The Fiscal Health of U.S. Cities

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Abstract

The recent bankruptcy filing by Detroit highlights the importance of measuring the fiscal health of the nation's central cities. In this paper we explore several means of assessing city fiscal health. In the first section, we describe methodology we employed to estimate the fiscal condition of Milwaukee, WI and its suburbs. In the second section, we employ a regression model to determine whether a measure of the fiscal health of a large sample of cities in 1982 developed by Helen Ladd and John Yinger is systematically related to the economic growth of these cities over the next 25 years. In the final section, we describe the construction of a fiscal database for 112 large central cities over the period 1977 to 2011. In creating what we refer to as fiscally standardized cities (FiSCs), we account for the wide variation in fiscal arrangements across U.S. cities. For each central city, the FiSC data include the revenue and expenditures of overlapping counties, school districts, and special districts. This unified framework allows systematic comparisons of city revenues and expenditures that have heretofore not been possible. We use the FiSC data to study the effect of the Great Recession on central cities. A predictive model for 2009-2013 suggests a sustained period of revenue decreases in many large cities. Pressure on the property tax from the housing crisis, together with declines in state and federal aid, are severely squeezing many cities. Actual revenue changes from 2009 to 2011 are broadly consistent with our forecasted revenue changes.

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The Fiscal Health of U.S. Cities

Introduction

Over the past couple years the fiscal health of American central cities has attracted considerable public attention. The media has been full of reports of cities making large cuts in their police forces, closing fire houses and schools, cutting library hours and park maintenance, and increasing class sizes. Most dramatically, the City of Detroit, with a population of about 700,000, has filed for bankruptcy. And in California, two large cities, Stockton and San Bernardino, have also filed for bankruptcy protection.

Policymakers, as well as experts on municipal finance, have begun to debate whether these recent developments are the direct consequences of the Great Recession and collapse of the housing market that occurred in many parts of the country, or whether they reflect in large part irresponsible fiscal behavior of local officials, who over the years have increased spending excessively, provided city employees with overly generous pension and other retirement benefits, and made unwise investments of public funds.

Regardless of whether public officials in some cities made irresponsible fiscal decisions in the past, there is little doubt that the fiscal health of most American central cities has suffered as a result of the Great Recession and the housing crisis. As we will demonstrate in this paper, both own-source revenues and intergovernmental revenues of central cities have declined over the past few years, in some cases quite sharply. The latest data from the U.S. Census Bureau (2013) indicate that between its peak in the 4th quarter of 2009 and the 2nd quarter of 2013, per capita local government property revenues have declined by 1.3 percent, which is equivalent to an 8.6 percent reduction in real terms. Although comprehensive data on spending reductions since the Great Recession are not available, one indication of the magnitude of spending cuts is the reduction in total local government employment in the U.S. From its peak in June 2009 through its trough in October 2012, it has fallen by 567,000, a reduction of nearly four percent (Bureau of Labor Statistics, 2013). While local government employment has risen since then, in September 2013 it remained more than a half million lower than its 2009 peak.

One way to engage the debate over the causes of city fiscal problems is to develop a rigorous measure of city fiscal health that reflects a set of conditions and circumstances that are out of the control of city government public officials. With such a measure, a city government would be in strong fiscal health if it has the *capacity* to provide its residents with an *adequate* (standard) level of a set of public service for which it is responsible, while not burdening its residents and businesses with unreasonable tax burdens. With this approach to measuring fiscal health one could distinguish between those city governments that are providing inadequate public services because of inefficient governance, and those governments that provide poor levels of service because they are in weak fiscal health.

Although measuring the fiscal health of U.S. central cities is a laudable goal, it is extremely difficult to carry out. After briefly discussing how one might measure fiscal health, we describe

one attempt to calculate an index of fiscal health for all the municipalities in a single U.S. metropolitan area. We then ask whether a measure of fiscal health for 70 large U.S. central cities calculated more than two decades ago can help predict the future growth and prosperity of those cities. In the final part of the paper, we will describe a methodology that will enable us to compare large U.S. central cities along a number of fiscal dimensions. These comparisons will allow us to begin to identify the impacts of the Great Recession and the housing crisis on the fiscal conditions of the largest U.S. cities.

The Measurement of Fiscal Health

There is a substantial literature on the measurement of the fiscal health of local or provincial governments. Much of this literature was motivated by attempts to develop objective measures of local government fiscal conditions for use in intergovernmental grant-in-aid formulas designed to allocate resources from higher-level governments in a manner that is proportional to the fiscal health of the recipient government. In many countries, including Canada, grant systems have been designed to reduce fiscal disparities among either provincial or local government.[1] With a well-designed system of intergovernmental aid, a higher-level government could assure that each lower-level government has sufficient fiscal resources to guarantee that its residents have access to a specified set of public services. To meet this objective, the donor government could design an equalization grant using a formula that provides each recipient government with a grant equal to the difference between the minimum amount of money needed to provide a specified mix of basic public services and the amount of money that the recipient government could be expected to raise from local sources at a "standard" rate of revenue effort. The first term in this formula provides a measure of the *expenditure needs* of the local government and the second term provides a measure of its *revenue-raising capacity*. The difference between expenditure needs and revenue-raising capacity, often referred to as a *fiscal gap*, provides a good measure of the fiscal health of local governments.

The literature on the measurement of expenditure needs and revenue-raising capacity is relatively small. In earlier work, we provided a discussion of some of the empirical issues involved in measuring the revenue-raising capacity and the expenditure needs of local governments (Chernick and Reschovsky, 2006). Shah (1996) in a study of provincial government equalization grant in Canada, estimated provincial expenditure needs by estimating disaggregated expenditure functions.

Within any country or province/state, expenditure needs can be expected to vary across local governments because some governments are required to provide a broader range of public services than other governments. Even when local governments have the same public service responsibilities, their expenditure needs may differ if the minimum amount of money needed to provide a standard bundle of public services differs. Economists generally refer to the minimum spending needed to produce a specified outcome as the *cost* of achieving that outcome. Whether the costs of providing various public services vary across local governments within a province/state or within a country is obviously an empirical matter.

[1] See Boadway (2004) and Boadway and Flatters (1982) for a conceptual and theoretical discussion of the roles horizontal equalization programs play within a system of intergovernmental finance.

Factors that reflect differences in costs include the various characteristics of a jurisdiction that cannot be controlled by local government officials and which reflect the environment that these governments face as they try to provide residents with their desired mix of public services. Cost factors are likely to include the demographic and social composition of a community. Physical characteristics of a jurisdiction can also influence costs, and for public services that are subject to substantial economies of scale, community size will be a relevant cost factor. Costs will also be higher the greater the number of non-residents entering a jurisdiction, whether for work, shopping, or recreation.

The major methodological challenge in estimating expenditure needs of local governments is to disentangle data on actual spending into that portion attributable to the costs of the service, that portion attributable to local preferences regarding levels of service provision, and the portion due to inefficiencies. One approach that has been used in the case of education and health care is to estimate *cost functions.* These empirically-estimated functions trace the relationships between expenditures (either per capita or per student), measures of outcome, such as gains in student academic performance, and a set of characteristics of each local government (including characteristics of its residents).[2]

If public sector output data are not available, an alternative statistical approach is to estimate *reduced form expenditure equations* in an attempt to identify cost factors and determine the expenditure needs of local governments. Like a cost function, the dependent variable in an expenditure equation is per capita expenditures on a particular local government public service or group of public services. A problem with using expenditure functions to measure the costs of local government services is that it may be difficult to isolate variables that have an impact on costs from variables that indicate differences in public good preferences or demands. For example, poverty rates are a cost factor, tending to raise expenditure levels, but high poverty rates are also likely to imply more constrained fiscal resources.

The estimated coefficients from a cost function or an expenditure function can then be used to construct a *cost index* which summarizes in a single number the amount of money each jurisdiction needs to provide the metropolitan wide standard or average level of public services, **relative** to the amount of money needed to provide the same public services in a local government with average costs.

The foundation for any measure of revenue-raising capacity is the economic base of each local government. As emphasized by Ladd and Yinger (1989), the actual capacity to raise revenue depends on the ability of local governments to have access to various tax and revenue *instruments*. The most frequently used of the three approaches found in the literature for 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. 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 of

[2] For examples of cost functions applied to the estimation of the costs of public primary and secondary education in the U.S., see Duncombe and Yinger (2000) and Imazeki and Reschovsky (2006).

the taxes or other revenue sources used by any local government within a province or a country, *i.e*., the reference group. The "standard" tax rates are often set equal the average rates utilized by the local governments in the reference group.

In general terms, revenue-raising 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.[3]

$$(1) \qquad RRC_i = \sum_j^N t^*_j \, BASE_{ij}$$

According to equation 1, 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 government i was either greater than or less than t*.

