municipal productivity can be made without having to conduct an extensive service

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[71]Ibid., p. 57.

quality screening process as in the Ammons study. The task is to develop a relative quality score for each city's service based on meaningful quality criteria for each service. This task involves acceptance of the assumption that interval level values can be assigned to a city's relative quality as measured by selected quality criteria for each service. In other words, this methodology implies that the relative service quality level of a city can be quantitatively accounted for in the fiscal analysis approach to intercity productivity measurement. The assumption is also made that the quantitative values or service quality scores have meaning only in relation to the values for the other cities included in the study. No attempt is made to use such scores to inflate or deflate expenditures for each city and no attempt is made to assign a dollar value equivalent to the quality score for each city. Further, it is assumed that this method accounts for the major quality of service differences between cities, thus enabling analytical concentration on potential explanatory variables for differences in the relative productivity scores for each city within each quality classification.

Finally, the classification of cities as high or moderate service quality is somewhat arbitrary since no previous public sector study has examined quality in quantitative terms. The cities that have quality index scores above the mean score are classified as high quality, full-service cities, and those cities with quality index scores below the mean are classified as moderate quality, full-service jurisdictions.

Cities with populations below 10,000 are excluded from the analysis due to data limitations, especially with respect to crime rates. To

minimize problems related to economies of scale, jurisdictions over 55,000 population are excluded from the cross-sectional analysis. Clarksville and East Ridge, Tennessee are not included in the analysis since they are not full-service municipalities. The former does not fund refuse collection and the latter does not fund fire protection service. The following sections address the two key aspects of the methodology for calculating quality of service scores: selection of quality of service measures, and development of the Relative Quality Index based on the selected service quality measures.

Service Quality Measures

The major consideration in selecting measures of quality for each of the six services examined in this study (fire protection, crime control, street maintenance, refuse collection, parks and recreation, and general government) is the need to balance measurement validity and reliability with the ease and cost of data collection. Primarily, this is an exercise in compromise. The objective is to employ appropriate measures of service quality that are valid, reliable and most readily secured for application to intercity service quality analysis. This task is complicated by the fact that there is a sparcity of published municipal data appropriate for use in the measures generally considered to be valid, reliable indicators of individual service quality. For each municipal service examined, the "ideal" or most desirable quality measures and the selected, best available measures are identified.

Police

The numerous performance measures developed to assess the quality and effectiveness of municipal police protection and crime control can be grouped into one of three major categories: measures of crime prevention, measures of apprehension success, and measures of police responsiveness and citizen satisfaction.[72] Ideally, assessments of the quality of police services should include the best indicators of quality from each of these three categories. For instance, crime prevention measures might include the number of reported and unreported crimes per 1,000 population calculated for residents, nonresidents, households, and businesses.[73] Another measure might include the dollar property loss from crimes per 1,000 population. Ideally, measures of apprehension success also could include the pecentage of arrests surviving initial judicial screening, the percentage of arrests by type of crime leading to conviction, the percentage of reported crimes cleared (solved) by type of crime, and the percentage of stolen property subsequently recovered.[74] Quality of police responsiveness can be measured by: the percentage of emergency or high priority calls responded to in "x" minutes and the percentage of nonemergency calls responded to in "y" minutes; the percentage of citizens and business persons feeling safe walking in their neighborhoods at night; and the

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[72]Hatry et al., How Effective Are Your Community Services?, p. 88.

[73]Ibid.

[74]Ibid.

percentage of citizens satisfied with police response times, fairness, courtesy, and overall performance.

Most of these measures are intrusive in the sense that the prime data sources are departmental incident reports, arrest and court records, dispatch records, and general citizen and business surveys. Most of these data would have to be collected for each city since it is not compiled on a large-scale, uniform basis. Consequently, multicity comparisons of police service quality must rely on a less complete set of indicators based on the data available.

The measure of police service quality selected for this study is a municipal crime rate index calculated from data submitted by cities to the FBI and published as part of the annual FBI Uniform Crime Report. This crime index is based on the 1983 reported incidence of the seven "Part 1" crimes of motor vehicle theft, murder and nonnegligent manslaughter, forcible rape, robbery, aggravated assault, burglary, and larceny-theft.[75] The use of FBI statistics as a measure of service quality and effectiveness has been criticized for several reasons: variations in crime rates are affected by criminal justice system actors other than police; the possibility of underreporting of crime and falsifications of reports; and the fact that crime statistics do not measure crimes prevented.[76] However, this crime index is the only readily available quality proxy suitable for intercity comparisons.

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[75]Ibid.

[76]Ammons, p. 65.

Table 3 contains the crime indexes for each city in this study. Each city's "metro" status, defined by the ICMA as either independent, suburban or central city is also listed since the mean crime index rates for each metro classification are used to calculate relative quality scores for the study cities.

Fire

Indicators of the quality of fire protection services can be grouped into four categories: supression, prevention, loss minimization, and citizen satisfaction. Perhaps the ideal indicator of the quality of a fire protection service is the number of fires prevented through the activities and operations related to a municipal fire department. For obvious reasons, this measure is virtually unobtainable. However, Hatry and his collegues at the Urban Institute suggest a number of good fire service quality indicators. These include loss minimization, rates of civilian and firefighter casualties, and direct dollar loss from fires per $1,000 of property served; suppression measures such as time to control fires based on size of fire on arrival, response time, and rescue effectiveness; prevention measures such as reported incidence of fires per 1,000 population by total and occupancy type, and rates of fires in inspected versus uninspected occupancies by type of occupancy and risk class; and citizen satisfaction measures such as the percentage of population rating the fire protection service as satisfactory.[77] Many of these measures for assessing fire service

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[77]Hatry, et al., How Effective Are Your Community Services?, pp. 110-111.

Table 3

1985 Municipal Crime Indexes
(Rate per 100,000 Population)

City	Metro Status	Crime Index
Athens	Independent	481
Bartlett	Suburban	397
Bristol	Central City	1,149
Cleveland	Independent	1,332
Columbia	Independent	956
Cookeville	Independent	803
Dyersburg	Independent	759
Elizabethton	Suburban	201
Franklin	Suburban	635
Gallatin	Suburban	518
Germantown	Suburban	404
Greeneville	Independent	417
Hendersonville	Suburban	459
Humboldt	Independent	601
Jackson	Independent	3,828
Johnson City	Central City	2,319
Kingsport	Central City	1,923
Lawrenceburg	Independent	306
Lebanon	Suburban	494[a]
McMinnville	Independent	530
Maryville	Surburban	661
Millington	Surburban	375
Morristown	Independent	1,038
Murfreesboro	Surburban	2,068
Oak Ridge	Surburban	1,543
Paris	Independent	478
Red Bank	Surburban	434
Shelbyville	Independent	262
Springfield	Surburban	493
Tullahoma	Independent	401
Union City	Independent	379
Overall Mean:		859.5
Central City Mean for 25,000+ population		2,121.0
Central City Mean for under 25,000 population		1,149.0
Suburban Mean for 25,000+ population		1,356.7
Suburban Mean for Under 25,000 population		512.4
Independent City Mean for 25,000+ population		2,038.7
Independent City Mean for under 25,000 population		537.9

[a]Based on an extrapolation from 1981, latest available data, and adjusting for the 6.9 percent decrease in the crime index for the state. State-wide crime index was 4,311.4 for 1981 and 4,011.7 for 1983.

Source: U.S. Department of Justice, Federal Bureau of Investigation, Uniform Crime Reports for the United States: 1983 (Washington, D.C.: U.S. Government Printing Office, 1983), pp. 61, 106.

performance require extensive data gathering efforts in each municipality and variations between cities are likely to be affected by numerous factors beyond the control of the fire department personnel such as the age of structures and other physical conditions present in the city.

The best available measure of fire service quality for purposes of intercity comparison is the classification system used by the Insurance Services Office of Tennessee (ISOT), a nonprofit association supported by the insurance industry. Under a system in use nationally, each city is assigned to one of ten classes for determining fire insurance premium levels on all property within the jurisdiction. Cities are rated on fire protection factors such as personnel levels and training, available equipment, adequacy of water supply, water pressure and fire hydrants, fire prevention programs (i.e. fire alarm availability), control of potentially hazardous conditions (through housing codes, electrical codes, storage of flammable materials), and fire station locations. Classifications range from 1 to 10 with 1 being the highest fire protection rating. Table 4 contains the 1983 ISOT classifications for each of the 31 study cities.

Refuse Collection

The quality of municipal refuse collection service can be measured along four basic dimensions: cleanliness and aesthetics, health and safety considerations, minimization of citizen inconvenience, and general citizen satisfaction. Through a combination of citizen and business surveys and trained observer ratings that measure quality along these dimensions, a fairly precise indication of refuse collection

Table 4

Municipal Fire Protection Classifications
1983

City	Fire Classification
Athens	6
Bartlett	4
Bristol	4
Cleveland	5
Columbia	4
Cookeville	5
Dyersburg	5
Elizabethton	5
Franklin	6
Gallatin	4
Germantown	3
Greeneville	4
Hendersonville	6
Humboldt	5
Jackson	3
Johnson City	3
Kingsport	3
Lawrenceburg	4
Lebanon	6
McMinnville	6
Maryville	5
Millington	5
Morristown	3
Murfreesboro	4
Oak Ridge	3
Paris	5
Red Bank	6
Shelbyville	5
Springfield	4
Tullahoma	5
Union City	5

Source: Insurance Services Office, Inc., Commercial Lines Manual - Tennessee (New York: Insurance Services Office, Inc., 1984).

service quality is possible.[78] However, for cross-sectional, intercity comparisons, the cost required to assess refuse collection quality in this manner is prohibitive, especially since very few cities currently employ these measurement techniques. Consequently, an alternative set of quality indicators or quality proxies is necessary.

The primary factors that distinguish the level of service between cities are frequency and location of solid waste collection. Variations in frequency and point of collection obviously affect the cost of service provision and reflect to a certain extent, the community's choice of a particular level of service quality with respect to the degree of the service burden assumed by the municipality versus the burden shifted to the resident or business. In the absence of more refined available measures for intercity comparison of refuse collection service quality, the thirty-one study cities are classified into one of four quality levels of service. Ranked in ascending order of quality, these categories are: once-a-week curbside or alley collection, once-a-week backdoor collection, twice-a-week curbside or alley collection, and twice-a-week backdoor collection. Table 5 indicates the number of cities in each service quality category.

Street Maintenance

Determination of the quality of street maintenance services can be accomplished in several ways. Mechanical devices using ultra-sound, for

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[78] Ibid.

Table 5

Frequency and Point of Collection for Municipal Refuse Service

City	Twice-a-Week Backdoor	Twice-a-Week Curbside or Alley	Once-a-Week Backdoor	Once-a-Week Curbside or Alley
Athens				X
Bartlett			X	
Bristol				X
Cleveland				X*
Columbia			X	
Cookeville				X
Dyersburg	X			
Elizabethton				X
Franklin			X	
Gallatin				X*
Germantown	X			
Greeneville				X
Hendersonville	X			
Humboldt			X	
Jackson	X			
Johnson City				X
Kingsport				X
Lawrenceburg				X*
Lebanon			X	
McMinnville		X		
Maryville				X*
Millington	X			
Morristown		X		
Murfreesboro		X		
Oak Ridge	X			
Paris			X	
Red Bank		X		
Shelbyville		X		
Springfield		X		
Tullahoma		X		
Union City		X		

* City provides either carts or waste receptacles, or provides twice-a-week refuse collection to selected neighborhoods.

Source: Information collected by author through telephone interviews conducted in June 1985 with Public Works Directors, Street Supervisors, or City Engineers.

instance, can be used to dynamically test for a wide range of street surface conditions and pavement performance characteristics. The data generated from such analyses can be used to assess the effects of various maintenance methods and to classify all streets by condition. Trained observer ratings of street conditions that include assessments of the type and severity of pavement defects and rideability can also be used to classify streets according to a point system.[79] The classifications can range from excellent to poor and are especially useful for tracking the performance of street maintenance operations over time with shifts in the number of street miles between categories indicating the effectiveness of street maintenance service. Surveys of citizen opinions on the adequacy and condition of streets and sidewalks can also be used to determine the level of taxpayer satisfaction with street maintenance operations.

Unfortunately, data from these types of measures of the quality of street maintenance operations are not readily available for all cities. Only a few of the cities in this study have surveyed local citizens' satisfaction with street maintenance services. However, many of the city road systems in the thirty-one study cities have been evaluated and classified according to some type of rating system developed either in-house or by a public agency such as the Local Planning Division of Tennessee Department of Community and Economic Development. The selected basis for comparing the quality of street maintenance

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[79]See, for instance, David Folz, Evaluation of Street Maintenance Operations in Oak Ridge, Tennessee, City of Oak Ridge: 1983.

operations is the percentage of street miles rated poor or in need of resurfacing treatment as defined in the survey methodology used in the study city. In instances where survey data for individual cities is not available for 1983, city officials were asked to estimate the proportions of street miles in each category. Obviously, some problems of data comparability may exist, but by employing this simple measure and just four categories, these differences are assumed to be minimal. Table 6 presents the categories of city street miles rated poor or in need of resurfacing treatment for each of the study cities.

Parks and Recreation

Hatry and others at the Urban Institute prefer to assess the quality of municipal park and recreation services through surveys of user satisfaction with several service characteristics.[80] These characteristics include: enjoyableness, level of crowdedness, physical attractiveness, safety, accessibility, variety of interesting activities, and helpfulness of staff.[81] If all municipalities used similar questionnaires that measured these characteristics of park and recreation services, the task of making intercity comparisons of service quality would be relatively easy. Without such comparable data on the quality of service output, the researcher is forced to use proxy measures of quality based on more readily obtained information on service inputs.

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[80]Hatry, et al., pp. 42-43.

[81]Ibid.

Table 6

Municipal Street System Surface Conditions

Percentage City Street Miles Rated in Poor Condition or in Need of Repair

City	Less Than 10%	10-19%	20-29%	30% or More
Athens		X		
Bartlett				X
Bristol		X		
Cleveland			X	
Columbia		X		
Cookeville			X	
Dyersburg		X		
Elizabethton			X	
Franklin	X			
Gallatin		X		
Germantown	X			
Greeneville			X	
Hendersonville			X	
Humboldt				X
Jackson				X
Johnson City			X	
Kingsport		X		
Lawrenceburg			X	
Lebanon	X			
McMinnville			X	
Maryville	X			
Millington			X	
Morristown	X			
Murfreesboro	X			
Oak Ridge	X			
Paris	X			
Red Bank	X			
Shelbyville		X		
Springfield		X		
Tullahoma		X		
Union City	X			

Source: Information collected by author through telephone interviews conducted in June 1985 with Public Works Directors, Street Supervisors, or City Engineers.

The input measures used as proxies to distinguish the quality of park and recreation services provided by municipalities are the number of tennis courts per 2,000 population, the number of lighted tennis courts per 5,000 population, and the number of improved baseball/softball fields per 3,000 population. Standards established by the National Recreation and Park Association suggest one tennis court per 2,000 population and one softball diamond per 3,000 population.[82] The standard of one lighted tennis court per 5,000 population was developed by Ammons to help distinguish those cities that have "a higher quality of service in the expansion of hours available for use . . . assuming some correlation between a municipality's willingness to purchase lighting and its desire for good nets and playing surfaces."[83] Each city's ratio on these three proxy measures of quality is listed in Table 7.

Financial Administration

Financial administration is an important staff function that affects the quality of other local government services provided directly to citizens. In the private sector, the proficiency or quality of financial management is often judged on the customary profit per share notion.[84] In the public sector, however, there is no comparable

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[82]Robert D. Buechner, ed. National Park, Recreation, and Open Space Standards (Washington, D.C.: National Recreation and Park Association, 1971), p. 13.

[83]Ammons, p. 71.

[84]Lennox L. Moak and Albert M. Hillhouse, Local Government Finance (Chicago: Municipal Finance Officers Association, 1975), p. 371.

Table 7

Selected Municipal Recreation Facility Inventory

City	Number of Tennis Courts	Number of Lighted Tennis Courts	Number of Baseball/ Softball Fields
Athens	3	2	3
Bartlett	10	8	7
Bristol	10	4	7
Cleveland	10	10	6
Columbia	14	14	8
Cookeville	0	0	3
Dyersburg	8	6	19
Elizabethton	12	12	8
Franklin	0	0	3
Gallatin	9	9	11
Germantown	17	15	11
Greeneville	10	10	5
Hendersonville	8	8	6
Humboldt	4	4	5
Jackson	18	17	15
Johnson City	40	35	23
Kingsport	15	15	4
Lawrenceburg	10	10	4
Lebanon	6	3	7
McMinnville	5	5	7
Maryville	5	3	6
Millington	3	1	8
Morristown	20	12	15
Murfreesboro	0	0	14
Oak Ridge	28	28	8
Paris	2	2	3
Red Bank	2	0	1
Shelbyville	10	10	21
Springfield	10	10	3
Tullahoma	8	8	9
Union City	14	12	8

Source: Information collected by author mainly through personal interviews conducted in June 1985 with Ms. Joyce Hoyle and Mr. Jerry W. Dillehay of the Department of Conservation in Nashville, Tennessee.

single measure of performance. Consequently, a combination of quality indicators is necessary to identify variations in financial performance between municipalities.

