Measuring the Fiscal Health of U.S. Cities

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Abstract

This paper uses a specially constructed data base on city finance that accounts for the revenues and spending of the constituent governments that provide public services in cities—municipal governments, school districts, counties, and special districts—to analyze the fiscal health of cities. This approach, called the Fiscally Standardized City (FiSC), permits comparisons of city finance between cities with widely different institutional structures. Fiscal health is defined in terms of the balance between expenditure needs and fiscal capacity. The expenditure need calculations are obtained from regressions of five separate categories of spending. The analysis allows us to identify variables that are likely to affect the cost of providing various public services. Our estimates of fiscal capacity of cities are based on the Representative Tax System approach. Our empirical analysis is based on a panel data set of 148 FiSCs for the years 2000 through 2014. We find that there are substantial differences in both the expenditure needs and fiscal capacity across cities and over time. When we put these two measures together to calculate overall fiscal health, we find wide variations across cities and between 2000 and 2014, with the variation in fiscal health across cities increasing between 2000 and 2014.

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Measuring the Fiscal Health of U.S. Cities

Introduction

As Richard Bird (2015) has argued, how one chooses to measure fiscal health of cities depends on the questions one wants to answer. Concerns about default risk, inadequate infrastructure investments, or poor public service provision all call for different measures of fiscal health. Some cities may be at high risk of bankruptcy even though they continue to provide their residents with an adequate level of public services at reasonable rates of taxation. Other cities may be at low risk of bankruptcy or default, but nevertheless fail, by almost any standard, to provide their residents with high quality public services. Unfortunately, examples abound: limited access to potable water in Flint; abysmally low high school graduation rates in Cleveland, San Bernardino, Philadelphia, and Atlanta; violent crime rates twice to three times the national average in Chicago, Los Angeles, Houston, and Tampa (Federal Bureau of Investigation 2016; National Center for Education Statistics 2017). Detroit is a rare example of a case where the failure to deliver core services coincided with financial insolvency and ultimately, bankruptcy. In general, we need different metrics to distinguish cities that are at risk of financial default on their long-term debt from cities that are unable to provide their citizens and businesses with reasonable levels of public services at affordable rates of local taxation.

In this paper, our goal is to develop a way to compare the fiscal ability of the nation's major central cities to provide their residents with public services at reasonable rates of taxation. Our general conceptual approach to the measurement of city fiscal health is to calculate each city's fiscal gap, which is defined as the difference between each city's expenditure needs and its revenue-raising capacity. Cities with the largest gaps are in the weakest fiscal health. Expenditure needs are defined as the minimum amount of money a local government requires to deliver a specified set of public services. Expenditure needs differ across cities because the costs of public service provision vary due to characteristics of each jurisdiction that are beyond the control of local public officials, such as the demographic and social composition of each jurisdiction and its physical characteristics. The revenue-raising capacity of cities depends on local governments' access to various tax instruments and the size of their respective tax bases.

This approach to the measurement of fiscal health is well known, not only in the academic literature, but as the foundation for intergovernmental grant formulas used to allocate transfers to local governments.[1] Fiscal gaps, measured in a number of different ways, provide the basis for formulas that countries throughout the world use to allocate intergovernmental grants (Reschovsky 2007). In the U.S., many state governments use fiscal gap formulas to allocate state education funds to their local school districts. Most of these formulas account for expenditure needs in a highly ad hoc manner. There exist, however, several studies of educational finance

1 A small theoretical literature addresses the various roles of horizontal equalization programs in dealing with fiscal imbalances attributable to the variation among local governments in their ability to raise revenues to finance the public services for which they are responsible (Boadway and Flatters 1982; Buchanan 1950, 1952; Flatters, Henderson, and Mieszkowski 1974).

that have involved the estimation of the expenditure needs and revenue-raising capacity of the public school districts (Duncombe and Yinger 1997, 2000; Imazeki and Reschovsky 2006).

The literature contains only a few empirical studies that have calculated fiscal gaps for general purpose local governments. Ladd and Yinger (1989) estimated the fiscal condition of 70 large American central city governments using data for 1982. The rest of the literature focuses on local governments in a single state. The fiscal gap estimates reported in Bradbury et al. (1984) provided the foundation for the allocation of "Additional Assistance" grants that were distributed by Massachusetts to its cities and towns for several years during the 1980s. Ladd, Reschovsky, and Yinger (1991) measured the fiscal conditions of local governments in Minnesota as part of an evaluation of Local Government Assistance grants in that state and Green and Reschovsky (1994) assessed the fiscal health of municipal governments in Wisconsin in order to evaluate Wisconsin's Shared Revenue grants to local governments. In an analysis of state aid in Massachusetts, Bradbury and Zhao (2009) developed a fiscal gap-based measure of the fiscal health of local governments in Massachusetts; Turley, Flannery, and McNena (2015) assessed the Irish system of general purpose grants to its local governments by estimating fiscal gaps for Irish local governments; Yan and Reschovsky (2019) estimated fiscal gaps for the municipal governments in Zhejiang Province, China; and Slack, Tassonyi, and Grad (2015) calculated fiscal gaps for the 30 largest municipalities in the Province of Ontario, Canada. Finally, in recent research, Gordon, Auxier, and Iselin (2016) have constructed fiscal gap measures for states as part of an effort to assess the distribution of federal grants among the states.

The major reason that there have been so few studies of the fiscal health of central cities in the U.S. is that the great diversity of governmental structures that one observes across cities has made it difficult to make valid cross-city comparisons of both city revenues and expenditures. The only centralized source of fiscal data for local governments across the U.S. is the U.S. Census Bureau, which provides annual detailed data on expenditures and revenues of local governments, measured in a consistent way. These data are provided separately for different types of governments, municipalities, independent school districts, county governments, and special districts. In some cities, municipal governments are responsible for providing a full array of public services, including public education, while in other cities, the municipal government shares the responsibility for providing services with several overlying independent governments. These different government structures are illustrated in figure 1, which compares per capita spending in Baltimore and Tampa using fiscal year 2014 data. Per capita municipal government spending is nearly three times higher in Baltimore than in Tampa. However, when one accounts for the fact that the municipal government in Baltimore is responsible for public education and for a range of services generally provided by county governments, while Tampa has an independent school district that provides public education and an overlying county government that serves the Tampa region, total per capita spending for public services within the boundaries of the two central cities is nearly identical.

To allow valid fiscal comparisons across central cities, the authors, along with Adam Langley of the Lincoln Institute of Land Policy, developed the concept of Fiscally Standardized Cities (FiSC). A FiSC is not an actual governmental body, rather it combines fiscal data from a central city's municipal government with a pro-rated share of both expenditures and revenues from all overlying governments. The results are detailed revenue and expenditure data that reflect the total revenues raised on behalf of central city residents and businesses and the public spending carried out on their behalf. For a detailed description of the methodology used to develop FiSCs, see Chernick, Langley, and Reschovsky (2015).

The FiSC data set contains detailed fiscal data for 150 large central cities. The starting point for choosing cities was to include all cities with 2010 populations in excess of 200,000 plus cities with populations of at least 150,000 in 1980, even if their populations in 2010 were below 200,000. To ensure that our data set included cities from each state, where necessary, we added cities so that our final database included the largest two cities in each state.[2] More details on the selection of the cities is provided in Langley (2016). In this paper, we will use data for the 15-year period from 2000 to 2014.

Our study of the fiscal condition of central cities has several advantages over prior work. To our knowledge, the only previous study of a national sample of central cities was conducted by Ladd and Yinger (1989). They focused explicitly on municipal governments and dealt with the issue of overlapping governments in a limited way. They adjusted their measure of revenue-raising capacity of cities for the capacity that was "used up" by overlying county governments and independent school districts. Our use of revenue and expenditure data of fiscally standardized cities allows for a much more complete accounting of the effects of overlying governments. All of the empirical literature cited above generates measures of fiscal health using cross-sectional analysis of a single year of data (or, in several cases, the average of data from several adjacent years). In our analysis, as we explain below, we exploit 15 years of data, allowing us to generate robust estimates of the expenditure needs of the 150 cities in our sample.