A second method for measuring revenue-raising capacity is to equate revenue capacity with the total size of the economy in a local jurisdiction. This approach, called the *total taxable resources* approach, ignores specific tax instruments and assumes that in the long run, the capacity of a local government to raise revenues is proportional to the size of its economy. If a measure, such as gross city product, exists, then revenue-raising capacity can be measured by applying a standard tax burden to each local government's gross city product.

The third approach, referred to as the *maximum revenue* approach, incorporates the behavioral relation between the size of a city's tax base and the tax rate on that base. The underlying premise is that there exists for every city a maximum amount of revenue that it can raise. The assumption is that the responses of individuals and businesses to higher tax rates will lead to a decline in the size of the city tax base. These responses will be in the form of reduced consumption, work effort, or investment, or out-migration from the city. At some point as tax rates continue to rise, revenue will no longer increase, and may actually decline. This maximum revenue defines the true revenue capacity of the city. This approach, although complex, was applied to four U.S. cities by Haughwout, et al. (2004) and to the Toronto metropolitan area by Bird, Slack, and Tassonyi (2012).

Comparing the Fiscal Health of Central Cities and their Suburbs: A Study of the Milwaukee Metropolitan Area

The suburban areas of metropolitan areas are at the same time both substitutes and complements of cities. Workers with jobs in the center city may choose to live in the city, or to live outside and commute to the city. At least some types of firms may also be able to choose between lower density locations outside the city's boundaries and location within the center city. For many decades, jobs in metropolitan areas in the U.S. (and we suspect in Canada) have been decentralizing away from the central business district (Kneebone, 2013).

Local governments within metropolitan areas operate in a competitive environment for residents and businesses. Service costs are heavily influenced by the characteristics of the environment in which governments operate. As compared to the typical suburban jurisdiction, many central

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

cities face higher than average service costs, and below average fiscal capacities. The fiscal advantage enjoyed by some suburbs is reinforced by extensive powers of zoning and land-use control, allowing these jurisdictions to regulate population density and maximize their fiscal base, while at the same time keeping down the costs of providing services by restricting access to the poor and to minorities and recent immigrants.

In this section, we present a preliminary analysis of the fiscal condition of municipal local governments in the four-county Milwaukee metropolitan (urban) area. The central city, Milwaukee, is located on the Western shore of Lake Michigan, about 75 miles north of Chicago. Milwaukee has a population of approximately 600,000 and the urban area has an additional 900,000 residents. The central city is surrounded by 89 independent (suburban) municipal governments. They range in size from 300 to 68,000 residents, with 19 local governments having populations below 2,000. These municipalities are extremely diverse, ranging from high density urban to quite rural. Because of data and time constraints, in this paper we focus on municipal government functions, ignoring the fiscal impacts of both of the overlapping school districts and county governments.

For each municipal government, we calculate need-capacity gaps by developing estimates of both expenditure needs and revenue-raising capacity. We start by defining the expenditure need of local government i (EN_i) as

$$(2) \qquad EN_i = \sum_j^N SR_{ij} * S_j * CI_{ij}.$$

SR_{ij} is a dummy variable indicating whether local government i is responsible for providing public service j, S_j is a measure of a "standard" level of public service j within the Milwaukee metropolitan area, and CI_{ij} is the value in local government i of a cost index for public service j. Because we have only very limited data on public sector outcomes, in this analysis we define S_j as the median level of per capita spending on public service j among the 90 Milwaukee area municipalities included in our analysis.

Using detailed fiscal data from the Wisconsin Department of Revenue, we first divided municipal expenditures into nine categories - general government, law enforcement, fire and public safety, streets and transportation, public works, health and human services, culture and recreation, economic development, and debt service.

Table 1 presents a summary of the spending patterns, and fiscal and socio-economic characteristics of the Milwaukee metropolitan area. To highlight city-suburban disparities, we show separate results for the city of Milwaukee and the average of all suburbs. Fiscal data are for the 2004 fiscal year.

The table highlights both the very substantial fiscal differences between the center city and its suburbs, in terms of spending levels, property tax base, intergovernmental aid, and tax rates, as well as the substantial variation among the suburban jurisdictions. The top panel shows per capita spending on the various municipal functions, and total spending per capita. Using the suburbs as a base, Milwaukee's total expenditures exceed the suburban average by about 50 percent. In dollar terms, the largest disparities are in general government, law enforcement, and

fire and public safety. Among suburban jurisdictions, the variation in spending is particularly high for law enforcement (police) and debt service. The variation of law enforcement spending across suburban municipalities reflects in part the fact that many small jurisdictions rely in large part on their county governments to provide police protection. It is also interesting to note, that Milwaukee does not spend more per capita than all of its suburban neighbors. In every expenditure category, at least some suburban municipalities spend substantially higher amounts than the City of Milwaukee.

Because the only tax local governments in Wisconsin are authorized to levy is the property tax, per capita property values serve as the appropriate tax base for the calculation of revenue-raising capacity. As can be seen in the middle panel, equalized property values per capita, are only a third as high in the center city as the suburbs, $36.6 thousand as compared to $104,000. Offsetting the property base disparity is a substantial difference in state aid (intergovernmental transfers) to the City of Milwaukee compared to its suburbs. In fact, the $368 dollar difference is almost as large as the total spending differential between Milwaukee and its suburbs. Despite this difference in state aid, to achieve the spending disparity noted above, the city taxes itself at a rate that is almost twice as high as the suburban average, 8.6 versus 4.6 mills.[4]

The bottom panel of Table 1 shows the very considerable difference in socio-economic characteristics between the City of Milwaukee and its suburbs. As is typical in many American cities, the poverty rate is very high - over 20 percent in 2000.[5] By contrast, the suburban rate is quite low, with the ratio of center city to suburban poverty almost seven to one, versus the more typical U.S. ratio of two to one. The city population is also substantially more minority, renter, and single parent than the suburbs, as well as having almost twice the proportion of older housing. These very large differences in those factors which have a potential effect on the cost of city services, together with the differences in fiscal capacity, suggest that the fiscal health of the City of Milwaukee may be relatively weak.

Our approach is to identify cost factors through the process of estimating expenditure equations for the most important expenditure functions. With the exception of law enforcement, each expenditure equation was estimated over the entire set of metropolitan area municipalities. In the case of police, a number of municipalities relied on their county government to provide law enforcement. To account for this institutional arrangement, our law enforcement regression was estimated on all jurisdictions that spent in excess of $15 per capita on law enforcement. In the interests of brevity, we present in Table 2 the estimated expenditure regressions for only three expenditure categories: law enforcement, fire protection and other public safety, and streets and transportation. To reflect the great variation in local government populations, the regressions are weighted by population and robust standard errors are calculated.

The regressions all include property values and exogenous state aid as measures of fiscal resources. They also include the residential share of the property tax base. This variable provides a measure of the *tax-price* faced by the average resident.[6] If 60 percent of the value of property is

[4] A mill is one-tenth of one percent.
[5] Poverty data for 2009 remain largely unchanged from values in 2000.
[6] The residential share of property value provides an appropriate measure of tax price because in Wisconsin within any jurisdiction, residential and non-residential property are always taxed at the same rate. Not only does the state's

residential property and the remaining 40 percent is commercial or industrial property, an extra dollar of spending will increase property taxes for the average residential taxpayer by 60 cents. Thus, if one assumes that local government spending reflects the preferences of residents and if the demand for local public services is not perfectly price inelastic, a lower tax-price should result in higher levels of demand for public spending. The tax-price variable has the expected negative sign, and is statistically significant in most of the regressions. Cost variables included in the specifications vary across services, depending mainly upon statistical significance for inclusion or exclusion.

The first regression is for law enforcement. It includes the percent of households who rent instead of own their home, and percent of the population over the age of 65. While both of these factors may reflect a mixture of cost and demand effects on expenditures, they nonetheless indicate that exogenous demographic and housing tenure characteristics of the municipality can have a substantial effect on municipal expenditures. Referring back to Table 1, the much higher proportion of renters in the City of Milwaukee than in the suburbs is thus associated with relatively higher central city law enforcement expenditures. The age variable, however, raises expenditures more in the suburbs than in the city. Somewhat surprisingly, property and violent crime rates were statistically insignificant, and thus were dropped from the law enforcement equation.

In the fire and other public safety regression, percent of old housing has the expected positive sign, but is not significant at conventional levels. Population density has a significant positive - effect, probably a reflection of the greater costs of assuring fire safety in denser areas. Percent elderly is again highly significant. This may reflect the fact that the "other public safety expenditures" category includes ambulance services, and these tend to be used much more frequently by the elderly. The streets and transportation regression controls for service loads by dividing expenditures by the number of miles of roads in a jurisdiction. The significant positive effect of population density may reflect greater maintenance costs from wear and tear on roads in denser municipalities.

