

Predicting Municipal Fiscal Distress: Aspiration or Reality?

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Abstract

Cities are where people come together to work, live, and thrive. Cities also face a host of fiscal challenges, many of which were laid bare in the Great Recession. Given these challenges, stakeholders of many kinds have sought more and better indicators of city fiscal health. This paper provides an overview of such measures grounded in economic, fiscal or financial, and comprehensive approaches. It further explores lessons from past federal and state programs to distribute local aid and monitor local fiscal conditions. The paper notes a fundamental challenge in evaluating fiscal health measures: the relative infrequency of adverse events such as defaults and bankruptcy. It presents one approach to addressing this challenge: observing how cities with alternative starting conditions weather a housing price shock. Results presented here will help state and federal policymakers concerned with responding to municipal fiscal distress as well as voters wishing to make informed choices about their fiscal futures.

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Predicting Municipal Fiscal Distress: Aspiration or Reality?

Cities Under Pressure

Cities are where people come together to work, live, and thrive. In the United States, cities and metropolitan areas generate nearly 90 percent of gross domestic product (GDP). By one estimate, a limited number of Southern and large metropolitan areas produced three-quarters of all US economic growth from the mid-1960s to the present (Hsieh and Moretti 2015). Further, cities have been at the forefront of improvements in longevity and well-being thanks to investments in infrastructure and public health (Costa and Kahn 2015). And because of their ability to concentrate people and jobs (Kahn 2006), they will be instrumental to addressing challenges posed by climate change.

But cities also face a host of challenges. Primary among these are fiscal challenges, many of which were laid bare in the Great Recession. Locally generated revenue, or own-source receipts, tumbled nearly 5 percent (their greatest decline on record except for a pair of back-to-back recessions in the late 1970s and early 1980s). When federal stimulus funds ran out, states cut local government aid to balance their own budgets. These cuts were the worst since the national income and product accounts started keeping track in 1960 (figure 1).¹



FIGURE 1 Year-over-Year Change in Major Local Government Receipts

Note: Values have been converted to real 2016 dollars.

Today, although city revenues have been improving, they remain below prerecession levels when adjusted for inflation (McFarland and Pagano 2017). Local government employment also remains depressed despite population growth and increased economic activity (figure 2). Although municipal bankruptcies have been and continue to be rare, many cities have experienced severe and highly visible fiscal distress (Spiotto, Acker, and Appleby 2016). For example, Chicago's credit rating fell to junk status in May 2015, and Hartford entered Connecticut's state fiscal oversight program in March 2018.²



FIGURE 2 State and Local Government Employment

Many cities will struggle in coming years as bills become due for underfunded public employee pensions and other long-term obligations.³ Like states, cities that rely on income and sales taxes will have to confront a changing economy, including increasingly volatile individual earnings, and the shift from goods- to service-based consumption as well as from physical to remote retail sales.⁴ Unlike states, however, cities often lack the legal authority to adopt new revenue instruments or to make major changes to existing ones.⁵

Given these challenges, many different stakeholders have sought more and better indicators of which places could be headed for trouble. In the wake of the Great Recession, states created or strengthened programs to detect early signs of city fiscal distress (Pew Charitable Trusts 2016). The federal government established an Office of State and Local Finance in the US Treasury Department to, among other responsibilities, "monitor developments in municipal bond markets."⁶ Private companies

Source: US Bureau of Labor Statistics, Current Employment Statistics.

developed online portals—such as USA Facts, "Open Budget Oakland," and "Checkbook NYC"—to help citizens keep tabs on their governments.

However, many obstacles prevent city financial health indicators from becoming more widely available. For one, high-quality data are hard to find. Although most municipalities file audited financial statements soon after the end of a fiscal year, these statements are not easily searchable or comparable across governments or over time.⁷ The US Census Bureau provides comprehensive financial data for all independent government entities in the United States. However, it cautions that the data are to be used for statistical purposes only and "cannot be used … to measure a government's fiscal condition" (US Bureau of the Census 2006a: 3-13).

Beyond data availability, a deeper problem is that no definitions of municipal fiscal health or of what analysts should be measuring in the first place are generally agreed upon. This report seeks to remedy that omission. We provide an overview of municipal fiscal health measures grounded in economic, fiscal or financial, and comprehensive approaches and evaluate the strengths and limitations of these measures.

We then note a fundamental challenge in evaluating fiscal health measures: the relative infrequency of adverse events such as defaults and bankruptcy. Moreover, metrics tend to be "sticky," or exhibit limited change over time, making it difficult to test whether better financial management or some other fixed city traits are affecting fiscal outcomes.

We present one approach to addressing this challenge: observing how cities with alternative starting conditions weather a housing price shock. We attempt to draw lessons for how states and the federal government might improve monitoring of local fiscal conditions. Results we present here may also help local public officials and voters make more informed choices about their fiscal futures.

What Is Municipal Fiscal Health?

A key issue in assessing city fiscal health is deciding what indicators are most important. The earliest approaches tended to focus on economic outcomes with the idea that these metrics provided a better basis than fiscal outcomes for distributing federal aid because state and local financial managers could not easily manipulate the results.⁸ More recent efforts have borrowed from the private sector, using financial condition ratios from city balance sheets and activity statements. The following sections describe these economic, fiscal or financial, and comprehensive measures (table 1).

TABLE 1 Taxonomy of Municipal Fiscal Health Measures

Concept	Source	Method	Indicators
Economic approaches			
Fiscal capacity	ACIR (1962, 1971)	Representative Revenue System	Revenue collections divided by revenue capacity
Index of center city hardship	Nathan and Adams (1976)	Urban to suburban ratios, weighted	Unemployment, population age <18 and >64, education, income, crowded housing, poverty
Fiscal capacity	ACIR (1977, 1982)	Fiscal Pressure	Relative tax effort (ranking) divided by change in tax effort
	CBO (1978)	Composite scores from point-in-time indicators and outside indices	Social Need: Nathan and Adams index, plus income, poverty, unemployment, and crime
Indices of social, economic and fiscal need			Economic: changes in population, income, manufacturing jobs; population density, housing vintage
			Fiscal: cumulative budget deficits, liquidity, debt, taxes as share of property values, and two comprehensive measures developed by Institute for the Future and HUD
Need-capacity gap	Ladd and Yinger (1989) Ratcliffe, Riddle & Yinger (1990)	Revenue-raising capacity minus standardized expenditure need, expressed as a % of	Standardized expenditure need from costing functions, regressions, and environmental cost factors
	Reschovsky (1993)	capacity	Revenue capacity is revenue that can be raised by applying a uniform tax burden, as a % of resident income

Fiscal and financial approaches				
Fiscal stress warning signs	ACIR (1973)	Case studies and regression analysis for a limited sample of cities and counties in the Great Depression	Revenue-expenditure imbalance, General Fund deficit, outstanding short- term debt, high and rising property tax delinquency, sudden and substantial assessed value decline, unfunded pension liabilities.	
Financial condition ratios	Aronson & King (1978)	Focus on debt- service combined with a rising ratio of debt service to income	Seven ratios, focused on debt, debt service and income	
Urban fiscal strain	US Department of the Treasury (1978)	Average change in weighted variables; combined with other indices	Population, per capita income, own-source revenue burden, long-term debt per capita, property values	
Fiscal strain	Clark and Ferguson (1983)	Measure based on fiscal outputs divided by population indicators. Produces twenty separate indicators.	Fiscal outputs include general expenditures, own revenues, common functions, and debt Population factors include median family income, population change, and city wealth	
Financial condition ratios	Brown (1993)	10-Point Scale	Total revenues/population, own-source General Fund (GF) revenues/GF revenue, GF sources from other funds/Total GF sources, Operating Expenditures/Total expenditures Total revenue/total expenditures, Unreserved GF Balance/GF revenues, GF cash and investments/GF liabilities, GF liabilities/GF revenues, direct long-term debt/population, and debt service/total revenues	
Financial Condition Ratios	Honadle & Lloyd-Jones (1998)	Brown 10-point Scale	Use Brown scale to assess specific case study	