The next section provides an overview of the methodology we will use to measure both the expenditure needs and revenue-raising capacity of central cities. This is followed by a section that describes both the fiscal and non-fiscal data that we use in our study. We also provide a picture of the trends in per capita spending and revenue in the average FiSC. In the next section, we provide a detailed discussion of our empirical approach to estimating expenditure needs and summarize our results. This is followed by a section that describes the calculation of the revenue-raising capacity of each FiSC in our sample. We then use the results to calculate fiscal gaps for the central cities in our sample and discuss what we have learned about the fiscal health of these cities. In a concluding section, we discuss the next steps we propose to undertake in our effort to refine and improve the analysis.

2 These selection criteria resulted in a FiSC sample of 146 cities. To reach an even 150 cities, we added the four largest state capitals that would not have otherwise been in the FiSC sample (Hartford, CT; Salem, OR; Tallahassee, FL; and Topeka, KS). The FiSC sample contains no cities in Hawaii and in New Jersey because the largest cities in these states have state-administered school districts, making it impossible to allocate education revenues and expenditures to individual cities.

The Measurement of Fiscal Health

An underlying principle in the measurement of both expenditure needs and revenue-raising capacity is that to the extent possible, both measures should be independent of actual revenue and spending decisions taken by local government officials. As we will explain below, both the expenditure needs and revenue-raising capacity of individual cities depend on spending or public service norms and on tax effort norms. Because absolute measures of fiscal gaps will thus depend on the chosen norms, in this paper we develop measures of relative fiscal health that allow us to directly compare fiscal conditions across the nation's central cities.

Expenditure Needs

Expenditure needs are defined as the minimum amount of spending each city needs to do to provide a common level of public services. Actual spending may be either greater or less than expenditure needs. The expenditure needs of local governments will differ in part because of differences in the public services for which they are responsible. Because fiscally standardized cities (FiSCs) account for differences in service responsibilities by considering the services provided by overlying governments, differences in the expenditure needs of FiSCs are primarily due to variations in the costs of providing a standard level of public services.[3]

Factors that indicate differences in costs are defined as characteristics of a city that cannot be easily manipulated or controlled by local government officials. These cost factors reflect the environment in which local governments operate. They generally include the demographic and social composition of a municipality, physical characteristics of a community, and, for public services that are subject to substantial economies or diseconomies of scale, city population.

We define the per capita expenditure needs of FiSC$_i$ (EN$_i$) as

$$EN_i = \sum_j^N SR_{ij} * S_j * CI_{ij}. \quad (1)$$

We divide total spending in each FiSC into several functional categories, such as education, public safety, and transportation, represented by the subscript j. SR_{ij} is an indicator of whether public service j is the responsibility of local governments in $FiSC_i$. Because of the way FiSCs are constructed, in most cases, SR_{ij} takes a value of one. However, in a few cities, where FiSCs are not responsible for spending on health and social services and for spending on housing and community development, SR_{ij} is given a value of zero.

S_j is a measure of a "standard" level of per capita public service j within the U.S. For the purposes of this analysis, we will define the standard, S_j, as the average level of per capita

3 FiSC data cannot account for differences across states in the split of service responsibilities between state and local governments. While this is not a major issue, some differences across states in the assignment of functions do exist. For example, in several cities, including New York and Boston, state agencies are responsible for the provision of local public transportation, and thus transportation spending is not included in FiSC data. In other cities, transportation is provided by the city municipal government, or more commonly, by a special district devoted to transportation. In either case, transportation spending is included in FiSC data. For more detail on this issue, see Chernick (2017).

spending on public service j across all FiSCs. CI_{ij} is the value in local government i of a cost index for public service j. The values of the cost index indicate the minimum amount of money needed to provide public service j in FiSC i relative to the cost of delivering public services in a FiSC with average values of the statistically-identified cost factors. The steps involved in constructing cost indices are described below.

The major methodological challenge in determining the cost of public service provision is to disentangle data on actual spending into one portion that represents the costs of the service, another portion related to decisions of local governments on the quantity and quality of public services to provide, and a third portion reflecting efficiencies or inefficiencies in service provision in any one government in any particular city, relative to the average.

Because direct data on public service provision are not available, it is not possible to estimate true cost functions.[4] In this paper, we follow much of the literature and estimate reduced form expenditure equations as a means of identifying cost factors.[5] As with a cost function, the dependent variable in an expenditure equation is generally per capita expenditures on a particular local government service or group of services. Public sector efficiencies relative to the average, after taking account of cost differentials, are reflected in the regression residuals, with positive residuals reflecting inefficiency, and negative residuals reflecting relative efficiency.

The estimated coefficients from an expenditure function can be used to construct a cost index. The basic idea is to calculate for each FiSC the level of "hypothetical" per capita spending on each expenditure function, e.g., education, based on the actual values of the cost factors and the average values of a set of "control" variables that reflect factors that are unrelated to costs, but that influence the level of per capita spending. Examples of control variables include measures of the tax base of each city, the receipt of intergovernmental aid, and explicit public sector demand or preference variables. To construct a cost index value for each FiSC, we divide each FiSC's hypothetical spending on each function by average per capita spending on that function across all FiSCs. The expenditure needs of each FiSC will then be calculated using equation 1.

Revenue-Raising Capacity

The revenue-raising capacity (RRC) of a local government can be defined as the amount of revenue the government could raise from its own resources if it taxes those resources at a "standard" rate. The foundation for any measure of revenue-raising capacity is the economic base of each local government. The existence of any tax base, whether it be the income of residents, business profits, wealth, consumption expenditures, or the value of real property, does not automatically confer revenue-raising capacity on a local jurisdiction. As emphasized by Ladd

4 Using data on student performance on standardized tests, Duncombe and Yinger (1997, 2000), and Imazeki and Reschovsky (2006) estimated cost functions for public educations and used the results to calculate the expenditure needs of individual school districts.

5 See Bandyopadhyay and Rao (2008), Bradbury et al. (1984), Ladd, Reschovsky, and Yinger (1992), Green and Reschovsky (1994), Turley, Flannery, and McNena (2015), and Chernick and Reschovsky (2015) for examples of empirical studies of municipal fiscal health that were based on cost indices generated from the estimation of expenditure functions.

and Yinger (1989) and by Hoene and Pagano (2010), the actual capacity to raise revenue depends on the ability of local governments to have access to various tax and revenue instruments. In most U.S. states, the revenue instruments available to local governments are determined by state government statute. We return to the distinction between actual and potential revenue-raising capacity below.

One quite standard way of measuring the revenue-raising capacity of local governments is to calculate the maximum amount of revenue each local government could raise if it imposed a set of "standard" tax rates on a "standard" set of tax bases. In order to have a valid measure of revenue capacity, the definition of each tax base should be defined by a higher level of government, namely the state government. In other words, local governments should not be able to influence the size of its tax bases. This approach to measuring revenue-raising capacity is known as the *representative tax system* (RTS). The standard tax bases include all the taxes or other revenue sources used by local governments. The "standard" tax rates can be set equal to the average rates utilized by all local governments in FiSCs, or an alternative percentile standard. In general terms, capacity in local government i is defined as the weighted sum of *N* potential tax bases, where the weight for each base j is the standard tax rate t^*_j for tax j.[6]

$$RRC_i = \sum t^*_j \, BASE_{ij} \qquad (2)$$

According to equation 2, the actual revenue collected by local government i could be above or below i's revenue-raising capacity if the tax rate used by local governments i was either greater than or less than t*. In addition to taxes, local governments also raise revenues from user fees and charges, licenses, permits, and fines. Measuring the capacity for raising revenues from these sources is problematic on both conceptual and empirical grounds. We follow the lead of previous researchers and add to our revenue-raising capacity measure the actual revenues from these non-tax sources of own-source revenue. In general, state governments often limit the ability of local governments to utilize non-tax local revenue instruments. In addition, they generally mandate that revenue from user charges cannot exceed the costs of providing the services on which the charges are being levied. These limits to local revenue autonomy help justify the inclusion of actual non-tax revenue in a revenue-capacity measure.