The next step is to use the regression coefficient for each of the expenditure categories to calculate a cost index for that category of spending. We start by calculating *hypothetical spending* for each municipal government, where the calculation involves multiplying the regression coefficients by the metropolitan average values for the control variables and by municipality-specific values for each cost factor. To create an index, each municipality's hypothetical spending level is divided by hypothetical spending for a municipality with average values for the cost factors.[6]

The final step in calculating each municipality's expenditure need is to determine the set of functions for which it provides public services, and then to multiply median per capita spending in the Milwaukee area with the municipality's cost index value. For the functions for which we

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constitution include a "uniformity clause" that mandates that all types of property be treated equally for tax purposes, but the state's Department of Revenue has the authority to monitor local property assessment and take steps to prevent differential assessment by type of property.

[6]The resulting indices are normalized so that they have an average value of one.

have not calculated cost indices, we use median spending in the area. For these functions, the implicit assumption is that per capita costs do not vary across urban area municipalities.

In order to see the impact of intergovernmental transfers, we calculate revenue-raising capacity using a two-step process. First, we calculated *tax* capacity, which we define as the property tax revenue each municipality would raise by levying an equalized property tax rate of 4.7 mills, the median tax rate in the metropolitan area. We then add state and central government transfers to tax capacity to get a full measure of revenue-raising capacity.

The final step in measuring the fiscal condition of local governments is to calculate the difference between each municipality's expenditure need and tax or revenue-raising capacity relative to the average differences. We call the difference between expenditure needs and tax capacity the *tax gap,* and the difference between expenditure need and revenue-raising capacity the *fiscal gap*. By design, these gaps are normalized so that they average about zero. A positive fiscal gap means that expenditure needs exceed fiscal capacity by an above average amount. The tax gap is a reflection of the gap between expenditure needs and own fiscal resources, while the fiscal gap takes into account the effects of intergovernmental aid. Table 3 shows the results of these calculations separately for the City of Milwaukee and its suburban local governments. The suburbs are arrayed by their median household incomes using 1999 data from the U.S. Census Bureau.

Expenditure needs in Milwaukee are $799 per capita compared to a suburban average of $637. Expenditure needs tend to be lower in higher income suburban local governments. It is notable that the poorest suburbs, those with median household incomes below $50,000, actually have higher levels of expenditure need than the City of Milwaukee. Tax capacity is more than twice as high in the average suburb than in the City of Milwaukee, $489 compared to $172 per capita. There is a large variation in tax capacity, with tax capacity in the highest income suburban communities being nearly five times the tax capacity in the poorest communities.

Without considering intergovernmental transfers, fiscal disparities within the Milwaukee urban area are large. Milwaukee has a tax gap of $481, which is larger than any of the groupings of suburban jurisdictions. Within the suburbs, the tax gap varies by almost $1,300 from poorest to richest suburbs. Milwaukee's tax gap is very large relative to most of its suburban neighbors.

Adding state and federal intergovernmental aid to the locally-raised tax capacity substantially increases the revenue-raising capacity of Milwaukee relative to most of its suburban neighbors. The result of a transfer system in Wisconsin that heavily favors the City of Milwaukee is a substantial reduction in the city's fiscal gap. Although the fiscal gap is above the average for the metropolitan area (by construction, set equal to zero), at $42 per capita, it is smaller than the fiscal gaps faced by suburban local governments with median household incomes below $60,000.

Our measures of the fiscal health of municipal governments in the Milwaukee metropolitan area represent preliminary steps in the exploration of the fiscal conditions of municipal governments. One potentially important omission is any consideration of the impact on city fiscal health of the financing of public education and various county government services. In Wisconsin, as in many

parts of the U.S., a wide range of public services are provided by independent governments that serve urban residents and businesses. We discuss the impacts of these institutional arrangements later in the paper.

Using Need-Capacity Gaps to Predict Future Economic Performance

In their well-known study, Ladd and Yinger (1989) estimate need-capacity gaps for 70 large central city governments for 1982 and a number of earlier years. In their study, expenditure need is estimated by regressing expenditures on factors affecting demand for public services, including income, the tax price of public services, and state aid, and cost factors include poverty, the age distribution of the population, density, the age of the housing stock, and the average price of labor in the region. An expenditure need index is calculated by multiplying the actual measures of cost by the estimated regression coefficients from the cost model.

Fiscal capacity is measured as the amount of revenue a city could raise if it imposed nationally average tax rates on the tax bases it is allowed to use. A special feature of the Ladd-Yinger measure of fiscal capacity is their estimate of the potential of cities to export a portion of the tax burden to non-residents of the city. The greater is the exporting potential, the more revenue a city can raise for a given burden on its own residents. Exporting is assumed to vary depending on the industrial composition of the city's employment, and the ratio of non-resident to resident workers. Ladd and Yinger take account of the effect of overlying governments which draw on the same tax base as cities by treating their revenues as 'using up' municipal fiscal capacity. Both expenditure need and fiscal capacity are viewed as being determined by factors beyond the control of city policy makers.
Cities with relatively high need-capacity gaps must either impose relatively high tax rates to achieve an average quality of service, or if they choose to have average or lower than average tax burdens, to provide sub-standard service levels. Regardless of the choices they actually make, they are expected to be at a competitive disadvantage in attracting and maintaining jobs and population, relative to cities whose need-capacity gaps are smaller.

In this section, we will explore whether weaker city fiscal health as measured by Ladd and Yinger did in fact lead to a competitive disadvantage in terms of slower economic growth and other outcomes. Our basic model takes the form:

$$(3)\ \%\Delta Y_{86\text{-}05} = a_0\,(\text{Need-Capacity Gap})_{82} + a_2(\text{region}) + a_3(\mathbf{X})_{1985} + a_4(\%\Delta \text{POP})_{\text{suburbs}}$$

City outcomes (ΔY) are measured by a variety of indicators, including population growth, per capita income growth, employment growth, growth in city revenues, and crime rates. The vector **X** of initial characteristics of the city includes population, poverty rates, per capita income, and two measures of educational attainment: percent high school graduates and percent college graduates.

Tables 4 and 5 show sample regressions from this exercise. The dependent variable in Table 4 is the percentage change in population growth, from 1986 to 2005, while in the second table the dependent variable is employment change. The specification in the first column includes only

fiscal health, and regional dummies. The second column also includes initial city poverty rates, income, and educational attainment (percent with a high school degree), while the third column adds suburban population change or metropolitan wide employment change to the list of covariates. Fiscal health in Table 4 is a standardized measure, in which fiscal capacity is measured as if each city was allowed to use property, sales, and income taxes. Table 5 measures fiscal health in terms of the actual fiscal capacity of the city, taking account of the specific taxes it is allowed to use. The first regression is estimated using 70 large U.S. cities.

The first column in both Tables 4 and 5 suggests that cities in better fiscal health experienced faster growth in population and employment. The predicted difference between, for example Philadelphia PA (fiscal health index equals -.49), and Winston-Salem NC (index equals 27.5) is 9.1 percentage points, which represents a large difference. The comparable effect for employment growth is of a similar magnitude. However, when we include the other covariates, fiscal health is no longer statistically significant, and even changes sign for the employment regression. By contrast, high initial poverty rates have a strong negative relationship with future growth. A two standard deviation range in poverty rates implies roughly double the effect on growth in population and employment as a two standard deviation variation in the fiscal health index.

Poverty and per capita income are key variables that go into the fiscal health index. They are also related to the strength of the city's economy and its demographic composition. The fact that fiscal health is no longer significant when poverty and income are included in the regression reflects the built-in multicollinearity between the index and its components. Just as the fiscal health index is constructed so as to reflect 'environmental' variables beyond the control of policy makers, so the underlying economic characteristics of the city at a given point in time are beyond the control of the current policy makers. We would also like to know if cities that are relatively inefficient in the delivery of public services pay a price in terms of future economic performance. The fiscal health index could and has been used to determine the degree of efficiency or inefficiency in particular jurisdictions (Duncombe and Yinger, 1997).

Comparing the Revenues and Expenditures of Central Cities

The U.S. Census Bureau provides the only comprehensive source of fiscal data for cities. Data are collected separately for each types of governmental unit—general-purpose municipal governments, which include cities and towns, independent school districts, county governments, and special districts.[7] Because the delivery of public services is organized in very different ways in different cities, direct comparison across cities of revenues by source can be highly misleading. While some municipal governments are responsible for the financing of a full array of public services for their residents, others share the responsibility of providing services with a set of overlying governments. For example, Boston, New York City, Baltimore, and Nashville have no independent school districts or county governments serving local residents. In these cities, the

[7] Census data on local government finances are sometimes criticized because not all local governments report data to the Census Bureau using the same accounting basis. Although most local governments provide data on a modified accrual basis, some use a cash or accrual basis. Fortunately, the use of the modified accrual basis that conform to generally accepted accounting procedures is nearly universal among the governments that serve the residents of large central cities. Further detail on the collection of local government fiscal data can be found in the U.S Census Bureau (2006) *Classification Manual*.

municipal government is responsible for providing core municipal services, plus elementary and secondary education, public health, and other social services. On the other hand, municipal governments in El Paso, Las Vegas, Miami, and Wichita collect only about one-quarter of the revenues that finance the delivery of public services within their boundaries. The remaining three-quarters of the revenues are the responsibility of one or more independent governments serving city residents, governments whose boundaries frequently extend beyond central city government boundaries.