The measures selected to indicate the relative quality of municipal financial administration are Moody's rating of 1983 general obligation debt and whether the city has received a Certificate of Conformance in Financial Reporting awarded by the Municipal Finance Officers Association (MFOA). Moody's municipal bond ratings classify general obligation bonds into one of nine basic categories - Aaa, Aa, A, Baa, Ba, B, Caa, Ca, and C.[85] Within the top five groups, Moody's rates those bonds believed to possess the strongest investment attributes with the symbols Aal, Al, Baal, Bal and Bl. Bonds rated "Aaa," for instance, are judged to be of the best quality with the smallest degree of investment risk because they are protected by an exceptionally stable margin and secure principal. Bonds rated "C" have extremely poor prospects of ever attaining any real investment standing.

The bond ratings in the study cities range from Aa to Ba with four identifiable variations in between for a total of six levels of quality. The ratings of general obligation bonds for each city and whether the City has been awarded an MFOA Certificate of Conformance is indicated in Table 8. Receipt of the MFOA Certificate of Conformance is considered to represent evidence that a city's annual financial report is "efficiently organized, employs standard terminology, minimizes ambiguities

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[85]Moody's Investor Service, Moody's Municipal and Government Manual)New York, 1983), p. vi.

Table 8

Selected Characteristics of Municipal Financial Administration

City	1983 Moody's General Obligation Bond Rating	Receipt of the MFOA Certificate of Conformance
Athens	Baa	
Bartlett	Baal[a]	
Bristol	A	
Cleveland	A	
Columbia	A	
Cookeville	Baal	
Dyersburg	A	
Elizabethton	Baa	
Franklin	A[b]	
Gallatin	A	Yes
Germantown	Al	Yes
Greeneville	A	
Hendersonville	A	Yes
Humboldt	Baal[c]	
Jackson	A	
Johnson City	A	
Kingsport	Al	
Lawrenceburg	Baal[d]	
Lebanon	Baa	
McMinnville	Baa	
Maryville	A	
Millington	Ba	
Morristown	A	
Murfreesboro	A	
Oak Ridge	A	Yes
Paris	Baal	Yes
Red Bank	Ba[e]	
Shelbyville	A[f]	
Springfield	Baa	
Tullahoma	A	
Union City	Baal	

[a]Estimated rating based on bond and financial characteristics similar to those cities in this class.

[b]Moody's rating for 1984 school bonds since no rating is available for 1983.

[c]Moody's rating for 1978 - the most recent available.

[d]Estimated rating based on bond and financial characteristics similar to those cities in this class.

[e]Moody's rating for Hospital Revenue Bonds.

[f]Estimated rating based on bond and financial characteristics similar to those cities in this class.

Source: Moody's Investor Service, Inc., Moody's Municipal and Government Manual, 1983, Vol. 2 (New York: Moody's Investor Service, Inc., 1983)

and misleading references, and demonstrates a constructive spirit of full disclosure."[86]

The Relative Service Quality Index

The purpose of the relative service quality index is to establish a consistent measurement framework that quantitatively accounts for the variations in the quality of service provided by the municipalities examined in this study. The index of relative service quality is based on the selected indicators of quality for each service described in the preceding section. These indicators were chosen because they represent the best available measures suitable for comparing the service productivity of municipalities. Since no "objective" quality standards per se have been established for each service, the quality of each city's service is evaluated only in comparison to the quality level offered by the other cities included in the analysis.

In order to estabish a quality benchmark for each service from which scores can be calculated, an "average" service quality level is determined for each service and assigned a value of 100 points. This average consists of the mean or the most frequent characteristic associated with each of the quality indicators for each service considering the data for all of the 31 cities included in the analysis. Variations from the "average" service quality level are calculated and added to or subtracted from the benchmark score of 100 points in the manner indicated for each service in Table 9.

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[86]Municipal Finance Officers Association, "Certificate of Conformance," MFOA Newsletter, Supplement (July 1, 1981), p. 1.

Table 9

The Relative Service Quality Index

Service	Quality Criteria	Method for Calculating Service Quality Values
1. Police Protection	1983 FBI Crime Index	Cities are classified by metro status (central city, independent, and suburban) and by population (above or below 25,000). The mean crime index for cities in each of the six categories is calculated and assigned a value of 100 points. The percentage difference from the mean for cities in each category is calculated, multiplied by 100, and added to 100 points if the city's crime index is below the mean or subtracted from 100 points if the city crime index is above the category's mean.
2. Fire Protection	1983 Fire Protection Classification Based on the Ratings of the Insurance Services Office of Tennessee.	Class: 3 — Point Value: 200 Class: 4 — Point Value: 150 Class: 5 — Point Value: 100 Class: 6 — Point Value: 50
3. Refuse Collection	Frequency and Point of Collection for Residential Refuse Collection	Type: Twice-a-Week Backdoor — Point Value*: 200 Type: Twice-a-Week Curbside/Alley — Point Value*: 150 Type: Once-a-Week Backdoor — Point Value*: 100 Type: Once-a-Week Curbside/Alley — Point Value*: 50

*25 points are added to the quality of service score if the city provides special assistance to residents in the form of carts or waste receptacles, or if some city neighborhoods are provided with a higher quality of service level than others.

(Continued)

Table 9 (Continued)

Service	Quality Criteria	Method for Calculating Service Quality Values	
5. Parks and Recreation	Number of Tennis Courts per 2,000 Population Number of Lighted Tennis Courts per 5,000 Pop. Number of Baseball/ Softball Fields per 3,000 population	The three national standards are assigned a value of 33 points each. Each city's percentage deviation from the national standards is multiplied by 33 points and the sum of the three scores are assigned quality point values so that the weight of the parks and recreation service will be equivalent to the five other services in the study.	
		Score	Point Value
		300+	200
		250-299	175
		200-249	150
		150-199	125
		100-149	100
		50-99	75
		26-49	50
		0-25	25
6. Financial Administration	Moody's Rating of Municipal General Obligation Debt	A1	150
		A	100
		Baa1	75
		Baa	50
		Ba	25
	Receipt of the MFOA Certificate of Conformance for Financial Reporting	Receipt of MFOA Certificate	50

Source: Compiled by the author.

The relative quality index is designed so that each service has approximately the same weight in the calculation of total service quality scores. The sum of each city's individual service quality scores comprise the aggregate score of relative service quality. Cities with scores above 700 are classified as high quality cities and those with scores under 700 are classified as moderate quality cities. These quality scores can be inserted into the regression formula for each quality group as part of the fiscal analysis approach to comparing municipal productivity. The service quality scores for the thirty-one study cities are listed in Table 10. Table 11 ranks cities according to quality scores and lists those cities classified in the high and moderate service quality categories. Thus, the relative service quality index is a method for quantitatively accounting for differences in the quality of services provided by municipalities. This method facilitates analysis of relative productivity differences between cities since quality of service differences are taken into account during the analysis.

Measurement of Relative Service Productivity

The methodology for measuring and comparing municipal productivity is based on the regression technique employed by Ammons to calculate a Relative Productivity Index for each city.[87] Ammons explains that:

> . . . regression provides a means of defining by formula the relationship between two or more variables. The product of

[87]Ammons, pp. 104-109.

Table 10

Municipal Scores on the Relative Service Quality Index

City	Police Protection	Fire Protection	Refuse Collection	Street Maintenance	Parks & Recreation	Financial Administration	Total Service Quality Score
Athens	111	50	50	150	75	50	475
Bartlett	123	150	100	50	125	75	623
Bristol	100	150	50	150	75	100	625
Cleveland	135	100	75	100	100	100	610
Columbia	153	150	100	150	125	100	778
Cookeville	51	100	50	100	25	75	401
Dyersburg	59	100	200	150	150	100	759
Elizabethton	161	100	50	100	175	50	636
Franklin	76	50	100	200	25	100	551
Gallatin	89	150	75	150	125	150	739
Germantown	121	200	200	200	150	200	1,071
Greeneville	122	150	50	100	125	100	647
Hendersonville	166	50	200	100	75	150	741
Humboldt	88	100	100	50	100	75	513
Jackson	12	200	200	50	100	100	662
Johnson City	91	200	50	100	150	100	691
Kingsport	109	200	50	150	100	150	759
Lawrenceburg	143	150	75	100	175	75	718
Lebanon	104	50	100	200	100	50	604
McMinnville	101	50	150	100	125	50	576
Maryville	71	100	75	200	75	100	621
Millington	127	100	200	100	75	25	627
Morristown	7	200	150	200	150	100	807
Murfreesboro	48	150	150	200	50	100	698
Oak Ridge	86	200	200	200	175	150	1,011
Paris	111	100	100	200	75	125	711
Red Bank	115	50	150	200	25	25	565
Shelbyville	151	100	150	150	200	100	851
Springfield	104	150	150	150	150	50	779
Tullahoma	125	100	150	150	125	100	750
Union City	130	100	150	200	200	75	855

Source: Compiled by the author.

Table 11

Quality of Service Rankings for Municipalities

Quality of Service Municipalities	Quality Index Score
High	
1. Germantown	1,071
2. Oak Ridge	1,011
3. Union City	855
4. Shelbyville	851
5. Morristown	807
6. Springfield	779
7. Columbia	778
8. Kingsport	759
9. Dyersburg	759
10. Tullahoma	750
11. Hendersonville	741
12. Gallatin	739
13. Lawrenceburg	718
14. Paris	711
Moderate	
1. Murfreesboro	698
2. Johnson City	691
3. Jackson	662
4. Greenville	647
5. Elizabethton	636
6. Millington	627
7. Bristol	625
8. Bartlett	623
9. Maryville	621
10. Cleveland	610
11. Lebanon	604
12. McMinnville	576
13. Red Bank	565
14. Franklin	551
15. Humboldt	513
16. Athens	475
17. Cookeville	401

Source: Compiled by the Author.

> the regression process is an equation that identifies the line that most closely approximates the pattern of empirical observations along the dimensions of the respective variables or that allows the projection of the dependent variable based upon the knowledge of explanatory variables.[88]

In linear form, the regression equation for intercity productivity comparisons based upon expenditures, workload, labor costs, and service quality level is:

$$E = a + b_1W + b_2C + b_3Q$$

where E is the projected expenditure, a is a constant, W is workload, C is labor cost, Q is service quality level, and b_1, b_2, and b_3 are weights. Unlike the Ammons study, the workload or population is not expressed as a curvilinear relationship with expenditures since a much narrower population range mediates the issue of economies of scale based on large city size.

Expenditures are derived from FY 1983 data and regression equations can be calculated either for a particular service or for all services combined. The municipal service expenditure data is displayed in Table 12. The workload for each city is the municipality's 1982 population. The population of the study cities is shown in Table 13. (For the reader's information, the form of government present in each city is also listed in Table 13.) Labor costs for each city are based on an index of entry-level salaries for selected municipal occupations. This index represents the average salaries for entry-level police officers, firefighters, street supervisors, and clerk-typists (see Table 14).

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[88]Ibid., p. 104.

TABLE 12

FY 1983 Municipal Service Expenditures

City	General Gov't	Police	Fire	Streets	Refuse	Parks & Recrea.	Totals
Athens	1,197,323	583,152	374,784	574,688	160,412	173,771	3,064,130
Bartlett	761,210	930,805	695,096	751,883	434,322	257,996	3,831,312
Bristol	506,041	907,079	791,940	1,035,210	224,765	315,588	3,780,623
Cleveland	891,621	1,141,992	1,174,190	898,839	561,108	527,087	5,194,837
Columbia	1,144,235	1,133,928	938,554	866,063	625,164	416,659	5,124,603
Cookeville	1,196,096	1,220,021	672,874	678,930	256,038	103,000	4,126,959
Dyersburg	326,922	798,575	869,383	538,008	528,523	569,082	3,630,493
Elizabethton	328,364	646,244	473,275	701,766	237,234	228,370	2,615,253
Franklin	303,347	811,584	546,610	84,562	704,202	36,600	2,486,905
Gallatin	632,841	977,116	779,522	430,611	788,936	237,080	3,846,106
Germantown	1,026,485	766,451	648,651	2,825,725	529,370	692,619	6,489,301
Greeneville	201,009	653,583	539,221	596,022	872,875	258,473	3,121,183
Hendersonville	597,784	1,119,543	479,765	480,852	669,390	327,481	3,674,815
Humboldt	250,418	451,231	374,875	247,569	272,697	108,641	1,705,431
Jackson	1,519,905	2,908,848	2,625,742	1,780,721	2,166,640	1,203,427	12,205,283
Johnson City	2,892,610	3,178,884	1,696,566	2,168,174	967,484	1,255,002	12,158,720
Kingsport	2,953,281	2,126,257	1,708,225	1,124,254	752,913	1,211,229	9,876,159
Lawrenceburg	343,972	788,307	284,490	563,339	343,215	274,419	2,597,742
Lebanon	470,244	582,215	526,424	595,530	288,132	66,259	2,528,804
McMinnville	490,499	599,896	309,015	230,073	320,264	204,446	2,154,193
Maryville	402,668	834,124	760,331	3,402,790	254,928	153,227	5,808,068
Millington	356,164	650,184	309,092	252,193	215,843	36,411	1,819,887
Morristown	719,039	1,494,255	1,138,016	1,292,884	386,683	506,813	5,537,690
Murfreesboro	1,442,203	1,417,737	1,594,362	672,798	779,596	523,295	6,429,991
Oak Ridge	1,481,433	1,558,211	1,393,887	1,198,255	605,433	512,986	6,750,205
Paris	315,349	599,824	546,013	764,268	305,780	219,375	2,750,609
Red Bank	293,530	556,300	214,374	346,091	214,570	48,181	1,673,046
Shelbyville	270,248	589,110	517,663	757,428	174,946	225,500	2,534,895
Springfield	229,050	552,402	356,340	358,180	203,864	212,524	1,912,360
Tullahoma	857,238	822,655	526,908	1,137,001	564,453	591,872	4,500,127
Union City	821,340	532,092	500,443	341,063	398,662	88,579	2,682,179

Source: Municipal Technical Advisory Service of the University of Tennessee, 1983 Survey of Municipal Government Finance (Knoxville: U.T. MTAS, 1983).

Table 13

1982 Population and Form of Government of Selected Study Cities in Tennessee

City	1982 Population	Form of Government
Athens	12,080	Council-Manager
Bartlett	18,618	Mayor-Council
Bristol	23,986	Council-Manager
Cleveland	26,652	Commission
Columbia	26,571	Council-Manager
Cookeville	20,794	Council-Manager
Dyersburg	15,856	Mayor-Council
Elizabethton	12,460	Council-Manager
Franklin	13,183	Mayor-Council
Gallatin	17,191	Mayor-Council
Germantown	22,750	Mayor-Council
Greeneville	14,097	Mayor-Council
Hendersonville	26,805	Council-Manager
Humboldt	10,209	Mayor-Council
Jackson	49,131	Commission
Johnson City	43,522	Council-Manager
Kingsport	32,027	Council-Manager
Lawrenceburg	10,184	Mayor-Council
Lebanon	12,275	Mayor-Council
McMinnville	10,683	Mayor-Council
Maryville	17,807	Council-Manager
Millington	20,236	Mayor-Council
Morristown	19,962	Council-Manager
Murfreesboro	32,845	Council-Manager
Oak Ridge	27,662	Council-Manager
Paris	10,728	Council-Manager
Red Bank	13,299	Council-Manager
Shelbyville	13,530	Council-Manager
Springfield	10,814	Commission
Tullahoma	15,800	Mayor-Council
Union City	10,516	Council-Manager

Sources: Marlon D. Crow, Ed., Tennessee Blue Book 1983-1984 (Kingsport, TN: Kingsport Press, Inc., 1983), pp. 462-469. (The 1982 population figures are certified by the Tennessee State Planning Office.) ICMA, Municipal Year Book 1983.

Table 14

FY 1983 Entry-Level Annual Salaries for Police Officers, Firefighters, Clerk Typists, and Street Supervisors in Selected Tennessee Study Cities

City	Police Officer	Fire-fighter	Clerk-Typist	Street Supervisor	Mean Entry Level Salary Index
Athens	$ 11,615	$ 11,615	$ 10,015	$ 14,868	$ 12,028
Bartlett	13,208	12,528	9,984	14,913	12,658
Bristol	12,068	12,068	9,971	23,625	14,433
Cleveland	15,024	15,024	9,100	16,380	13,882
Columbia	11,952	11,652	9,408	15,864	12,219
Cookeville	13,145	11,918	9,796	19,406	13,566
Dyersburg	11,543*	10,301*	10,200	14,937	11,745
Elizabethton	11,356	11,336	7,675	15,225	11,398
Franklin	14,268	13,812	11,128	21,580	15,197
Gallatin	13,478*	12,463	11,688	16,453	13,520
Germantown	14,400	13,104	12,252	17,496	14,313
Greeneville	11,052	11,052	10,790	15,035	11,982
Hendersonville	13,200	11,952	9,840	17,676	13,167
Humboldt	12,610	10,660	13,910	14,014	12,798
Jackson	14,545	13,091	12,134	19,379	14,787
Johnson City	12,728	12,728	9,130	20,717	13,825
Kingsport	13,428	13,428	9,036	13,344	12,309
Lawrenceburg	12,012	10,244	11,952	17,616	12,956
Lebanon	12,168	12,871	15,620	13,374	13,508
McMinnville	12,388	12,042	11,688	16,453	13,142
Maryville	13,455	11,611	11,611	14,842	12,879
Millington	14,690	13,078	7,200	14,616	12,396
Morristown	13,478	12,209	10,025	16,432	13,036
Murfreesboro	13,071	13,071	10,510	25,188	15,460
Oak Ridge	15,468	15,480	12,432	31,678	18,764
Paris	13,635	13,248	11,463	15,806	13,538
Red Bank	13,166	11,960	12,542	15,205	13,218
Shelbyville	12,877	13,422	14,587	16,453	14,334
Springfield	12,084	10,980	9,084	14,616	11,691
Tullahoma	10,928	10,920	8,840	15,080	11,442
Union City	12,688	8,486	9,152	15,015	11,335

* Data derived from the Municipal Yearbook, 1983.

