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ALTERNATIVE PROCEDURES FOR COMPUTING MEASURES

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**GOVERNMENT EXPENDITURE LEVELS: ALTERNATIVE
PROCEDURES FOR COMPUTING MEASURES**

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Abstract

Measuring government expenditure levels depends not only on good accounting but also on appropriate procedures for computing the expenditure-level measures. This paper examines alternative ways of computing expenditure-level measures, and compares several different measures using data on government overhead expenditures for California cities. The results demonstrate the importance of choosing an appropriate measure and the potential for per capita expenditures to yield misleading results.

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Introduction

The level of government expenditures provides a battleground for political dispute. Recurring themes of "government fat" and "bureaucratic waste" pervade American political rhetoric. The success of various tax and spending limitation proposals, spurred by the success of California's famous Proposition 13, attest to the potentially serious consequences for local government of such themes. Despite the political controversy surrounding government spending, research issues concerning the measurement of expenditure levels have faced neglect. This paper examines the measurement of government expenditure levels--specifically, alternative ways of computing measures.

Difficulties of Measuring Expenditure Levels

Studies of expenditure levels of local government typically make comparisons across jurisdictions or over time using per capita spending within different spending categories. Bernick (1990), for example, identified large variations among California cities in reported per capita expenditures for administrative overhead and for public safety. The "bureaucracy-bashers" like to use such findings to identify high expenditure-level jurisdictions and rail against the bureaucratic fat. However, efforts to measure and draw conclusions about government expenditure levels need to recognize

Fred Gey, Data Archivist at the Survey Research Center, University of California, Berkeley, provided assistance in obtaining the census data used in this study.

expressed as government expenditures per \$1000 of personal income.² Hughes and Laverdiere (1986) discussed several ways of computing measures using "allocation ratios," the percentage of funds allocated to a particular expenditure category. The appropriate standardization procedure to choose depends not on technical considerations, but rather on the purpose of the statistic. If your purpose is to create an expenditure-level measure relative to service needs or demands, and if you consider population size a proxy for the need or demand for services, then you might choose to express expenditures relative to the number of people. If your purpose is to create an expenditure-level measure relative to capability, and if you consider income a proxy for the resources or capability for providing services, then you might choose to express expenditures relative to personal income. In short, you should choose the appropriate expenditure-level measure based on whether you want to measure expenditures relative to need, to resources, or something else.³

The development of crime statistics has faced similar issues concerning the appropriate statistical standardization procedure. Although per capita measures dominate crime statistics also, crime statistics researchers have paid somewhat more attention to alternative measures than have expenditure-level researchers. For example, Cohen et al. (1985) computed burglary rates based on the

²See, for example, Table 31 in Bureau of the Census (1990).

³Another standardization problem when analyzing expenditure data concerns how to adjust for inflation when making comparisons over time. See, for example, Beck (1985).

The expenditure category of general government was chosen to illustrate the statistical issues involved in computation of alternative expenditure-level measures. General government operating expenditures include 1) management and support expenditures (city administration, financial administration, and personnel administration) and 2) legislative expenditures (city council, attorney, clerk, and auditor).⁷ This category was chosen as an interesting example, since it encompasses the range of expenses for government overhead that presumably those virulently attacking "government fat" and "bureaucratic waste" may have in mind. Despite possible non-comparability problems in the data that make conclusions about specific cities problematic, these data facilitate investigating how much difference results from the choice of the statistical standardization procedure.

Alternative Measures of Government Overhead

The data were used to create three alternative measures of spending levels for government overhead. General government operating expenditures were standardized in three ways, yielding:

- 1) expenditures per capita
- 2) expenditures per \$1000 personal income
- 3) expenditures as a percent of all city expenditures

These three measures differ greatly in concept. The most commonly used type of measure, the per capita measure, seems of questionable conceptual merit in this case, since government overhead expenditures are not for direct services to the population.

⁷Management and support expenditures constitute about four-fifths of the total expenditures for general government.

Table 1

Intercorrelations Among Alternative Measures of Expenditures for Government Overhead

<u>Alternative Expenditure Measures</u>	<u>1</u>	<u>2</u>	<u>3</u>
1. Per Capita	--	.85	.41
2. Per \$1000 Personal Income	.92	--	.46
3. Percent Total Expenditures	.64	.68	--

Note: Numbers below the diagonal are correlations. Numbers above the diagonal are squared correlations.

