



# Central City Revenues after the Great Recession

**Providence, Rhode Island, collects nearly 90 percent of its tax revenue from the property tax.**

*Howard Chernick, Adam H. Langley, and Andrew Reschovsky*

**T**he Great Recession of 2007–2009 and the sluggish recovery since then have produced extraordinarily large state budget gaps. Even as the fiscal condition of most state governments is slowly improving, many central cities have only recently begun to feel the full impacts of the economic slowdown and the disruptions to the housing market.

A number of indicators have been flashing signs of local government fiscal distress. From its peak in 2008 through May 2012, local government employment has fallen by 528,000, or 3.6 percent (U.S. Bureau of Labor Statistics 2012). The media has also been reporting large cuts in public services in some cities. Newark, New Jersey, has been forced to make substantial cuts in municipal employment, as well as imposing significant increases in taxes and fees. Stockton, California, is reportedly on the verge of bankruptcy. A number of counties

in New York State are either in or close to fiscal receivership, and the school district of Providence, Rhode Island, which comprises half the city's total budget, is facing a nearly \$40 million shortfall for the coming academic year.

The most recent comprehensive data on central city finances are from the U.S. Census Bureau for the year 2009. In the absence of more recent data, we have developed a forecasting model of the revenues of the nation's largest central cities, based on a specially constructed multiyear database. We focus on large cities not only for their sheer size, but also because they are crucial to the economic success of their surrounding regions.

The prosperity of cities depends on effective public services, provided at competitive tax rates. The deep recession, reinforced by the decline in housing prices and extensive housing foreclosures, has put pressure on local tax revenues and local public services. Deep cuts in state aid to many local governments have only added to the fiscal pain. Given the ongoing sluggishness of the U.S.

economy, the prospects for a robust recovery in revenues over the next few years are highly uncertain.

### **The Difficulty of Comparing City Revenues**

The U.S. Census Bureau provides the only comprehensive source of fiscal data for cities. Information is collected separately for each type of governmental unit—general-purpose municipal governments, which include cities and towns; independent school districts; county governments; and special districts. Because the delivery of public services is organized in very different ways in different cities, direct comparisons of revenues across cities by source can be highly misleading.

While some municipal governments are responsible for financing a full array of public services for their residents, others share this responsibility with a variety of overlying governments. For example, Boston, Baltimore, and Nashville have neither independent school districts nor county governments serving local residents. Each of those municipal governments is responsible for providing core municipal services, plus education, public health, and other social services. By contrast, 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 are the responsibility of one or more independent governments serving city residents, and in some cases people who live beyond the city boundaries as well.

To illustrate the difficulty in making revenue comparisons, census data indicate that in 2009, the City of Tucson, Arizona, which relies heavily on a local sales tax, collected only 14 percent of its total tax revenue from the property tax, while Buffalo, New York, collected 88 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, the situation is reversed. Property taxes accounted for 68 percent of the total local tax revenue paid by Tucson residents, but only 50 percent of tax revenue paid by the residents of Buffalo. In the latter case, the county government relies heavily on sales tax revenue.

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 received by governmental entities that provide services to 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 and county governments that overlay municipal boundaries. We refer to the result of this calculation as a “constructed city” government.

To create constructed cities we take the following steps. For cities with independent school districts that are coterminous to city boundaries, we combine the school district and municipal values of all revenue 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 constructed city. For each school district serving a portion of the central city, we draw on geographical information system (GIS) analysis of census block group level data from the 1980–2000 decennial censuses to determine the number of students in each school district that live in the central city.

For counties, we allocate the portion of revenues associated with city residents on the basis of the city’s share of county population. Because geographic boundaries are not readily available, and fiscal data is intermittent, our calculations do not take account of special districts. For the country as a whole, special districts are relatively unimportant, and failing to include them should do little to distort fiscal comparisons among central cities.

Constructed city revenues are calculated for the nation’s largest central cities for the years 1988 through 2009. The source for the data is the quinquennial Census of Governments, and, for non-census years, the Annual Survey of State and Local Government Finances. The sample 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. In 2009, the population of the 109 central cities in our sample was 58.9 million, equaling 60.3 percent of the population of all principal cities within U.S. metropolitan statistical areas.