Comprehensive approaches			
Comprehensive	Kloha, Weissert, and Kleine (2005)	10-point Scale Define binary condition for each indicator using standard deviation	Population growth, real taxable value growth, general long-term debt as % of taxable value, large real taxable value decrease, General Fund (GF) expenditures as a % of taxable value, GF operating deficit, prior GF operating deficits, size of GF balance, fund deficits in the current or previous year
	International City/County Management Association (ICMA 1980) Groves and Valente (1994) Nollenberger, Groves, and Valente (2003)	36 individual indicators across 7 categories, measure them each individually over time	7 categories: revenue, expenditure, operating position, debt, unfunded liability, capital plant, and community needs and resources
Fiscal trend monitoring system (FTMS)	Groves, Godsey, and Shulman (1981)	ICMA FTMS	Ask city representatives in 50 cities to use and give feedback on ICMA FTMS
	Hendrick (2004)	Three-dimensional fiscal health measurement. Spending needs and revenue wealth, balance with the environment, and fiscal slack	Revenue wealth and spending need indicators obtained through regression analysis, similar to Ladd and Yinger. Fiscal balance is revenue/wealth and spending/need Fiscal slack is % unreserved fund balance, % capital expenditures, % enterprise income, and % debt service

Economic Approaches

The current flurry of interest and activity in US cities mirrors another period in American history, President Johnson's "unconditional war on poverty" (*Economic Report of the President* 2014). In the

1960s, the number of federal grants available to states, cities, and other local governments nearly tripled. Although some of the largest and most enduring programs—Medicaid, the federal-state low-income health insurance program, and Title I of the Elementary and Secondary Education Act for low-income students—targeted states, most funds from this "creative federalism" period were for urban areas (Dilger 2017). The Model Cities program, for example, identified 150 cities for intensive federal investment (Haar 1975). With a surge in federal dollars came increased attention to measuring local "need" and ensuring that aid reached places with the greatest need.

FISCAL CAPACITY STUDIES

The Advisory Commission on Intergovernmental Relations (ACIR) undertook some of the first comprehensive assessments of state and local need, developing what is now known as the Representative Revenue System (RRS) to improve on state personal income as a metric for distributing federal aid.⁹ This method projects what revenues hypothetically could be available to a jurisdiction based on its economic circumstances, regardless of actual policy choices (ACIR 1962). For any revenue source, the RRS applied an average US tax rate to each state's tax base. The result was a measure of "revenue capacity," or what a state could hypothetically collect from that source. Comparing actual revenue collections with a state's total revenue capacity yielded a measure of "revenue effort."¹⁰

The ACIR took care to point out that the RRS was "by no means free of problems." The method overlooked differences across states in revenue instruments available. (Some states have no broad-based individual income tax, for example.) It ignored differences in tax administration capabilities. (The ACIR noted that differences were especially stark in property taxes.) It did not account for the ability of states to export tax burdens to nonresidents (through sales taxes on tourists, for example). Perhaps most important, the measure was a yardstick and not a normative benchmark. It did not assume that national average effective tax rates were in any way the "right" ones.

The ACIR periodically updated and elaborated on its analysis in reports until its termination in 1996.¹¹ In 1971, it added charges to the mix of revenue instruments, renaming the RRS the Average Financing System. It also compared the actual distribution of federal grants to underlying revenue capacity and it implemented a similar approach for a sample of large cities and counties compared with their statewide averages. In 1977, the ACIR introduced a concept of "fiscal blood pressure," intended to capture what happened when fiscal capacity was increasing or decreasing over time (in this case from 1964 to 1975).

From its earliest reports, the ACIR noted the importance of assessing not only revenue capacity but also spending need (ACIR 1962). States facing higher prices for labor and other inputs would, the

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commission reasoned, require more resources to provide a given level of service (as would states with more road miles to maintain, more school-aged children to educate, and so forth). However, other analysts working in parallel to the ACIR were the first to publish spending-need metrics (Musgrave and Polinsky 1970).

The ACIR incorporated these insights into a Representative Expenditure System (RES) starting with its 1990 state fiscal capacity report (Rafuse 1990). In brief, analogous to RRS, the RES abstracted from local policy decisions about what services to provide and to whom. It calculated how much a state would have to spend to meet national average per capita spending targets if these targets were adjusted for state input (mainly labor) costs and program workloads in each functional area (e.g., K–12 education, public welfare, highways, and so forth). Other researchers a continued this approach after the ACIR's termination (e.g., Tannenwald 1998, 1999; Tannenwald and Turner 2006; Yilmaz et al. 2006; Yilmaz and Zahradnik 2008)

NEED-CAPACITY GAP STUDIES

Although President Nixon reduced the number of grant programs available to cities in the 1970s (e.g., consolidating six programs into the Community Development Block Grant) he also embarked on the nation's only sustained experience with federal fiscal equalization, or general revenue sharing.¹² President Carter later experimented with countercyclical fiscal assistance, or increasing grants to cash strapped local governments in a recession to help jump-start the economy.¹³

Attention to local need indicators therefore continued in the 1970s and well into the 1980s even as President Reagan reduced federal grants to cities in real terms and as a share of total revenues (figure 3). Many observers were also attuned to cities because of the 1975 New York City financial crisis, where the state encountered difficulty borrowing on behalf of the city and the federal government ultimately extended \$2 billion in short-term loans (Ravitch 2014). In the late 1970s and early 1980s, cities and other local governments also faced the fiscal consequences of a voter property tax revolt that started with California's Proposition 13 but quickly spread across the country.¹⁴

County Municipality Township Special district School district 20% 18% 16% 14% 12% 10% 8% 6% 4% 2% 0% 1977 1979 1981 1983 1985 1987 1989 1991 1997 2002 2007



Source: US Bureau of the Census, Census of Governments and Survey of State and Local Government Finance, 1977–2012, accessed through SLF-DQS.

Note: Since 1992, sublocal government finance data have been released every five years (in years ending in 2 or 7). This chart depicts direct federal transfers and does not include federal funds that first pass through states.

Prompted by New York's financial difficulties and more general concerns about a flight of people and jobs to the suburbs, Richard Nathan and Charles Adams of the Brookings Institution published an index of central city hardship in 1976. The index compared central cities to surrounding suburbs by calculating within-metropolitan area ratios of unemployment, age, education, income, housing condition, and poverty.

The US Congressional Budget Office incorporated this index into its own 1978 study of urban social needs (CBO 1978).¹⁵ In its study, CBO also assessed economic and fiscal needs. CBO measured economic need as declines in population, per capita income, manufacturing jobs, and retail sales. The authors also considered underlying capital stock as measured by housing vintage. They indicated a desire to look at labor quality and business climate but found inadequate metrics available.

To calculate fiscal needs, CBO relied on short-term measures such as accumulated budget surpluses or deficits over a three-year period, debt as a share of revenues, taxes as a share of property values, and net cash and investments as share of the General Fund (a liquidity measure).¹⁶ To address longer-term fiscal distress, they cited work by the Institute for the Future and US Department of Housing and Urban Development on local fiscal capacity calculated as in the ACIR reports described previously.¹⁷

Similar to the ACIR and CBO, scholars Helen Ladd and John Yinger were interested in how well city revenue capacity matched service needs when they wrote *America's Ailing Cities* in 1989. With the property tax revolt in full swing, these authors were especially attuned to the danger of what observers now refer to as "service insolvency."¹⁸ In short, cities unable to generate sufficient revenues to pay for the high-quality services that attract people and jobs could find themselves in a permanent downward spiral.

Ladd and Yinger (1989) were also concerned with distinction between factors inside and outside city control, including state rules about what services cities had to provide and what revenues cities could collect. They started with a measure of "standardized fiscal health," equivalent to the difference between city revenue capacity and spending need. They went on to calculate "actual fiscal health," or the difference between "restricted revenue capacity" and "actual expenditure need." Restricted revenue capacity incorporated state limitations on local revenue sources (for example, if a state prohibited cities from imposing an income tax). Actual spending need reflected state differences in the assignment of local government service responsibilities (for public welfare, for example).

Subsequent papers in this tradition measured fiscal conditions of school districts and considered the scope for expanded state aid (Ratcliffe, Riddle, and Yinger 1990). Others applied the same formulation to other types of aid (for instance, Bradbury and Zhao 2009) and intermetropolitan fiscal disparities (for instance, Chernick and Reschovsky 2006).