A distinction can be made between potential and actual tax bases. Potential tax bases would include the set of all tax bases used in at least some FiSCs. In that way, the RRC of all FiSCs would include the property tax base, the sales tax base, and the personal and corporate income tax bases. A more realistic definition of RRC takes account of the fact that many local governments are restricted by their state government in their choice of tax bases. For example, in Massachusetts, cities have no access to general sales or income taxes. Thus, actual RRC can be measured by including in equation 2 only those tax bases allowed by the state government in which each FiSC is located.

6 For a detailed discussion of the measurement of revenue-raising capacity see Chernick (1998).

Fiscal Gaps

Our primary goal in this project is to develop a measure of the relative fiscal health of FiSCs. Both expenditure needs and revenue-raising capacity are calculated on the basis of policy "norms." We define these norms as average per capita spending in FiSCs and average tax rates of FiSCs. The absolute value of fiscal gaps is a function of how these "standards" are defined, rather than as a statement about the appropriateness of the current level of spending and revenue effort in U.S. central cities.

In order to have a complete picture of the fiscal condition of FiSCs, we must account for the fact that all FiSCs are the recipients of grants received from the federal government and from their respective state governments. We thus define the relative fiscal condition of FiSCs as the difference (or gap) between relative expenditure needs and the sum of relative revenue-raising capacity and intergovernmental transfers. To construct a relative measure of fiscal health, we normalize our gaps by subtracting from each component of the gap its average value among all FiSCs. In equation 3, Tr_i represents the per capita value of federal and state transfers (grants) to local governments in FiSC i. The terms with bars refer to average values across all FiSCs.

$$Gap_i = (EN_i - \overline{EN}) - (RRC_i - \overline{RRC}) - (Tr_i - \overline{Tr}) \quad (3)$$

Data

Our analysis is conducted for 150 FiSCs. With a few exceptions, these cities include the largest central cities in the U.S. and, for states without a large central city, the two largest cities in that state. The fiscal data for each FiSC are constructed based on data from the individual units of government files compiled by the U.S. Census Bureau as part of their Annual Survey of State and Local Government Finances.

Figure 2 provides an overview of the average pattern of real per capita spending in the 150 FiSCs between 2000 and 2015. The figure illustrates the annual percentage change in average real per capita spending relative to per capita spending in 2000. The lines in the graph represent both total spending and spending in the major expenditure categories. The data show that on average, spending grew until 2009 and then fell until 2013. While total spending grew between 2013 and 2015, it remained substantially below its 2009 peak level. Spending on education grew at a slower rate than other categories of spending and then fell at a faster rate. Although spending on public safety and health and human services both fell after the Great Recession, in 2015 real per capita spending in these two categories averaged about 20 percent higher than spending in 2000. This contrasts with spending on education and on government administration and general government, which in 2015 were on average are only about 7 percent above their levels in 2000.

Figure 3 shows the average pattern of real per capita general revenue in the 149 FiSCs. (Washington, DC is excluded because it doesn't receive any state aid). The graph clearly illustrates the impact of the Great Recession. The two most important sources of local government revenue, the property tax and state aid, both declined after the recession, and in 2015 were only slightly higher than they were in 2000, 3 percent higher in the case of state aid and 14 percent higher for the property tax.[7] The figure shows very clearly the impact of the federal stimulus package enacted by Congress in 2009 (the American Recovery and Reinvestment Act). Federal aid to local governments rose sharply from 2009 to 2011, but has been falling steadily since then. Only revenue from user fees has risen steadily over the 15-year period.

The data in both figures 2 and 3 represent averages across all 150 FiSCs. Needless to say, a great deal of variation exists among cities in both revenue and expenditures. Table 1 presents standard summary statistics for the latest year of data (2014). The top portion of the table lists per capita current (operating) expenditures and eight functional categories of spending. In most cases, the standard deviations are at least a third of the mean values. As a measure of the potential per capita tax bases, the table also lists the per capita market value property, total retail sales per capita, and the per capita income of persons 15 years and older. The data on the market value of property were collected from the Consolidated Annual Fiscal Reports (CAFRs) of each city. In cases where those data were not reported in CAFRs, we followed up with queries to individual cities. The retail sales data come from the once every five-year economic censuses conducted by the U.S. Census Bureau. Because the latest available census data are for 2012, we imputed 2013 and 2014 values of retail sales by increasing 2012 values by the real rate of growth of retail sales based on national data from the Census Bureau's Annual Retail Trade Survey (ARTS). Data on per capita incomes are from the Census Bureau's American Community Surveys.

The bottom portion of table 1 provides summary statistics for a set of variables that we use in estimating expenditure functions as part of the process of determining the expenditure needs of FiSCs. The data come from the U.S. Census Bureau. Individual variables will be discussed in the next section of the paper when we describe the expenditure regressions.

Estimating Expenditure Needs

In this section of the paper, we describe the expenditure functions that we estimate and then explain in detail how we employ the results to first construct cost indices, and then use these indices to calculate the expenditure needs of FiSCs. As discussed in the previous sections, we estimate separate expenditure functions for spending on the major functions of the local governments operating in FiSCs. This disaggregated approach should allow more accurate identification of the cost factors that influence spending levels on various government functions. We use annual data covering the period between 2000 and 2014 in the estimation of expenditure functions. Because the error terms for each spending equation are likely to be correlated within cities in any given year, we use the method of seemingly unrelated regressions to take account of this error dependence.

Using the estimated coefficients from these regressions, we calculate cost indices and expenditure needs for the years 2000 and 2014. Table 2 shows the expenditure function regressions for five categories of current spending: K-12 education; public safety; health and human services; environment; natural resources and transportation; and government

7 Chernick and Reschovsky (2017) explore in detail the relationships between changes in own-source revenues and intergovernmental revenues in the post-Great Recession period.

administration, general government, and debt service. Except for education, all dependent variables are measured in real per capita terms. The education dependent variable is real education expenditures per school-aged child. Because of relatively high rates of absenteeism and truancy in city schools, school-age population provides a better measure of school "workload" than official enrollment data.

The cost factors identified in the education equation (column 1 of table 2) are school-age population (measured in logs and entered as a quadratic), an index of comparable wages, the percent of households that are female headed, the percent of housing units built prior to 1939, the percent of population who are Hispanic, and an indicator variable for independent school districts. Per pupil property values are included as a control variable. Consistent with previous literature on the costs of education, we find a U-shaped relationship between expenditures. Scale economies are present for cities that have below 130,000 school-age children. There are, however, diseconomies of scale for larger cities.

The cost of living in different parts of the country is an important factor in explaining spatial differences in wages. An exogenous measure of wage differences across cities is provided by a Comparable Wage Index (CWI) originally developed for the National Center for Education Statistics (NCES) by Lori Taylor. The index measures "the systematic, regional variations in the salaries of college graduates who are not educators" (Taylor and Glander 2006). Using her original methodology, Taylor has updated this index on an annual basis through 2014. The results can be found at https://bush.tamu.edu/research/faculty/Taylor_CWI/.

There is ample evidence from previous research that it is more expensive to educate children raised in economically disadvantaged families and students who have limited English language ability. Consistent with this literature, both the percentage of female-headed households and the percentage of the population who are Hispanic are positive and statistically significant. For many school districts, the largest non-personnel costs are for the upkeep and maintenance of school facilities. These costs generally rise with the age of the facilities. Although we have no data on the age of school buildings, the age of school facilities is likely to parallel the age of residential buildings in each city. Consistent with this hypothesis, the percentage of housing units built prior to 1939 is positive and statistically significant. The final cost factor in the education equation is the independent school district indicator, which is statistically significant with a negative sign, indicating higher costs in dependent school districts. This result probably reflects the fact that on average, cities with dependent school districts are larger than average cities with independent districts and have higher costs for a set of reasons not fully captured by the other cost factors.