While prior studies have recognized the importance of overlying jurisdictions, they have been less systematic in taking account of the variations in governmental structure. Carroll (2009) ignores overlying jurisdictions, while Inman (1979) and Sjoquist, Walker, and Wallace (2005) use dummy



**Less than 20 percent of Atlanta's revenues are from state and federal aid.**

variables as a partial adjustment. Ladd and Yinger (1989) focus on the revenue capacity of municipal governments by adjusting for the capacity “used up” by overlying governments.

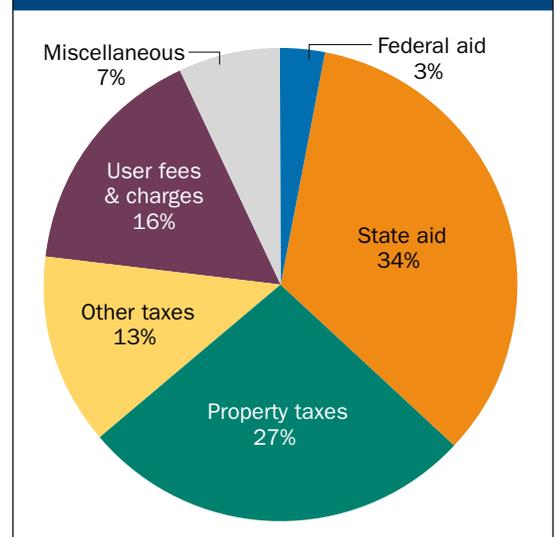
**Constructed City Revenues**

Figure 1 displays the average share of total general revenues that came from each revenue source in the 109 constructed cities in 2009. The most important sources are state aid (34 percent) and property taxes (27 percent). User fees and charges contributed 16 percent, while taxes other than the property tax contributed 13 percent.

Sources of revenue vary enormously among constructed cities. For example, 60 percent or more of general revenue came from state and federal aid in Springfield (Massachusetts), Fresno, and Rochester, while aid contributed less than 20 percent of revenues in Atlanta, Dallas, and Seattle. The reliance on the property tax also varies across cities, with over 90 percent of tax revenue coming from the property tax in Providence, Boston, and Milwaukee, but less than 30 percent in Philadelphia, Birmingham, and Mobile.

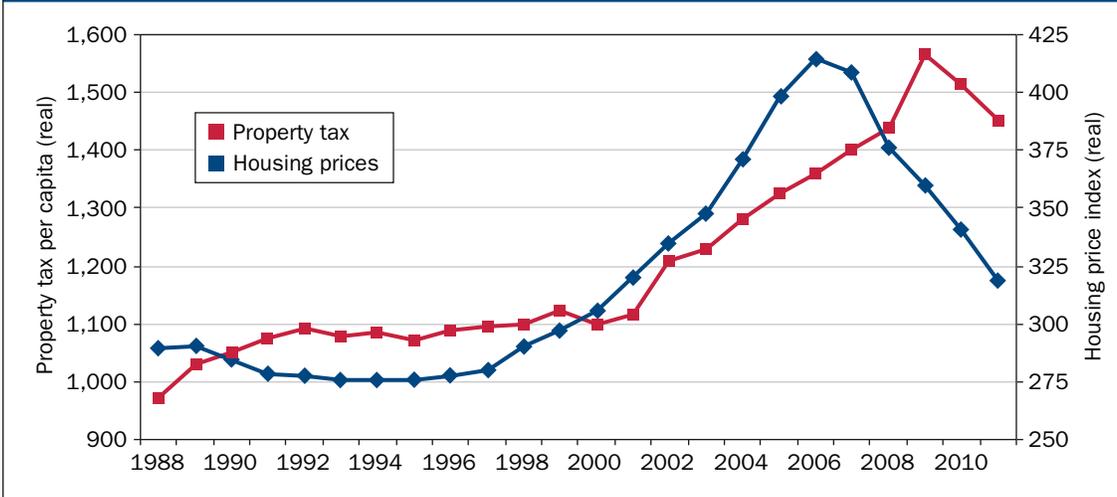
Because the importance of counties and independent school districts varies enormously, revenue comparisons that rely only on data from municipal governments are highly misleading. For example,

**FIGURE 1**  
**Revenue Sources of Constructed Cities, 2009**



Source: Authors' tabulation of data from the U.S. Census Bureau's 2009 Annual Survey and State of Local Government Finances.

**FIGURE 2**  
**U.S. Property Taxes and Housing Prices, 1988–2011**



Note: Property taxes and housing price index values are U.S. averages for each calendar year.