Source: Municipal Technical Advisory Service of the University of Tennessee, Salary and Fringe Benefit Survey of Tennessee Municipalities/1983. (Knoxville: MTAS 1983) pp. 23-73.

The regression equation based on the data for the cities in each quality category identifies a line or formula-based expenditure projection from which the actual expenditures for each city will vary to some degree. The direction of variation or the sign of the residual indicates the positive or negative nature of the relative productivity of a particular city's actual expenditure observation. (The residual is the difference between the actual and the estimated value of "E" for each city). The magnitude of the residual represents the extent of deviation from the estimated or formula-based expenditure projection. A positive residual indicates that actual expenditures for a particular city exceed the formula-based projection and therefore this indicates relatively low productivity. Conversely, a negative residual indicates a higher than average level of productivity.

By simply reversing the sign of the residual to indicate an association between a positive residual and a higher level of productivity, and by calculating the ratio of the residual to the projected expenditure, one can compute for each city what Ammons calls a Relative Productivity Index. The Relative Productivity Index is defined by the following formula:

$$P_i = -1(R_i / F_i)$$

where P_i is the Relative Productivity Index score for a particular city, R_i is the residual for that city, and F_i is the formula-based expenditure projection.[89]

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[89]Ibid., p. 105.

Relative Productivity in High-Quality Service Cities

The regression equation of total expenditures for the 14 cities in the high-quality service category is:

$$E = -1339822.76 + 246.589W - 149.067C + 3878.305Q$$

where E is the projected average total expenditure for FY 1983; W is the workload, represented by the 1982 population; C is the labor cost represented by the salary index, and Q is the relative service quality score based on the relative quality index. This regression of total expenditures on workload, labor cost and service quality has an R^2 value of .744, indicating that 74.4 percent of the variation in total expenditures is explained by the variables in the equation. As an indicator of the importance of each variable in the equation, the betas for workload, service quality, and labor cost are .838, .191, and -.129, respectively. Clearly, population is the most important variable in explaining expenditures but service quality also turns out to be more important than labor cost in the equation.

The relative productivity indexes for the fourteen high-quality service cities indicate that the percentage deviation from the formula-based projections ranged from 40.5 percent below the projection for Hendersonville (indicating higher productivity) to 34.5 percent above the projection for Paris (indicating lower productivity). The relative productivity indexes for each city's total expenditure and for each service is shown in Table 15. In terms of total expenditures, taking into account population, relative labor costs, and relative service quality, Hendersonville is the most efficient high-quality service city.

Table 15

Ranking of High Quality Cities Based on the Relative Productivity Index for Six City Services and Total Expenditures, FY 1983

	General Government[a]		Police[b]		Fire[c]		Streets[d]		Refuse[e]		Parks & Recreation[f]		Total Expenditures	
	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index
Hendersonville	1	.584	1	.263	1	.572	3	.369	7	.039	2	.499	1	.405
Springfield	4	.285	9	-.007	5	.134	2	.498	2	.412	5	.195	2	.266
Columbia	6	.243	2	.203	6	.124	7	.147	5	.075	3	.412	3	.200
Shelbyville	3	.288	4	.169	7	.103	6	.151	1	.516	6	.063	4	.198
Union City	12	-1.200	13	-.263	12	-.368	1	.690	13	-.259	1	.707	5	.068
Dyersburg	2	.530	6	.057	13	-.390	8	.025	11	-.149	10	-.407	6	.035
Oak Ridge	9	-.182	11	-.076	9	-.129	4	.247	9	-.055	7	-.047	7	-.022
Gallatin	8	.035	7	.039	8	-.057	5	.154	14	-.633	4	.317	8	-.026
Germantown	7	.174	3	.173	3	.268	10	-.315	10	-.104	9	-.144	9	-.031
Morristown	5	.245	10	-.041	14	-.395	11	-.380	3	.258	8	-.053	10	-.161
Tullahoma	10	-.206	8	.026	4	.146	12	-.605	12	-.217	12	-.428	11	-.197
Lawrenceburg	14	-1.520	14	-.267	2	.354	13	-.870	8	.008	14	-.747	12	-.283
Kingsport	11	-.538	12	-.218	11	-.311	9	-.083	6	.056	11	-.408	13	-.288
Paris	13	-1.410	5	.148	10	-.133	14	-2.32	4	.141	13	-.551	14	-.345

[a]The general government service expenditure equation is: $E = -141711 + 78.21W - 75.41C + 639.20Q$ ($R^2 = .618$)

[b]The police service expenditure equation is: $E = 485587 + 54.03W + 40.15C - 1272Q$ ($R^2 = .755$)

[c]The fire service expenditure equation is: $E = -132278 + 40.90W + 28.93C - 304.1Q$ ($R^2 = .589$)

[d]The street maintenance expenditure equation is $E = -2243637 + 22.25W - 85.57C + 4772.87Q$ ($R^2 = .597$)

[e]The refuse collection expenditure equation is: $E = 468484 + 21.1W - 6.78C - 347.29Q$ ($R^2 = .586$)

[f]The parks and recreation service expenditure equation is: $E = 220525 + 29.95W - 50.46C + 397.43Q$ ($R^2 = .563$)

The introduction of labor costs, service quality and population in the regression approach produces city service productivity rankings markedly different for some of the cities when compared to their rankings on a simple per capita expenditure basis. The impact on productivity rankings caused by the regression-based approach versus the per capita expenditure approach is indicated in Table 16. Among the cities that changed position most dramatically are Germantown with a four-step increase from thirteenth to ninth position and Union City with a three-step increase from eigth to fifth position. Gallatin, Lawrenceburg, and Paris are high-quality cities that dropped in rank the most on the regression-based productivity index approach. Overall, six cities increased in productivity rank, four cities decreased in rank and four cities remained unchanged. Consequently, the regression-based approach takes into account the effects of population, labor costs, and relative service quality on total expenditures among higher quality type cities and introduces productivity measurement refinements that can provide useful information on the relative managerial proficiency in service delivery. This refinement occurs since local officials are neither advantaged nor penalized for serving a community of a particular population size.

Relative Productivity in Moderate Quality Service Cities

The regression equation of total expenditures for the seventeen cities in the moderate quality service category is:

$$E = 3357992.82 + 286.291W - 322.782C - 967.740Q$$

where E is the projected average total expenditure for FY 1983,

Table 16

Comparison of Productivity Rankings by Per Capita Expenditures and the Relative Productivity Indexes for High Quality Cities, FY 1983

City	Rank According to Per Capita Expenditures	Rank According to the Relative Productivity Index	Impact
Hendersonville	1	1	No Change
Springfield	2	2	No Change
Columbia	4	3	1-Step Increase
Shelbyville	3	4	1-Step Decrease
Union City	8	5	3-Step Increase
Dyersburg	6	6	No Change
Oak Ridge	7	7	No Change
Gallatin	5	8	3-Step Decrease
Germantown	13	9	4-Step Increase
Morristown	11	10	1-Step Increase
Tullahoma	12	11	1-Step Increase
Lawrenceburg	9	12	3-Step Decrease
Kingsport	14	13	1-Step Increase
Paris	10	14	4-Step Decrease

Source: Compiled by the author.

W is the workload or 1982 population, C is the average labor cost for entry-level salaries as represented by the labor cost index and Q is the relative service quality score based on the relative service quality index. The R^2 value of these three factors regressed on total expenditures is .888, indicating that 88.8 percent of the variance in expenditures is explained by population, labor costs and service quality. The betas for these three factors are 1.01, -.114 and -.022, respectively indicating that population is the most important variable in the equation.

The relative productivity indexes for the seventeen moderate quality service cities are shown in Table 17 and indicate that the percentage deviation ranges 59.9 percent below the projected expenditure for Millington to 59.9 percent above the projected expenditure for Maryville in FY 1983. This means that Millington is the most efficient city in the moderate quality class in the use of resources, taking into account population, relative labor cost and relative service quality differences.

A comparison of rankings using the regression-based expenditure approach and the per capita expenditure method is shown in Table 18. The impact on rankings produced by the relative service productivity indexes involve marked shifts in position for most cities. The City of Jackson moves up five positions and Elizabethton and Johnson City each increase four places in the productivity rankings. Cleveland, Murfreesboro, Cookeville, Bartlett, Greenville, and Athens all move up in the rankings while Franklin, Humboldt, McMinnville and Lebanon all have much lower than predicted service productivity.

Table 17

Ranking of Moderate Quality Cities Based on the Relative Productivity Index for Six City Services and Total Expenditures, FY 1983

	General Government[a]		Police[b]		Fire[c]		Streets[d]		Refuse[e]		Parks & Recreation[f]		Total Expenditures	
	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index	Rank	Rel. Prod. Index
Millington	1	.545	1	.384	1	.582	1	.769	1	.568	1	.902	1	.599
Red Bank	8	.316	8	.028	2	.501	6	.373	5	.238	3	.455	2	.289
Bristol	3	.386	2	.247	3	.232	16	-.217	8	.048	5	.169	3	.238
Cleveland	9	.169	3	.209	10	-.044	10	.150	6	.229	9	-.079	4	.122
Murfreesboro	13	-.318	4	.168	9	-.037	4	.400	7	.227	5	.169	5	.094
Cookeville	5	.323	6	.029	11	-.113	13	-.109	3	.405	2	.577	6	.092
Bartlett	12	-.138	10	-.003	7	-.030	9	.221	8	.048	7	.157	7	.042
Elizabethton	10	.139	13	-.177	16	-.512	8	.270	10	.013	11	-.233	8	.006
Jackson	7	.320	9	.016	5	-.015	12	.073	13	-.484	8	-.031	9	-.016
Humboldt	4	.379	11	-.051	17	-.554	3	.434	15	-.835	17	-16.650[g]	10	-.032
Greeneville	2	.498	12	-.054	13	-.262	7	.359	17	-1.789	12	-.236	11	-.076
Johnson City	14	-.509	14	-.234	4	.135	14	-.138	4	.243	10	-.192	12	-.136
Athens	15	-.759	5	.104	15	-.351	11	.082	11	.009	14	-1.179	13	-.238
Lebanon	16	-.902	15	-.319	14	-.288	15	-.199	12	-.028	13	-.244	14	-.312
McMinnville	17	-.954	16	-.588	6	-.020	2	.506	14	-.549	16	-15.260[g]	15	-.332
Franklin	11	-.127	17	-.768	8	-.036	5	.385	16	-1.360	15	-2.250[g]	16	-.468
Maryville	5	.323	6	.029	12	-.175	17	-2.850	2	.417	4	.428	17	-.599

[a]The general government equation is: $E = 2202378 + 60.94W - 94.20C - 2368.7Q$ ($R^2 = .684$)

[b]The police service equation is: $E = 994986 + 71.76W - 60.27C - 1027.23Q$ ($R^2 = .899$)

[c]The fire service equation is: $E = -1112247 + 48.27W + 54.46C + 318.89Q$ ($R^2 = .908$)

[d]The street maintenance equation is: $E = 1909590 + 43.67W - 198.28C + 1207.70Q$ ($R^2 = .316$)

[e]The refuse collection equation is: $E = -812209 + 30.12W + 29.67C + 533.22Q$ ($R^2 = .615$)

[f]The parks and recreation service equation is: $E = 175494 + 31.51W - 54.16C + 368.37Q$ ($R^2 = .874$)

[g]Humboldt, McMinnville and Franklin yielded a negative projected expenditure, producing distorted relative productivity indexes. No other projected expenditure for any of the services in any of the cities was negative.

Table 18

Comparison of Productivity Rankings by Per Capita Expenditures and the Relative Productivity Indexes for Moderate Quality Cities FY 1983

City	Rank According to Per Capita Expenditures	Rank According to the Relative Productivity Index	Impact
Millington	1	1	No Change
Red Bank	2	2	No Change
Bristol	3	3	No Change
Cleveland	6	4	2-Step Increase
Murfreesboro	7	5	2-Step Increase
Cookeville	8	6	2-Step Increase
Bartlett	10	7	3-Step Increase
Elizabethton	12	8	4-Step Increase
Jackson	14	9	5-Step Increase
Humboldt	4	10	6-Step Decrease
Greeneville	13	11	2-Step Increase
Johnson City	16	12	4-Step Increase
Athens	15	13	2-Step Increase
Lebanon	11	14	3-Step Increase
McMinnville	9	15	6-Step Decrease
Franklin	5	16	11-Step Decrease
Maryville	17	17	No Change

Source: Compiled by the author.

In summary, the regression-based approach to the fiscal analysis of intercity productivity offers a more refined method for comparing municipal service productivity than does per capita expenditure analysis. By categorizing cities according to general quality level and then adjusting for the effects of population, labor costs and service quality on municipal expenditures through multiple regression, research attention can be focused on variables subject to some managerial control that may help to explain the differences in fiscal performance between cities. Understanding these variations in productivity between cities offers the potential for accelerating the rate of productivity improvement in the poorer performing jurisdictions and broadening the empirical basis for advocating adoption of the "best" productivity improvement practices.

SUMMARY

The complexity of municipal productivity measurement frequently masks its essential purpose which is to improve management of scarce resources, make the delivery of urban services more efficient and effective, and inform official and citizen judgments regarding the productivity of the local service delivery system. No simple single measure has been devised that can adequately account for the efficiency, effectiveness and service quality dimensions of productivity. However, numerous indicators exist for each dimension of productivity. Unfortunately, there is no uniformity in the few cities that have adopted productivity measurement systems despite the utility of such systems for evaluating municipal service performance and for informing management of decisions regarding service delivery.

The empirical research in municipal productivity measurement can be classified into three approaches: efficiency and effectiveness measures, the vector approach, and the fiscal analysis approach. The approach with the most potential for precision measurement of service productivity is the group of efficiency and effectiveness measures developed by Harry Hatry and the Urban Institute. A combination of measures described by Hatry and chosen according to his eight suggested guidelines will produce the most precise and useful type of productivity information for municipal officials.

To measure aggregate municipal productivity in the absence of common, widely adopted efficiency, effectiveness and quality indicators, Bradford, Malt and Oates developed a vector framework. The major value of this early work consists of conceptual refinements in measuring service effectiveness and the promise of fruitful empirical research in productivity measurement on an aggregate level that employs proxies for service quantity and quality.

The fiscal analysis approach to service productivity measurement includes per capita expenditure comparisons and determinants analysis. The latter can be classified into three basic types: analysis of expenditure effects of political and socioeconomic variables, the Ross-Burkhead intraorganizational productivity measurement approach, and the Ammons intercity productivity measurement approach. Generally, per capita expenditure comparisons are poor indicators of service productivity because they measure only resource input and workload. Variations in labor costs and service quality levels are neglected in this type of analysis.

The determinants approach attempts to account for differences in total or per capita municipal service expenditures by analyzing expenditure variations with numerous political and socioeconomic variables. However, these studies frequently do not account for differences in service effectiveness, labor costs, or service level and quality between municipalities.

More limited research in productivity measurement using the fiscal analysis approach is directed toward accounting for municipal differences in factor prices and service quality. The Ross-Burkhead study, for instance, pioneered longitudinal analysis of aggregate municipal service productivity and measured changes in workload, labor costs, and quality of service within a single jurisdiction. Ross and Burkhead recognize the difficulties involved in separating quality changes from productivity changes but suggest that multiple proxy measures for quality appear to yield the best results in terms of quantitatively distinguishing the important quality of service dimension of productivity.

The Ammons approach to accounting for the quality of service dimension in intercity productivity measurement focuses on screening cities according to selected criteria to match cities based on service quality. In essence, quality of service differences are controlled for prior to the analysis of intercity service productivity. To measure aggregate intercity productivity, Ammons develops an equation of total service expenditures for fourteen high-quality, full-service U.S. cities and accounts for workload and labor costs in a regression expression, the purpose of which is to calculate a Relative Productivity Index.

This Relative Productivity Index indicates the magnitude of each city's residual from the formula-based expenditure projection and signifies relative municipal efficiency among high-quality service cities in the use of resources, taking workload and labor costs into account.

The value of attempting to surmount the problems in intercity productivity measurement consists of the potential motive power for stimulating intercity performance competition and accelerating the rate of productivity improvement in the wake of municipal retrenchment. Significant savings can be realized if poorer performing jurisdictions can be motivated to measure and improve service productivity in ways similar to those found in more productive cities. Regular state-wide comparisons of relative municipal productivity, identification of the factors which account for productivity differences, and widespread publication of analytical results and city productivity rankings can help to make productivity improvement a more salient issue on the local political agenda. They can also provide local managers and citizens with a more informed, empirical basis for initiating change in the municipal service milieu.