Cost factors identified in the public safety regression (column 2 of table 2) are the comparative wage index, the percent of female-headed households, the percent of the population who are Hispanic, and the ratio of urbanized area population to city population. Demand or preference variables include two demographic variables—the percent of population age 65 or over and the percent of population from ages 5 through 17. Control variables are property values per capita and general-purpose state aid per capita.

The ratio of urban population to city population is a proxy for the number of commuters and other visitors to the city relative to the city population. We hypothesize that commuters and other city visitors raise the costs to the city for providing a range of public services, particularly the costs of public safety, transportation and street maintenance, and sanitation. Perhaps because of increased feelings of vulnerability, the elderly tend to prefer higher spending on public safety.

Statistically significant cost factors in the health and human services regression (column 3 of table 2) are the percent of housing built prior to 1939, the percent of population who are Hispanic, the percent who are age 65 or older, population density, and the poverty rate. The preference factor is the percent with a BA or a higher degree, and control variables are per capita property values and state aid per capita for health and welfare. Cost factors in the broad spending category that includes environment and natural resources, transportation, housing and community development, and sewage and sanitation (column 4 of table 2) are the ratio of urban area to city population, population density, and the average annual snowfall (measured in inches). Control variables include the per capita market value of property and per capita state and federal aid.

Statistically significant cost factors in the government administration regression (column 5 of table 2) are the comparative wage index, the percent of female-headed households, the percent of housing units built prior to 1939, the percent of the population from ages 5 through 17 and the percent age 65 and older, the ratio of urban area to city population, and the land area of the city.

A cost index tells us how much more or less it costs the governments in a particular FiSC to provide a standard level of public services compared to governments that face average costs. The expenditure function regression coefficients allow us to quantify the magnitude of the contribution of each cost factor to the overall costs of providing a standard level of public services. As described previously, the value of the cost index in $FiSC_i$ is its hypothetical spending on function j divided by spending on j in a FiSC with average costs. The hypothetical spending in city i is calculated by multiplying the coefficients of the cost factors by the cost factor values in i and multiplying the coefficients on the control variables by the average value of these variables.

A useful way to illustrate the relationship between the regression results and the calculation of cost indices is to draw on the fact that hypothetical spending can be expressed as average per capita spending across all FiSCs plus the sum of contributions to spending in each FiSC by each cost factor. The contributions of each cost factor (positive or negative) to spending are defined as the regression coefficient of each cost factor times the difference between the value of the cost factor in a given FiSC and the average value of the cost factor.

Table 3 illustrates the construction of cost indices for public education for five cities: Boston, Bridgeport, Philadelphia, Phoenix, and San Francisco. As shown in the cost index row, costs in Bridgeport are 34 percent above average, while in Phoenix costs are nearly 16 percent below average. In Bridgeport, all five cost factors are above average. In Phoenix, an above average percent Hispanic contributes to higher costs, but this factor is outweighed by three other cost factors—population size, percent female-headed households, and the percent of housing units built before 1939, which are all below average. In San Francisco, the percent Hispanic, the percent of female-headed households, and the population size all contribute to lower costs, but these three factors are all outweighed by the high cost of living (as measured by the comparative wage index).[8]

In table 4, we provide summary information on the cost indices for each of our five expenditure categories. Cost index values vary substantially across the 148 municipalities. Measured by the standard deviation (in this case, equal to the coefficient of variation), the variation in cost indices is largest for general administration and health and social services, and smallest for environment and transportation and education (per student). The bottom panel lists cost index values for the five FiSCs in table 3 plus Cleveland and Nashville. The cost indices obviously vary across cities, but they also vary by type of expenditure. For example, in Philadelphia costs for general administration and public safety are quite high but cost for environment and transportation are below average.

Using our calculated cost indices, we calculate expenditure needs separately for each of the five expenditure categories, and then to add up the results to obtain a single estimate of each municipal government's expenditure needs. Following equation 1, for each category of expenditures j, we start by defining S_j as the average per capita level of spending in 2000 (see table 5) and in 2014 (see table 6). For each spending category other than education, we calculate expenditure needs for each municipality by multiplying S_j and the value of its appropriate cost index. For education, we also multiply the product of S_j and the cost index by a service responsibility index—namely, the school age children/population ratio relative to the FiSC average ratio.

Tables 5 and 6 provide descriptive statistics for expenditure needs for the five expenditure categories and in the last column, for total expenditures. Per capita expenditure needs grew from $3,651 in 2000 to $3,945 in 2014. The coefficient of variation was somewhat smaller in 2014 – 0.146 compared to 0.164 in 2000. Among the seven FiSCs listed in the bottom panel of table 6, expenditure needs varied from $3,409 in Nashville to $5,589 in Bridgeport.

Calculating Revenue-Raising Capacity

To implement the representative tax system approach to the measurement of the own-source revenue-raising capacity of the cities in our sample, we gathered data on the tax bases of the three major sources of tax revenue of local governments in the U.S.—the property tax, the general sales tax, and the income tax. Together these three taxes account for about 90 percent of all tax revenues collected by local governments in the United States. The base of the property tax is the market value of real property within each city. In most cases, these data are available directly from city CAFRs. When market values were not included in CAFRs, we were able to obtain appropriate data from city officials, with the exception of Gary, Indiana.

Our first measure of own-source revenue-raising capacity is a measure of potential capacity. It is a representative tax system (RTS) measure calculated on the assumption that all cities have the

8 Note that in table 3, the sum of the total contributions of cost factors and average spending are equal to hypothetical spending, and that the cost index is defined as the ratio of hypothetical spending to average spending.

potential to access all three tax bases. The capacity measure also includes the actual revenue from user charges. We use as weights in our RTS measure the average tax rate among all FiSCs that utilize each tax base. As accurate tax rate data are not available, for each tax base we calculate the tax rate in each FiSC as the revenue raised from that tax divided by the tax base. Thus, for example, the sales tax rate for each FiSC is calculated as sales tax revenue in each city divided by retail sales.

Our second measure of own-source revenue-raising capacity is closer to an actual capacity measure in that it only includes sales and income tax components for FiSCs using those taxes. A general sales tax is collected by at least one type of government in 112 of the 150 FiSCs, while an individual income tax is utilized in only 25 of the FiSCs. As with our first capacity measure, the weights of each tax base are the average tax rates of FiSCs using each tax, with the rates calculated as actual tax revenue divided by the tax base of each tax. It should be emphasized that in the case of the sales and income taxes, the tax base measures we use are not the actual tax bases. Thus, our sales tax base measure, total retail sales, includes the sale of many goods and services that are exempt from sales taxation in many states. On the other hand, states generally collect sales taxes on at least a portion of purchases made by businesses. These taxable sales are by definition not included in the Census Bureau definition of retail sales.

Summary statistics for our two tax capacity measures are presented in tables 7 and 8. By construction, average potential tax capacity is larger than actual tax capacity, although differences in capacity, measured by the coefficient of variation, are larger for the actual tax capacity measure. Between 2000 and 2014, both real average tax capacity and the variation across cities grew. The coefficient of variation for potential capacity was 0.263 in 2000 and 0.308 in 2014. The bottom panel of both tables 7 and 8 shows tax capacity for eight selected cities. The difference between potential and actual tax capacity is quite large in Boston because local governments in Massachusetts are prohibited from levying general sales or income taxes. In contrast, in Cleveland and Philadelphia, which use all three major sources of tax revenue, actual tax capacity equals potential capacity.

The first two columns of tables 9 and 10 present descriptive statistics for own-source revenue-raising capacity, which is calculated by adding per capita revenue from user charges and fees to tax capacity. The third column shows per capita revenue from state and federal intergovernmental grants and the fourth column displays the sum of actual own-source revenue capacity and grants. Both own-source revenue capacity and state and federal per capita grants are unequally distributed across the 148 FiSCs. There is a weak negative correlation between actual own-source revenue-raising capacity and transfers (r = -0.091). On the whole, transfers are equalizing in the sense that the coefficient of variation of post-transfer revenue-raising capacity is lower than the coefficient of variation of own-source revenue-raising capacity—in 2014, 0.272 compared to 0.359.