Sources: Federal Housing Finance Agency, U.S. All Transactions Index; U.S. Census Bureau, Quarterly Summary of State & Local Taxes; Consumer Price Index, All Urban Consumers.

in 2009 per capita general revenue of the city government of Pittsburgh was \$1,958, while the per capita revenue for Baltimore was \$5,306. However, per capita revenues in the two constructed cities were nearly identical. This pattern is not atypical among cities.

Comparing per capita revenues across central city municipal governments overstates the differences across cities because it forces us to compare city governments that have very different sets of public service responsibilities. Utilizing the concept of constructed cities provides the basis for more accurate intercity comparisons, and allows us to generate comprehensive revenue forecasts for the cities in our sample.

### Forecasting Revenues for Constructed Cities

To forecast general revenues for 109 constructed cities for the four years from 2010 to 2013, we sum projections for five separate revenue streams: property taxes; nonproperty tax revenues; nontax own-source revenues; state aid; and federal aid (Chernick, Langley, and Reschovsky 2012). We use econometric models fitted with actual and projected metropolitan area-level data to forecast the three sources of own-raised revenue. We then make a range of projections about intergovernmental revenues based on information from surveys and published revenue estimates.

### Property Tax Revenues

Predicting the exact relationship between changes in tax revenues and changes in the size of the tax base is particularly difficult in the case of the property tax. Property tax rates are adjusted much more frequently than sales or income tax rates to reflect changes in assessed values and revenue needs. Predicting the revenue impact is further complicated by the existence in some states of legislatively or constitutionally imposed limits on tax rates, changes in tax levies, or changes in assessed values. Major changes in the fiscal relationships between state and local governments, such as school funding reforms, are often motivated by the goal of reducing reliance on the property tax.

Although property taxes are generally levied on all real property, comprehensive data on property values over time and across states do not exist. Thus, researchers have had to focus on changes in housing prices. Data collected on the Lincoln Institute's website, Significant Features of the Property Tax (2012), indicate that in the large majority of states where data are available residential property accounts for well over half of total property value.

Figure 2 demonstrates the relationship since 1988 between housing prices in the United States and per capita local government property tax revenues. Inflation-adjusted housing prices rose steadily from 1998 until 2006, but by 2011 they

had fallen by 25 percent. Per capita property tax revenues followed a similar pattern, with sharp growth beginning in 2001 and continuing until 2009, three years after housing prices peaked.

The lag between changes in housing prices and changes in property tax revenues occurs because changes in assessed values, on which property taxes are levied, typically lag behind changes in market values. The lag may be as little as a year, in cities with annual reassessments, or longer in cities that reassess less frequently or have explicit policies to phase in changes in market value.

The housing price indices for our 109 constructed cities indicate very different patterns of boom and bust in different parts of the country. Willingness of city residents to support increases in property taxes may reflect both changes in the value of their homes and changes in their income. Furthermore, as property tax rates are often adjusted in response to changes in other revenue sources, changes in state aid are likely to affect changes in property tax rates and revenues. To capture these various factors, we estimated a statistical relationship between annual changes in per capita property tax revenues and lagged changes in housing prices, metropolitan area personal incomes, and per capita state aid. Data on property tax revenues are for the years 1988 through 2009. Our statistical model also accounts for city-specific factors that remain constant over time.

The results of our analysis indicate a statistically significant relationship between changes in property tax revenues and changes in housing prices, lagged three years. Our results also indicate that changes in personal income two years ago lead to current year changes in property taxes revenues. This suggests that the impact of the decline in housing prices from 2006 to 2012 and reductions in personal income during the recession will exert negative pressure on property tax revenues from 2009 until at least 2015. Changes in state aid were found to be statistically insignificant.

We estimate that, on average, a 10 percent change in housing prices in our constructed cities results in a 2.5 percent change in tax revenues. This implies that the average city will offset about three-quarters of the revenue effect of falling market values by raising effective tax rates.

To forecast changes in per capita property tax revenues, our coefficient estimates are combined with actual and projected values of metropolitan

housing prices, personal income, and state aid, which are then added to actual 2009 property tax revenues to calculate annual per capita revenue for each year between 2010 and 2013. Adjusting for inflation we find that per capita property tax revenue in the average constructed city will decline by \$40 or 3.1 percent over the period from 2009 through 2013. Predicted changes range from increases of about 14 percent in the Texas cities of Lubbock and San Antonio to declines of 20 percent in some cities in California, Arizona, and Michigan, where the bursting of the housing bubble was most severe.