Effect of Alternative Measures on Comparisons Among Cities

One possible effect of the choice of expenditure-level measures could occur when making comparisons among different cities--for example, attempting to identify cities that are big spenders. This study can investigate this effect by comparing the rank order for the ninety California cities on the three different expenditure measures. The rankings for the biggest spending cities remain almost the same using either expenditures per capita or expenditures per \$1000 personal income: the top ten cities on the per capita measure are all within the top eleven on the personal income measure. The rankings for expenditures based on percent of total expenditures, however, differ substantially: the top ten cities on the per capita measure rank as low as forty on the percent of total expenditures measure. In short, comparisons of the rankings of cities on the alternative measures confirm the findings from the previous correlation results. Although only small practical differences were found between the population standardized measure versus the income standardized measure, more dramatic differences resulted when using the measure standardized by total expenditures.

Examining the rankings for individual cities demonstrates the potential importance of the choice of measure for drawing conclusions about spending levels of specific jurisdictions. Even the population and income standardized measures can differ dramatically. For example, Newport Beach ranks twenty-one on general government expenditures per capita, but due to its

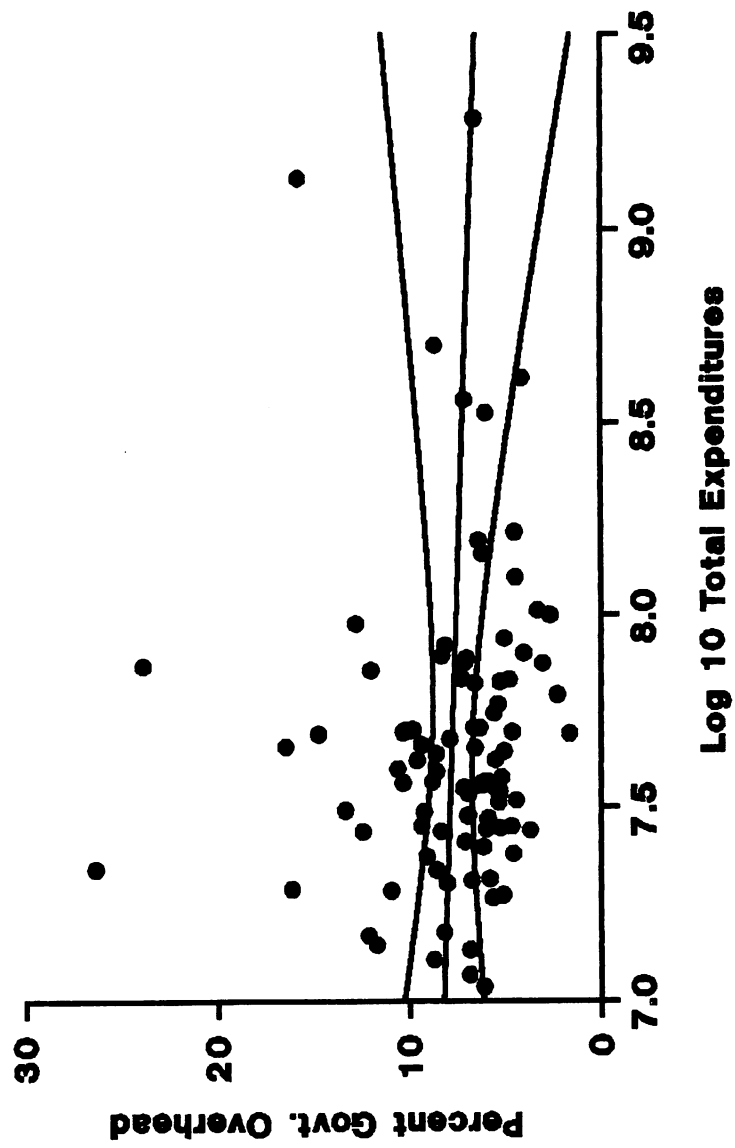
changes with size of the government. Especially for expenditures like government overhead one might expect larger jurisdictions to accrue greater efficiency. Using per capita expenditure statistics, Bernick (1990, 18) purports to show that government overhead for California cities over 50,000 population does not decrease, but indeed even increases, for larger cities. This serves as a good example for illustrating the potential impact the choice of measure can have on research.

Figure 1 graphically shows the relationship between the size of the government, as measured by total expenditures, and per capita government overhead. Besides showing the individual cities, the scatterplot also shows the regression line and the ninety-five percent confidence bands. The cities that appear as high-expenditure outliers are Santa Monica, cited by Bernick (1990) as an extravagant city, and San Francisco, unique as a combined city-county. Even removing these two outliers, Figure 1 shows a statistically significant positive relationship between government overhead expenses and size of the government.¹² Thus, Figure 1 seems to provide evidence that larger governments incur more, not less, government overhead.

Now contrast the findings shown in Figure 2. Figure 2 shows the relationship between total expenditures and government overhead expressed as the percent of all government expenditures. No evidence appears that expenses go up with size; indeed, overhead

¹²The t-statistic for the regression coefficient is 4.5 ($p < .001$) using all cities, and 2.6 ($p = .01$) without the two outliers.

Figure 2
Government Overhead % vs. Total Expenditures



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