To illustrate the difficulty in making revenue comparisons, in 2010 the city of Tucson, Arizona, which relies heavily on a local sales tax, collected just 13 percent of its total tax revenue from the property tax, while Buffalo, New York collected 89 percent of its tax revenue from the property tax. However, when we take account of the revenues paid by city residents to their overlying school districts and county governments, property taxes accounted for 69 percent of the total local tax revenue paid by the residents of Tucson, but only 51 percent of tax revenue paid by the residents of Buffalo, New York, where county governments rely heavily on sales tax revenue.

Because it is difficult to put together data that allow for an accurate comparison of cities on both the revenue and spending side, the literature on the financing of the nation's central cities is extremely sparse. With the exception of the research by Bradbury (1982, 1983) and by Ladd and Yinger (1989), very few studies have taken a comprehensive look at the financing of American central cities.

Our approach to dealing with the variation in the organizational structure of local governments across the country is to account for all local government revenues levied on city residents and businesses. The basic idea is to include all revenues collected by a central city municipal government and by that portion of independent school districts, county governments, and special districts that overlaps municipal boundaries. We refer to the result of this calculation as a *fiscally standardized city* (FiSC).

The fiscal health of cities depends on the balance between public services provided and taxes imposed. On the tax side, residents and businesses are likely to be indifferent as to whether taxes are imposed by the city or by other overlapping political jurisdictions. What matters is the total tax burden that falls on the inhabitants of the geographic area that constitutes the city, in relation to services received. To assess the fiscal health of cities, and the potential linkage to their economic health, we need a comprehensive accounting of revenues and expenditures. For example, if school or county property taxes rise in response to cuts in state school aid, while city taxes remain unchanged, the FiSC measure will automatically take account of the effect of these policy responses on the overall tax burden in cities. By contrast, if one analyzes the municipal government alone, the broader tax effects will be understated in cities where overlapping governments are more important, and the potential effect of and economic downturn on the fiscal base of cities will be obscured.

While particular methodologies differ, the general approach to capturing the effects of overlapping jurisdictions is not new. In a report entitled *Composite Finances in Selected City Areas*, the U.S. Census Bureau (1974) compared fiscal and debt burdens for the central city and a single suburban municipality in five large metropolitan areas by compiling revenue and spending data

from all overlapping local governments that served the residents of each of their sample municipalities. We follow a similar, although somewhat simplified methodology, but apply it to nearly all large U.S. cities. Katharine Bradbury (1982), in a comparative study of fiscal distress in U.S. cities, addresses the need to account for differences in city government responsibilities by calculating the "combined revenue collection in city areas". She does this by allocating to each city area all non-municipal local government revenue within each state on an equal per capita basis. We improve on the use of statewide averages by utilizing fiscal data from each non-municipal government that overlies each central city.

To create FiSCs for cities with independent school districts that are coterminous to city boundaries, we combined the school district and municipal values of all revenues variables. For school districts that cover a geographical area larger than the city, and for cities served by multiple school districts, we use data on the spatial distribution of enrollments to allocate a pro-rata share of total school revenues to the FiSC. For each school district serving a portion of the central city, we drew on geographical information system (GIS) analysis of Census block group or tract level data from the 1980 through 2010 decennial censuses to determine the number of students in each school district that live in the central city.

The next step in calculating the revenues and expenditures of FiSCs is to add the portion of county government revenues associated with city residents. In cases where county governments cover an area larger than the central city, revenues are allocated to the FISC on the basis of the city's share of county population.[8] The final step is to allocate fiscal data from special districts to FiSCs. In the U.S., special districts are independent government bodies that are devote to the provision of a single type of public service. The most important special districts operate hospitals, electricity or water utilities, public housing or mass transit systems. Although determining the geographic service area of special districts is challenging, our general approach was to allocate fiscal data for special districts to FiSCs based on the central city's share of population in each special district's service area.

We have calculated FiSC revenues for almost all the nation's largest central cities for the years 1977 through 2011. The source for the data is the quinquennial Census of Governments, and the Annual Surveys of State and Local Government Finances for all non-census years between 1977 and 2011. The database includes all cities with 2007 populations over 200,000 except those with 1980 populations below 100,000 and all cities with 1980 populations over 150,000 even if their 2007 population was below 200,000.[9] In 2009, the population of the 112 central cities in our sample was 60.9 million, equaling about 62 percent of the population of all "principal" cities within U.S. metropolitan statistical areas.

[8] While it would be preferable to allocate property tax revenues from overlapping jurisdictions based on the geographical distribution of the tax base, such data do not exist. While some cities might have a greater or lesser share of the property base than their share of population or students, we do not think there will be a systematic bias introduced by our methodology.

[9] Our sample has 77 cities with 1980 populations above 150,000 and 2007 populations above 200,000; 24 cities with 1980 populations above 150,000 and 2007 populations below 200,000; and 11 cities with 1980 populations between 100,000 and 150,000 and 2007 populations above 200,000. Because of various data problems we excluded 3 cities that otherwise met our selections criteria.

Table 6 divides the 112 cities in our sample into 10 categories by their differing fiscal structures. Each city has been characterized by the geographical boundaries of its overlying school districts and county government, and in the case of school districts by their fiscal independence from the municipal government. Thirteen cities in our sample have exclusive responsibility for all city services. Most cities (87 out of 112) have an overlying county, and most have independent school districts, the boundaries of which usually extend beyond the city boundaries.

Most previous empirical studies of the financing of municipal governments have failed to take full account of the impact of overlapping jurisdictions. Carroll (2009) takes no account. Inman (1979) and Sjoquist, Walker, Wallace (2005), use dummy variables to partially adjust for overlapping jurisdictions. Ladd and Yinger (1989) focus on a comparison of the revenue raising capacity of big city municipal governments, and adjust for the capacity "used up" by county governments and independent school districts that overly city governments.

FiSC Revenues and a Comparison to Central City Governments

In this section, we present data on the major sources of revenue in our 112 fiscally standardized cities. Table 7 divides total general revenues of FiSCs into own-source and intergovernmental revenues, and, in the bottom panel, displays tax revenues by type of tax. In fiscal year 2011, the FiSCs had general revenues of $376.6 billion. The average FiSC raised 62 percent of its revenue from taxes, fees, and miscellaneous sources, and received the remaining 38 percent from higher level governments, primarily through state aid. As shown in Table 7, there is a great deal of variation in the composition of revenue among the 112 FiSCs. At one extreme is Springfield, MA, which raised 30 percent of its general revenue from own sources, and at the other extreme is Atlanta, Georgia, which raised nearly 81 percent of its general revenue from own sources, receiving only 19 percent through federal and state aid.

Table 7 also shows that 67 percent of tax revenue came from the property tax in the median FiSC. Among the 112 FiSCs, 16 raised 80 percent or more of their tax revenues from the property tax, including 9 cities that relied on the property tax for more than 90 percent of their total tax revenue. At the other extreme, Birmingham and Mobile, Alabama and Philadelphia, PA all got less than 30 percent of their tax revenues from the property tax. Other than the property tax, only the general sales tax accounted more than 10 percent of tax revenues in the average FiSC. The low average shares of non-property tax revenues reflect the fact that most of the FiSCs either do not utilize at all or raise only small amounts of revenues from taxes other than the property tax. For example, 17 FiSCs generate no revenue from the general sales tax and another 24 raise less than 10 percent of their tax revenues from the sales tax. The individual income tax provides revenue in 23 FiSCs and the corporate income tax in only 9.

In the aggregate, about 58 of the total revenues of FiSCs come from central cities' municipal governments, 14 percent from county governments, 20 percent from school districts, and 8 percent from special districts. These aggregate revenue data understate the importance of overlying school districts and county governments in the average central city because New York City and several other large central cities have no overlying governments, while the FiSC cities with the smallest share of general revenue attributable to their municipal governments are

generally small. Thus, the average share of general revenues associated with municipal governments in the 112 FiSCs is 46.4 percent. If we restrict our sample to the 76 FiSCs that have both independent school districts and overlying county governments, the municipal government share of the general revenue of FiSCs falls to 36.0 percent, with 21.9 percent associated with county governments and 33.3 percent with independent school districts serving central city students.

The data show clearly that central city municipal governments rely much less heavily on intergovernmental revenues than their overlying governments, especially school districts and special districts.. Although federal aid is a more important revenue source for city governments than for county governments and school districts serving central cities, the opposite is true for state aid. In 2011, 62 percent of the revenue of school districts serving central city residents came from the state aid.[10] Data from the U.S. Department of Education, National Center for Education Statistics (2013) indicate that state governments provided 47.1 percent of public school revenues in the average state. The larger role played by state aid in central city school districts implies that the revenue of FiSCs will be more sensitive to changes in state education aid than the revenue of central city municipal governments.