### ***Other Locally Raised Revenues***

As demonstrated in figure 1, revenue raised from local sources other than the property tax in the average constructed city accounts for a little over one-third of total revenues. These revenues come from local government sales taxes, income taxes, user charges, fees, licenses, and other miscellaneous sources. The importance of these revenue sources varies tremendously across cities, ranging from 6 percent of general revenues in Springfield (Massachusetts) to 60 percent in Colorado Springs.

As we did in forecasting property tax revenues, we started by estimating the statistical relationship between annual changes in revenues and changes in metropolitan area personal income, lagged one year. We estimate separate equations for tax revenue from taxes other than the property tax and for local-source revenue from nontax sources. Using the coefficients from our estimated equations and actual and forecast data on metropolitan area per capita personal income, we forecast a \$20 per capita (2.1 percent) increase in tax revenue from sources other than the property tax and a \$29 (1.2 percent) increase in nontax locally raised revenues over the four-year period between 2009 and 2013.

### ***State Aid to Cities***

Over the past few years, most state governments have faced large budget shortfalls. Budget adjustments have occurred mainly on the spending side, and in many states there have been large reductions in state aid to local governments. To forecast reductions in state aid through 2013, we draw on a survey of changes in state education aid between 2008 and 2012 by the Center on Budget and Policy Priorities (Oliff and Leachman 2011). We assume that the reported percentage change in



each state's education aid applies to the school districts in every constructed city in that state, and that the same percentage change in aid applies to noneducation aid as well.

Given the uncertainty over future legislative actions, we make three alternative predictions. The base case assumes that state aid stays constant in real terms from 2012 to 2013. Our best case assumption is that state aid increases in each city by 3 percent in that period, while our worst case is that state aid changes by the same amount in real terms as in 2011–2012, i.e., an average reduction of about 6 percent. Under our base case, per capita state aid is forecast to decline by \$153 (9.5 percent) between 2009 and 2013.

### ***Federal Aid to Cities***

Cities receive federal grants through a myriad of different programs. In the past few years, fiscal

pressure at the federal level has led to a number of proposals to sharply reduce such spending. President Obama's FY2013 budget calls for large cuts in a wide range of programs that provide revenue to cities. Based on alternative assumptions about Congressional actions, we take as a base case assumption a 15 percent reduction in federal aid between 2009 and 2013, a worst case of a 37.7 percent reduction in federal grants between 2009 and 2013 (the current budget proposal), and a best case of a 9.5 percent cut.

### ***Total General Revenues***

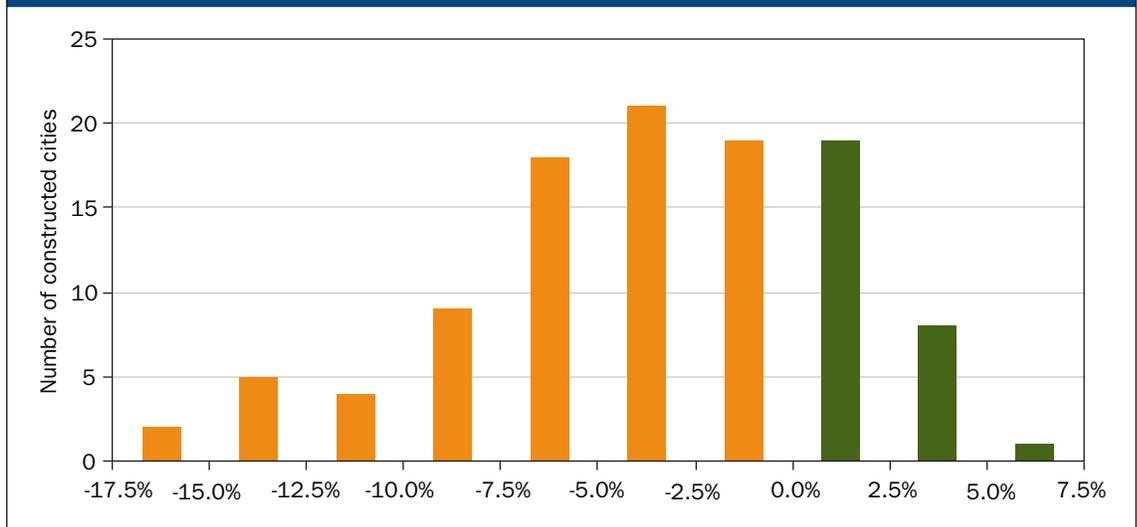
General revenues are defined as the sum of the five sources of revenues discussed above. Adding up the forecasts, we predict that on average inflation-adjusted per capita general revenues will decline between 2009 and 2013 by 3.5 percent (\$169). Though the variation in revenue forecasts across