Besides the lack of commonly adopted productivity measures, one of the barriers to realizing the potential motive power of intercity productivity comparisons is the difficulty in accounting for quality of service variations between cities. To help refine the methodology for measuring quality of municipal services on a comparative basis, this chapter presented a relative service quality index that employs multiple quality proxies for each of the six services offered by the thirty-one full-service cities between 10,000 and 55,000 population in the State of

Tennessee. This index consists of the best available indicators of quality. Ideally, more intrusive measures of service quality, such as surveys of citizen satisfaction with various urban services, might be included to refine the relative service quality index. However, for the purpose of conducting a cross-sectional analysis of the FY 1983 relative municipal service productivity of all full-service Tennessee cities, the quality measures included in the index are believed to represent a reasonable basis for quantitatively distinguishing relative municipal service quality. This relative quality index is used to classify the cities as either high quality or moderate service quality.

In addition to the relative service quality index, a relative labor cost index is developed to account for variations in personnel costs in the study cities. These two indexes were combined with service workload (represented by the 1982 city population) to develop a regression equation for municipal expenditures for the high-quality and the moderate quality cities. These formula-based projections of municipal expenditures are used to calculate Relative Productivity Indexes for each study city within their respective quality groups. As a result, the relative productivity of each municipality is measured through a regression-based fiscal analysis approach that explicitly accounts for workload, labor costs, and relative service quality.

This regression-based, fiscal analysis of intercity productivity is a more refined method than per capita expenditure comparisons. Comparisons of productivity rankings using each method indicate that several cities shift position due to the refinements introduced through the relative service quality and labor cost indexes.

The Relative Productivity Indexes for the study cities provide the basis for analysis of several variables that may explain the observed differences in municipal productivity. Explaining why certain study cities are more productive than others is the focus of the next chapter.

CHAPTER III

ANALYSIS OF RELATIVE MUNICIPAL PRODUCTIVITY

Introduction

This chapter focuses on the factors that help to explain the differences in productivity among high and moderate service quality cities in Tennessee. The inquiry builds on the management and organizational features described in Chapter I that are expected to have some bearing on relative productivity. Included in the analyses are several financial and community characteristics that also may have an impact on productivity.

The basis for inclusion of a large number of diverse factors in the analysis is two-fold. First, the paucity of interorganizational productivity research necessitates a rather broad exploratory effort to discover what factors are associated with higher levels of municipal productivity. Secondly, a wide ranging analysis can help to distinguish among the characteristics that are significantly related to productivity all of those factors subject to some control by local managers and elected officials. Such distinctions are important to local managers concerned with the focus and direction of productivity improvement efforts.

This analysis does not purport to specify the causes of higher productivity, nor does it propose a uniform prescription for productivity improvement applicable to all jurisdictions. Rather, its import consists of identifying those factors that are significantly correlated

with productivity, especially those subject to some managerial discretion or control and offering officials in lower productivity cities more refined information on "best practices" useful in the pursuit of maximum politically feasible service productivity in their jurisdictions.

The data used in this analysis of relative service productivity (as measured by the relative productivity index) is derived from four primary sources. The information on chief executives, elected officials, department chiefs and organizational characteristics was collected through a mailed questionnaire of administrative staff personnel (either an administrative assistant, city clerk, city recorder or personnel director) from the thirty-one study cities. Twenty-five, or approximately 80 percent, of the administrative staff personnel responded to the survey. Data on issue priorities, service privatization, service innovations and management practices was collected through a mailed questionnaire of chief executives from the study cities. Twenty-eight, or approximately 90 percent, of chief executives responded to the survey. The survey forms used for each group of officials are contained in Appendix A. Data on the FY 1983 municipal financial characteristics was derived from information collected by the Municipal Technical Advisory Service of the University of Tennessee. Finally, the primary source of information for community characteristics is 1980 U.S. Census data contained in the County-City Data Book and the 1982 Municipal Year Book.

The Correlates of Relative Municipal Service Productivity

Characteristics of Chief Executive Officers, Local Legislative Representatives and Department Heads

Over the last several decades, there has been a great deal of ferment and change in the processes of fulfilling governments' need for qualified, competent people to represent constituents and operate local service functions. Societal values related to filling government positions shift in emphasis over time, but three seem to be generally predominant: the desire for strong executive leadership; the preference for a politically neutral, competent corps of public servants; and the belief that the composition of the public work force should mirror, to some extent, the demographic composition of the political community.[1] The academic and political debate over how best to realize these values in government touches on many substantive policy areas including governmental form, personnel practices, and, of course, efficiency and effectiveness in government operations. This debate is a dynamic and unsettled one in many respects. One of the many spin-off foci from it is the increasing academic and popular attention given to the relationship between people, government efficiency, and its lineal descendant — productivity improvement.

An intuitively appealing yet empirically difficult assertion to verify that is expounded in much of the popular literature on

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[1]George J. Gordon, Public Administration in America (New York: St. Martin's Press, 1982), p. 295.

performance excellence concerns the substantial difference individual managers can make in productivity beyond extant circumstances or organizational characteristics.[2] The logical question for further inquiry is what characteristics distinguish individual managers and officials in the more productive municipalities? While lacking access to detailed personnel information, an attempt is made in this analysis to examine some of the characteristics of municipal managers and officials believed be related to municipal productivity.

The characteristics examined include data on education level, tenure in office, occupational background, personnel turn-over, and salary. The profile of officials in high and moderate quality cities on each of these characteristics is reported in Table 19. There are several differences between the two groups of cities in terms of these characteristics. Chief executives in high quality cities generally have a shorter tenure, a corresponding higher turn-over rate, a more professional-oriented occupational background, a slightly lower educational level, and higher salaries than do chief executive officers in moderate quality cities. Department heads (including only the police chief, fire chief and public works director) in high quality cities have a slightly lower average education level, and a longer tenure in their positions than do the service chiefs in moderate quality cities.

Following the scientific method of hypothesis formulation, it is proposed that the more productive cities in each quality stratum will

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[2]See for example, Thomas J. Peters and Robert H. Waterman, Jr., In Search of Excellence (New York: Warner Books, Inc., 1982), pp. 238-242.

Table 19

Profile of Chief Executive Officers, Local Legislative Representatives, and Department Heads in High and Moderate Quality Service Cities

Characteristic	High Quality Cities N	High Quality Cities Mean	Moderate Quality Cities N	Moderate Quality Cities Mean
Tenure (years) of the Chief Executive Officer as of 1983 (Mayor or City Manager)	14	6.00	17	7.90
Number of Different Chief Executive Officers 1973-1983	14	1.64	17	1.29
Mayor's Principal Occupation[a]	11	2.63	14	2.07
Mayor's Formal Education Level[b]	14	1.40	17	1.57
Annual Salary ($) of the Chief Executive Officer in 1983	14	$30,253.93	17	$29,829.06
Percentage of City Council Members with Executive or Professional Occupations	11	61.00	14	44.30
Percentage of City Council Members with Small Business, Sales, Teaching, or Clerk Occupations	10	15.70	14	40.70
Percentage of City Council Members with Blue-Collar Skilled or Semi-Skilled Occupations	11	5.10	14	3.60
Percentage of City Council Members with Homemaker or Other Occupations or Who Are Retired	11	18.20	14	11.20
Percentage of City Council Members with less than a High School Education	11	5.00	14	0.00
Percentage of City Council Members with a High School Education	10	40.00	14	46.10

Table 19 (Continued)

Characteristic	High Quality Cities N	High Quality Cities Mean	Moderate Quality Cities N	Moderate Quality Cities Mean
Percentage of City Council Members with a College Degree	11	55.00	14	53.80
Percentage of Council Members with Less Than 5 Years Tenure	11	54.00	14	58.90
Percentage of Council Members 5-10 years Tenure	10	36.00	14	31.30
Percentage of Council Members with More than 10 years Tenure	11	11.00	14	9.70
Average Educational Level of Department Heads[c]	11	7.27	14	7.60
Average Tenure of Department Heads[d]	11	8.18	14	7.50
Tenure of Mayor[e]	11	3.00	14	2.50

Source: Compiled by the Author.

[a]Average score based on 3 = executive, proprietor or professional; 2 = small business, sales, teacher, technician or clerk; 1 = blue-collar skilled or semi-skilled; 0 = homemaker, retired, or other occupational background.

[b]Educational level is based on: 2 = college degree; 1.5 = high school and some college; 1 = high school diploma; 0 = less than a high school education.

[c]Combined education score of three department heads: the police chief, fire chief and public works director. Each department head received points based on: 4 = college degree; 3 = high school and some college; 2 = high school diploma; and 1 = less than a high school diploma.

[d]Combined tenure score of the three department heads based on: 4 = over ten years; 3 = five - 10 years; 2 = two - four years; and 1 = less than two years.

[e]Tenure score of the mayor based on: 4 = over ten years; 3 = five - 10 years; 2 = two - four years; and 1 = less than two years.

have CEO's, city council representatives, and department heads with higher education levels, longer tenure, less turn-over, higher salaries (for CEO's) and more professional-oriented occupations (for the mayor and city council). The two subsequent sections examine, respectively, the findings for the high and moderate service quality cities.

Analysis of the Characteristics of the Chief Executive Officers, Local Officials, and Department Heads in High Service Quality Cities and Relative Productivity

Pearson product-moment correlations were computed to determine the relationship between the selected characteristics and the Relative Productivity Index. Only two characteristics were found to be signif-cantly related to the Index at $p < .10$, as indicated in Table 20. Parenthetically, statistical significance for purposes of inference seems less critical for this particular study than for others since the cities in each quality category constitute the entire universe of high and moderate quality, full-service cities in Tennessee between 10,000 and 55,000 population. However, statistical significance thresholds do provide a degree of confidence that the observed relationships are not just unlikely, chance occurrences. The conventional statistical significance level of .05 is relaxed somewhat to .10 in this study due to the statistical ramifications of the small number of cases ($N = 14$ for high quality cities and $N = 17$ for the moderate quality cities).

For high quality cities, the larger the percentage of council members with tenure between five and ten years, the higher the relative productivity score ($r = .542$). This relationship is significant at the .10 level. Although not statistically significant, there is also a

Table 20

Pearson Product-Moment Correlations Between Characteristics of Chief Executive Officers, Local Legislative Representatives and Department Heads in High Quality Service Cities and the Relative Productivity Index

Characteristic	N	r
Percentage of City Council Members with Five - Ten Years Tenure	10	.542**
Average Educational Level of Department Heads	11	-.484*
Percentage of City Council Members with Less Than Five Years Tenure	11	-.409
Number of Different Chief Executive Officers (1973-1983)	14	-.316
Mayor's Principal Occupation	11	.277
Percentage of City Council Members with Small Business, Sales, Teaching or Clerk Occupations	10	-.246
Mayor's Formal Education Level	14	-.232
Annual Salary of the Chief Executive Officer in 1983	14	-.227
Percentage of City Council Members with Homemaker or Other Occupations or Who Are Retired	11	.223
Percentage of City Council Members with a College Degree	11	-.191
Tenure of the Mayor	11	-.187
Average Tenure of Department Heads	11	.167
Percentage of City Council Members with a High School Education	10	.154
Percentage of City Council Members with Less Than a High School Education	11	.140
Percentage of City Council Members with More Than Ten Years Tenure	11	.095
Tenure of the Chief Executive Officer in 1983	14	.061
Percentage of City Council Members with Blue-Blue Collar Skilled or Semi-Skilled Occupations	11	-.023
Percentage of City Council Members with Executive or Professional Occupations	11	.004

Source: Compiled by the author.

r = Pearson product-moment correlation

**Statistically significant at the .05 level or below (one-tailed test)

*Statistically significant at the .10 level (one-tailed test)

positive relationship between council members with more than ten years of tenure and productivity (r = .095). Conversely, the observed relationship between council members with less than five years of tenure and productivity is a negative one (r = -.409). These relationships suggest that council membership stability contributes in some way to higher levels of municipal productivity. Presumably, with more years of local legislative experience, council members acquire more in-depth knowledge or insight into governmental operations and budgeting that helps to raise service productivity. The hypothesized relationship between council member tenure and productivity is supported for high quality cities.

The only other statistically significant relationship in the analysis involves the negative correlation between educational levels of department heads and productivity (r = -.484). Contrary to the hypothesis for this characteristic and relative productivity, higher educational levels for service chiefs are not related to higher levels of productivity. Although not statistically significant, it appears that the tenure of department heads or years of practical on-the-job experience is more likely to be associated with higher levels of service productivity (r = .167). None of the other remaining observed relationships were statistically significant. In fact, the nature of the remaining relationships between the characteristics of CEO's and the city council members did not support the hypotheses since higher education levels, a higher salary level for the CEO and more professional-oriented occupations are negatively correlated with relative productivity.

Analysis of the Characteristics of Chief Executive Officers, Local Legislative Officials and Department Heads in Moderate Service Quality Cities and Relative Productivity

More than half of the characteristics selected for analysis are statistically significant at the .10 level in the observed relationships with relative productivity. As indicated on Table 21, the strongest correlation exists between the percentage of city council members with five to ten years of tenure and relative productivity ($r = -.676$). However, the negative nature of this relationship is, strangely enough, the opposite of that observed for high quality cities and does not support the hypothesized relationship. For moderate service quality cities, the correlation shows that the higher the percentage of council members with five to ten years of tenure, the lower the level of municipal productivity. Conversely, the higher the percentage of council members with less than five years of tenure, the more likely the productivity level will be higher. Although lacking statistical significance at the .10 level, the correlation between city council members with more than ten years of tenure and relative productivity is a positive one and worthy of mention because it tends to support the hypothesis that longer tenure of city council members is associated with higher productivity. However, the interesting deviant correlation remains the strongest relationship in the analysis.

A possible explanation for the apparent lack of support for the hypothetical relationship between length of city council members' tenure and productivity is that council members in this group generally have only a high school education. The correlation in Table 21 indicates that

Table 21

Pearson Product-Moment Correlations Between Characteristics of Chief Executive Officers, Local Legislative Representatives and Department Heads in Moderate Quality Service Cities and the Relative Productivity Index

Characteristic	N	r
Percentage of City Council Members with Five - Ten Years Tenure	14	-.676**
Percentage of City Council Members with Less Than Five Years Tenure	14	.573**
Tenure of the Mayor (in Years)	14	-.546**
Average Educational Level of Department Heads	14	.484**
Percentage of City Council Members with a High School Education	14	-.483**
Percentage of City Council Members with a College Degree	14	.482**
Mayor's Formal Education Level	17	-.452**
Percentage of City Council Members with Blue-Blue Collar Skilled or Semi-Skilled Occupations	14	.427*
Percentage of City Council Members with Small Business, Sales, Teaching or Clerk Occupations	14	-.372*
Mayor's Principal Occupation	14	-.288
Percentage of City Council Members with More Than Ten Years Tenure	14	.252
Annual Salary of the Chief Executive Officer in 1983	17	.249
Average Tenure of Department Heads	14	-.148
Tenure of the Chief Executive Officer in 1983	17	.097
Percentage of City Council Members with Executive or Professional Occupations	14	.093
Number of Chief Executive Officers (1973-1983)	17	-.085
Percentage of City Council Members with Homemaker or Other Occupations or who are Retired	14	.076

Source: Compiled by the author.

r = Pearson product-moment correlation

**Statistically significant at the .05 level or below (one-tailed test)

*Statistically significant at the .10 level (one-tailed test)

the higher the proportion of council members with only a high school education, the lower the city's relative productivity (r = -.483). Conversely, the higher the percentage of council members with a college degree, the higher the city's relative productivity. Closer examination of the correlation matrix reveals that members with council tenure between five and ten years also have lower education levels, but those with over ten years tenure have higher education levels. Although the relationships for these latter two variables are not statistically significant, there is some evidence in support of the basic hypotheses concerning the tenure and education of council members and higher productivity.

Contrary to the hypothesized relationships, the tenure and education level of the mayor is negatively correlated with productivity. This means that productivity declines as the mayor's tenure and education level increase. The respective coefficients are -.546 and -.452 and are significant at the .10 level. Likewise, the more professional orientation the mayor's occupation is, the less productive is the jurisdiction (r = -.288, not significant at the .10 level).

The hypothesis that higher education of department heads is related to higher service productivity is supported by a fairly strong positive correlation of .482, significant at the .10 level. Yet, length of tenure of the department heads is negatively correlated with productivity, albeit not statistically significant at the .10 level. For moderate quality cities, education rather than tenure of department heads is a better indicator of higher service productivity.

A final set of statistically significant relationships for moderate quality cities needs to be examined, expecially since they do not support the original hypotheses. The correlations indicate that cities with higher percentages of council members with blue-collar type occupations are more productive ($r = .427$) while those with higher proportions of council members with small business, sales, teaching, or clerk occupations are less productive ($r = -.372$). For moderate quality cities, the occupational characteristics of council members and perhaps their unique values or attitudes, associated with the different working environments, seem to make a difference in terms of relative service productivity.

Organizational Priorities

The chief executive officers in high and moderate quality cities were asked to rank eight problems or issues in order of importance to their respective cities. The primary purpose of this ranking procedure is to establish the relative importance of productivity improvement among other issues and problems that compete for municipal resources, including the time and attention of city officials. Another reason for the ranking of issues/problems is to discover if any important distinctions arise between high and moderate service quality jurisdictions.