It is interesting to compare Boston and San Francisco. In both cities, potential and actual tax capacity grew rapidly between 2000 and 2014. In Boston, at least partially in response to this growth in capacity, real per capita intergovernmental transfers declined by 19 percent from 2000 to 2014. In San Francisco, however, per capita transfers grew by 67 percent over this period, resulting in an exceptionally large increase in San Francisco's total revenue-raising capacity.

The Calculation of Relative Fiscal Gaps

To determine the relative fiscal health of the 148 FiSCs in our sample, we follow equation 3 and calculate the value of expenditure needs, own-source revenue-raising capacity, and intergovernmental transfers relative to their respective mean values. We calculate fiscal gaps in two ways using our two measures of tax capacity—potential and actual. The results of these calculations for 2000 and 2014 are presented in tables 11 and 12, respectively.

By construction, the average value of the two fiscal gap measures is zero. The statistics on the standard deviation and range of gaps demonstrate clearly the large variation that exists in the fiscal health of American central cities. Note that the larger the value of the fiscal gap, the weaker the fiscal health of the FiSC. FiSCs with negative gaps are in better fiscal health than the average FiSC. A large positive gap indicates that the exogenously determined expenditure needs of a city exceed its revenue-raising capacity supplemented by its actual receipt of grants from its state and the federal government by an above-average amount.

Comparing tables 11 and 12 shows that fiscal disparities among the 148 FiSCs in our sample, as measured by the variation in relative fiscal gaps, grew between 2000 and 2014. The bottom panel of both tables displays the relative fiscal gaps of seven cities. In relative terms, the fiscal health of Nashville and Phoenix worsened between 2000 and 2014. Note that they moved from above-average to below average fiscal health during this period. On the other hand, Boston and San Francisco, both of which were in relatively strong fiscal health in 2000, appear to have grown fiscally stronger by 2014. Table 13 lists the 10 FiSCs with the largest reductions in fiscal health (measured by relative fiscal gaps) and the 10 FiSCs with the largest improvements in fiscal health.

Conclusions

This paper describes a methodology for measuring the fiscal health of cities and presents empirical results for 148 large American central cities. Fiscal health is defined in terms of the balance between expenditure needs and fiscal capacity. The unit of analysis is the fiscally standardized city (FiSC), which includes all local governments that provide services to city residents and businesses. By including the revenues and spending of all the constituent governmental units that provide services to and exact revenues from central cities, our goal is to be able to provide a more comprehensive measures of fiscal health, both over time and across cities. Our analysis is based on a panel data set from 2000 through 2014. We find that there are substantial differences in both expenditure needs and fiscal capacity across cities and over time. When we put these two measures together to calculate overall fiscal health, there are wide variations across cities and between 2000 and 2014.

The expenditure need calculations are obtained from regressions of five separate categories of spending. The analysis allows us to identify variables that are likely to affect the cost of providing various public services. An example is the ratio of the urbanized area population to the city population. We expected this variable, which proxies for suburban commuters entering central cities, to have a positive effect on spending, and the regression analysis supports this hypothesis.

We have calculated fiscal capacity using two versions of the representative tax system approach. The first applies average tax rates to the three major tax bases used by cities: real property, retail sales, and personal income. While all FiSCs use the local property tax, and most have some form of sales tax, relatively few cities have local income taxes. The second approach to the measurement of fiscal capacity applies average rates only to those tax bases that the FiSCs actually tax.

In future work, we will explore how fiscal health has changed over time, and the factors that influence any such changes. The time series data on the size of the various tax bases will be used to determine factors that affect the change in tax bases. In particular, we are interested in whether differences in contemporary spending levels, both overall and by function, can be shown to have a measurable effect on the growth in city tax bases. Our unique data set should allow a more comprehensive analysis of these potential effects than was possible in prior studies.

We plan to use our measures of fiscal health to investigate in depth the relationship between fiscal health and state and federal grants. We also plan to examine the role of tax and expenditure limitations and government structure on the fiscal health of cities. For example, do cities benefit from being able to share responsibility for spending and revenue raising with counties, school districts, and special districts? We will also exploit the panel nature of our data to examine the consequence of poor fiscal health by analyzing the relationship between initial period fiscal health and growth in tax capacity and revenues, and expenditure need and spending, as well as population, between 2000 and 2014.

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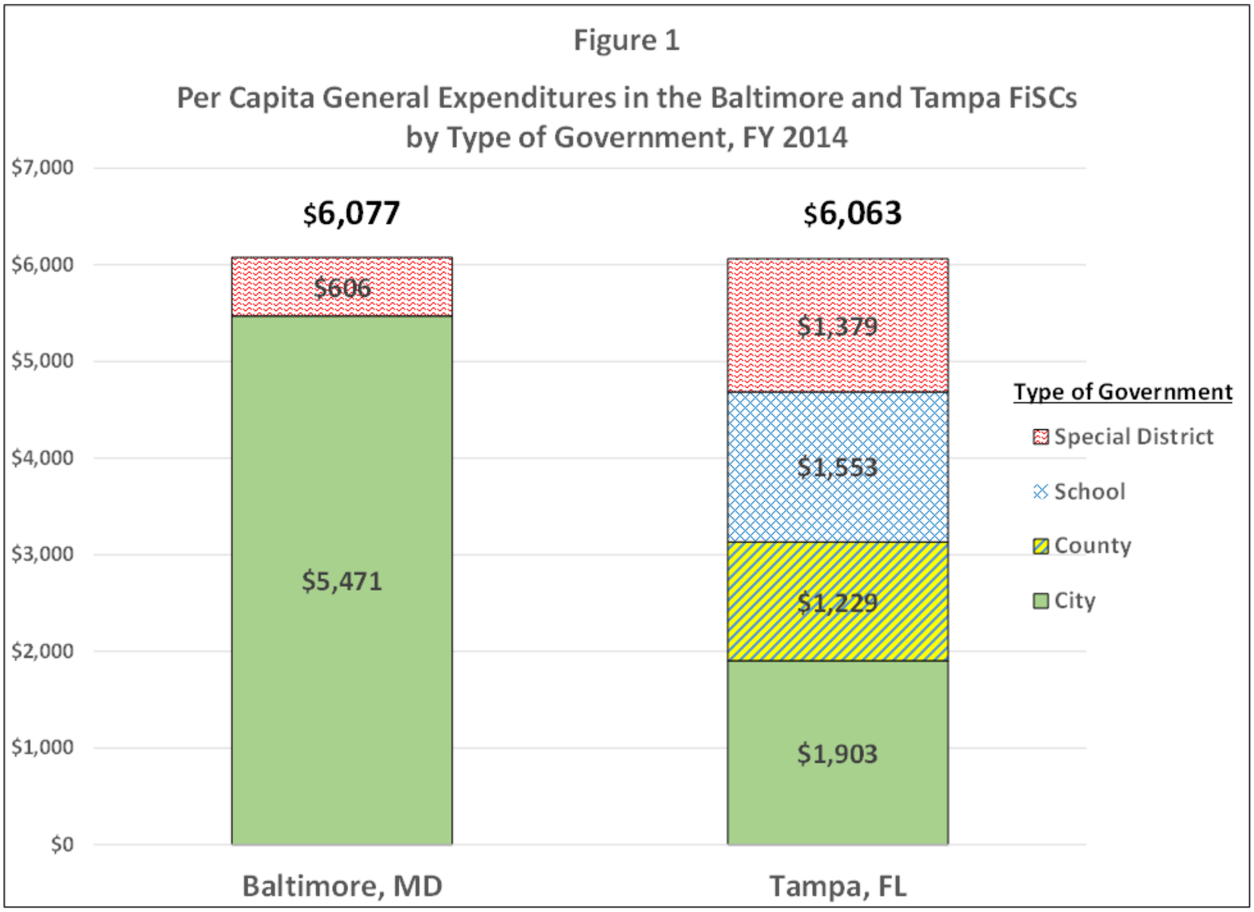
Figures and Tables