The property tax accounts for two-thirds of the tax revenue in the average FiSC, but only 45.8 percent of the tax revenue of city municipal governments. This difference reflects the fact that in general city governments rely much more heavily on taxes other than the property tax than do county governments, school districts, or special districts. Among cities with an overlying county government county general sales taxes generate on average 17.4 percent of county government tax revenue and 25.7 percent of the tax revenue of special districts.. City governments and special districts, and to lesser extent counties, get a substantial share of their revenues from user fees and charges. This pattern of revenues contrasts with school districts serving central cities. On average, they rely on taxes for 88 percent of their own-source revenues, and the property tax comprises 95 percent of their total tax revenues.

To show the importance of using a comprehensive accounting of city revenues and expenditures, in 2009, per capita general revenue of the government of the City of Pittsburgh was $1,958, while the per capita revenue of the City of Baltimore was $5,306, 2.7 times higher. However, when we compare data for the two FiSCs, their per capita revenues are nearly identical.[11] This pattern is not atypical. Among the nation's largest central cities, a number of FiSCs have similar levels of per capita revenue, despite the fact that their municipal government revenues are quite dissimilar.

Fiscal Health and the Great Recession

The 2007-2009 Great Recession and the painfully slow recovery have put substantial pressure on the fiscal health of U.S. cities. In this section, we present an analysis of the way in which the

[10] Given the way the Census Bureau classifies data, most federal education grants that are passed through to individual school districts are classified as state, rather than federal, aid.

[11] The explanation is that only 37 percent of government revenue flowing to or paid by Pittsburgh residents is tied to the municipal government, with the remainder collected by several independent school districts and the county government (Allegheny). In contrast, in Baltimore the municipal government is responsible for both public education and for all county government functions.

recession has affected city finances, both overall and in terms of specific sources of revenue. Because census data on government revenues is only available through 2011, we draw on previous work (Chernick, Langley, and Reschovsky, 2012), in which we developed *predictive* models for city revenues by source for the period 2009 to 2013.

Figure 1 shows the percentage change in inflation-adjusted per capita revenue from 2000 to 2010 for 112 FiSCs. The data are smoothed by using three-year moving averages of revenue. The middle line shows the average percentage change for all cities, while the top and bottom lines show percentage changes of revenues in the high growth and low-growth tails.

The figure shows that the rate of growth in revenue declined in the aftermath of both the 2001 and the 2007-2009 recessions, but that in the latter period, the decline was much more precipitous. Real revenue growth remained positive throughout the decade of the 2000s until 2010. The high and low-growth tails of the distribution show very similar patterns, with the city at the 5th percentile of revenue growth in 2011 (Tuscon, AZ) showing a 5.1 percent decline in real revenues per capita. Though not shown here, the cumulative percentage decline in general revenue between 2009 and 2011 at the 5th percentile (Miami, FL) was 12 percent.

Our model for city revenues, described in detail in Chernick, Langley, and Reschovsky (2012), forecasts general revenues for the 109 FiSCs over the 2009-2013 period.[12] We summed projections for five separate revenue streams: 1) property taxes, 2) non-property tax, tax revenues, 3) non-tax own source revenues, 4) state aid, and 5) federal aid. Econometric models were fit with actual and projected metropolitan area-level data to forecast the three sources of own-raised revenue, while projections for intergovernmental revenues were based on information from surveys and published revenue estimates.[13]

The change in property taxes were estimated as a function of metropolitan wide housing prices, city income, and state aid. All variables were entered in lag form, to reflect the fact that property tax revenues adjust to changes in the underlying determinants with a lag. We estimated the following equation:

$$\Delta \ln(PTax_{it}) = \sum_{g=2}^{4} \alpha_g \Delta \ln(HPI_{i,t-g}) + \sum_{g=1}^{2} \beta_g \Delta \ln(Income_{i,t-g}) + \delta * \Delta \ln(StateAid_{i,t-1}) + \sum_{i=1}^{109} \gamma_i (City_i) + u_{it} \quad (4)$$

where *PTax* is real per capita property tax revenue for the 109 FiSCs, *HPI* is the annual average of the quarterly all-transaction housing price index produced by the Federal Housing Finance Agency (FHFA) adjusted for inflation, *Income* is real per capita personal income for the

[12] The FiSC dataset used for the forecasting model did not include the cities of Louisville, KY, New Orleans, LA, and Washington, DC.

[13] The three sources of own-source revenue are each estimated as separate equations. While there may be some interrelationships between the three sources of local revenue, in the forecast period we only have data on housing prices and incomes. Hence, we are unable to identify a simultaneous model that could also be used for forecasting. Arguably the most important interaction between the three revenue sources is the ability to adjust property tax rates in response to short-term changes in state aid. This relationship is explicitly accounted for in our property tax model. By contrast, local governments generally face severe state constraints on their ability to adjust rates on other taxes, or add new sources of other types of own-source revenues.

metropolitan area in which each city is located, *State Aid* is real per capita state aid for the 109 FiSCs, and *City* represent city fixed effects.

The model in (4) yields an elasticity of property tax revenue with respect to housing prices of 0.25, with a three year lag, implying that three years after a 10 percent decline in metropolitan wide average housing prices, per capita real property taxes will be 2.5 percent lower in central cities. This estimate is somewhat less than that of Lutz (2008), who finds that for all local governments the housing price elasticity is about 0.4, suggesting that about 60 percent of the decline in housing prices is offset by an increase in nominal property tax rates. The lower elasticity in cities than in all local governments may reflect the greater importance of commercial real estate in cities, the less than perfect correlation between housing prices and the market value of commercial property, and the possibility that cities are able to shift more of the burden of the property tax to non-residential property than smaller jurisdictions when the market value of housing declines.

Two other equations in our forecasting model are used to predict revenues from taxes other than the property tax, and fees and charges. Changes in both revenue categories are estimated as functions of city per capita income. Changes in state aid are based on a survey of changes in state aid to education by the Center on Budget and Policy Priorities, and changes in federal aid are based on publically-available budget projections of discretionary federal outlays for state and local government grants.

Figure 2 shows predicted changes in general revenue for 2009-2013, and actual changes from 2009-2011. The striking result from the first set of bars in the figure is that the *two year* actual average decrease in real per capita general revenue in 109 FiSCs from 2009 to 2011 was 4.3 percent, while the revenue forecasting model predicts a *four-year* decline, from 2009-2013, or 3.5 percent. These data suggest that unless per capita real revenues grew substantially in 2012 and 2013, the actual decline in FiSC general revenues in the four years after the official end of the Great Recession may exceed our forecast. Although we appear to have over-estimated the average decline in revenues from state aid, the actual 5.8 percent 2-year property tax reduction exceeds our forecasted 5.3 percent 4-year decline in property tax revenues. In many metropolitan areas, housing prices continued to fall through mid-2012. Given the lagged relationship between changes in housing prices and changes in property tax revenues, our forecasts suggest that city revenues may continue to decline between 2011 and 2013 and likely beyond.

Figure 3 compares actual versus predicted revenues for two cities with large predicted declines in revenue, Bakersfield and Fresno, both in California, and two cities with large predicted increases in revenue, Shreveport, Louisiana, and Chattanooga, Tennessee. General revenue in both California cities has declined between 2009 and 2011, but by considerably less than the 16.8 percent 4-year reductions predicted by our forecasting model. Although, if the current trend continues, reductions in property tax revenues may meet our forecasts, it appears that actual reductions in state aid will be somewhat less severe than forecast.

Although we forecast small increases in general revenue between 2009 and 2013 in Shreveport and Chattanooga, real per capita revenues in both cities have actually declined between 2009 and 2011. In Shreveport, property tax revenue has grown less rapidly than forecast. In both cities,

however, state aid has declined, with Chattanooga facing a two-year reduction in aid of over 16 percent.

Figure 4 shows actual and predicted changes for New York City. What stands out is the large disparity between the 8.5 percent *predicted decrease* in the property tax and the 10.2 percent *actual increase*. This large difference reflects the increase in property tax rates imposed in 2009-2010, and the pipeline of assessed value increases based on pre-crisis appreciation of property values. It shows the limits of the property tax prediction model in accurately predicting future changes in individual cities. Perhaps most importantly, it suggests that the value of land and structures in New York City has proved to be remarkably resilient in the face of a substantial economic shock.

Conclusion

Fiscal health is a measure of the balance between the fiscal capacity of a city and the cost of providing the services that current and potential residents and firms demand. Cities have an outsized importance in regional and national economies, through their ability to generate spillovers of knowledge and productivity enhancements. Given the vital role of public services in making cities livable and attractive, and the potential negative effects on economic activity of the taxes and charges that must be imposed to finance public services, fiscal health is an important policy issue. Higher level governments which must decide on the level of assistance to cities, through both grants-in-aid and tax enabling authority, need to be able to accurately assess needs and fiscal capacity.