Table 22 displays the average scores and rankings of the eight selected issues or problems by 100 percent of the chief executives in high quality cities and 82.4 percent of the surveyed chief executives

Table 22

Organizational Priorities of High and Moderate Service Quality Cities

Local Government Issue or Problem	High Quality Cities (N = 14) Priority	Score	Moderate Quality Cities (N = 14) Priority	Score
Economic Development	1	2.50	1	2.21
Public Safety	2	3.07	2	4.42
Local Quality of Life	3	4.21	3	4.57
Capital Improvements	4	4.28	5	4.71
Street Maintenance	5	4.35	6	4.78
The "Fiscal Crisis"	6	4.64	4	4.64
Solid Waste Disposal	7	5.21	7	4.92
Productivity Improvement	8	5.85	8	5.71

Source: Compiled by the author based on a survey of chief executive officers, June-July 1985.

in moderate quality cities. For chief executives in both municipal service quality strata, productivity improvement ranks a disappointing eighth place, right behind solid waste disposal. In fact, the top three issues or problems are identical for chief executives in both groups with economic development, public safety and the local quality of life dominating the political agenda as reported by respondents. On the average, the "fiscal crisis" is a more pressing problem for chief executives in moderate quality cities as indicated by its fourth place ranking compared to its sixth place ranking in high quality cities.

The results of the rankings by chief executives in Tennessee cities clearly indicate that economic development, public safety and the local quality of life are far more pressing and important issues than productivity improvement. Officials are concerned about service delivery and the local quality of life, but productivity improvement as a separate issue is apparently viewed as a less attractive way to address financial matters and service delivery than is the expansion of the local economy through economic development efforts. On the other hand, local officials may feel that productivity improvement is a rather nebulous issue or one that has been or is being sufficiently addressed through current service operations. At any rate, chief executives in the surveyed Tennessee municipalities seem to have a different set of priorities than their counterparts across the nation did in 1982 when a similar national survey was taken.[3] Although general economic conditions

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[3]David N. Ammons and Joseph C. King, "Productivity Improvement in Local Government: Its Place Among Competing Priorities," Public Administration Review 43 (March-April 1983): 113-120.

across the nation have improved since 1982 when Ammons and King conducted their survey and the national survey contained ten issue/problems, whereas the Tennessee survey asked officials to rank eight issue/problems, it is noteworthy that chief executives in the national survey ranked productivity improvement fourth on the average, and economic development received an average fifth place ranking.[4]

Analysis of Organizational Priorities in High and Moderate Service Quality Cities and Relative Productivity

A reasonable hypothesis relevant to researchers in municipal productivity concerns the expectation that the more productive municipalities tend to place a higher priority on productivity improvement compared to other issues on the local political agenda. However, the very low ranking of productivity improvement by most jurisdictions in this survey makes finding a statistically significant relationship unlikely. Nevertheless, Pearson product-moment correlations were calculated for the issue rankings and the relative productivity index. As indicated in Table 23, only three relationships between issue rankings and relative productivity are significant at the .10 level for high quality cities. No significant relationships are present for moderate quality cities.

To properly analyze Table 23, positive correlations should be interpreted as meaning that as the issue declines in importance,

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[4]Ibid.

Table 23

Pearson Product-Moment Correlations Between Organizational Priorities of High and Moderate Service Quality Cities and the Relative Productivity Index

Local Government Issue or Problem	High Quality Cities N	High Quality Cities r	Moderate Quality Cities N	Moderate Quality Cities r
Street Maintenance	14	-.562**	14	.079
Economic Development	14	.543**	14	-.076
Public Safety	14	-.427*	14	-.161
Solid Waste Disposal	14	.281	14	-.268
Productivity Improvement	14	-.280	14	-.003
Capital Improvements	14	-.133	14	.125
Local Quality of Life	14	.129	14	.021
The "Fiscal Crisis"	14	-.120	14	.242

Source: Compiled by the author.

r = Pearson product-moment correlation

**Statistically significant at the .05 level or below (one-tailed test)

*Statistically significant at the .10 level (one-tailed test)

productivity tends to increase and negative correlations imply that as the issue declines in importance, productivity tends to decline as well. The significant findings in Table 23 suggest, therefore, that as street maintenance and public safety decline in importance, relative productivity tends to be lower. In addition, the correlation coefficient for economic development means that as economic development becomes more important, productivity tends to increase. In other words, the more productive high quality cities in the survey tend to place a higher priority on economic development ($r = .543$). The more productive moderate quality cities generally seem to place a higher priority on the "fiscal crisis" although this latter relationship ($r = .242$) does not meet the .10 significance benchmark. Consequently, the higher productive cities in the high and moderate service quality categories seem to have slightly different issue orientations associated with productivity.

Organizational Characteristics

As indicated earlier in Chapter I, fairly extensive research has been conducted on the nature and character of organizations with several different typologies or models developed to describe organizations. Two of the most influential models of human relations theory are those of Douglas McGregor and Renis Likert.[5] McGregor's Theory X and Theory Y dichotomy is perhaps the least developed. He simply contrasted the

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[5]Charles Perrow, Complex Organizations: A Critical Essay (Glenview, Illinois: Scott, Foresman and Company, 1979), p. 114.

Theory X view of management and its emphasis on negative sanctions with a Theory Y approach that holds management responsible for arranging things so employees can achieve their own goals by accomplishing organizational objectives.

Likert's distinction among organizations is somewhat more well-developed.[6] He identifies four "systems" of organizations: exploitative-authoritative (System 1), benevolent-authoritative (System 2), consultive (System 3), and participative group (System 4). Likert identifies some 51 different aspects on which the different systems can vary.[7]

For this analysis, only seven of Likert's criteria were used. The continua employed by Likert were also converted to a forced-choice questionnaire format to facilitate the ease of comprehension by respondents. The seven criteria selected include: the character of leadership with regard to the extent to which leaders have confidence and trust in subordinates, the character of employee motivation efforts and the extent of motivation through rewards rather than punishment, the extent to which downward communications by managers are accepted by subordinates, the extent to which upward communications via the line are accurate and complete, the extent of cooperative teamwork, the extent to which decision-making is dispersed rather than concentrated at the top

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[6]Renis Likert, The Human Organization: Its Management and Value (New York: McGraw-Hill, 1967), pp. 207-210.

[7]Ibid.

of the organization, and, finally, the character of the control process or the extent to which control data are used by supervisors for self-guidance or group problem solving, rather than in a punitive, policing manner. In addition to these seven criteria adapted from Likert's work, the form of municipal government was also included in the analysis. The three basic forms represented in the study cities are: commission, mayor-council, and council-manager.

The profile of the two municipal service quality groups on each of the selected organizational characteristics is depicted in Table 24. The relative proportions of different governmental forms among the two quality groups are comparable with the majority of each having the council-manager system. In addition, the differences in mean scores on the seven Likert criteria are generally similar with moderate service quality cities slightly more "System 4-like" on five of the seven criteria.

The most notable feature somewhat obscured by the mean scores on Table 24, is the narrow range of scores among the cities in each quality stratum with respect to the four systems defined by Likert. Administrative staff in most of the cities rate their organizations as either System-3 or System-4 on the vast majority of criteria. This fact is important in the interpretation of the relationships between these criteria and relative productivity as described in the two subsequent sections. For both high and moderate service quality cities, the hypotheses tested involve the proposition that those cities that are more "System 4-like" in their organizational characteristics are more

Table 24

Profile of Organizational Characteristics of High and Moderate Service Quality Cities

Characteristic	N	High Quality City	N	Moderate Quality City
Percentage of Cities with Commission Form of Government	14	7.10	17	11.8
Percentage of Cities with Mayor-Council Form of Government	14	35.70	17	41.1
Percentage of Cities with Council-Manager Form of Government	14	57.10	17	47.1
Leadership*	11	3.18	14	3.35
Motivation*	11	3.36	14	3.07
Downward Communication*	11	3.00	14	3.28
Upward Communication*	11	3.00	14	3.35
Cooperative Teamwork*	11	3.27	14	3.35
Decision-Making*	11	2.27	14	2.07
Character of Control Process*	11	3.00	14	3.71

*These factors refer to the selected continua from Renis Likert's work on organizational operating characteristics with the following score interpretations: 1 = exploitative-authoritative (System 1); 2 = benevolent-authoritative (System 2); 3 = consultive (System 3); and, 4 = participative group (System 4).

Source: Compiled by the author based on survey of administrative staff in June-July 1985.

likely to have higher levels of service productivity due to the greater emphasis on and sensitivity to staff participation and satisfaction. In addition, it is hypothesized that cities with the council-manager form of government will be more productive due to the emphasis on service efficiency and staff competence associated with this type of system that emerged from the municipal reform movement at the turn of the century.

Analysis of the Organizational Characteristics of High Service Quality Cities and Relative Productivity

As indicated on Table 25, only three organizational characteristics are significantly correlated with the relative productivity index at the .10 level. None of the three relationships support the hypotheses for these characteristics and relative productivity. The more "System 4-like" are the control process, extent of cooperative teamwork and accuracy and completeness of upward communications via the line, the lower is the city's service productivity. These relationships, together with the narrow range in criteria scores on the four system categories suggest that the more productive cities generally have "System 3-like" attributes on the three characteristics significantly related to productivity.

According to Likert's model, a System 3 consultative approach tends to emphasize reward and self-guidance in the use of control data but still involves some punitive measures. For the extent of cooperative teamwork, the more productive cities use cooperative teamwork in a moderate amount as opposed to the more extensive team approach under a System 4 organization. In the System 3 organization, employees

Table 25

Pearson Product-Moment Correlations Between Organizational Characteristics of High Service Quality Cities and the Relative Productivity Index

Characteristic	N	r
Character of Control Process	11	-.675**
Extent of Cooperative Teamwork	11	-.619**
Accuracy of Upward Communication	11	-.597**
Extent of Motivation Through Rewards Rather Than Punishment	11	-.312
Extent to Which Leaders Have Confidence and Trust in Subordinates	11	.209
Extent to Which Downward Communications Are Accepted by Subordinates	11	-.141
Form of Government	14	-.122
Extent to Which Decision Making is Dispersed Rather Than Concentrated at the Top of the Organization	11	-.115

Source: Compiled by the author.

r = Pearson product-moment correlation

**Statistically significant at the .05 level or below (one-tailed test)

feel free to report most things to their superiors with completeness and accuracy but are still somewhat cautious or reticent about reporting bad news to the boss. This balance between respect for authority and open, democratic participation by staff in the organization seems to contribute to an organizational milieu or climate that permits higher levels of productivity to be attained than in those organizations with more System 4-like characteristics.

None of the other characteristics demonstrated a positive correlation with higher productivity except for the extent to which leaders have confidence and trust in subordinates. The more complete confidence and trust in employees displayed by leaders in all matters, the higher the level of municipal service productivity. This coefficient ($r = .209$) is not significant at the .10 level but it is the only observed association that supports the hypothesized nature of the relationship between organizational characteristics and productivity. Governmental form is not significantly related to productivity and, consequently, the hypothesis that the council-manager form is associated with higher municipal productivity is not supported.

Analysis of the Organizational Characteristics of Moderate Service Quality Cities and Relative Productivity

Table 26 summarizes the correlation coefficients between the selected organizational characteristics and the relative productivity of moderate service quality municipalities. Three characteristics emerged as significantly related to productivity at the .10 level: the extent to which leaders have confidence and trust in subordinates, the

Table 26

Pearson Product-Moment Correlations Between Organizational Characteristics of Moderate Service Quality Cities and the Relative Productivity Index

Characteristic	N	r
Extent to Which Leaders Have Confidence and Trust in Subordinates	14	-.518**
Character of Control Process	14	-.493**
Extent of Motivation Through Rewards Rather Than Punishment	14	-.472**
Extent of Cooperative Teamwork	14	-.249
Extent to Which Downward Communications Are Accepted by Subordinates	14	-.201
Extent to Which Decision Making is Dispersed Rather Than Concentrated at the Top of the Organization	14	-.194
Accuracy of Upward Communication	14	.102
Form of Government	17	-.031

Source: Compiled by the author.

r = Pearson product-moment correlation

**Statistically significant at the .05 level or below (one-tailed test)

character of the control process, and the extent to which leaders motivate employees through rewards rather than punishment. The hypotheses that organizations with System 4 features on these criteria would be more productive are not supported. Each characteristic is negatively associated with higher productivity indicating for the reasons noted above that cities with System 3 ratings by administrative staff tend to be the more productive cities.

Only one of the organizational criteria proved to be related in the direction hypothesized. Administrative staff in cities with higher levels of productivity described the information that they give their boss as usually accurate and complete. However, this relationship is not statistically significant at the .10 level.

Management Factors

In addition to several organizational characteristics, many management techniques used by cities constitute the group of factors subject to some control and discretion by managers. If various management techniques and approaches are related to greater municipal productivity then these factors are primary candidates for inclusion in municipal productivity improvement programs.

The management factors examined in this analysis include the extent to which cities contract with private firms (referred to as the service privatization score), the flexibility management has to reward employees for exceptional performance or for productivity improvements, the actual extent of managerial reward flexibility and the use of

educational incentives, suggestion awards, attendance incentives, task systems, variation in working hours, safety incentives, and job enrichment techniques. In addition, the nature of the productivity improvement effort in the municipality is classified as either unstructured, decentralized or centralized based on survey responses by chief executives. The extent of service innovations actually used by the municipalities is also determined through the survey of chief executives. This data constitutes the basis for the service innovation score used in the analysis of management factors and relative productivity.

Table 27 identifies the mean score or frequency of use for each of the management factors employed by high and moderate service quality cities. This comparison of the two service quality groups shows that high service quality cities contract more extensively with private firms for service provision and tend to have greater and more extensive flexibility to reward employees for exceptional performance than do managers in moderate service quality cities. In addition, they tend to use educational incentives, suggestion awards and job enrichment techniques more extensively than moderate service quality cities. High service quality cities have a higher mean service innovation score indicating that they generally employ more service innovations than do moderate quality cities. The nature of the local productivity improvement effort also tends to be somewhat more structured than the efforts in moderate service quality cities. Those improvement efforts that are structured in both groups by and large are decentralized in that department heads, rather than a single office or individual, are held accountable for

Table 27

Profile of Management Factors in High and Moderate Service Quality Cities

Factor	High Quality Cities (N=14)	Moderate Quality Cities (N=14)
Service Privatization Score[a]	3.28	3.21
Flexibility to Reward Employees for Exceptional Performance[b]	57.1	35.7
Extent of Reward Flexibility[c]	1.21	.929
Use of Educational Incentives[d]	71.4	57.1
Use of Suggestion Awards[d]	21.4	14.2
Use of Attendance Incentives[d]	14.2	28.5
Use of Task Systems[d]	28.5	35.7
Use of Variation in Working Hours[d]	21.4	21.4
Use of Safety Incentives[d]	14.2	42.8
Use of Job Enrichment Techniques[d]	28.5	14.2
Service Innovation Score[e]	4.85	4.42
Nature of Productivity Improvement Effort[f]	1.78	1.50

Source: Compiled by the author based on survey of chief executive officers in June-July 1985.

[a]Based on nine city services: park maintenance, refuse collection, refuse disposal, planning services, street maintenance, legal services, police protection, fire protection, and custodial services. Cities that contract with private firms for primary services are awarded two points for each service and one point for supplemental service in each function. The sum is the service privatization score, and can range from 0-18.

[b]Percentage of chief executive officers responding "yes" with regard to whether they feel they have enough flexibility to reward employees for exceptional performance or for productivity improvements.

Table 27 (Continued)

[c]Extent of flexibility is a summary score based on "no" = 0 and "yes" = 1 for each of the following types of rewards: nonmonetary recognition, one-time pay bonus, extra steps in pay range awarded, promotion in position, flexibility to adjust pay without regard to pay steps, and "other" specified types of rewards. The figure reported is the mean for the survey respondents that felt they had reward flexibility.

[d]Percentage of chief executive officers who reported using this type of reward or incentive for employees.

[e]The innovation index score is based on "no" = 0 and "yes" = 1 for each of the following service innovations: computerized police records, mini-pumper fire-fighting trucks, portable asphalt recycling equipment, pothole/pavement repair machine, use of volunteer staff workers in support of various city services, a city-sponsored smoke detector or fire extinguisher program for local residents or businesses, a city energy conservation program, computerized payroll or cost accounting functions, public road acceptance standards, and innovative waste collection or disposal methods. The sum is the service innovation index score and the figure reported is the mean for reporting cities.

[f]Score based on: 0 = city not concerned with productivity improvement; 1 = productivity improvements occur as opportunities arise (unstructured approach); 2 = department heads held accountable for productivity improvements based on performance measures (decentralized approach); and 3 = a single office or individual has specific responsibility for measuring/encouraging organization-wide productivity improvement. The figure reported is the mean for cities in each quality group.

productivity improvements based on adopted performance standards. The most frequently employed incentive for both quality groups are educational incentives. This is the only incentive that is used by more than half the cities in each group.

The hypotheses for this analysis are drafted from the research on job satisfaction, motivation and innovation reviewed in Chapter I. Specifically, cities with higher service privatization and innovation scores and those that use the various employee incentives are expected to have higher levels of productivity.