Fiscal and Financial Approaches

Whereas economic approaches described above have sought to identify how background conditions influence municipal fiscal health, some literature has focused squarely on local fiscal management and policy decisions. These studies have examined financial condition ratios and other metrics readily available from state and local government balance sheets and activity statements. Although less data-intensive than constructing need and capacity measures, fiscal and financial approaches require more analyst evaluations about which measures to include and how to weight them.

FISCAL WARNING SYSTEM AND FISCAL STRAIN

As it was updating and refining its fiscal capacity measures, the ACIR also attempted to develop a "fiscal warning system." The impetus for this was a series of high-profile bankruptcies and nearbankruptcies in the private sector, including the Lockheed Corporation (ACIR 1973). Further, President Nixon had recently made provocative remarks regarding the fiscal health of the state and local public sector.¹⁹

Based on case studies and regression analysis for select cities and counties, the ACIR identified several proximate causes of financial emergencies in the Great Depression:

- a large, one-time operating deficit, or revenue-expenditure imbalance
- smaller and recurring operating deficits
- an accumulated General Fund deficit, or current operating liabilities exceeding current assets
- end-of-fiscal-year outstanding short-term debt or internal borrowing and unpaid vendor bills
- high and rising rates of property tax delinquency
- a sudden and substantial decrease in assessed property values
- unfunded local pension liabilities

The ACIR suggested that states and the federal government ought to improve municipal monitoring and oversight, including regulating short-term debt and locally administered pension funds. They also recommended strengthening state intervention and federal bankruptcy protection.

Responding to the New York City's 1975 fiscal crisis, the US Department of the Treasury (1978) developed a concept of urban fiscal strain including changes in weighted fiscal and socioeconomic indexes. Aronson and King (1978) assessed state-local short-and long-term debt service ratios in New York and other states. Clark and Ferguson (1983) proposed to predict fiscal distress by comparing "fiscal policy outputs," such as general expenditures, own-source revenues, and debt, to "economic outputs," such as median family income, population, and city wealth.

FINANCIAL CONDITION RATIOS

Analysts have long relied on financial condition ratios to assess the profitability and long-term viability of private firms.²⁰ Ratio analysis also has a venerable tradition in the nonprofit and public sector.²¹ However, a quick survey of the literature suggests that financial condition ratios do not provide an easy answer for how to assess municipal fiscal health. Although ratios are easily obtained

from government financial reports, the choice of indicators and critical values to indicate distress is highly subjective.

TABLE 2 Selected Financial Condition Ratios

Financial condition ratio	Formula
Liquidity Current ratio	Current assets/current liabilities
Working capital	Current assets – current liabilities
Quick ratio	(Cash + marketable securities + accounts receivable)/current liabilities
Net position ratio	Total net position/expenses
Current liabilities	Current liabilities/total revenues
Solvency Debt-to-asset ratio	Total liabilities/total assets
Operating position	Total revenues/total expenditures
Profit margin ratio	Surplus (or deficit)/revenue
Return-on-assets ratio	Surplus (or deficit)/total assets
Continuing services ratio	Unrestricted net assets/total expenses
Fund balance ratio	Unrestricted general fund balance/general fund expenditures
Operating deficit ratio	General fund surplus or deficit/net operating expenditures
Operating expense ratio	Operating expenditures/total expenditures
Sustainability	
Net worth ratio	Restricted and unrestricted net assets/total expenses
Sustainability ratios	Total revenues, tax revenues, or expenditures/population
Debt service ratios	Debt service expenditure/total revenues or expenditures
Long-term debt per capita	Long-term debt outstanding/population
Pension underfunding	Unfunded pension liability/population
Diversification Common size ratio	Line item amount/total amount (e.g., cash to total assets)
Capacity	
Debt-to-assessment ratio	Debt/assessment
Effective tax rate	Taxes (or own-source revenues)/taxable assessment
Risk Tax leverage factor	Total operating expenditures/property tax revenue
Risk exposure factor	(Investment revenue + intergovernmental revenue + transfers in)/property tax revenue

Transfer dependency	Transfers/total revenues
Charge-to-expense ratio	Charges for services/total expenses

Textbook explanations of financial condition analysis, such as in Mead (2000: C-1), often start with the caveat that it is "more of an art than a science." Among the determinations that an analyst needs to make is the dimension of interest. For example, liquidity refers to the ability to pay bills as they come due whereas solvency and sustainability concern long-term obligations compared with resources available (table 2). Alternatively, analysts may wish to consider immediate, budget-year, and long-term obligations as well as a jurisdiction's ability to provide services demanded by people and businesses or as required by law (Bird 2014).

Analysts must also define an appropriate benchmark. Options include a comparison group of other governments or a government's own past performance. Analysts should also decide whether to focus on a government's general fund or all funds and how to account for pension and other retiree liabilities. Because results will vary depending on the choice of benchmark, the Government Account Standards Board suggests that financial condition analysis should be an iterative process where the choice of indicator and comparison group changes as more information becomes available (Mead 2000). However, this ambiguity can also lead to gaming, or financial administrators selectively choosing ratios that give the desired appearance of a government's condition (McDonald 2017).

Further complicating matters, commonly used ratios may be overlapping or redundant. Moreover, disagreement about definitions of commonly used terms is not unusual. For example, North Carolina's Local Government Commission defines "net position ratio" as "unrestricted net position divided by total liabilities" whereas, as noted, most sources define it as "total net position divided by expenses."²² Florida's state auditor defines "fund balance ratio" as "restricted and unrestricted fund balances divided by total revenues," whereas other sources explain it as "unrestricted general fund balance divided by general fund expenditures."²³

To make financial condition analysis more useful and ratios more comparable, some authors have constructed indexes of key measures. Brown (1993) developed a well-known 10-point scale based on revenue, expenditure, operating position, and debt ratios. For each measure, he compared a city with its peers and then assigned it a score based on quartile. The final score is a sum of these quartile rankings. Authors such as Honadle and Lloyd-Jones (1998) have applied this analysis to specific governments.

Wang, Dennis, and Tu (2007) created a Financial Condition Index from eleven items measuring government-wide rather than only General Fund information. (These include the cash ratio, quick ratio,

current ratio, operating ratio, surplus per capita, net asset ratio, long term liability ratio, long-term liabilities per capita, taxes per capita, revenues per capita, and expenditures per capita.)²⁴

Kloha, Weissert, and Kleine (2005) added population and real taxable value to the financial condition ratios. They assessed each indicator relative to a benchmark, assigned a score of 1 to governments that met the benchmark and zero otherwise, then summed over all indicators to get a combined score. Arnett (2014) standardized ratios using z-scores then took a weighted average.

However, combinations of financial condition ratios suffer from many of the same problems as ratios alone: redundancy, unclear relationship to outcomes, subjectivity, and a lack of consistency across communities or over time. For example, Clark (2015) and others have criticized the Financial Condition Index for not measuring what it seeks to measure or doing so in a reliable way. Moreover, authors rarely make the case for why specific variables should be included and why an index is a better predictor of fiscal distress than individual variables.

Comprehensive Approaches

As some analysts have pursued financial condition ratios, others have sought to adapt more comprehensive measures into early warning systems, similar to the CBO's early assessment of social, economic, and fiscal needs. In 1980, the International City/County Managers Association produced a Fiscal Trend Monitoring System incorporating 36 indicators across seven categories (revenue, expenditure, operating position, debt, unfunded liability, capital plant, and community needs and resources). The most recent version of the Fiscal Trend Monitoring System, produced in 2003 by Nollenberger, Groves, and Valente, includes 42 indicators. This could allow city managers and the public to choose metrics of interest but could also be overwhelming.

Academic researchers working in this vein (e.g., Hendrick 2004; Jacob and Hendrick 2012) have proposed focusing on a government's environment and how its decisions relate to that environment. For example, Pagano and Hoene (2010) focus on "fiscal space," including city economic base, political context, and state-granted revenue authority. Credit rating agencies have similarly looked beyond traditional economic and financial metrics to include assessments of political gridlock and willingness to pay vendors and other creditors (Standard & Poor's 2018).

An Early Warning System: What to Include?