Measurement of fiscal capacity is challenging. On the expenditure side, outputs in the public sector are difficult to quantify, and separating exogenous cost factors from preferences, as the expenditure need concept requires, is rarely clear cut. On the revenue side, comprehensive measures of fiscal capacity require information on the size of the various tax bases. These data, particularly for the property tax, the most important local tax in the U.S. and Canada, are no longer collected by the U.S. Census Bureau.[14] In principle, the tax capacity measure should be dynamic, with the net revenue available taking account of the potential negative effect of taxation at any given rate on the size of the tax base. Clean econometric estimates of the potential negative feedback affect are difficult to obtain (Smart, 2012).

In this paper we present several ways of assessing the fiscal health of U.S. cities. In the first section, we present a methodology and detailed results for one city, Milwaukee, and its suburbs. Expenditure need is estimated by regressing actual spending on measures of fiscal resources, and various cost factors. Fiscal capacity is proportional to the value of the property tax base. The results indicate that the City of Milwaukee is indeed disadvantaged in fiscal terms relative to its suburbs, and that there exist large disparities in fiscal health among Milwaukee's suburbs. In previous work, we explored the disparities between central city and suburban fiscal health in six Eastern and Midwest cities in 1989 and 1999, using cruder measures of fiscal capacity and

[14] The Governments Division of the Census Bureau recently completed an extensive study of the feasibility of collecting data on property tax bases. Unfortunately, they concluded that such a collection effort would not be economically viable.

expenditure need (Chernick and Reschovsky, 2008). We found that all of the central cities (except New York City) were substantially disadvantaged relative to their suburbs, and that the degree of fiscal disadvantage tended to grow more severe between 1990 and 2000.

Our second approach to assessing the fiscal health of U.S. cities involves taking an existing comparative measure of fiscal health, namely, the need-capacity indices for 1982 constructed by Ladd and Yinger, and using a regression model to determine whether the economic performance of the Ladd-Yinger sample of cities over the next 25 years, in terms of population, jobs, income, and crime rates, was systematically related to their fiscal health in 1982. The results suggest that population and job growth were stronger in cities with better fiscal health, while income and crime rate were unrelated. However, adding covariates which are closely related to fiscal capacity and need, the index itself loses statistical significance. In particular, higher initial rates of poverty are negatively related to economic performance. This exercise should not be interpreted as indicating that fiscal health is not important to cities, but that it is insufficient to explain performance over such a long time period.

The third approach to fiscal health is the most ambitious. We have constructed a long-period data base (1977-2011) of revenue and expenditures for 112 large central cities that takes account of the wide variation in fiscal arrangements in U.S. cities. We create fiscally standardized cities (FiSCs) by accounting for the revenue and expenditures of overlapping counties, school districts, and special districts.[15] This unified framework allows systematic comparisons of city revenues and expenditures that have heretofore not been possible.

We use the FiSC data to study the effect of the Great Recession on central cities. The results are sobering. A predictive model for 2009-2013 suggests a sustained period of revenue decreases in many large cities. Pressure on the property tax from the housing crisis, together with declines in state and now federal aid, are severely squeezing many cities. The latest available data showing actual changes for 2009 to 2011 are broadly consistent with our forecasted revenue changes.

In future work, we intend to add more recent years of data, and devote more attention to the expenditure side of city budgets. In particular, data on city pension obligations, which we are adding to our data set, will help to assess the extent to which current fiscal problems of many large cities are due to the recession and exogenous shocks to the housing market, versus imprudent compensation policies on the part of city officials.

[15] A public-use version of the FiSC database is available on the website of the Lincoln Institute of Land Policy at www.lincolninst.edu.

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Tables and Figures

Table 1

Fiscal and Socio-Economic Characteristics of Milwaukee and Its Suburbs

	City of Milwaukee	Milwaukee Suburbs			
		Average	Stand. Dev.	Minimum	Maximum
Per Capita Spending (FY 2004)					
General government	$214	$96	$64	$26	$442
Law enforcement	322	178	246	0	1,850
Fire and public safety	190	113	64	27	285
Streets and Transportation	114	100	59	37	391
Public works (excluding sewage)	51	39	23	0	112
Health and human services	53	6	12	0	87
Culture and recreation	41	49	45	0	191
Economic development	69	19	26	0	178
Debt service	175	181	325	0	2,708
Total	$1,228	$790	$615	$189	$3,676
Fiscal Variables					
Equalized property value per capita	$36,589	$104,077	$76,901	$46,168	$593,445
Residential share	61.0%	78.2%	14.3%	35.0%	98.0%
Total state aid per capita	$527	$159	$97	$55	$504
Shared revenue per capita	$405	$48	$49	$12	$269
Total federal aid per capita	$74	$4	$14	$0	$105
Municipal (equalized) mill rate	8.62	4.64	2.56	0.80	13.85
Socio-economic Characteristics					
Population (2004)	593,920	10,422	12,863	269	66,816
Pecent non-white	54.4%	7.8%	5.6%	0.0%	37.3%
Percent living renter-occupied units	52.9%	19.1%	12.2%	2.1%	56.0%
Percent single-parent households	44.7%	13.4%	6.0%	4.5%	36.4%
Percent 65 years and older	10.3%	11.6%	4.4%	3.6%	23.8%
Poverty rate (2000)	20.8%	3.0%	1.8%	0.2%	11.6%
Percent of housing built before 1939	33.6%	17.2%	10.9%	1.5%	54.9%
Property crime rate (crimes/100 pers.)	5.43	2.05	0.92	0.80	4.63
Violent crime rate (crimes/100 pers.)	0.79	0.08	0.05	0.02	0.29

Source: Authors' calculations based on data from the WI Department of Revenue and the U.S. Census Bureau.

Table 2

Selected Expenditure Regressions: Milwaukee Metropolitan Area, 2004[+]

Dependent Variable: Log of Law Enforcement Spending Per Capita

	Coefficient	t-statistic
Log of property value per capita	0.54	2.0 **
Residential property share	-1.09	-1.09 *
Log of shared revenue state aid per capita	0.12	4.17 **
Percent renter	1.47	1.94 *
Percent of population over 65	4.94	3.39 **
Constant	-2.8	-0.76
Adusted $R^2 = 0.60$		

Dependent Variable: Log of Fire and Other Public Safety Spending Per Capita

	Coefficient	t-statistic
Log of property value per capita	0.31	2.29 **
Residential property share	-1.44	-3.92 **
Log of shared revenue state aid per capita	0.058	2.08 **
Percent of Housing built before 1939	0.57	1.49
Log of population density	0.141	3.36 **
Percent of population over 65	4.15	3.61 **
Constant	-0.12	-0.06
Adusted $R^2 = 0.73$		

Dependent variable: Log of Spending Per Mile on Streets and Transportation

	Coefficient	t-statistic
Log of property value per capita	0.27	1.77 *
Residential property share	-0.198	-0.38
Log of state aid for transportation	0.146	2.5 **
Log of population density	0.386	6.49 **
Constant	2.15	1.14
Adjusted $R^2 = 0.54$		

Table 3

The Fiscal Health of Municipal Governments in the Milwaukee Metropolitan Area

		Expenditure Need*	Tax Capacity	Tax Gap	Fiscal Capacity	Fiscal Gap
City of Milwaukee		$799	$172	$481	$773	$42
Suburban Milwaukee		(by 1999 Median HH Income*)				
Less than $50,000	(14)	824	305	373	569	272
$50,000-59,999	(29)	672	372	154	547	141
$60,000-69,999	(20)	637	489	2	653	0
$70,000-89,999	(20)	569	535	-112	645	-59
$90,000 and over	(6)	665	1,488	-970	1,756	-1,075
Suburban Average	(89)	637	489	2	653	0

*Numbers in parentheses are the number of municipalities.