Analysis of the Management Factors in High Service Quality Cities and and Relative Productivity

Interesting correlation coefficients between several management factors and relative productivity are displayed in Table 28. Six statistically significant correlations with the productivity index are present; however, five of these are in a negative direction, the opposite of the hypothesized nature of the relationships between the variables. The use of task systems ($r = -.509$), educational incentives ($r = -.409$), attendance incentives ($r = -.395$), suggestion awards ($r = =.373$) and the flexibility to reward employees for exceptional performance ($r = -.388$) are all associated with cities with lower levels of productivity. The only relationship that supports the hypothesis developed for it is the fairly strong association between the service privatization score and relative productivity ($r = .445$).

The pattern of correlations that pertain to the various employee incentives suggests that managers who want to enhance productivity might

Table 28

Pearson Product-Moment Correlations Between Management Factors in High Quality Service Cities and the Relative Productivity Index

Factor	N	r
Use of Task Systems	14	-.509**
Service Privatization Score	14	.445**
Use of Educational Incentives	14	-.409*
Use of Attendance Incentives	14	-.395*
Flexibility to Reward Employees for Exceptional Performance	14	-.388*
Use of Suggestion Awards	14	-.373*
Use of Safety Incentives	14	-.269
Use of Job Enrichment Techniques	14	-.228
Service Innovation Score	14	-.155
Extent of Reward Flexibility	14	-.151
Nature of Productivity Improvement Effort	14	.114
Use of Variation in Working Hours	14	.068

Source: Compiled by the author.

r = Pearson product-moment correlation

**Statistically significant at the .05 level or below (one-tailed test)

*Statistically significant at the .10 level (one-tailed test)

be wise to pursue strategies that do not emphasize an extensive package of employee incentives. Such a finding does not mean that cities using employee incentives have workers who are more or less satisfied with their jobs or working environment than cities not using such incentives. In fact, city employees in organizational environments that emphasize various incentives and job enrichment techniques may indeed be more satisfied than their counterparts in cities that do not employ such management techniques. There is simply no way this speculation can be confirmed from this survey data. However, the finding that certain management approaches are not positively correlated with higher productivity seems to lend support to Katzell and Yankelovich's observation that job satisfaction and productivity improvement do not necessarily follow parallel paths.[8]

For high quality service cities, the management technique with the most apparent potential for reducing costs is to contract with private companies or other government entities for the provision of various municipal services. The fairly strong significant correlation between the service privatization score and higher productivity suggests that those cities contracting for services such as park maintenance, refuse collection and disposal, legal services, and custodial services (the most frequently contracted services according to respondents) will deliver services for less cost than cities without contracts.

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[8]Raymond Katzell and Daniel Yankelovich, Work, Productivity and Job Satisfaction: An Evaluation of Policy-Related Research (New York: The Psychological Corporation, 1975), p. 12.

Somewhat surprisingly, service innovation is not positively associated with higher productivity ($r = -.155$). Although the observed relationship in Table 28 is not statistically significant, this finding suggests that either the service innovations are not performing as expected or the larger investment in service innovation and enhanced service delivery has yet to produce noticeable productivity improvements for cities with higher innovation scores. This finding, albeit indicating a weak negative relationship, does not support the hypothesis between innovation and productivity.

Analysis of Management Factors in Moderate Service Quality Cities and Relative Productivity

Table 29 reports the correlation coefficients between the management factors and relative productivity for moderate service quality cities. Four relationships are statistically significant at the .10 level and all four do not support their respective hypotheses. The use of suggestion incentives, the extent of reward flexibility, the use of job enrichment techniques and the variation in working hours permitted are negatively associated with service productivity.

The findings suggest that these employee incentives are not useful in improving productivity in moderate service quality cities just as they are not likely to enhance productivity in cities with a high quality of service. The consistent negative nature of the relationship between employee incentives and productivity underscore the complex nature of productivity improvement and the absence of a quick-fix management solution to the task of delivering municipal services in a more efficient and effective manner.

Table 29

Pearson Product-Moment Correlations Between Management Factors of Moderate Service Quality Cities and the Relative Productivity Index

Factor	N	r
Use of Suggestion Awards	14	-.610**
Extent of Reward Flexibility	14	-.491**
Use of Job Enrichment Techniques	14	-.486**
Use of Variation in Working Hours	14	-.396*
Flexibility to Reward Employees for Exceptional Performance	14	-.334
Use of Task Systems		-.314
Service Innovation Score	14	-.275
Use of Safety Incentives	14	-.107
Use of Educational Incentives	14	-.043
Service Privatization Score	14	.030
Nature of Productivity Improvement Effort	14	.011
Use of Attendance Incentives	14	.010

Source: Compiled by the author.

r = Pearson product-moment correlation

**Statistically significant at the .05 level or below (one-tailed test)

*Statistically significant at the .10 level (one-tailed test)

Service privatization in moderate service quality cities is virtually unrelated to productivity ($r = .030$). In addition, the more innovative cities in the analysis seem to have lower levels of productivity ($r = -.275$). Neither of these two relationships is statistically significant but the hypotheses advanced for each are not supported by the observed nature of the relationships.

Financial Factors

The financial resource characteristics of the study cities and their relationships with relative municipal productivity are examined in this analysis. Specific attention is focused on the mix of revenue sources and the degree of municipal reliance on various revenues as potentially important factors that shape the local decision-making milieu and therefore affect relative service productivity. Bivariate analyses of the financial factors and relative service productivity, as measured by the Relative Productivity Index for each city, are presented for both the high and moderate quality of service cities.

The high and moderate service quality cities differ on several important financial characteristics. As indicated by the profile of cities in each quality of service stratum (see Table 30), high quality cities generally tend to rely more extensively on federal revenue sources and local sales tax revenue. As expected, high service quality is more expensive to provide and, accordingly, cities in this group collect, on average, more total revenue per capita than do moderate quality cities. On the other hand, moderate quality cities rely more

Table 30

Profile of Financial Characteristics in High and Moderate Service Quality Cities, FY 1983

Financial Characteristics	Mean for High Quality Cities (N=14)	Mean for Moderate Quality Cities (N=17)
Proportion of Local Taxes of Total Revenues (%)	52.00	51.93
Proportion of Property Taxes of Total Revenues (%)	26.20	28.05
Proportion of Federal Revenue of Total Revenues (%)	11.32	7.61
Per Capita Property Tax Revenue ($)	102.00	105.18
Total Intergovernmental Revenue Per Capita ($)	100.64	118.11
Per Capita Local Sales Tax Revenue ($)	67.00	56.76
Proportion of Sales Tax of Total Revenues (%)	17.34	15.61
Ratio of Intergovernmental Revenues to Property Tax Revenues	1.27	1.24
Total Revenue Per Capita ($)	420.64	399.35

Source: Compiled by author based on FY 1983 budget data collected by the Municipal Technical Advisory Service of the University of Tennessee.

extensively on the local property tax and all intergovernmental revenues, on a per capita basis, for financing city services than do cities in the high quality strata.

Numerous reasons for the respective revenue emphases of cities in the two quality groups could exist. As indicated in the subsequent section on community characteristics, residents in high quality cities have higher median home values, higher per capita and median household incomes, a higher proportion of elderly residents, higher median gross rent, a newer housing stock and a higher proportion of owner-occupied housing. The combination of these factors may interact to produce more political pressure for holding the line on property taxes than exists in moderate quality cities. Consequently, high quality cities with higher income residents may find it more politically feasible to rely on the more "invisible" local sales tax revenue to finance city services. Conversely, the higher proportion of residents who hold wholesale and retail trade occupations may represent a stronger retail trade section of the economy that mitigates emphasis on local sales tax in moderate quality cities.

High quality cities may simply have more personnel skilled in securing federal funds or benefit more from various federal programs than do moderate quality cities. Since all cities in Tennessee receive basically the same amount on a per capita basis from state-shared revenue sources, the higher reliance by moderate quality cities on intergovernmental revenue on a per capita basis apparently is a function of the structure of various state grant-in-aid programs that favor the

more "needy" cities in the state which also happen to be the less wealthy moderate quality service cities. At any rate, these differences between the quality groups on several financial characteristics provide additional support for categorizing cities by quality strata even when the quality of service factor is accounted for in the measurement of relative service productivity.

Analysis of the Financial Characteristics and Relative Productivity of High Quality Service Cities

Three of the nine financial characteristics are correlated with the relative productivity index at the .10 level of significance. Table 31 indicates that total revenue per capita, total intergovernmental revenue per capita and per capita local sales tax revenue are negatively correlated with the productivity index. In other words, as total revenue, intergovernmental revenue, and local sales tax revenue increase on a per capita basis, relative productivity declines.

The strongest significant correlation with relative productivity is for total revenue per capita ($r = -.485$). The implication is that the more money high quality cities collect, the less efficiently they spend it. This observed relationship seems to lend credence to the popular notion that the bigger the government, the less productive it is in the use of tax resources. It also seems to support the strategy by some contemporary political conservatives to make government work better by limiting the supply of revenue to it, thus perhaps placing more pressure on government managers to increase productivity.

Table 31

Pearson Product-Moment Correlations Between Financial Characteristics of High Quality Service Cities and the Relative Productivity Indexes (FY 1983 Budget Data)

Financial Characteristic	N	r
Total Revenue Per Capita	14	-.485*
Total Intergovernmental Revenue Per Capita	14	-.478*
Per Capita Local Sales Tax Revenue	14	-.456*
Per Capita Property Tax Revenue	14	-.305
Proportion of Local Taxes of Total Revenues	14	.203
Proportion of Property Taxes of Total Revenues	14	-.089
Ratio of Intergovernmental Revenues to Property Tax Revenues	14	.104
Proportion of Local Sales Tax Revenue of Total Revenues	14	.046
Proportion of Federal Revenue of Total Revenues	14	-.041

r = Pearson Product-Moment Correlation

* = Statistically significant at the .05 level or below (one-tailed test).

Source: Compiled by the Author.

Alternatively, citizens in some high quality cities who are generally wealthier as a whole than the group average, may tolerate a higher tax burden in return for a satisfactory service level for their investment. Although this point is mere speculation since surveys of public opinion were not conducted as a part of this study, it is clear based on the analysis that there are differences in relative productivity, taking the quality of service factor into account. Furthermore, it is clear that efficiency in the use of resources declines as per capita revenue increases.

A strong negative relationship exists between intergovernmental revenue received on a per capita basis and relative productivity. This observed relationship supports Ammons's finding in his study of fourteen high service quality U.S. cities that "the greater the community's reliance on intergovernmental revenues, the less efficient it tends to be in its operations."[9] Ammons also found that the greater a community's reliance on what are typically the most highly visible forms of own-source revenues (local revenues), the more efficient the city tends to be in its operations.[10] The observed relationship in this study between the proportion of revenues that consists of local taxes and relative productivity ($r = .203$) while not statistically significant, supports the direction of this relationship found in the Ammons study. Consequently, the relative productivity of

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[9]David N. Ammons, Municipal Productivity: A Comparison of Fourteen High-Quality-Service Cities (New York: Praeger Publishers, 1984), p. 192.

[10]Ibid.

high quality service cities decreases as the per capita amount of intergovernmental revenue rises and productivity apppears to increase as local taxes comprise a larger proportion of municipal budgets.

Several possible reasons may exist for the relationships involving intergovernmental and own-source revenues, and productivity. As Ammons points out:

> A different sense of frugality may apply when a project's funding source can be clearly identified as intergovernmental rather than local. Rigorous cost-benefit analysis may seem less essential when the money comes from Washington or the state capitol.[11]

On the other hand, extensive federal reporting and procedural requirements and federal laws regarding wage rates, hiring practices and minority or other special categories of contractors may drive up the operating costs of some local government programs funded with federal revenues.[12] Perhaps the explanation consists of some combination of the two considerations with the added pressure on some managers to secure all possible non-local sources of financing projects or programs to avoid having to raise local revenue sources to fund service improvements or expansion.

The third significant relationship in the analysis of financial characteristics and productivity is the decline in productivity associated with increases in the per-capita amount of local sales taxes. This observation becomes more meaningful with recognition of the fact

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[11]Ibid., p. 194.

[12]Ibid.

that the high quality cities in Tennessee experienced, on the average, a rather rapid growth in population between 1970 and 1980, a trend that has slowed only somewhat in the early 1980's. The increase in population and the concommitant rise in local sales tax revenue may serve to reduce pressure on some local managers to maximize service productivity when sales tax revenue continues to pour into local treasuries.

Analysis of the Financial Characteristics and Relative Productivity of Moderate Quality Service Cities.

As indicated in Table 32, only one of the nine financial characteristics is significantly related to relative productivity. As in high quality service cities, the higher the per capita revenue collected, the less productive are moderate quality cities.

Although not statistically significant at the .10 level, the nature of the remaining relationships are generally in the direction expected based on the analysis of high quality cities. The higher the proportion of local taxes in city budgets, the more productive are moderate service quality cities. Likewise, the higher the per capita amount of intergovernmental revenues received, the lower the productivity in governmental services. While these relationships are not as strong as nor significant for moderate quality cities when compared to those for high quality cities, the outstanding feature common to cities in both quality strata is the fact that the more revenue collected per capita, the less productive municipalities are likely to be in their service operations.

Table 32

Pearson Product-Moment Correlations Between Financial Characteristics of Moderate Quality Service Cities and the Relative Productivity Indexes (FY 1983 Budget Data)

Financial Characteristic	N	r
Total Revenue Per Capita	17	-.485*
Total Intergovernmental Revenue Per Capita	17	-.297
Per Capita Property Tax Revenue	17	-.269
Proportion of Local Sales Tax Revenue of Total Revenues	17	.257
Ratio of Intergovermental Revenue to Property Tax Revenues	17	.190
Per Capita Local Sales Tax Revenue	17	-.188
Proportion of Local Taxes of Total Revenues	17	.173
Proportion of Federal Revenue of Total Revenues	17	-.126
Proportion of All Local Taxes of Total Revenues	17	-.027

r = Pearson Product-Moment Correlation

* = Statistically significant at the .05 level or below (one-tailed test).

Source: Compiled by the Author.

Community Characteristics

Numerous population and economic characteristics were examined in an effort to discover significant relationships with service productivity. Such characteristics are usually beyond the control of local managers to alter, in any meaningful way, to affect productivity over the short-term. However, it is important to examine any significant relationship with service productivity because in Hatry's words:

> Hundreds of characteristics differentiate the various cities . . . with each jurisdiction as unique as is each human being . . . major productivity differences often do exist . . . [but] what is not known is how much of the remaining difference is due to inherent local characteristics not found elsewhere and how much is due to better practices by some jurisdictions.[13]

In an effort to make the distinction implicitly called for by Hatry, nineteen community characteristics were examined for the two service quality strata. Table 33 displays the average features for both quality groups. On most characteristics, high and moderate quality cities are fairly similar. The major exceptions are that high quality cities, on the average, have higher rates of population growth for the 1970 - 1980 period, a lower proportion of the population in poverty in 1980, higher per capita and median family incomes, a slightly lower average age since incorporation, a lower population density, a higher proportion of owner-occupied housing in 1980, higher median home values and median gross rents in 1980, and a slightly higher proportion of their populations under the age of 18.

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[13]Harry P. Hatry. "Issues in Productivity Measurement for Local Governments," Public Administration Review 32 (November-December 1972): 781.

Table 33

Profile of Community Characteristics in High and Moderate Service Quality Cities

Community Characteristic	Mean for High Quality Cities (N=14)	Mean for Moderate Quality Cities (N=17)
Size of City (Square Miles), 1982	13.28	12.32
Rate of Population Change (Percentage) Between 1970 and 1980	+494.84	94.35
Percentage Black Population, 1980	12.76	11.02
Percentage of Population 65 Years of Age and Older, 1980	13.18	12.66
Percentage of Population with At Least a High School Education, 1980	58.94	59.40
Percentage of Population in Poverty, 1980	13.20	15.47
Per Capita Income, 1979	$6,959.86	$6,274.00
Median Household Income, 1979	$15,975.14	$13,754.77
Percentage of Workforce in Industrial/ Manufacturing Occupations, 1980	37.71	34.59
Percentage of Population in Wholesale and Retail Trade Occupations, 1980	20.07	21.53
Percentage of Population in Service-Related Occupations, 1980	9.21	8.53
Percentage of Population in Professional Occupations, 1980	21.93	24.12
Age of City Since Incorporation (Years)	122.79	133.06
Density (1982 Population per Square Mile)	1,525.14	1,743.24
Percentage of Housing Stock Owner-Occupied in 1980	66.29	60.67
Median Value of Owner-Occupied Housing in 1980	$39,221.43	$36,776.47
Median Gross Rent of Occupied Rental Housing, 1980	$205.64	$191.17
Percentage of Housing Constructed Since 1969	28.57	26.94
Percentage of Population Under 18 Years of Age, 1980	28.21	25.88

Source: Compiled by the author based on Census data.

Community Characteristics and Relative Productivity of High Quality Service Cities

Three community factors are significantly related to service productivity at the .10 level of significance as indicated by Table 34. The strongest relationship involves the rate of population change between 1970 and 1980 ($r = .532$). The proportion of the population under the age of 18 in 1980 is also strongly correlated with relative productivity ($r = .499$) while the percentage of the population 65 years and older is negatively correlated with productivity ($r = -.359$).