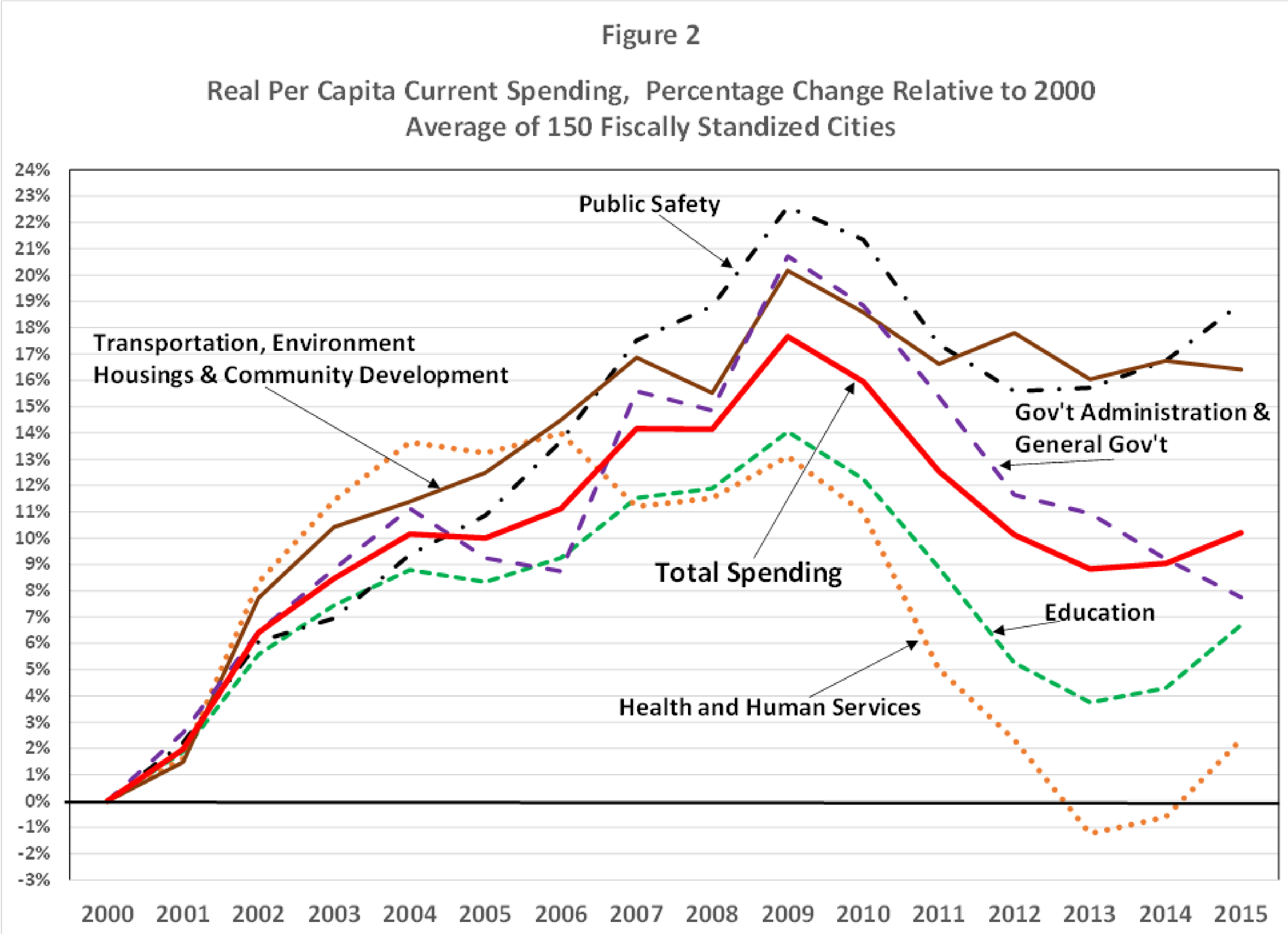


Figure 2
Real Per Capita Current Spending, Percentage Change Relative to 2000
Average of 150 Fiscally Standized Cities
24%
23%
22%
21%
20%
19%
18%
17%
16%
15%
14%
13%
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
-1%
-2%
-3%
Public Safety
Transportation, Environment
Housings & Community Development
Gov't Administration &
General Gov't
Total Spending
Education
Health and Human Services
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

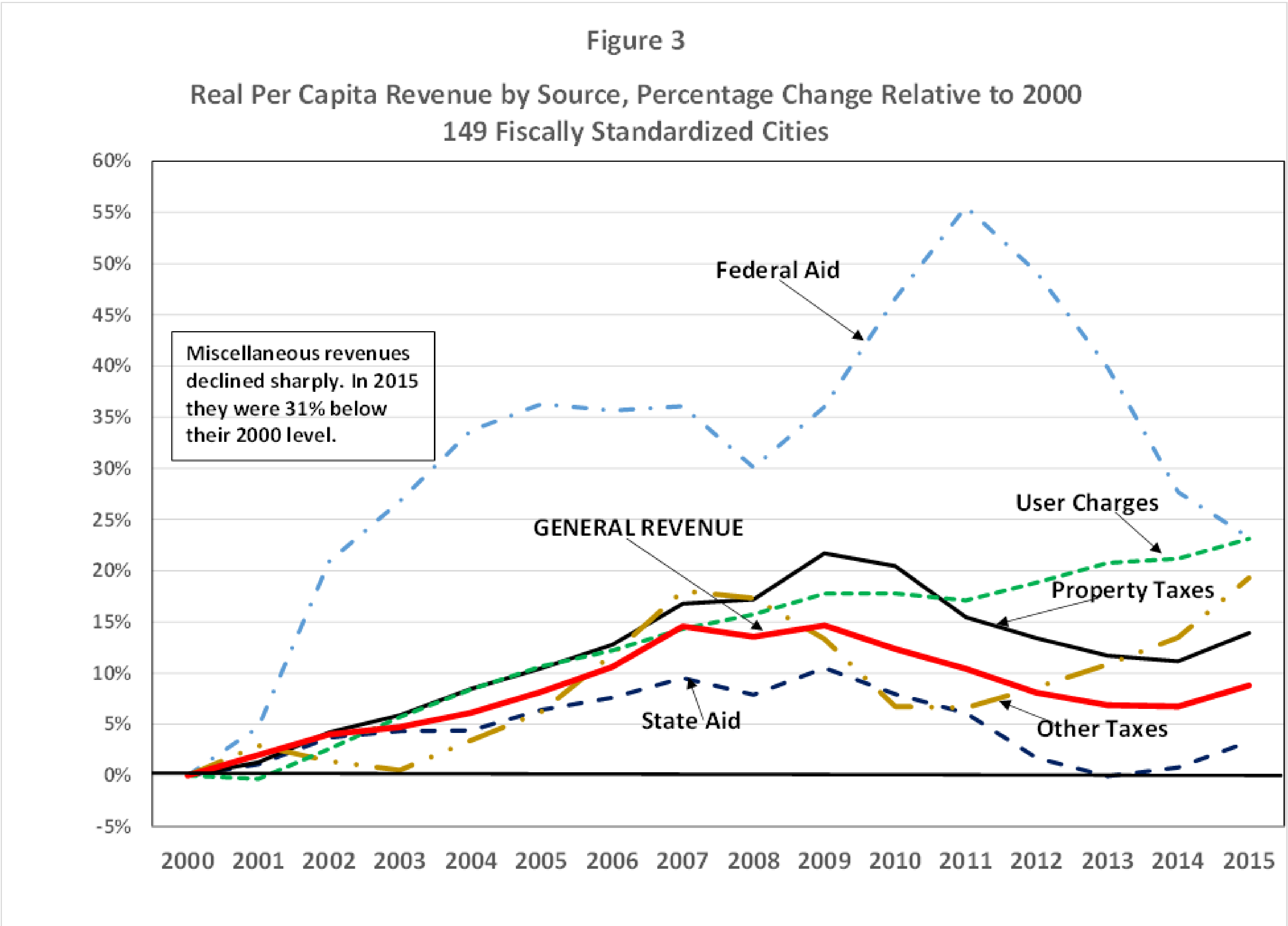


Figure 3
Real Per Capita Revenue by Source, Percentage Change Relative to 2000
149 Fiscally Standardized Cities
Miscellaneous revenues declined sharply. In 2015 they were 31% below their 2000 level.
Federal Aid
User Charges
GENERAL REVENUE
Property Taxes
State Aid
Other Taxes
60%
55%
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
-5%
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