Table 4

Percent Population Change, *Standardized* Fiscal Health

Dependent Variable: % Change in City Population, 1986-2005			
	(1)	(2)	(3)
Standardized Fiscal Health Index (1982)	.1198333**	.024391	.0225467
P-Value	0.031	0.793	0.793
% Chg Land Area (1986-2005)	.6361825***	.5754695***	.4978165***
P-Value	0.001	0.001	0.003
Region Dummy (Relative to Northeast)			
Midwest	.8648454	.7203952	-1.382008
P-Value	0.843	0.868	0.735
South	6.520401	8.668899	1.619227
P-Value	0.162	0.124	0.782
West	22.02819***	18.97619***	13.1649**
P-Value	0.000	0.008	0.018
ln(Population) (1986)		1.491768	1.689507
P-Value		0.559	0.469
Poverty Rate (1989)		-1.397144***	-1.405887***
P-Value		0.001	0.001
Per Capita Income (1985)		-.0031291	-.001495
P-Value		0.114	0.378
% Graduating High School (1980)		.3697255	
P-Value		0.296	
% Graduating College (1980)			-.120242
P-Value			0.749
% Chg Suburb Population (1982-2005)			.2604052***
P-Value			0.000
Constant	-2.108246	14.12785	16.0948
P-Value	0.471	0.694	0.596
F	13.48***	17.65***	27.10***
P-Value	0.0000	0.0000	0.0000
R-Squared (Adjusted)	0.5773	0.6720	0.7300
N	70	69	69

* p < 0.10 ** p < .05 *** p < .01

Table 5

Percent Employment Change, *Actual* Fiscal Health

Dependent Variable: % Change in Employment in City, 1980-2005			
	(1)	(2)	(3)
Actual Fiscal Health Index (1982)	.2020654**	-.0238111	-.0054225
P-Value	0.039	0.865	0.959
% Chg Land Area (1980-2005)	.4225643**	.4493863***	.4678719***
P-Value	0.026	0.004	0.001
Region Dummy (Relative to Northeast)			
Midwest	4.002794	-8.135257	-17.53847***
P-Value	0.516	0.227	0.004
South	21.58302***	20.40762***	1.052402
P-Value	0.010	0.005	0.889
West	51.553***	18.56524*	3.708933
P-Value	0.000	0.071	0.664
ln(Population) (1980)		2.191971	6.244679**
P-Value		0.572	0.041
Poverty Rate (1979)		-2.65972***	-2.905124***
P-Value		0.000	0.003
Per Capita Income (1985)		-.0077077***	-.0027251
P-Value		0.009	0.417
% Graduating High School (1980)		1.425047**	
P-Value		0.019	
% Graduating College (1980)			.129103
P-Value			0.873
% Chg Metro Private Employment (1982-2005)			.5573676***
P-Value			0.000
Constant	-.5917716	14.12954	-9.791086
P-Value	0.874	0.766	0.834
F	15.13***	11.04	41.34***
P-Value	0.0000	0.0000	0.0000
R-Squared (Adjusted)	0.5021	0.6725	0.7800
N	69	68	68

* p < 0.10 ** p < .05 *** p < .01

Table 6

Number of *Fiscally Standardized Cities* by Type of Fiscal Structure

	Has Overlying County	No Overlying County	Total
City-dependent school district	5	13	18
Single independent school district whose boundary is coterminous with city boundaries	13	7	20
One or more independent school districts whose boundaries extend beyond city boundaries	52	2	54
County-wide independent school district	11	3	14
County-dependent school district	6	0	6
Total	87	25	112

Table 7

General Revenue and Tax Revenues of 112 Fiscally Standardized Cities by Type of Revenue, 2011

Type of Revenue

	Amount (in mil.$)	Percentage of General Revenue	Median Share	Minimum Share	Maximum Share
Intergovernmental Revenues	$143,874	38.2%	38.5%	19.2%	70.3%
Federal aid	28,178	7.5%	6.4%	0.9%	33.2%
State aid	115,698	30.7%	30.6%	8.1%	61.9%
Own-source revenue	$232,644	61.8%	61.5%	29.7%	80.8%
Tax revenue	149,533	39.7%	37.0%	10.8%	55.9%
User fees & charges	60,735	16.1%	16.5%	3.7%	44.2%
Misc. general rev.	22,436	6.0%	5.7%	1.0%	20.7%
Total general revenue	$376,579	100.0%			

Type of Tax

	Amount (in mil.$)	Percentage of Total Taxes	Median Share	Minimum Share	Maximum Share
Property	$86,689	58.0%	67.0%	25.8%	98.8%
General sales	21,792	14.6%	13.5%	0.0%	50.3%
Selective sales	11,406	7.6%	6.2%	0.0%	22.6%
Individual income	14,716	9.8%	0.0%	0.0%	38.8%
Corporate income	7,026	4.7%	0.0%	0.0%	15.1%
Other taxes	7,904	5.3%	3.7%	0.3%	25.2%
Total taxes	$149,533	100.0%			

Source: Authors' tablulations of data from the 2011 Annual Survey of State and Local Government Finances, U.S. Census Bureau.

Table 8

General Revenue and Tax Revenue by Source for 112 Large Central Cities, 2011
Comparison of Revenues of FiSCs and of Their Component Governments

Type of Revenue	112 Large Central Cities									
	Amount (in mil. $)					Average Share of General Revenue and of Total Taxes				
	Municipal Gov't	County Gov't*	School Districts+	Special Districts	FiSC	Municipal Gov't	County Gov't**	School Districts++	Special Districts^	FiSC
Intergovernmental revenue	$65,363	$20,309	$45,969	$12,233	$143,874	22.5%	33.0%	62.1%	42.4%	39.1%
Federal aid	15,412	1,929	684	10,152	28,178	6.5%	3.9%	0.8%	33.3%	7.0%
State aid	49,951	18,380	45,285	2,083	115,698	16.0%	29.1%	61.2%	9.0%	32.1%
Own-source revenue	$154,122	$33,049	$28,824	$16,649	$232,644	77.5%	67.0%	37.9%	57.0%	60.9%
Tax revenue	99,511	19,323	25,563	5,136	149,533	44.0%	42.0%	33.5%	20.5%	37.2%
User fees & charges	39,507	10,863	1,220	9,145	60,735	24.5%	18.5%	1.9%	27.9%	17.4%
Misc. general rev.	15,113	2,862	2,041	2,419	22,436	9.0%	6.5%	2.5%	9.2%	6.4%
Total general revenue	$219,494	$53,359	$74,793	$28,933	$376,579	100.0%	100.0%	100.0%	100.0%	100.0%
Type of Tax										
Property	$45,611	$14,735	$24,369	$1,974	$86,689	45.8%	74.5%	94.8%	59.4%	66.6%
General sales	15,528	3,023	616	2,625	21,792	15.6%	17.4%	2.8%	25.2%	15.3%
Selective sales	10,342	872	41	151	11,406	10.4%	3.7%	0.2%	1.4%	7.5%
Individual income	14,447	20	249	0	14,716	14.5%	0.2%	0.8%	0.0%	5.0%
Corporate income	6,988	39	0	0	7,026	7.0%	0.1%	0.0%	0.0%	0.5%
Other taxes	6,595	635	288	386	7,904	6.6%	3.9%	1.4%	14.0%	5.2%
Total taxes	$99,511	$19,323	$25,563	$5,136	$149,533	100.0%	100.0%	100.0%	100.0%	100.0%

*Dollar amounts are the share of the total revenues of overlying county government allocated to FiSCs, with the allocation based on the central city share of total county population.
+Dollar amounts are the share of the total revenues of overlying school districts allocated to FiSCs, with the allocation based on the central city share of total students.
**Average shares calculated for the 87 central cities that have overlying county governments.
++Average shares calculated for the 88 central cities that are served by one or more independent school districts.
^Average tax shares calculated for the 98 central cities in which special districts levy tax revenues.
Source: Authors' tablulations of data from the 2011 Annual Survey of State & Local Government Finances, U.S. Census Bureau.

Figure 1

Prtcrntage Change in Real Per Capita General Revenues
(3-Year Moving Averages)

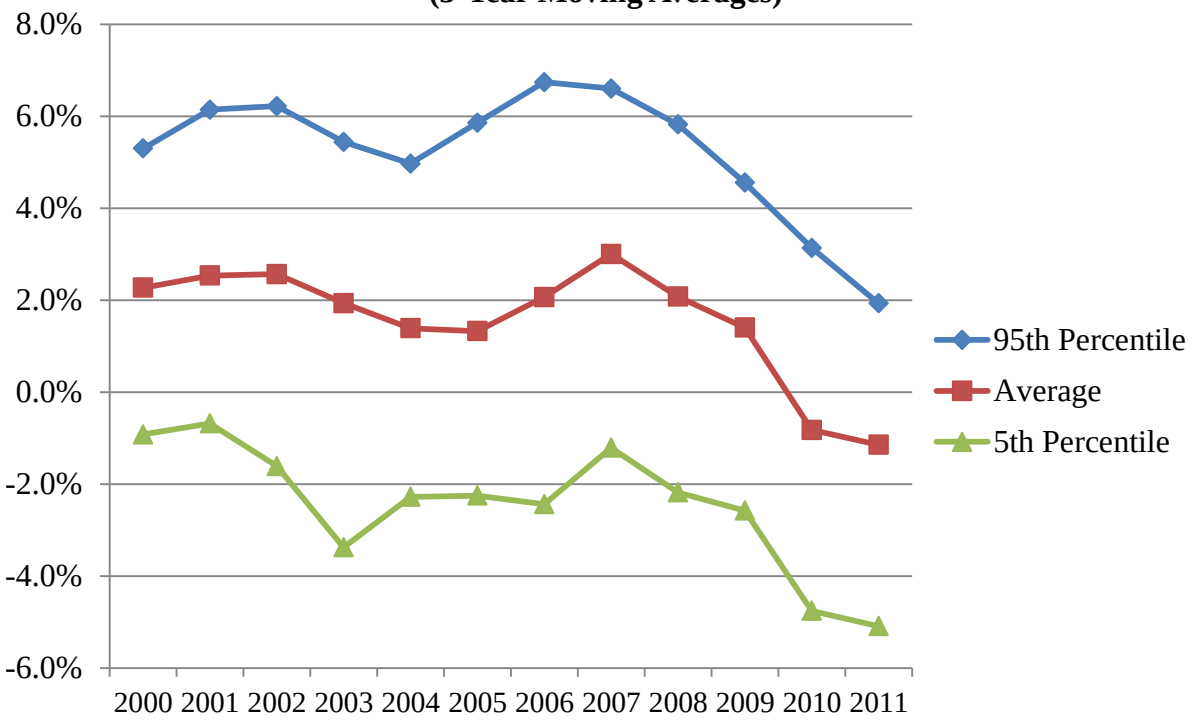


Figure 2

Percentage Change in Real Per Capita Revenues
Actual versus Predicted, Average for 109 FiSCs