The fact that higher rates of population growth between 1970 and 1980 are correlated with higher levels of productivity may be indicative of the presence of a certain amount of slack resources that enable particular high quality service cities to invest in more service innovations or productivity improvement efforts than cities with lower growth rates. On the other hand, considerable population growth boosts the local revenue intake and, in conformance with the relationship between higher productivity and the reliance on local revenue sources previously discussed, the observed correlation may indicate the growth over time in local revenues as a proportion of total revenues collected. However, only a longitudinal analysis of relative productivity could specify this pattern with any degree of certainty.

Several possible explanations may account for the relationship between the proportion of residents under 18 and productivity. Higher proportions of school-age children may represent a source of parental pressure for larger municipal contributions to the local school systems

Table 34

Pearson Product-Moment Correlations Between Community Characteristics of High Quality Service Cities and the Relative Productivity Indexes

Community Characteristic	N	r
Rate of Population Change (Percentage) Between 1970 and 1980	14	.532**
Percentage of the City Population Under 18 Years of Age, 1980	14	.499**
Percentage of the City Population 65 Years of Age and Older, 1980	14	-.359*
Percentage Black Population, 1980	14	.292
Percentage of Population in Poverty, 1980	14	-.276
Median Gross Rent of Occupied Rental Housing, 1980	14	.269
Age of the City Since Incorporation (Years)	14	-.238
Percentage of Workforce in Wholesale or Retail Trade Occupations in 1980	14	.227
Percentage of Housing Constructed Since 1969	14	.184
Median Household Income in 1979	14	.182
Percentage of the Workforce in Industrial/ Manufacturing Occupations, 1980	14	-.171
Median Value of Owner-Occupied Housing, 1980	14	.167
Percentage of Housing Stock Owner-Occupied, 1980	14	.152
Density (Population per Square Mile), 1982	14	.142
Percentage of Population With At Least a High School Education, 1980	14	.140
Percentage of Workforce in Professional Occupations, 1980	14	-.130
Percentage of Workforce in Service-Related Occupations, 1980	14	.125
Per Capita Income, 1979	14	.055
Size of City (Square Miles), 1982	14	.024

r = Pearson Product-Moment Correlation

* = Statistically significant at the .10 level or below (one-tailed test).

** = Statistically significant at the .05 level or below (one-tailed test).

Source: Compiled by the Author.

with concommitant pressure placed on other city departments to be more efficient or to provide services at lower costs due to possible fund reallocations to the local school systems. On the other hand, larger proportions of younger residents may simply place fewer service demands on city government, thus lowering the resource requirements necessary to provide a particular level of service quality.

For cities with higher proportions of elderly residents, lower levels of productivity could be a result of more service demands placed on various city departments. Consequently, the cost of providing services increases with the volume of service requests, thereby lowering productivity relative to other cities with fewer elderly residents.

Community Characteristics and Productivity of Moderate Quality Service Cities

Several characteristics of moderate quality cities are significantly related to relative productivity. Based on the correlations listed in Table 35, the following factors appear to have an impact on productivity:

- The larger the population 65 years and older, the lower the productivity score;
- The greater the number of years since incorporation, the less productive the city;
- The higher the proportion of the work force in wholesale and retail trade, the more productive the city will be;

Table 35

Pearson Product-Moment Correlations Between Community Characteristics of Moderate Quality Service Cities and the Relative Productivity Indexes

Community Characteristic	N	r
Percentage of the City Population 65 Years of Age and Older, 1980	17	-.626**
Age of the City Since Incorporation (Years)	17	-.625**
Percentage of Workforce in Wholesale or Retail Trade Occupations in 1980	17	.508**
Density (Population per Square Mile, 1982)	17	.502**
Percentage of Population With At Least a High School Education, 1980	17	.483**
Percentage of the Workforce in Industrial/ Manufacturing Occupations, 1980	17	-.437**
Percentage of Housing Stock Owner-Occupied, 1980	17	-.362*
Percentage of Workforce in Service-Related Occupations, 1980	17	.334*
Percentage of Population in Poverty, 1980	17	-.211
Median Gross Rent of Occupied Rental Housing, 1980	17	.199
Percentage of the City Population Under 18 Years of Age, 1980	17	-.157
Per Capita Income, 1979	17	-.150
Percentage of Housing Constructed Since 1969	17	.133
Percentage Black Population, 1980	17	-.125
Median Value of Owner-Occupied Housing, 1980	17	.116
Percentage of Workforce in Professional Occupations, 1980	17	-.078
Median Household Income, 1979	17	.075
Size of City (Square Miles), 1982	17	.074
Rate of Population Change (Percentage) Between 1970 and 1980	17	.068

r = Pearson Product-Moment Correlation

* = Statistically significant at the .10 level or below (one-tailed test).

** = Statistically significant at the .05 level or below (one-tailed test).

Source: Compiled by the Author.

- The higher the population density, the greater the city's productivity in the use of resources;
- As the proportion of the population with at least a high school education rises, so does productivity;
- The larger the proportion of the work force in industrial and manufacturing occupations, the lower the city's productivity;
- More owner-occupied housing seems to be associated with lower productivity; and
- The larger the proportion of the work force in service-related occupations, the more productive a city tends to be in its operations.

The lower productivity of service operations associated with a larger elderly population may be a function of the same increased demand on services by the elderly previously suggested for high service quality cities. The age of the city also seems to negatively affect productivity. This relationship may be caused by several factors among which could be an older infrastructure, a less efficient pattern of development, or it may reflect other characteristics such as form of government or various entrenched service practices not present in "younger" cities with newer infrastructure, more planned developments, and more innovative service operations.

Not surprisingly, the cities with higher population densities tend to be more productive than cities with sprawl development patterns. Smaller lots, a grid development system, and planned developments tend

to reduce the costs associated with service provision. Following this reasoning, it is logical that higher proportions of owner-occupied housing are related to lower levels of productivity. Single-family housing and large lot developments require more manpower, time, and resources to service and, therefore, drive up the cost of service delivery for cities with high proportions of owner-occupied housing, compared to those with larger proportions of higher density rental housing.

Interestingly, cities with higher proportions of workers in wholesale and retail trade, and in service-related occupations tend to be more productive than those cities with a higher proportion of workers in industrial and manufacturing occupations. The difference could be a function of the greater service demands of industrial firms, characteristics unique to a blue-collar work force, or some combination of these factors. Conversely, retail trade and other commercial establishments often generate less waste, require less extensive municipal fire-fighting equipment, and are more likely to employ workers at lower wage rates who may be able to afford only rental housing — all of which place less strain on municipal budgets.

Finally, cities with higher proportions of high school graduates tend to be more productive. Apparently, the more educated the citizenry, the more aware or interested they may be in how efficiently and effectively city services are provided. Residents with at last a high school education or more may also be somewhat more likely to participate in various city boards or commissions, although this is speculative

since no data was readily available on the extent of citizen participation in city elections or in various municipal government meetings.

Summary of Findings

The profiles of high and moderate service quality cities reveal several differences in the characteristics of the six categories of factors analyzed with respect to relative municipal service productivity. Two fairly distinct "service quality cultures" emerge with basically distinct profiles and characteristics that help to explain the impact various factors have on the relative productivity of cities in each quality stratum. The notion of different service quality cultures does not imply that one group of cities is more or less productive than the other since the productivity index clearly shows differences in productivity within each quality of service group. The import of the concept of different service quality cultures is in the utility the notion has in referencing the different characteristic profiles and the bundle of public policy choices made by the political community and urban administration to provide a generally higher level of service quality. These distinctions may be useful in accounting for the fact that several different factors are correlated with the relative productivity of cities in the two service quality strata.

Several statistically significant relationships exist that help to account for the differences in relative productivity among cities in each quality group. These relationships are summarized in Tables 36 and 37 for high and moderate quality cities, respectively. While the

Table 36

Correlation Coefficients Between Principal Explanatory Variables and the Relative Productivity Indexes of High Quality Service Cities

Variable	N	r
Characteristics of CEO's, Local Elected Representatives, and Department Heads:		
Percentage of City Council Members with Five-Ten Years Tenure	10	.542**
Average Educational Level of Department Heads	11	-.484*
Organizational Priorities:		
Street Maintenance	14	-.562**
Economic Development	14	.543**
Public Safety	14	-.427*
Organizational Characteristics:		
Character of Control Process	11	-.675**
Extent of Cooperative Teamwork	11	-.619**
Accuracy of Upward Communications	11	-.597**
Management Factors:		
Use of Task Systems	14	-.509**
Service Privatization Score	14	.445**
Use of Educational Incentives	14	-.409*
Use of Attendance Incentives	14	-.395*
Flexibility to Reward Employees for Exceptional Performance	14	-.388*
Use of Suggestion Awards	14	-.373*
Financial Characteristics:		
Total Revenue Per Capita	14	-.485**
Total Intergovernmental Revenue Per Capita	14	-.478**
Per Capital Local Sales Tax Revenue	14	-.456**
Community Characteristics:		
Rate of Population Change Between 1970-1980	14	.532**
Percentage of the City Population Under 18 Years of Age in 1980	14	.499**
Percentage of the City Population 65 Years of Age and Older in 1980	14	.359*

Source: Compiled by the author.

r = Pearson product-moment correlation

**Statistically significant at the .05 level or below (one-tailed test)

*Statistically significant at the .10 level (one-tailed test)

Table 37

Correlation Coefficients Between Principal Explanatory Variables and the Relative Productivity Indexes of Moderate Quality Service Cities

Variable	N	r
Characteristics of CEO's, Local Elected Representatives, and Department Heads:		
Percentage of City Council Members with Five-Ten Years Tenure	14	-.676**
Percentage of City Council Members with Less Than Five Years Tenure	14	.573**
Tenure of Mayor (in Years)	14	-.546**
Average Educational Level of Department Heads	14	.484**
Percentage of City Council Members with a High School Education	14	-.483**
Percentage of City Council Members with a College Education	14	.482**
Mayor's Formal Education Level	17	-.452**
Percentage of City Council Members with Blue-Collar Skilled or Semi-Skilled Occupations	14	.427*
Percentage of City Council Members with Small Business, Sales, Teaching or Clerk Occupations	14	-.372*
Organizational Priorities:		
No significant correlations		
Organizational Characteristics:		
Extent to Which Leaders Have Confidence and Trust in Subordinates	14	-.518**
Character of Control Process	14	-.493**
Extent of Motivation through Rewards Rather than Punishment	14	-.472**

(Continued)

Table 37 (Continued)

Variable	N	r
Management Factors:		
Use of Suggestion Incentives	14	-.610**
Flexibility to Reward Employees for Exceptional Performance	14	-.491**
Use of Job Enrichment Techniques	14	-.486**
Use of Variation in Working Hours	14	-.396*
Financial Characteristics:		
Total Revenue Per Capita	17	-.485**
Community Characteristics:		
Percentage of the City Population 65 Years of Age and Older in 1980	17	-.626**
Age of the City Since Incorporation	17	-.625**
Percentage of the Work Force in Wholesale and Retail Trade Occupations in 1980	17	.508**
Density (Population per Square Mile in 1982)	17	.502**
Percentage of Population with at Least a High School Education	17	.483**
Percentage of Work Force in Industrial Manufacturing Occupations	17	-.437**
Percentage of Housing Stock Owner-Occupied in 1980	17	.362*
Percentage Work Force in Service-Related Occupations	17	.334*

Source: Compiled by the author.

r = Pearson product-moment correlation

**Statistically significant at the .05 level or below (one-tailed test)

*Statistically significant at the .10 level (one-tailed test)

relatively small number of cases for each service quality group should temper the substantive importance of the findings somewhat, the results of the analysis merit consideration by local managers, representatives and citizens interested in productivity improvement.

In high service quality jurisdictions, those that have city council members with five to ten years tenure, an organizational emphasis on economic development, a System 3 organizational environment, little or no use of various employee incentives, and more extensive use of contracts with private firms to provide municipal services are the better performing cities in terms of service productivity as measured by the Relative Productivity Index. In addition, those cities that have higher per capita revenue collection rates and rely more on intergovernmental revenue sources and the local sales tax are less productive in their service operations. The fastest growing cities in Tennessee between 1970 and 1980 and those that had higher proportions of persons under 18 years of age in 1980 tend to be the more productive high quality service jurisdictions. Cities with higher proportions of elderly residents 65 years and older in 1980 tend to be less productive.

In moderate service quality jurisdictions, those with council members and mayors with less tenure in office but with council members and service department heads with higher education levels are the more productive cities. Cities with mayors who have longer tenure and higher education levels tend to be less productive as do those with council members with small business, sales, or clerk occupational backgrounds. Higher productive cities tend to have council members with blue-collar related occupations.

Moderate service quality cities that have System 3, consultative organizational characteristics are more productive than those with System 4, participative group profiles. The cities that use various employee incentives and have a high total revenue per capita collection rate are also less productive. Moderate service quality cities that are generally older since incorporation, have higher proportions of elderly residents, and have more industrial/manufacturing resident employees and higher proportions of owner-occupied housing, have lower relative productivity. The cities that have higher proportions of their work force in wholesale and retail trade and in service occupations, larger proportions of residents with at least a high school education and higher population densities are the more productive moderate service quality jurisdictions.

CHAPTER IV

CONCLUSION

Summary

The basic purpose of this work has been to investigate the meaning, measurement and process for improvement of municipal service productivity. Academic and practioner interest in municipal productivity has grown in recent years as popular frustration with and rebellion against increasing tax burdens has intensified and as the future of various federal intergovernmental revenues has become less certain. However, even a casual perusal by expert or layman of the public productivity literature is likely to reveal a great deal of ambiguity, conceptual disarray and conflicting findings on how best to improve service productivity. Thus, this work was motivated in part by the need to help dispel some of the conceptual confusion surrounding productivity, to refine a method for measuring local government service productivity and to illuminate at least a direction for fertile research in the future on ways to improve productivity in the public sector.

The meaning of productivity was explored with a review of the diverse definitions advanced. The major dimensions of public sector productivity — efficiency, effectiveness and quality — were identified and the definition of productivity developed by Nancy Hayward was adopted for use in this study because of her succinct specification of the multi-dimensional nature of the concept as the efficiency with which

resources are consumed in the effective delivery of quality public services.

The continuing growth of public sector expenditures as a percentage of the gross national product heightens the salience of increasing public service productivity as part of the drive to make the U.S. even more competitive in the world marketplace. Many contemporary political and business leaders charge that simple application of sound business practices in the public sector will help to achieve these objectives. Undoubtedly, there is much that public managers can learn from private sector productivity improvement efforts. However, the peculiar political nature of the public decision-making environment often forces public managers to reconcile competing, frequently conflicting policy objectives thereby complicating and frequently frustrating attempts to improve public sector productivity. On a conceptual level, the public and private sectors share five models or possible scenarios for achieving productivity improvement with respect to the relationship between input resources and output goods or services. What is less clear are the specific organizational and management techniques applicable to the public sector that will lead to increased productivity.

Based on a review of the public productivity literature, several key prerequisites for productivity improvement success were identified. These include the importance of robust political leadership by the chief executive, managerial recognition of a performance gap and a strong desire to close it, sufficient staff support with analytic capabilities, and development of a productivity measurement system to track performance.

Several overt and more subtle barriers to public productivity improvement were also identified. The findings from the many studies on job satisfaction, motivation, innovation and management style were also synthesized for their relevance to public productivity improvement. Among the more pertinent findings were that meaningful recognition of and compensation for individual employee performance are important in developing a more productive work force.

Several U.S. cities are heralded as having successful productivity improvement programs. However, lack of commonly adopted productivity measures and the dearth of data collected uniformly on municipal performance characteristics severely limits the ability of researchers to make valid interorganizational comparisons of service productivity and to specify and verify the relative significance of various practices suspected of enhancing service performance. The value of making intercity productivity comparisons was explored with emphasis placed on the potential motive power intercity performance competition has for magnifying the saliency and accelerating the pace of productivity improvement in the poorer performing jurisdictions. However, before this entrepreneurial spirit so prevalent in the private sector can be replicated in the municipal management environment, productivity measurement must advance beyond its current state of infancy.

Three basic approaches to productivity measurement were identified: the efficiency and effectiveness approach, the vector approach, and the fiscal analysis approach represented in an interorganizational context principally by the work of David N. Ammons. The Ammons fiscal analysis approach with added refinements in the measurement of the important

quality of service dimension of productivity was adopted for this cross-sectional study of the FY 1983 service productivity of the thirty-one full-service Tennessee municipalities between 10,000 and 55,000 population.

To measure the relative service productivity of the study cities, statistical regression was employed using total municipal expenditures for police, fire, parks and recreation, street maintenance, solid waste collection, and general government services as the dependent variable. The independent variables in the regression formula included 1982 municipal population for service workload, an entry level salary index for labor costs, and a relative service quality index. The relative service quality index was used to classify cities into high and moderate service quality strata and it was also used in the regression equation for each stratum to assess relative productivity taking variations in quality of service into account. The regression equations for the two service quality strata were used to calculate a relative productivity index based on the Ammons methodology.