**Los Angeles and other constructed cities in California will experience among the largest projected revenue declines.**

the nation is substantial, nearly three-quarters of central cities face some level of reductions (figure 3). The largest projected revenue declines are in California and Arizona, where 11 cities have declines of greater than 10 percent. There is no particular regional pattern to the cities where we forecast growth in revenues. For example, per capita revenue growth in excess of 3 percent is predicted for such diverse cities as Atlanta, Cincinnati, and Lubbock.

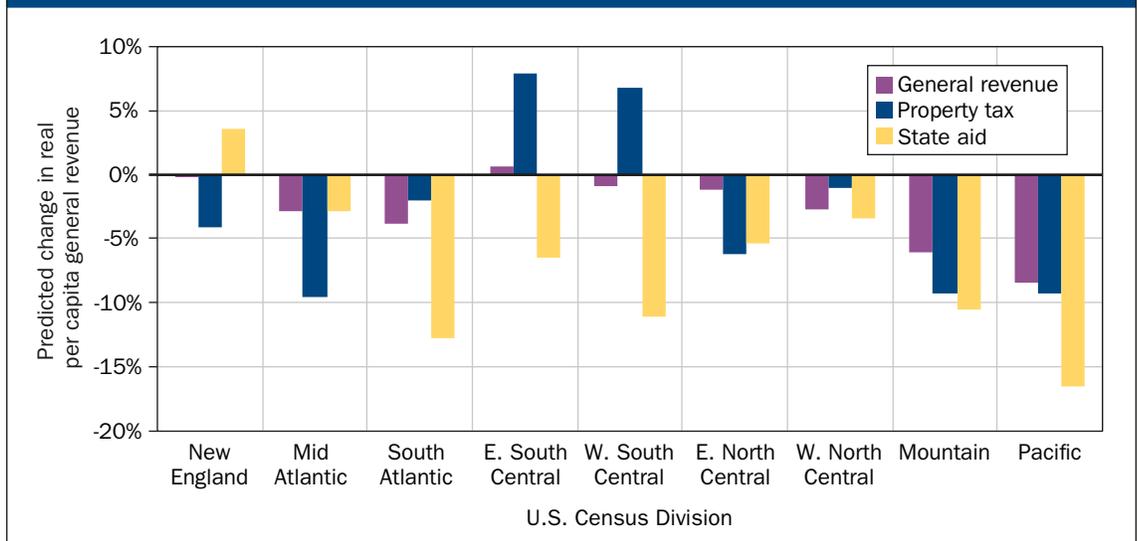
Figure 4 groups constructed cities by their census division. Above-average revenue declines are forecast in the Pacific, Mountain, and South Atlantic divisions. Revenues are declining in the central cities in these regions because they are facing a combination of reduced property tax revenues and sharp reductions in state aid. By contrast, in the East and West South Central divisions, real general revenues remain largely unchanged because declines in state aid are

**FIGURE 3**  
**Distribution of Constructed Cities by Forecasted Percentage Change in Real Per Capita General Revenue, FY2009–FY2013**



Note: For this forecasting exercise, we excluded three Indiana cities (Indianapolis, Gary, and Fort Wayne) because changes in property taxes and state aid in Indiana reflected a major reform starting in 2008 that included over 50 percent increases in state education aid combined with large property tax reductions.

**FIGURE 4**  
**Predicted Changes in Revenue in U.S. Regions, 2009–2013**



Notes: Revenue changes for the E. North Central census division excludes Indiana cities. See note in figure 3 for an explanation.

offset by increases in property taxes. The opposite is true in New England, where property tax reductions are offset by state aid increases.