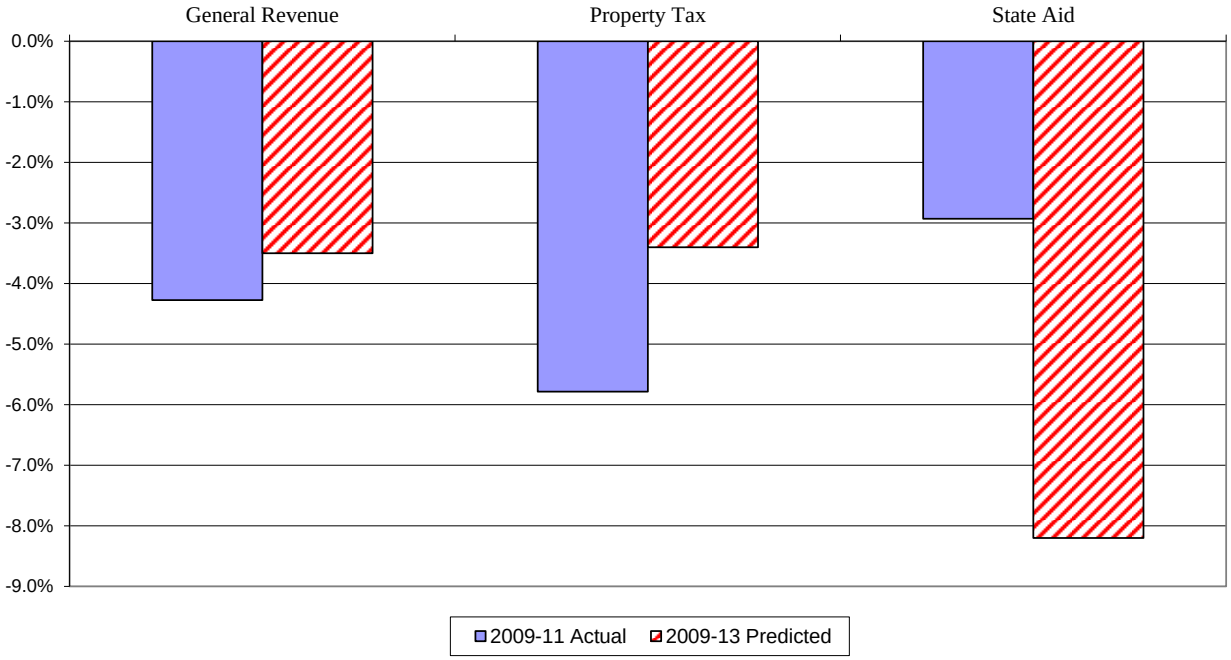
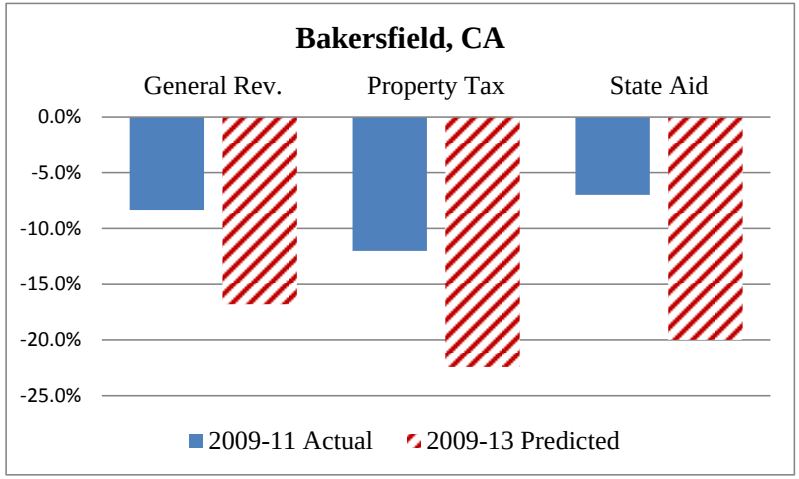
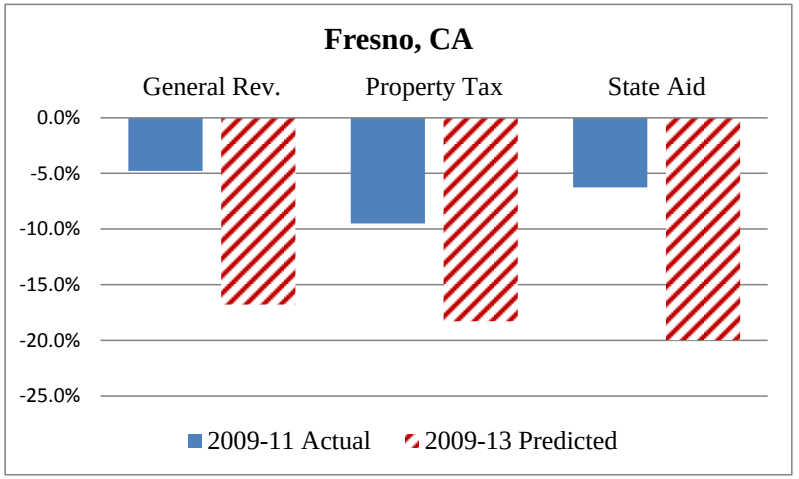


Figure 3

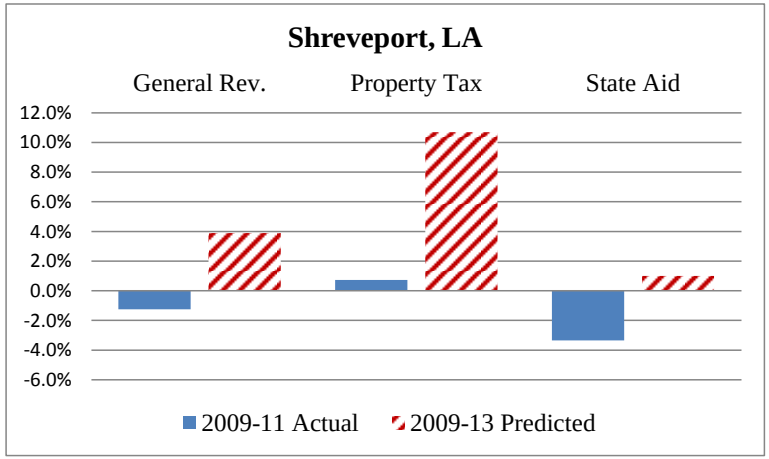
FiSCs with Large Predicted Percentage Changes in Real Per Capita Revenue
Actual 2009-2011 versus Predicted 2009-2013

Cities with Largest Predicted Revenue Declines





Cities with Largest Predicted Revenue Increases



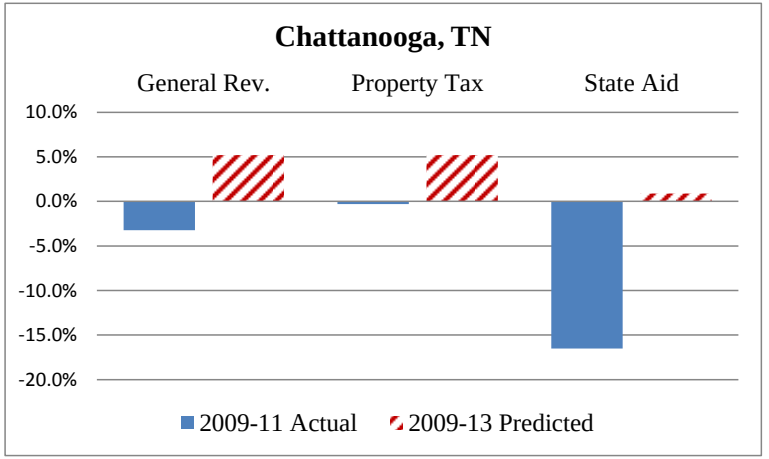


Figure 4

Percentage Change in Real Per Capita Revenue
Actual versus Predicted

New York City