As noted, many states created or enhanced programs to monitor local fiscal conditions in the wake of the Great Recession and instances of high-profile fiscal distress. Although most states routinely collect and report local government financial information, as of July, 2016, 22 states went further, "actively and regularly" reviewing this information (Pew Charitable Trusts 2016). Of this group, eight states maintained "early warning systems," meaning they had laws defining local fiscal distress and systems tracking which local governments were moving in that direction. Since that time, Virginia also instituted its own fiscal distress monitoring (table 3).²⁵

State local fiscal monitoring programs typically rely on a range of environmental and fiscal indicators. For example, New York examines economic and demographic factors such as population change, home value change, median household income, unemployment, population under 18 or over 65 years old, and households on public assistance. The state also considers fiscal indicators such as end-of-year fund balances, operating deficits or surpluses, cash position, short-term debt issuance, and fixed costs.²⁶ The state then assigns each city government a "fiscal score" based on whether the city is classified as having no fiscal stress or as falling into one of three stress categories: susceptible to fiscal stress, moderate fiscal stress, or significant fiscal stress.

State	Department	Documents	Early warning?
Colorado	Department of Local Affairs; Office of the State Auditor	Audits	No
Connecticut	Office of Policy and Management	Audits	No
Florida	Auditor General	Audits	No
lowa	Department of Management; Auditor of State	Audits, budgets, annual financial reports	No
Kentucky	Department for Local Government	Audits, uniform financial information reports, quarterly financial reports (counties only), budgets (counties only)	No
Louisiana	Office of the Legislative Auditor	Annual financial reports	Yes
Maryland	Office of Legislative Audits, Department of Legislative Services	Audits	No
Michigan	Division of Local Government Services, Department of Treasury	Audits	No
Minnesota	Office of the State Auditor	Audits	No
Nevada	Department of Taxation	Audits, budgets, financial reports	Yes

TABLE 3 States with Fiscal Monitoring

New Hampshire	Municipal and Property Division, Department of Revenue Administration	Numerous, including budgets, financial reports, estimated revenues	No
New Jersey	Division of Local Government Services, Department of Community Affairs	Budgets, annual financial reports	Yes
New Mexico	Local Government Division, Department of Finance and Administration	Quarterly financial reports, budgets	No
New York	Division of Local Government and School Accountability, Office of the State Comptroller	Annual financial reports	No
North Carolina	State and Local Government Finance Division, Office of the State Treasurer	Annual financial reports	Yes
Ohio	Division of Local Government Services, Auditor of State	Audits	Yes
Oregon	Audits Division, Secretary of State	Audits	No
Pennsylvania	Department of Community and Economic Development	Annual survey of financial condition, financial reports	Yes
Rhode Island	Division of Municipal Finance, Department of Revenue; Office of the Auditor General	Proposed and adopted budgets, quarterly financial reports, audits, five-year forecasts	Yes
South Dakota	Department of Legislative Audit	Audits	No
Tennessee	Comptroller of the Treasury	Adopted budgets, reports on debt, financial statements, requests to issue debt, cash analyses	Yes
Virginia	Auditor of Public Accounts	Audits, budgets, annual financial reports	Yes
Washington	State Auditor	Budgets, audit reports, financial statements, financial schedules	No

Source: Pew 2016,;https://budget.lis.virginia.gov/item/2017/1/HB1500/Chapter/4/4-8.03/.

Notes: "Department" refers to the state agency or agencies that monitor local governments for fiscal distress. "Documents" are the primary documents used for fiscal monitoring. States are identified as "early warning" if they both have a law defining fiscal distress for local governments (not including schools) and have a system designed to identify signs that a locality is declining toward fiscal distress.

Why It Is Difficult to Benchmark the Benchmarks

With a few notable exceptions, states have developed early warning systems with little insight from the academic and research community (such as Plerhoples and Scorsone 2011 or Kleine, Kloha and Weissert 2002). This omission makes sense given the small number of highly visible adverse events. Assessing predictive power is difficult when there is virtually nothing to predict.

Despite a few highly visible municipal bankruptcies, such as those in Vallejo, California (2008), Central Falls, Rhode Island and Jefferson County, Alabama (2011), Stockton and San Bernardino, California (2012), and Detroit, Michigan (2013), only 666 municipal bankruptcies have been filed since 1937, when local governments first gained access to Chapter 9 of the US Bankruptcy Code (although in some cases, cities could only file with state approval). This amounts to an average of 8.5 filings per year, with most from special taxing districts and not large, general-purpose local governments. By contrast, corporations have filed for Chapter 11 reorganizations at a rate of roughly 10,000 a year in most years since 1985 (Spiotto, Acker, and Appleby 2016).

Given the rarity of general-purpose local government bankruptcies in recent years, some researchers have looked to history. For example, Holian and Joffee (2013) determined which city financial and socioeconomic characteristics were most associated with bond defaults in the Great Depression. They then applied these relationships to current city conditions to estimate current default probabilities. Noting that much has changed in the intervening years, the authors supplemented their analysis with case studies. They found a simple ranking of cities based on a standardized measure of general fund balance to be even more highly predictive than the model-based estimates. Standard & Poor's (2013) also cited Great Depression–era research on default probabilities.

Another approach is to consider signs of trouble short of default and bankruptcy. Gorina, Maher, and Joffe (2018) examined local government financial reports and media accounts to obtain information on actions taken by governmental officials during the Great Recession. They found that cities in California and Michigan were more likely to reduce public-employee salaries, defer pension payments, and cut services if budget reserves were low, debt was high, and property taxes were a smaller share of revenues.

Analyzing behavioral rather than environmental or fiscal indicators of distress is intriguing. However, these indicators may be measures of fiscal pressure more than of distress. Put another way, it is unclear whether to such actions unfavorably (i.e., as signs of local fiscal distress) or favorably (i.e., as indicators of managers who respond quickly in a crisis).

Making Use of a New Data Portal

A recent focus on transparency in government and collaborations between local governments and technology specialists have made it easier to obtain and compare municipal fiscal health indicators. Notably, GovRank, a project of United States Common Sense, electronically scraped consolidated annual financial reports (CAFRs) and manually gathered financial data through phone calls, web searches, and public record requests. The result was a data set including observations for more than 13,000 local governments and all 50 states from fiscal year 2009 to 2014.²⁷

Although GovRank provides the most comprehensive local government financial data available, significant gaps remain. The number of observations available drops considerably in 2014 compared with previous years, and relatively few governments have data for all years from 2009 to 2013 (table 4). For smaller governments, the analysts were often compelled to rely on "non-CAFR" financial reports, meaning that numbers were unaudited or audited but on a cash basis rather than on a modified accrual basis.

Because of concerns about the comparability of CAFR and non-CAFR information plus other idiosyncrasies in small jurisdictions, we restricted our attention to cities with populations above 25,000. This again reduces the number of observations available (table 4). Further, GovRank analysts were not able to collect all targeted indicators in all years (pension and other postemployment benefit information was especially challenging).

Using GovRank, we were able to obtain data for four financial condition ratios in all cities and years in our restricted sample (table 4). These ratios (described in table 2) are all measures of long-term solvency or sustainability. For the first three measures, higher values are better; for the fourth, lower values are better:

- profit margin ratio (surplus or deficit as a share of revenue)
- net worth ratio (restricted and unrestricted net assets as a share of total expenses)
- continuing services ratio (unrestricted net assets as a share of total expenses)
- the debt-to-asset ratio (total liabilities divided by total assets)

For all observations, the average debt to asset ratio was 0.36, well below what some analysts consider a critical value of 0.6 (Chen et al. 2009). Albuquerque had the lowest debt to asset ratio in all years (0.0005), whereas Oklahoma City had the highest (8.27 in 2010). The latter may be an anomaly because the next highest value in our data set was 2.92.

TABLE 4 GovRank Descriptive Statistics

Government Type					
	Year	City	County	State	Total
2009		7,856	2,551	50	10,457
2010		8,460	2,606	50	11,116
2011		9,171	2,632	50	11,853
2012		9,321	2,698	50	12,069
2013		9,066	2,613	50	11,729
2014		5,786	1,914	50	7,750

Total number of observations						
2009-2013	49,660	15,014	300	64,974		
Observations with data in all						
years 2009-2013	6,957	2,308	50	9,315		
Governme	nts with Populatio	n >=25,000 Re	esidents		-	
	City	County			_	
2009	1,407	1,438				
2010	1,423	1,458				
2011	1,436	1,459				
2012	1,441	1,482				
2013	1,436	1,459				
2014	1,346	1,239				
Total no. of observations						
2009-13	8,489	8,535				
Observations with data in all						
years 2009–13	1,384	1,373				
	Cities ≥25,00	00 Residents, a	all years 2009-	·2014		
			Standard			
Variable	Observations	Mean	deviation	Minimum	Maximum	Median
Debt to asset ratio	8,022	0.36	0.25	0.00	8.27	0.32
Profit margin ratio	8,020	0.05	0.16	-3.39	5.07	0.05
Continuing services ratio	8,019	0.37	0.65	-3.73	33.26	0.36
Net worth ratio	7,970	0.14	0.59	-2.08	47.78	0.14

Source: GovRank.org, United States Common Sense; author's calculations.