Forecasting future levels of state and federal aid to central cities is extraordinarily difficult. Our approach is to choose a range of estimates for 2012–2013 changes in intergovernmental aid. From the cities' perspective, our worst case calls for steep cuts in both state and federal aid, while our best case calls for smaller cuts in federal aid and modest increases in state aid. When combined with cities' own sources of revenue, under the worst case scenario, real general revenues will decline by \$295 per capita (6.1 percent) between 2009 and 2013. This decline is \$126 per capita more than our base case forecast. Even under our best case, we forecast that on average general revenues will decline by \$116 per capita or 2.4 percent over the four-year period.

## Conclusions

These predicted reductions in revenue place many of the nation's largest central cities in uncharted territory. While these revenue declines may appear modest, they contrast quite sharply with the resiliency of city revenues following the previous three recessions. For example, real per capita revenues grew by a robust 17 percent in our 109 constructed cities during the four years following the recession of 1981–1982. Given the severity of that recession, the current revenue declines highlight the unprecedented magnitude and duration of fiscal pressure on cities that has resulted from the housing market collapse and the Great Recession in 2007–2009.

Demographic and economic trends, such as the aging of the population and the persistence of high poverty rates, contribute to the rising costs of providing government services in central cities. In many cities legally binding pension and health care benefits for retirees constitute a large and growing component of total compensation. Facing both rising costs and reduced revenues, many central cities have no choice but to implement substantial cuts in locally provided public services. There is little question that these reductions, when combined with projected cuts in federal and state government programs that provide direct assistance to city residents, such as Food Stamps, Medicaid, and unemployment insurance, will cause substantial harm to central city economies.

While the governments serving central city residents must continue to search for ways to reduce costs without harming service quality and to explore potential new sources of revenue, it is also critically important that the federal government and state governments take an active partnership role in mitigating the adverse impact of the recession on the nation's central cities. **L**

## ABOUT THE AUTHORS

**HOWARD CHERNICK** is professor of economics at Hunter College and the Graduate Center of the City University of New York. He specializes in the public finances of state and local governments, both in the U.S. and abroad. Contact: [howard.chernick@hunter.cuny.edu](mailto:howard.chernick@hunter.cuny.edu)

**ADAM H. LANGLEY** is a research analyst in the Department of Valuation and Taxation at the Lincoln Institute of Land Policy, where he has coauthored papers on property tax incentives and relief programs, nonprofit payments in lieu of taxes, and state-local government fiscal relationships. Contact: [alangley@lincolninst.edu](mailto:alangley@lincolninst.edu)

**ANDREW RESCHOVSKY** is a professor of public affairs and applied economics in the Robert M. La Follette School of Public Affairs of the University of Wisconsin-Madison and a visiting fellow at the Lincoln Institute of Land Policy. He conducts research on property taxation and other aspects of state and local public finance. Contact: [reschovsky@lafollette.wisc.edu](mailto:reschovsky@lafollette.wisc.edu)

Note: This article is a condensed and updated version of the article published in *Publius* in 2012.

## REFERENCES

- Carroll, Deborah A. 2009. Diversifying municipal government revenue structures: Fiscal illusion or instability? *Public Budgeting & Finance* 29(1) (Spring): 27–48.
- Chernick, Howard, Adam Langley, and Andrew Reschovsky. 2012. Predicting the impact of the U.S. housing crisis and "Great Recession" on central city revenues. *Publius: The Journal of Federalism* 42(3).
- Inman, Robert. 1979. Subsidies, regulation, and taxation of property in large U.S. cities. *National Tax Journal*. June.
- Ladd, Helen F., and John Yinger. 1989. *America's ailing cities: Fiscal health and the design of urban policy*. Baltimore: The Johns Hopkins University Press.
- Oliff, Phil, and Michael Leachman, 2011. New school year brings steep cuts in state funding for schools. Washington, DC: Center on Budget and Policy Priorities (October 7).
- Significant Features of the Property Tax. 2012. Cambridge, MA: Lincoln Institute of Land Policy. <http://www.lincolninst.edu/subcenters/significant-features-property-tax>
- Sjoquist, David L., Mary Beth Walker, and Sally Wallace. 2005. Estimating differential responses to local fiscal conditions: A mixture model analysis. *Public Finance Review* 33(1) (January): 36–61.
- U.S. Bureau of Labor Statistics. 2012. Current employment statistics survey. Seasonally adjusted employment. [www.bls.gov/data](http://www.bls.gov/data)