The relative productivity index is a measure of each municipality's actual expenditure deviation from its regression-based projected expenditure taking into account workload, labor cost, and service quality variations. Higher relative service productivity is attributed to cities within the high and moderate service quality strata that spend less for services than the projected amount. Conversely, lower productivity is assigned to those cities that expend more for the same services than the regression-based expenditure projection.

Analysis of the differences in relative productivity of cities in the high and moderate service quality strata focused on the hypotheses constructed for each characteristic within six categories of variables. These characteristics included background data on chief executive officers, city council members and department heads, organizational priorities, organizational characteristics, management factors and techniques, financial characteristics, and numerous community characteristics. Several variables for cities in each service quality strata were found to be significantly correlated with the relative productivity indexes based upon the Pearson product-moment correlation coefficients with a $p < .10$.

For high quality service cities, the factors significantly correlated with higher relative productivity included the following:

- longer tenure of council members (especially for the members with five to ten years in office);
- primacy of economic development as an organizational priority;
- increased use of contracts with private firms for the provision of various municipal services;
- higher rates of population growth between 1970 and 1980; and
- higher proportions of the population under 18 years of age.

The factors that were correlated with lower levels of productivity in high service quality jurisdictions included:

- the presence of System 4 organizational characteristics involving the control process, extent of cooperative teamwork, and accuracy of employee communications with superiors;

management factors involving the use of task systems, educational incentives, attendance incentives, suggestion awards and the increased flexibility to reward employees for exceptional performance;

- financial characteristics such as a high rate of total revenue collected per capita, a high rate of intergovernmental revenue received on a per capita basis, and a high rate of per capita local sales tax revenue; and
- community characteristics such as having a larger proportion of elderly residents 65 years or older.

The variables that had statistically significant correlations with the more productive moderate service quality cities included:

- shorter tenure of council members (those with less than five years in office);
- higher average educational level of department heads;
- higher percentage of city council members with a college education;
- higher percentage of city council members with blue-collar skilled or semi-skilled occupational backgrounds;
- higher percentages of the work force with wholesale and retail trade occupations and with service-related occupations;
- higher population densities; and
- higher proportions of the population with at least a high school education.

The characteristics found to be significantly related to the moderate service quality cities with lower relative productivity included the following:

- larger percentage of council members with between five and ten years tenure;
- larger percentage of council members with a high school education and those with a small business, sales or clerk occupational background;
- the mayor's longer tenure and higher formal education level;
- the presence of various System 4 organizational characteristics;
- the use of various management techniques such as suggestion incentives, extent of reward flexibility, job enrichment techniques, and variation in working hours;
- higher total revenue collected per capita;
- higher percentage of the population 65 years and older in 1980;
- older age of the city since incorporation;
- higher percentage of the work force in industrial/ manufacturing occupations; and
- higher percentage of owner-occupied housing in 1980.

The factors that were significantly correlated with the relative productivity of high and moderate service quality cities help to explain the differences in relative service productivity among jurisdictions in each quality stratum. Some of these factors are subject to more managerial control and discretion than others. The fact that different

variables are important for high and moderate service quality cities suggests that the two groups of cities may have different "service quality cultures" that help to shape the relative impact of certain characteristics on the relative productivity within each group.

Implications of the Findings

The findings of this study pertain to the differences in productivity among Tennessee municipalities in two service quality strata with populations between 10,000 and 55,000 in 1982 and are based on the FY 1983 fiscal data and characteristics used to calculate the relative productivity index for each city. Therefore, the findings represent a snap-shot perspective of the FY 1983 relative productivity of and the factors that account for the differences among the thirty-one full-service, medium-size Tennessee cities home to approximately 13.3 percent of the state's residents. Generalizations based on the findings technically should apply only to the cities included in the study. Yet the results of this inquiry also merit the attention of productivity researchers and managers in other jursidictions interested in productivity improvement.

For the cities in this study, productivity improvement is not a very high organizational priority compared with other issues and problems ranked in importance by chief executives. Substantial and enduring improvements in productivity are unlikely to occur unless a higher priority and greater commitment is given to enhancing service efficiency and effectiveness.

For local officials and managers interested in more immediate strategies for enhancing productivity, the feasibility of service privatization or more widespread use of contracts with private firms or other governmental agencies to provide various city services should be evaluated. This management strategy was an important characteristic of the more productive high service quality cities but, logically, it offers the potential for greater productivity for moderate service quality jurisdictions as well. The future attractiveness of this strategy is doubtful if certain changes in the federal tax code proposed by the Reagan Administration are implemented, but for the short-term, service privatization appears to represent potential savings in service expenditures.

The findings that certain organizational characteristics with System 4 qualities (as described by Likert) are negatively associated with productivity contradicts the direction of the relationship hypothesized in this study. On balance, this finding suggests that for high and moderate service quality cities, a more balanced organizational profile (in terms of operating characteristics) resembling a consultive, System 3 environment is associated with higher productivity. In other words, neither a wide-open participatory climate nor an exploitive-authoritative environment is related to higher levels of municipal productivity. Rather, cities with higher productivity in this study have organizational characteristics that fairly consistently run in the more balanced, consultative stream, indicating moderate levels of teamwork, group decision-making, and

self-direction. Consequently, the System 4 or Theory Y type of organizational climate does not represent a panacea for curing low employee productivity.

Another set of findings noteworthy for their negative relationship with productivity are the management factors. A variety of various incentives, job enrichment techniques and the extent of reward flexibility were found to be associated with less productive cities rather than the more productive cities as formulated in the hypotheses. The use of these incentives may or may not make municipal employees happier or more satisfied with their jobs. This relationship was not examined specifically in this study. However, the findings clearly show that use of these incentives and management techniques is not related to the more productive cities in either quality of service group. This finding may constitute one more nail in the maxim that a happy worker is always a more productive worker.

There are some characteristics beyond the control of local managers to change that have some impact on municipal productivity depending on whether the city is in the high or moderate quality stratum. Longer tenure of city council members in high service quality cities is apparently beneficial in terms of promoting higher productivity. Perhaps the years of acquired experience and less turnover provide a greater chance for local legislators to specialize and continue established policies. However, in moderate service quality cities "new blood," both on the council and in the mayor's position are significantly related to higher productivity as are the higher educational levels of these individuals. Perhaps the combination of having

council members and department heads with higher education levels enables better communication and more efficient delivery of services in these moderate quality service cities.

Many community variables are beyond the power of local government to alter to any meaningful extent. Some of these have varying degrees of association with relative service productivity. The more notable relationship for both service quality groups is the fact that higher proportions of elderly residents tend to be found in the less productive jurisdictions. On the surface, this relationship would appear to be questionable since elderly residents normally do not place heavy demands on local school systems or some types of recreation services. However, due to some combination of characteristics associated with elderly residents involving perhaps higher service demands placed on the police, solid waste collection, street maintenance operations, or local health departments, cities with higher elderly populations tend to be less productive in the use of resources.

The findings concerning municipal financial characteristics and relative productivity clearly show that the more revenue per capita cities collect, the more revenue is likely to be expended in a less productive manner. A similar relationship was found for those high service quality cities that collected high per capita amounts of intergovernmental and local sales tax revenue. The more revenue high service quality cities collect from these sources, the less productive they are in the use of resources taking workload, labor cost and service quality variations into account.

These findings suggest that organizational wealth or the existence of slack resources from intergovernmental or local sales tax sources places very little pressure on localities to be more frugal and productive in the expenditure of tax revenue. On the other hand, the empirical evidence in this study indicates that cities with a lower per capita "tax bite" and which rely on high-profile property taxes to a greater extent tend to be the more productive cities. Thus there is reason to conclude that fiscal stress and greater reliance on own-source revenues leads to higher levels of service productivity.

The findings on financial characteristics and relative productivity are not necessarily an endorsement for reduced federal and state aid to local governments or for a freeze on local property tax revenues. However, the terms of intergovernmental aid may need to be modified in the future to include some consideration for relative municipal productivity performance and local tax burden on citizens.

Directions for Future Research

Interorganizational productivity is a rich, largely unexplored focus of inquiry that demands additional study. It has been limited in the past by the difficulty in data collection, the lack of comparable budget data, and the paucity of performance information collected by local governments. Consequently, future studies would be aided greatly by the annual collection of municipal budget data and service quality characteristics by a state agency as part of a continuing effort to promote higher local government service productivity. A continuing local government productivity measurement and improvement program

sponsored by the states is possible and potentially quite useful for providing more detailed information on "best practices" and for sharpening a sense of competition among jurisdictions within a state to improve productivity and perhaps service quality. In the future, the results from such a program could even be used as one criteria in the distribution of state intergovernmental aid to entice local governments to participate in the program.

In the interim, future studies of intercity productivity should include an average of two or perhaps three fiscal years for expenditure and revenue data to mitigate unusual or peculiar deviations in service expenditures that may occur in any given year. If data for FY 1982 or FY 1984 had been available, it would have been included in this study to reduce the likelihood that a city would receive a low productivity ranking caused, for instance, by an unusual street improvement program funded under the operating budget as opposed to the capital improvements budget. Such an unusual expenditure incident occurred for the city of Maryville in FY 1983 which resulted in a productivity ranking perhaps much lower than if an average of several years expenditures had been employed in the fiscal analysis of relative productivity.

Several refinements in future intercity productivity research can be accomplished. To make the relative productivity index an even more useful measure of productivity in the interim period before common measures of service performance are adopted by municipalities, survey data on citizen satisfaction with city services should be collected and included as another very important independent variable in the regression equation. In addition, longitudinal studies of relative productivity

would provide a richer informational base with the capability for evaluating the success of various service innovations and management techniques within and among jurisdictions in their respective quality of service stratum. Another refinement that should be considered at some point when more data is collected and published for jurisdictions under 10,000 population is the inclusion of these smaller cities in productivity studies. The measurement and improvement of productivity in these smaller municipalities is just as, if not more, important than for medium size cities because of the larger percentage of total state residents usually represented in cities of this smaller population class. Finally, inclusion of these smaller jurisdictions as well as cities with populations exceeding 55,000 would expand the number of cases in the service quality stata, thus increasing the likelihood of discovering more statistically significant relationships with relative municipal service productivity. Such findings will help to increase the understanding of the factors and practices that lead to higher productivity in American cities.

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APPENDIX

QUESTIONNAIRES

Chief Executive/Manager Questionnaire

1. Please rank the following issues or problems in terms of priority for your city. Place a "1" beside the most pressing, a "2" beside the second most pressing and so forth through 8, the least pressing issue.

_____	Public Safety	_____	Solid Waste Disposal
_____	Economic Development	_____	The "Fiscal Crisis"
_____	Productivity Improvement	_____	Capital Improvements
_____	Street Maintenance	_____	Local Quality of Life

2. Does your city contract with a private firm or another governmental entity for any of the following services? (If so, please place a check next to the service and circle whether the contractor performs the service entirely or supplements city forces.)

_____	Park Maintenance	(primary/supplemental)
_____	Refuse Collection	(primary/supplemental)
_____	Refuse Disposal	(primary/supplemental)
_____	Planning Services	(primary/supplemental)
_____	Street Maintenance	(primary/supplemental)
_____	Legal Services	(primary/supplemental)
_____	Police Protection	(primary/supplemental)
_____	Fire Protection	(primary/supplemental)
_____	Custodial Service	(primary/supplemental)

3. Do you feel you have the flexibility to reward employees for exceptional performance or for productivity improvements?

_____ Yes _____ No

If your answer is yes, please check the type of reward(s) available to you:

_____	Nonmonetary recognition	_____	Promotion in position
_____	One-time pay bonus	_____	Flexibility to adjust pay without regard to pay steps
_____	Extra steps in pay range awarded	_____	Other (please specify)

4. Please check any of the following employee incentives used in your city:

_____ Educational incentives (for in-service training or continuing education)

_____ Suggestion awards (to encourage ideas for improving city operations)

_____ Attendance Incentives (to improve attendance, reduce lateness, or reduce sick leave abuse)

_____ Task systems (defines a "fair day's work" and permits some employees to leave work early with full pay upon completion of assigned tasks).

_____ Variation in working hours ("flex-time," or four-day work week with ten-hour days).

_____ Safety incentives (to encourage employees to improve their safety record)

_____ Job enrichment techniques (to motivate or challenge employees by making work more interesting through job rotation, job redesign, or increased employee participation in decision-making.

5. Please check any of the following items which your city has:

_____ Computerized police records

_____ Mini-pumper fire-fighting trucks

_____ Portable asphalt recycling equipment

_____ Pothole/pavement repair machine

_____ Volunteer staff workers in support of public safety, recreation services, or city administration

_____ City sponsored smoke detector or fire extinguisher program for local residents/ businesses

_____ City energy conservation program

_____ Computerized payroll and/or cost accounting functions.

_____ Public road acceptance standards

_____ Innovative waste collection or waste disposal methods

6. Which statement best describes the productivity improvement efforts in your city? (check one)

_____ Productivity improvements occur as opportunities arise.

_____ Department heads are held accountable for productivity improvements based on adopted performance measures.

_____ A single office or individual has specific responsibility for measuring and/or encouraging organization-wide productivity improvements.

_____ Our city is really not concerned with productivity improvement.

_____ Other (please specify) _____

Thank you!

Administrative Staff Questionnaire

Instructions: Please circle the choice that in your judgment best describes your city on each of the following characteristics. All of your responses will remain anonymous and will not be referred to by the city's name but only combined with the responses for all other cities in Tennessee. (Your complete candor is very important.)

Organizational Characteristics

1. Leadership. To what extent do city leaders have confidence and trust in subordinates?

   a. They have no confidence or trust in subordinates.
   b. They have condescending confidence and trust such as in a master-servant relationship.
   c. They have substantial but not complete confidence and trust in employees.
   d. They have complete confidence and trust in employees in all matters.

2. Motivation. How do city leaders motivate employees?

   a. Through fear, threats, punishment and occasional rewards.
   b. Through rewards and some actual punishment.
   c. Through rewards, occasional punishment, and some employee participation in decision-making.
   d. Through economic rewards, employee participation in goal setting, and regular employee performance appraisals.

3. Communication. How are communications from city leaders generally accepted by subordinates?

   a. Viewed with great suspicion.
   b. Some are accepted and some are viewed with suspicion.
   c. Often accepted but if not, employees sometimes feel free to openly question leaders about orders.
   d. Generally accepted but if not, employees feel completely free to openly question leaders about orders.

4. Communications. Generally, how would you describe the information that employees give their boss?

   a. The information is usually accurate and complete.
   b. Good news flows but other information is given somewhat cautiously.
   c. The boss only gets the information that he or she wants to hear.
   d. The information tends to be inaccurate and incomplete.

5. Teamwork. How much cooperative teamwork is present in your city?

   a. A very substantial amount throughout the organization.
   b. A moderate amount.
   c. Relatively little.
   d. None.

6. Decision-Making. At what level in the city are decisions formally made?

   a. Bulk of decisions are made by the top city officials.
   b. Policies are made at the top with many decisions made at lower levels but usually checked with bosses before action is taken.
   c. Broad policy decisions are made at the top, more specific decisions are made at lower levels.
   d. Decision-making is widely distributed throughout the organization.

7. Character of Control Process. To what extent is control data (i.e. accounting, cost, financial reports) used for self-guidance or group problem solving by employees, or used by supervisors in a punitive, policing manner?

   a. Used by boss for policing and in a punitive manner.
   b. Used for policing coupled with some reward and punishment.
   c. Used for some policing but with an emphasis on reward and some self-guidance.
   d. Used for self-guidance and for coordinated problem-solving and guidance, not used punitively by boss.

Mayor, Council or Commission, Department Heads

Please complete the following table to the best of your knowledge. (Your "best guess" will be fine). No names are necessary. Just check the appropriate boxes for the mayor, the council or commission members and the three department heads for your city.

	Primary Occupation (check one)						Formal Education level (check one)				Years in Office (check one)			
	Executive, Proprietor, or Professional	Small Business, Sales, Teacher, Technician, or Clerk	Skilled or Semi-Skilled Employee (Blue-collar)	Homemaker	Retired	Other	Less than High School Diploma	High School Diploma	High School Some College	College Degree	2 years or less	2-4 years	5-10 years	Over 10 years
Mayor														
Council Member														
#1														
#2														
#3														
#4														
#5														
#6														
#7														
#8														
#9														
#10														
Please check the education level and years in office for the:														
1. Police Chief														
2. Fire Chief														
3. Public Works Dir.														

Thank you!

VITA

David H. Folz was born in Berwyn, Illinois, attended public schools in LaGrange, Illinois and was graduated from Lyons Township High School in June 1970. He received the Bachelor of Arts in History from the University of Tennessee, Knoxville in June 1974 and the Master of Science in Planning from the University of Tennessee Graduate School of Planning in March 1977.

The author has worked with local and state governments for over eight years, serving as a planner for the University of Tennessee Technical Assistance Center, the Principal Planner with the Tennessee State Planning Office, and as a planning consultant to several local, state and federal agencies. He has authored various works on economic development, municipal administration, and personnel management.

The author has taught several different courses in public administration and political science at the University of Tennessee — first as a teaching assistant and then as a teaching associate while completing the doctoral program in Political Science. He received the Doctor of Philosophy degree with a major in Political Science from the University of Tennessee, Knoxville in August 1985. He has accepted a position as Visiting Assistant Professor at the University of Tennessee, Knoxville campus for the 1985-1986 academic year.

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