Profit margin, continuing services, and net worth ratios all averaged values above zero. However, profit margin ratios ranged from -3.39 in South San Francisco, California, to 5.07 in Cathedral City, California (both as of 2012). Continuing services ratios ranged from -3.73 in Harrisburg, Pennsylvania, in 2011 and 2012 to 33.26 in Longview, Texas, as of 2014.²⁸ Again, the latter appears to be anomalous: the next closest value was 6.75 and only three observations were above 3.00 in our data. Net worth ratios ranged from -2.08 in New York City in 2014 to a massive 47.78 in Longview (with 15.12 being the next closest value).

Profit margin ratios exhibit no discernable pattern for a few cities with highly publicized fiscal challenges (figure 4). This lack of variation makes sense given the very short time frame of our data. For some of the very worst cases of fiscal distress in recent years (e.g., Central Falls, Rhode Island, and Jefferson County, Alabama), our data only include the recovery period.





Source: GovRank.org, United States Common Sense.

More generally, for the entire period available, cities starting out in the bottom or top quartile of rankings tend to stay there (table 5). This "stickiness" suggests a problem in identifying which financial condition ratios are most predictive of municipal fiscal health or distress. Namely, a lack of variation over time suggests that environmental factors may be relatively stable or that some unobservable characteristics, such as management quality, may be driving results.

TABLE 5 GovRank Key Statistics over Time

	Profit margin	ratio 2009 vs 2014:	
	Cities with 201	2 CoG pop >=25000*	
	Ν	l=1,217	
		Profit mar	gin 2014
		Bottom 25 %	Top25%
Profit margin	Bottom 25 %	11.3%	3.1%
		2 70/	11 3%
2009 Observations incluo ssets ratio, continu	I op 25% de cities with financia ing services ratio, an	3.7 % I health indicators (profit r d net worth) for 2009 and	margin ratio, debt
2009 Observations incluo ssets ratio, continu	I op 25% de cities with financia ing services ratio, an Continuing servi	I health indicators (profit r d net worth) for 2009 and ces ratio 2009 vs 2014	nargin ratio, debi 12014. 4:
2009 Observations incluc ssets ratio, continu	lop 25% de cities with financia ing services ratio, an Continuing servi Cities with 201 N	3.7 70 1 health indicators (profit if health indicators (profit of a constraint) for 2009 and constraints (profit of a constraint) for 2009 vs 201. 2 coG pop >= 25000* = 1,217	12014.
2009 Observations inclue ssets ratio, continu	iop 25% de dies with financia ing services ratio, an Continuing servi Cities with 201 N	2.7 70 health indicators (profit i d net worth) for 2009 and ces ratio 2009 vs 201 2 CoG pop >=25000* I=1,217 Continuing se	argin ratio, debi 12014. 4: prvices 2014
2009 Observations includ sset s ratio, continu	iop 25% de dies with financia ing services ratio, an Continuing servi Cities with 201 N	Cos pop >=2500 cos ratio 2009 vs 201 2 CoG pop >=25000* =1,217 Continuing se Bottom 25 %	nargin ratio, debt 12014. 4: rrvices 2014 Top 25%
2009 Observations inclue seets ratio, continu	I op 25% de dies with financia ing services ratio, an Continuing servi Cities with 201 N Bottom 25 %	2.7 70 beath indicators (profit it d net worth) for 2009 and ces ratio 2009 vs 201. 2 CoG pop >=25000* l=1,217 Continuing se Bottom 25 % 17.3%	nargin ratio, debt 12014. 4: rrvices 2014 Top 25% 0.9%

Table 5: GovRank Key Statistics Over Time

Source: GovRank.org, United States Common Sense.

Debt-to-asset ratio 2009 vs 2014:

Cities with 2012 CoG pop >=25000* N=1,217

		Debt-to-asset 2014		
		Bottom 25 %	Top25%	
Debt-to-asset	Bottom 25 %	18.1%	0.4%	
2009	Top 25%	0.4%	18.9%	
*Observations include cities with financial health indicators (profit margin ratio, debt.to-				

assets ratio, continuing services ratio, and net worth) for 2009 and 2014.

Net worth ratio 2009 vs 2014:	
Cities with 2012 CoG pop >=25000*	
N=1.217	

		Net worth 2014		
		Bottom 25 %	Top25%	
Net worth 2009	Bottom 25 %	16.9%	0.4%	
	Top 25%	0.9%	17.7%	
*Observations include cities with financial health indicators (profit margin ratio, debt-to-				

assets ratio, continuing services ratio, and net worth) for 2009 and 2014.

Exploratory Multivariate Regressions

One way to gain insight into the utility of municipal fiscal health measures is to investigate whether cities in better fiscal condition are better able to weather a crisis than cities in worse condition.²⁹ Similar to Gorina, Maher, and Joffe (2018), we focused on the 2008 housing crisis. In a series of models, we regressed locally generated (own-source) revenues per capita on an index of city-level home prices, each of our financial condition ratios, and home prices interacted with the financial condition ratio of interest (figures 5 through 8 and tables A.1 through A.4).³⁰

In addition to the variables mentioned, we controlled for city characteristics such as income, educational attainment, racial and ethnic composition, and age composition using data from the American Community Survey.³¹ We also included city fixed effects to capture any time-invariant characteristics such as organizational practices or political culture. We included year fixed effects to account for changes (such as in the national economy) that could affect all cities in that year.

FIGURE 5 Regression for Own-Source General Revenues per Capita

With interaction of one-year lag hedonic price index and one-year lag profit margin ratio

One-year lag hedonic price index

Interaction: one-year lag hedonic price index and one-year lag profit margin ratio



Note: *** p<0.01, ** p<0.05, * p<0.1

Source: GovRank.org, United States Common Sense; American Community Survey; author's calculations.

FIGURE 6 Regression for Own-Source General Revenues per Capita

With interaction of one-year lag hedonic price index and one-year lag net worth ratio

One-year lag hedonic price index

Interaction: one-year lag hedonic price index and one-year lag net worth ratio



Note: *** p<0.01, ** p<0.05, * p<0.1

Source: GovRank.org, United States Common Sense; American Community Survey; author's calculations.

FIGURE 7

Regression for Own-Source General Revenues per Capita

With interaction of one-year lag hedonic price index and one-year lag continuing services ratio

One-year lag hedonic price index

Interaction: one-year lag hedonic price index and one-year lag continuing services ratio



Source: GovRank.org, United States Common Sense; American Community Survey; author's calculations.

Note: *** p<0.01, ** p<0.05, * p<0.1

FIGURE 8

Regression for Own-Source General Revenues per Capita

With interaction of one-year lag hedonic price index and one-year lag debt-to-asset ratio

- One-year lag hedonic price index
- Interaction: one-year lag hedonic price index and one-year lag debt-to-asset ratio



Note: *** p<0.01, ** p<0.05, * p<0.1

Source: GovRank.org, United States Common Sense; American Community Survey; author's calculations.

Our results suggest that home prices and revenues generally move in tandem. That is, places with higher home prices in one year tend to have higher revenues per capita the following year with and without demographic controls. However, this relationship dissipates when we include city and year fixed effects.

For solvency measures where positive values are better (profit margin, continuing services, and net worth ratios), high financial condition ratios are generally associated with higher revenues per capita. For the one solvency measure where lower values are better (debt-to-asset ratios), lower debt-to-asset ratios were associated with higher revenues per capita.

In many specifications, beneficial solvency measures attenuate the relationship between home prices and revenues. One reading of these results is that better financially managed cities are less susceptible to a boom-bust revenue cycle mimicking national housing market dynamics in the early to mid-2000s. Importantly, however, results are often not statistically significant.