Table 1

Summary Statistics, 148 FiSCs, 2014

Variables	Mean	Standard Deviation	Minimum	Maximum
Current Expenditure by Function				
Education per School Age Child	$12,808	$4,360	$3,561	$27,499
Health and Social Services Per Capita	526	727	0	5,150
Public Safety Per Capita	648	189	292	1,258
Environment, Natural Resources, Transportation, Housing and Community Development Per Capita	360	164	112	1,108
Government Administration, General Government and Debt Service Per Capita	785	392	291	2,531
Total Current Expenditures Per Capita	$4,052	$1,136	$1,888	$7,646
Per Capita Tax Base				
Market Value of Property	$76,326	$34,025	$12,032	$196,119
Total Sales	16,644	7,886	4,897	64,738
Income of persons 15 years and over	53,861	12,694	27,160	106,861
Cost Factors and Control Variables				
City Population	450,564	818,586	16,116	8,436,047
Population Density	4,043	3,487	177	27,807
Population of School Age (5-17 years)	55,715	95,692	1,595	953,273
Percent of Female-Headed Households	15.8%	4.6%	6.7%	30.4%
Percent of Population 65 and Over	12.3%	2.4%	6.1%	19.6%
Percent Hispanics	19.3%	18.4%	1.3%	96.3%
Poverty Rate	21.0%	6.5%	6.1%	41.2%
Percent with BA Degree or Higher	31.1%	9.5%	11.2%	58.9%
Percent of Housing Units Built Prior to 1939	18.2%	16.4%	0.4%	64.2%
Urbanized Area Population/City Population, 2010	0.032	0.024	0.873	0.140
Indicator Variable: Independent School District	0.777	0.418	0	1
Comparable Wage Index	0.998	0.099	0.801	1.334
Average Annual Snowfall, in Inches	24.0	29.4	0.0	212.0
Land Area in Square Miles	139.1	186.9	7.6	376.7
Per Capita State Aid, General Support	$124	$157	$0	$787
Per Capita State Aid, Health	$663	$95	$0	$516
Per Capita State Aid, Welfare	$124	$226	$0	$1,149
Per Capita State Aid, Sewers	$7	$26	$0	$172
Per Capita State Aid, Water Supply	$1	$9	-$2	$100
Per Capita Federal Aid, Natural Resources	$5	$57	-$1	$691
Per Capita Federal Aid, Other	$34	$46	$0	$377

Table 2

Expenditure Function Regressions for Per Capita Current Operating Spending
148 Fiscally Standardized Cities, 2000-2014

	Education (per child)	**Public Safety**	**Health & Human Services**	**Environment Transportation**	**Government Administration**
	(1)	(2)	(3)	(4)	(5)
Per pupil property value	0.00141 ***				
	(7.58)				
Comparable Wage Index	3,591.4 ***	547.9 ***	-150.5		1003.9 ***
	(5.89)	(15.20)	(0.91)		(14.90)
ln school age population	-5,345.3 ***				
	(8.71)				
ln school age population squared	222.6 ***				
	(7.80)				
Percent female-headed households	8,604.5 ***	1,417.6 ***			1340.8 ***
	(6.55)	(17.03)			(8.70)
Percent of Housing Units Built Prior to 1939	7,403.8 ***		-578.7 ***		544.5 ***
	(22.38)		(6.27)		(13.56)
Percent of Population, Hispanics	2,149.0 ***	11.69	-339.5 ***		
	(7.04)	(0.59)	(4.18)		
Independent school district	-1,952.8 ***				
	(15.73)				
Per capita property value		0.00137 ***	0.00286 ***	0.00112 ***	0.000887 ***
		(12.07)	(6.39)	(13.73)	(4.38)
Percent 65 and older		537.8 ***	1,930.1 ***		755.7 **
		(3.82)	(3.80)		(2.94)
Percent ages 5 to 17		-932.1 ***			-2024.4 ***
		(6.62)			(7.95)
Per capita state aid, general support		0.179 ***		0.0799 ***	0.169 ***
		(9.17)		(4.57)	(4.84)
Urbanized Area Population/City Population		24.6 ***		21.19 ***	14.72 ***
		(15.73)		(16.45)	(5.30)
Population density			0.0154 **	-0.00284 **	
			(2.82)	(3.22)	
Per capita state aid, health			0.846 ***		
			(6.61)		
Per capita state aid, welfare			1.486 ***		
			(23.42)		
Poverty rate			989.0 ***		
			(4.7)		
Percent with BA or higher degree			-1,120.0 ***		
			(6.61)		
Average annual snowfall, in inches				-0.403 ***	
				(4.20)	
Per capita federal aid, natural resources				0.148 *	
				(2.27)	
Per capita state aid, sewers				0.276	
				(1.92)	
Per capita state aid, water				2.596 ***	
				(4.92)	

Table continued

Table 2 (cont.)

Expenditure Function Regressions for Per Capita Current Operating Spending
148 Fiscally Standardized Cities, 2000-2014

	Education (per child)	**Public Safety**	**Health & Human Services**	**Environment Transportation**	**Government Administration**
	(1)	(2)	(3)	(4)	(5)
Ln city population					131.9
					(1.43)
Ln city population squared					-2.394
					(0.65)
Land area in square miles					-0.121 ***
					(3.33)
Per capita federal aid, other					0.662
					(8.24)
Constant	35,604.2 ***	-259.4 ***	203.0	204.9 ***	1,704.8 **
	(10.86)	(5.39)	(1.02)	(23.98)	(2.88)
Number of Observations	2,220	2,220	2,220	2,220	2,220
Adjusted R-squared	0.475	0.481	0.367	0.227	0.483

Notes: t statistics in parentheses. *p<0.1, **p<0.05, ***p<0.01
All regressions estimated for 148 FiSCs, years: 2000-2014.
Column 3: Health and social services exludes local government spending on hospitals.
Column 4: Environment and Transportation also includes spending on sewage, sanitation, natural resources, housing and community development.
Column 5: Government administration also includes spending on general government and on debt service.

Table 3

Calculation of Education Cost Indices for Selected FiSCs

	Regression Coefficients	**Contribution of Cost Factors+**				
		Boston	**Bridgeport**	**Philadelphia**	**Phoenix**	**San Francisco**
Cost Factors						
Comparable wage index	3,591.4	$571	$963	$373	$1	$1,081
Percent Hispanic	2,149.0	-$14	$397	-$131	$456	-$55
Percent female-headed households	8,604.5	$102	$784	$492	-$126	-$610
Ln school age population	-5,345.3	-$3,191	$2,359	-$9,728	-$10,302	-$2,877
Ln school age population squared	222.6	$2,678	-$2,256	$9,105	$9,699	$2,385
Percent of housing built before 1939	7,403.8	$2,765	$1,269	$1,617	-$1,230	$2,358
Total contribution of cost factors		$2,912	$3,516	$1,727	-$1,503	$2,282
*Hypothetical spending**		$12,894	$13,498	$11,709	$8,479	$12,264
Average Education per pupil spending		$10,070	$10,070	$10,070	$10,070	$10,070
Cost Index		**1.280**	**1.340**	**1.163**	**0.842**	**1.218**

Notes: +Calculated as regression coefficient * (Indidividual city value of cost factor - average value of cost factor for 148 FiSCs)
*Hypothetical spending calculated as predicted spending, using actual values of cost factors and average values of control variables.