Remaining Issues

Beyond the predictive power of financial condition ratios, researchers who have analyzed early warning systems have considered criteria such as "hope and forgiveness," or the ability to generate proportionate state responses to local fiscal distress (Kleine et al. 2002). This concern suggests many challenges beyond how to define municipal fiscal health. For one, local fiscal emergencies may be unforeseeable because of "event-driven crises" such as adverse court judgments, natural disasters, or a specific economic shock such as the closing of a large employer (Standard & Poor's 2018).

Relatedly, it is unclear at what time intervals local governments should report fiscal health measures (e.g., annually, quarterly, or monthly) and whether higher-frequency reporting is worth the administrative cost. States that have automated local government financial reporting may find this easier. For example, North Carolina introduced an online benchmarking tool in 2010 that allows localities to compare their fiscal situation to their peers.³²

More broadly, there is the question of what states should do with information from a fiscal monitoring system. Any state intervention program raises questions of local control and democracy (Gillette 2014). State oversight bodies may have powers to restructure labor contracts, increase taxes and fees, or require local governments to consolidate or dissolve (Spiotto, Acker, and Appleby 2016; Scorsone 2014). Generally, intervention powers escalate with the severity of a crisis, so states may take only small steps for a locality under "fiscal watch" but take larger ones during a full-blown emergency.

Many states that track municipal fiscal health do not intervene in cases of distress, and states that intervene do not necessarily track health regularly. For example, seven states with monitoring programs as of 2016 (Colorado, Iowa, Kentucky, Maryland, Minnesota, South Dakota, and Washington) did not have general laws regarding intervention in local fiscal crises as of 2013. Five states (Illinois

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Indiana, Maine, Massachusetts, and Texas) had intervention laws but no monitoring (Pew Charitable Trusts 2013, 2016).

Conclusions

We began this report by noting the importance of cities to national prosperity and well-being and discussing the ways in which cities may be at risk because of fiscal unsustainability. We then reviewed various ways that policymakers, academics, and business practitioners have assessed municipal fiscal health and attempted to adjudicate among these measures.

We showed the challenges associated with transforming existing metrics into a comprehensive, timely, and meaningful early warning system. Approaches are often incommensurable and ad hoc. To the extent an academic literature exists, results are often unclear or conflicting.

Stone et al. (2015) go through a similar exercise, illustrating the strengths and limitations of various measures in predicting Detroit's fiscal distress. However, they note that operating deficits (revenues minus expenditures) provide a fairly good summary statistic of how a city is doing. Inman (2003, 2009) and Inman, Craig, and Luce (1994) reached a similar conclusion, focusing on the experience of Philadelphia and deriving a more robust measure of revenues a city *could* raise (taking into account behavioral responses, or the possibility of businesses and taxpayers leaving the jurisdiction) and the mandatory versus discretionary nature of spending obligations (e.g., debt service, pensions, wages, and other contractual obligations).

Inman (2009) concluded that cities often faced too much of a burden for costs properly borne by the region, or state, or nation (e.g., for poverty alleviation). This intergovernmental arrangement makes it impossible for cities to cope when confronted with a "perfect storm" of an economic shock coupled with costly populations, restrictive rules, and poor governance. Perhaps we should shift our attention away from municipal fiscal health and instead toward the fiscal health of our entire intergovernmental system, including toward ways to reallocate spending responsibilities to the right level of government.

Appendix

TABLE A.1

Regressions for Own-Source General Revenues per Capita

Regression of general own-source revenues per capita (real \$2012) on hedonic price index

Variables	Uncontrolled	Demographic Controls	City Fixed Effects	Year Fixed Effects
Hedonic price index (lagged 1 year)	6.107**	4.215**	-0.424	-0.563
	(2.889)	(2.105)	(0.790)	(0.793)
1 yr lag profit margin ratio	665.3	1,064	34.41	62.83
	(813.6)	(704.1)	(158.0)	(154.4)
Interaction: 1 yr lag profit margin ratio and 1 $$				
yr lag hedonic price index	-9.739	-9.565	0.803	0.558
	(7.957)	(6.515)	(1.374)	(1.336)
Share of population white		-50.69*	-124.8	-205.4
		(26.41)	(265.5)	(244.7)
Share of population black		-31.62	-172.6	-243.3
		(22.35)	(269.8)	(255.9)
Share of population Asian/Pacific Islander		-58.79**	-177.9	-250.3
		(28.98)	(258.6)	(241.7)
Share of population other race		-20.99	-183.3	-232.6
		(22.13)	(261.3)	(241.2)
Share of population age 5-17		-155.2***	11.23	-29.44
		(30.31)	(51.05)	(57.00)
Share of population age 65+		-55.46***	-8.123	-9.162
		(12.41)	(38.20)	(43.14)
Share of population unemployed		0.0457	-10.24	-2.215
		(10.05)	(39.57)	(35.80)
Average household income		0.0200***	-0.00171	0.00431
		(0.00498)	(0.0128)	(0.0182)
Share of population in poverty		-18.02***	40.95	33.24
		(6.907)	(45.99)	(50.29)
Share of owner-occupied housing units		-31.13***	28.42	30.45
		(3.983)	(24.29)	(22.64)
Share of population foreign born		-8.985***	-1.427	-3.094
		(3.129)	(33.24)	(33.69)
Share of population with BA or higher		-0.436	16.52	14.68
		(5.333)	(51.05)	(52.68)
Constant	1,073***	10,646***	13.354	21,339
	(242.7)	(2,786)	(27,004)	(24,864)
	· ·	· · ·		· · ·
Observations	3,188	3,185	3,185	3,185
R-squared	0.042	0.406	0.992	0.992

Note: Robust standard errors in parentheses.

TABLE A.2

Regressions for Own-Source General Revenues per Capita

Regression of general own-source revenues per capita (real \$2012) on hedonic price index

		Demographic	City Fixed	Year Fixed
Variables	Uncontrolled	Controls	Effects	Effects
Hedonic price index (lagged 1 year)	10.29**	7.338**	-0.497	-0.691
	(4.298)	(2.984)	(0.954)	(0.951)
1 yr lag net worth ratio	2,112**	1,624**	-21.33	-39.90
	(923.7)	(669.0)	(157.7)	(157.0)
Interaction: 1 yr lag net worth ratio and 1				
yr lag hedonic price index	-30.04**	-22.16**	0.274	0.535
	(12.47)	(8.617)	(2.205)	(2.195)
Share of population white		-44.90	-109.7	-218.0
		(35.20)	(279.1)	(258.5)
Share of population black		-28.77	-160.2	-257.8
		(31.19)	(286.6)	(272.6)
Share of population Asian/Pacific Islander		-52.59	-163.5	-262.7
		(37.73)	(272.8)	(256.8)
Share of population other race		-15.78	-175.6	-252.5
		(30.36)	(271.2)	(252.7)
Share of population age 5-17		-155.5***	18.75	-28.57
		(29.23)	(52.99)	(57.59)
Share of population age 65+		-57.41***	-0.594	-4.202
		(12.05)	(39.23)	(43.72)
Share of population unemployed		9.632	-11.50	-2.180
		(12.29)	(43.67)	(39.59)
Average household income		0.0194***	-0.000576	0.00793
		(0.00480)	(0.0135)	(0.0191)
Share of population in poverty		-16.12**	38.47	32.01
		(7.148)	(50.52)	(53.81)
Share of owner-occupied housing units		-30.79***	31.72	31.93
		(4.186)	(25.30)	(23.58)
Share of population foreign born		-8.860***	-0.771	-2.366
		(3.336)	(35.49)	(35.98)
Share of population with BA or higher		1.595	17.63	16.58
		(5.516)	(51.93)	(53.22)
Constant	757.8**	9,751***	11,501	22,242
	(349.7)	(3,512)	(28,486)	(26,294)
Observations	2,914	2,911	2,911	2,911
R-squared	0.069	0.424	0.992	0.992

Note: Robust standard errors in parentheses.

TABLE A.3

Regressions for Own-Source General Revenues per Capita

Regression of general own-source revenues per capita (real \$2012) on hedonic price index

		Demographic	City Fixed	Year Fixed
VARIABLES	Uncontrolled	Controls	Effects	Effects
Hedonic price index (lagged 1 year)	8.981**	6.844**	-0.602	-0.750
	(3.833)	(2.802)	(0.895)	(0.895)
1 yr lag continuing services ratio	500.2	719.1**	-61.46	-70.10
	(347.4)	(302.6)	(78.18)	(79.69)
Interaction: 1 yr lag continuing services ratio				
and 1 yr lag hedonic price index	-9.382**	-8.143***	0.803	0.861
	(4.104)	(3.014)	(0.653)	(0.670)
Share of population white		-39.34*	-121.2	-208.4
		(22.88)	(266.1)	(243.5)
Share of population black		-22.90	-166.4	-243.5
		(20.13)	(270.9)	(254.9)
Share of population Asian/Pacific Islander		-48.05*	-171.6	-250.6
		(25.09)	(260.0)	(241.2)
Share of population other race		-7.607	-176.6	-232.7
		(20.19)	(262.3)	(240.5)
Share of population age 5-17		-150.3***	11.24	-31.94
		(28.67)	(51.88)	(56.88)
Share of population age 65+		-53.23***	-3.298	-4.847
		(11.74)	(39.94)	(44.34)
Share of population unemployed		4.881	-9.109	0.0439
		(10.95)	(39.87)	(36.16)
Average household income		0.0184***	-0.00258	0.00439
		(0.00438)	(0.0125)	(0.0182)
Share of population in poverty		-15.60**	40.98	34.89
		(6.874)	(46.52)	(50.54)
Share of owner-occupied housing units		-29.80***	30.47	31.88
		(4.090)	(24.67)	(23.00)
Share of population foreign born		-8.276***	-7.805	-9.382
		(3.210)	(32.98)	(33.45)
Share of population with BA or higher		3.780	21.14	19.86
		(5.243)	(49.79)	(51.16)
Constant	883.5***	8,999***	12,788	21,397
	(321.2)	(2,353)	(27,075)	(24,764)
Observations	3,183	3,180	3,180	3,180
R-squared	0.090	0.423	0.992	0.992

Note: Robust standard errors in parentheses.

TABLE A.4 Regressions for Own-Source General Revenues per Capita

Regression of general own-source revenues per capita (real \$2012) on hedonic price index

	(1)	(2)	(3)	(4)
	. /	Demographic	City Fixed	Year Fixed
VARIABLES	Uncontrolled	Controls	Effects	Effects
Hedonic price index (lagged 1 year)	-3.919	-5.527**	0.0222	-0.0192
	(3.039)	(2.439)	(0.599)	(0.591)
1 yr lag debt-to-asset ratio	-2,139	-2,419**	96.08	119.2
	(1,371)	(1,043)	(202.3)	(212.2)
Interaction: 1 yr lag debt-to-asset ratio and 1				
yr lag hedonic price index	26.32*	26.53**	-0.997	-1.225
	(14.05)	(10.49)	(2.005)	(2.098)
Share of population white		-32.48	-128.6	-213.5
		(23.80)	(265.5)	(245.1)
Share of population black		-17.73	-175.2	-250.1
		(21.51)	(269.7)	(256.1)
Share of population Asian/Pacific Islander		-40.51	-179.7	-256.5
		(25.88)	(259.2)	(242.3)
Share of population other race		0.992	-184.3	-237.9
		(20.86)	(261.6)	(241.5)
Share of population age 5-17		-143.8***	8.621	-35.06
		(24.12)	(51.39)	(58.16)
Share of population age 65+		-49.46***	-7.149	-8.927
		(10.05)	(38.90)	(43.49)
Share of population unemployed		12.13	-8.053	1.124
		(12.80)	(39.88)	(36.18)
Average household income		0.0164***	-0.00302	0.00384
		(0.00353)	(0.0134)	(0.0182)
Share of population in poverty		-15.29**	41.34	35.17
		(7.302)	(46.38)	(50.68)
Share of owner-occupied housing units		-30.46***	32.16	33.38
		(4.055)	(24.22)	(22.57)
Share of population foreign born		-8.332**	-4.970	-6.445
		(3.266)	(33.91)	(34.24)
Share of population with BA or higher		7.634	21.30	20.47
		(5.757)	(52.08)	(53.83)
Constant	1,851***	9,223***	13,473	21,864
	(346.0)	(2,593)	(27,002)	(24,910)
Observations	3,191	3,188	3,188	3,188
R-squared	0.116	0.458	0.992	0.992

Note: Robust standard errors in parentheses.

Notes

- ¹ For more discussion see Pew Charitable Trusts (2012).
- ² Molly Smith, "Junk City Snapshot: Chicago Taxes Rise, But So Do Pension Costs," *Bloomberg*, July 15, 2016; Jenna Carlesso, "City Council Greenlights State Bailout for Hartford," *Hartford Courant*, March 26, 2018.
- ³ For more discussion see, e.g., Aubry, Crawford, and Munnell (2018); Cembalest (2017); and Michael Maciag, "What Are Cities Spending Big On? Increasingly, It's Debt," *Governing*, September 2017.
- ⁴ For more discussion see, e.g., Ben Casselman, "As Amazon Steps Up Tax Collections, Some Cities Are Left Out," New York Times, March 25, 2018; Mikesell (2012).
- ⁵ For more discussion see, e.g., Pagano and Hoene (2010).
- ⁶ Kyle Glazier and Naomi Jagoda, "Treasury Creating Office of State and Local Finance" Bond Buyer, April 17, 2014. The Obama administration also established a Council on Community Solutions to "harness data and technology to improve outcomes," although fiscal tracking was not an explicit part of that effort. See "Establishing a Community Solutions Council," Exec. Order No. 13748, November 16, 2016.
- ⁷ See Randall et al. (2018) for a more detailed description of these data.
- ⁸ This is the well-known problem of moral hazard, or the idea that providing any kind of insurance—whether against natural, economic, or fiscal disasters—can alter behavior. In a federalist system, "soft budget constraints" or bailouts from higher government levels can lead to excessive local borrowing. See examples from 1990s Argentina and Brazil in Rodden, Litvack, and Eskeland (2003).
- ⁹ Established by the 86th US Congress, the ACIR was a "permanent, bipartisan body of 26 members, to give continuing study to the relationship among local, state, and national levels of government." Among its statutory responsibilities were to "provide a forum for discussing the administration and coordination of Federal grant and other programs requiring intergovernmental cooperation." See Pub. L. No. 86-380, 73 Stat 703 (1959).
- ¹⁰ The authors distinguished their approach from an earlier effort by the National Tax Association to define a "model" state and local tax system and calculate hypothetical revenue yields from that system (Bullock et al. 1919).
- ¹¹ Pub. L. No 104-52, 109 Stat. 468 (1995) appropriated \$784,000 for the ACIR's fiscal year 1996 budget, "of which \$450,000 shall be available only for the purposes of the prompt and orderly termination of the Advisory Commission on Intergovernmental Relations."
- ¹² President Nixon's general revenue sharing program relied on a complicated two-tiered aid formula that directed aid to both states and localities. It also attempted to equalize differences in fiscal capacity, or revenue access, among states while rewarding their revenue effort or dollars collected. It is not difficult to see how these goals could work at cross purposes. As economist George Break would later write, "the implied diversity of purpose became an inherent problem for the new program since it could hardly be expected to satisfy all expectations at once" (Break 1980, 145). Eventually, the program collapsed under the weight of its many and conflicting expectations. The state component of general revenue sharing ended in 1980, and the program terminated altogether in 1986. The official justification for the end of general revenue sharing was that the federal government had "no revenue to share." The program had also long generated controversy, in part because it required the federal government to do the heavy lifting of raising revenues while preventing Congress and the administration from targeting funds to their desired purposes (Sawicky 2001).