Table 4

Cost Indices by Spending Category, 148 FiSCs

	Education	(student/pop.) 2000	(student/pop.) 2014	Public Safety	Health & Social Services	Environment & Transportation	Government Administration
Summary statistics							
Average	1.00	0.180	0.124	1.00	1.00	1.00	1.00
Stand. Dev.	0.16	0.026	0.020	0.19	0.27	0.14	0.29
Minimum	0.77	0.105	0.070	0.67	0.33	0.68	0.43
Maximum	1.44	0.239	0.180	1.58	1.65	1.66	1.84
Selected FiSCs							
Boston	1.28	0.143	0.085	1.36	0.52	1.30	1.74
Bridgeport	1.34	0.203	0.133	1.53	1.05	1.15	1.59
Cleveland	1.25	0.204	0.125	1.23	1.29	1.01	1.45
Nashville	0.82	0.156	0.116	0.91	0.95	0.94	0.91
Philadelphia	1.16	0.188	0.118	1.24	1.31	0.97	1.55
Phoenix	0.84	0.203	0.149	0.87	1.00	0.99	0.83
San Francisco	1.22	0.104	0.070	1.28	0.49	0.98	1.84

Table 5

Expenditure Needs, 148 FiSCs, 2000

	Education	Public Safety	Health & Social Services	Environment & Transportation	Government Administration	Total Current Expendiures
Summary statistics						
Average	$1,609	$556	$453	$327	$707	$3,651
Stand. Dev.	$352	$107	$121	$45	$203	$600
Coef. of Var.	0.219	0.192	0.268	0.138	0.287	0.164
Minimum	$912	$372	$151	$223	$308	$2,603
Maximum	$2,722	$880	$749	$543	$1,303	$5,500
Selected FiSCs						
Boston	$1,660	$757	$237	$369	$1,233	$4,257
Bridgeport	$2,455	$853	$476	$376	$1,124	$5,284
Cleveland	$2,317	$683	$584	$330	$1,022	$4,936
Nashville	$1,149	$508	$431	$306	$642	$3,037
Philadelphia	$1,976	$690	$594	$315	$1,100	$4,674
Phoenix	$1,543	$482	$454	$324	$586	$3,389
San Francisco	$1,150	$710	$223	$321	$1,303	$3,707

Table 6

Expenditure Needs, 148 FiSCs, 2014

	Education	Public Safety	Health & Social Services	Environment & Transportation	Government Administration	Total Current Expendiures
Summary statistics						
Average	$1,626	$648	$526	$360	$785	$3,945
Stand. Dev.	$325	$124	$141	$50	$225	$575
Coef. of Var.	0.200	0.192	0.268	0.138	0.287	0.146
Minimum	$1,035	$434	$175	$245	$341	$2,897
Maximum	$2,560	$1,026	$871	$598	$1,446	$5,703
Selected FiSCs						
Boston	$1,452	$883	$276	$406	$1,369	$4,386
Bridgeport	$2,379	$994	$553	$415	$1,247	$5,589
Cleveland	$2,092	$796	$679	$363	$1,135	$5,064
Nashville	$1,266	$592	$501	$337	$713	$3,409
Philadelphia	$1,831	$804	$690	$347	$1,221	$4,893
Phoenix	$1,674	$562	$528	$357	$650	$3,771
San Francisco	$1,138	$827	$259	$353	$1,446	$4,024

Table 7

Potential and Actual Tax Capacity
148 FiSCS, 2000

	Potential Tax Capacity	Actual Tax Capacity
Summary Statistics		
Mean	$1,784	$1,191
Standard Deviation	$469	$419
Coefficient of Variation	0.263	0.352
Minimum	$681	$464
Maximum	$3,241	$3,013
Selected FiSCs		
Boston	$2,175	$1,334
Bridgeport	$1,117	$503
Cleveland	$1,209	$1,209
Nashville	$2,318	$1,671
Philadelphia	$1,020	$1,020
Pheonix	$1,616	$1,016
San Francisco	$2,795	$1,899

Table 8

Potential and Actual Tax Capacity
148 FiSCS, 2014

	Potential Tax Capacity	Actual Tax Capacity
Summary Statistics		
Mean	$2,482	$1,715
Standard Deviation	$765	$635
Coefficient of Variation	0.308	0.370
Minimum	$814	$536
Maximum	$4,961	$3,921
Selected FiSCs		
Boston	$4,371	$2,891
Bridgeport	$2,223	$1,296
Cleveland	$1,371	$1,371
Nashville	$3,223	$2,288
Philadelphia	$1,485	$1,485
Phoenix	$2,453	$1,566
San Francisco	$5,661	$4,065

Table 9

Revenue-Raising Capacity
148 FiSCS, 2000

	Own-Source Revenue-Raising Capacity		Intergov.	Total
	Potential	Actual	Transfers	RRCactual
Summary Statistics				
Mean	$2,242	$1,649	$1,323	$2,971
Standard Deviation	$559	$513	$589	$745
Coefficient of Variation	0.250	0.311	0.445	0.251
Minimum	$1,184	$774	$401	$1,501
Maximum	$4,059	$3,420	$3,612	$5,229
Selected FiSCs				
Boston	$2,507	$1,666	$2,448	$4,114
Bridgeport	$1,388	$744	$2,161	$2,935
Cleveland	$1,634	$1,634	$1,861	$3,495
Nashville	$2,654	$2,007	$661	$2,668
Philadelphia	$1,498	$1,498	$2,169	$3,667
Phoenix	$2,017	$1,417	$1,313	$2,730
San Francisco	$3,885	$2,989	$2,240	$5,229

Table 10

Revenue-Raising Capacity
148 FiSCS, 2014

	Own-Source Revenue-Raising Capacity		Intergov.	Total
	Potential	Actual	Transfers	RRCactual
Summary Statistics				
Mean	$3,529	$2,650	$1,904	$3,972
Standard Deviation	$1,084	$950	$849	$1,082
Coefficient of Variation	0.307	0.359	0.446	0.272
Minimum	$1,643	$1,079	$671	$1,957
Maximum	$8,505	$7,191	$4,687	$8,758
Selected FiSCs				
Boston	$4,775	$3,295	$1,984	$5,743
Bridgeport	$2,634	$1,707	$2,893	$3,868
Cleveland	$2,070	$2,070	$2,776	$3,931
Nashville	$3,697	$2,762	$1,025	$3,423
Philadelphia	$2,221	$2,221	$2,698	$4,390
Phoenix	$3,086	$2,199	$1,500	$3,512
San Francisco	$8,114	$6,518	$3,731	$8,758

Table 11

Relative Fiscal Gaps, 148 FiSCs, 2000

	Relative Fiscal Gaps	
	Potential	Actual
Summary Statistics		
Mean	$0	$0
Standard Deviation	$821	$753
Minimum	-$2,504	-$2,202
Maximum	$2,040	$2,037
Selected FiSCs		
Boston	-$784	-$537
Bridgeport	$1,649	$1,669
Cleveland	$1,354	$760
Nashville	-$365	-$311
Philadelphia	$921	$327
Phoenix	-$27	-$21
San Francisco	-$2,504	-$2,202

Table 12

Relative Fiscal Gaps, 148 FiSCs, 2014

	Relative Fiscal Gaps	
	Potential	**Actual**
Summary Statistics		
Mean	$0	$0
Standard Deviation	$1,302	$1,152
Minimum	-$5,423	-$4,797
Maximum	$2,103	$2,257
Selected FiSCs		
Boston	-$1,930	-$1,329
Bridgeport	$1,701	$1,749
Cleveland	$2,040	$1,161
Nashville	-$42	$14
Philadelphia	$1,410	$531
Phoenix	$279	$287
San Francisco	-$5,423	-$4,706

Table 13

10 FiSCs with Largest Reductions in Relative Fiscal Health and 10 FiSCS with Largest Improvements in Relative Fiscal Health, 2000 to 2014

Reductions	Improvements
Akron, OH	Miami, FL
Greensboro, NC	Burlington, VT
New Haven, CT	New Orleans, LA
Aurora, IL	New York, NY
Dayton, OH	Bismarck, ND
Topeka, KS	Anaheim, CA
Reno, NV	Columbia, SC
Las Vegas, NV	Chattanooga, TN
Louisville, KY	Ft. Lauderdale, FL
Hartford, CT	Manchester, NH