- ¹³ The main vehicles for 1970s countercyclical fiscal assistance were the Local Public Works, Comprehensive Employment and Training Act, and the Antirecession Fiscal Assistance programs.
- ¹⁴ Passed in 1978, Proposition 13 capped property tax rates at 1 percent, rolled back assessed values to 1975 levels, and limited growth in assessed values, and required supermajorities for some new state and local taxes. For more relevant information on Proposition 13, see Martin (2009) and Haveman and Sexton (2008).
- ¹⁵ More specifically, the measures were the unemployment rate as of 1970, per capita income, poverty rate (families living below 125 percent of the federal poverty level), age ratios (persons under age 18 or over age 64), educational attainment (people age 25 with less than a high school education), and housing quality (occupied units with more than one person to a room).
- ¹⁶ The US Census Bureau collected various data on taxable property values and assessed valuations from 1850 until 1992 (US Bureau of the Census 2006b).
- ¹⁷ The CBO (1978, 7) called this a "serious and persistent imbalance between the need for public services and s government's ability to finance the necessary expenditures," whereas Bradbury et al. (1984) referred to a "structural" or "citizen's" fiscal distress.
- ¹⁸ For example, see Stephen Fehr, "Service Insolvency' Could Help States Intervene in Troubled Cities," *Stateline* (blog), Pew Charitable Trusts, March 6, 2017.
- ¹⁹ Arguing for welfare reform and the General Revenue Sharing program, President Nixon said, "if we do not have it we are going to have States, cities, and counties going bankrupt over these next 2 to 3 years." (See "A Conversation with the President," President Richard Nixon interview with four representatives of television networks, January 4, 1971.
- ²⁰ One analyst traces the evolution of financial condition ratios to Euclid (Horrigan 1968).
- ²¹ It is a staple of accounting textbooks such as Finkler et al. (2012).
- ²² These definitions can be found on state websites. In North Carolina, the information can be found on the County and Municipal Fiscal Analysis page run by the Department of State Treasurer and the Local Government Commission. The Florida State Auditor maintains a page for Local Government Entity Financial Condition Assessment procedures and Financial indicators.
- ²³ These examples should not detract from the service each state is doing its citizens and local governments by facilitating financial comparisons as long as they clearly define what is in each ratio. It is also possible that, not being accounting professionals, we have misread ways in which definitions apparently at odds with each other are in fact the same. However, the point remains that there is no consensus on what financial condition ratios can or should be used to assess municipal fiscal health.
- ²⁴ Government Account Standards Board Standard 34, published in 1999, called for government-wide rather than just General Fund accounting.
- ²⁵ After the publication of Pew's (2016) report, Virginia adopted a monitoring program and early warning system in response to the fiscal struggles of Petersburg, VA. See Savannah Gilmore, "Virginia to Begin Monitoring Local Fiscal Distress," National Conference of State Legislatures blog, April 21, 2017.
- ²⁶ "Local Government and School Accountability: Fiscal Stress Monitoring System," Office of the New York State Comptroller, accessed June 1, 2018.
- ²⁷ For more description about the GovRank Data, see "About GovRank," United States Common Sense.

- ²⁸ Harrisburg entered state receivership after years of contending with the effects of a failed investment to repair an aging incinerator. See Spiotto, Acker, and Appleby (2016, 51–2).
- ²⁹ This is similar to a strategy Besley and Coate (2003) used to identify effects of an institution (elected versus appointed regulators) that was potentially endogenous or caused by the outcome or another omitted variable.
- ³⁰ See Gordon, Monkkonen, Lens, and Rosenthal (2016) for a description of the construction of city-level price indexes from 1995 to 2013.
- ³¹ We obtained these data from the Urban Institute Neighborhood Change Database at the tract level of geography and then aggregated to the city level. We interpolated annual values between the 10-year intervals.
- ³² See also Massachusetts' Municipal Finance Trend Dashboard and Ohio's Fiscal health Indicators, available at https://www.mass.gov/news/commissioner-harding-announces-municipal-finance-trend-dashboard and https://ohioauditor.gov/FHI/default.html

References

- ACIR (Advisory Commission on Intergovernmental Relations). 1962. Measures of State and Local Fiscal Capacity and Tax Effort. Washington, DC: ACIR.
- ---. 1971. Measuring the Fiscal Capacity and Effort of State and Local Areas (Report M-58). Washington, DC: ACIR.
- ---. 1973. City Financial Emergencies: The Intergovernmental Dimension. Washington, DC: ACIR.
- ---. 1977. Measuring the Fiscal "Blood Pressure" of the States-1964-1975 Report M-111). Washington, DC: ACIR.
- ---. 1982. Tax Capacity of the Fifty States: Methodology and Estimates (Report M-134). Washington, DC: ACIR.
- Arnett, Sarah. 2014. "State Fiscal Condition Ranking the 50 States." Working paper 14-02. Arlington, VA: George Mason University, Mercatus Center.
- Aronson, J. Richard, and Arthur E. King. 1978. "Is There a Fiscal Crisis outside of New York?" *National Tax Journal* 31 (2): 153–63.
- Aubry, Jean-Pierre, Caroline V. Crawford, and Alicia H. Munnell. 2018. The Funded Status of Local Pension Inches Closer to States. Boston: Center for Retirement Research at Boston College.
- Besley, Timothy, and Stephen Coate. 2003. "Elected Versus Appointed Regulators: Theory and Evidence." Journal of the European Economic Association 1 (5): 1176-1206.
- Bird, Richard M. 2014. "Reflections on Measuring Urban Fiscal Health." Municipal Finance Journal 35 (3): 47-78.
- Bradbury, Katherine, Helen F. Ladd, Mark Perrault, Andrew Reschovsky, and John Yinger. 1984. "State Aid to Offset Fiscal Disparities Across Communities." *National Tax Journal*, 37 (2): 151–70.
- Bradbury, Katherine, and Bo Zhao. 2009. "Measuring Non-School Fiscal Disparities Among Municipalities." *National Tax Journal* 62 (1): 25–56.
- Break, George F. 1980. Financing Government in a Federal System. Washington, DC: Brookings Institution.
- Brown, K. W. 1993. "The 10-point test of financial condition: Toward an easy-to-use assessment otool for smaller governments. *Government Finance Review* 9 (1): 21-25.
- Bullock, Charles J., Charles V. Galloway, Samuel T. Howe, Celsus P. Link, Samuel Lord, Ogden L. Mills, Thomas W. Page, A.C. Rearick, and W.L. Tarbet. 1919. "Preliminary Report of the Committee Appointed by the National Tax Association to Prepare a Plan of a Model System of State and Local Taxation." *Proceedings of the Annual Conference on Taxation* 12: 426–70.
- CBO (Congressional Budget Office). 1978. City Need and the Responsiveness of Federal Grant Programs. Washington, DC: CBO.
- Cembalest, Michael. 2017. "ARC and the Covenants 3.0: US Cities and Counties." Eye on the Market. New York: JP Morgan Chase.
- Chen, Greg G., Dall W. Forsythe, Lynne A. Weikart, and Daniel W. Williams. *Budget Tools*. Washington, DC: CQ Press.
- Chernick, Howard, and Andrew Reschovsky. 2006. "Fiscal Disparities in Selected Metropolitan Areas." Proceedings of the Annual Conference on Taxation and Minutes of the Annual Meeting of the National Tax Association 99: 76-84.
- Clark, B. Y. 2015. "Evaluating the Validity and Reliability of the Financial Condition Index for Local Governments." *Public Budgeting and Finance* 35 (2): 66-88.
- Clark, Terry N., and Lorna Crowley Ferguson. 1983. City Money: Political Processes, Fiscal Strain, and Retrenchment. New York: Columbia University Press.

- Costa, Dora L., and Matthew E. Kahn. 2015. "Declining Mortality Inequality within Cities during the Health Transition." *American Economic Review* 105 (5): 564–69.
- Dilger, Robert Jay. 2017. Federal Grants to State and Local Governments: A Historical Perspective on Contemporary Issues. Washington, DC: Congressional Research Service.
- White House. 2014. "Chapter 6: The War on Poverty 50 Years Later: A Progress Report," in *Economic Report of the President Together with the Annual Report of the Council of Economic Advisers*. Washington, DC: Government Printing Office.
- Finkler, Steven A., Thad Calabrese, Robert Purtell, and Daniel L. Smith. 2012. Financial Management for Public, Health, and Not-for-Profit Organizations. 4th ed. Boston: Prentice Hall.
- Gilette, Clayton P. 2014. "Dictatorships for Democracy: Takeover of Financially Failed Cities." Columbia Law Review 114 (6): 1373–1462.
- Gordon, Tracy M., Paavo Monkkonen, Michael Lens, and Larry A. Rosenthal, "City-level housing price indexes and sub-metropolitan price dynamics, 1996-2013," unpublished research note.
- Gorina, Evgenia, Craig Maher, and Marc Joffe. 2018. "Local Fiscal Distress: Measurement and Prediction." Public Budgeting & Finance Spring: 72-94.
- Groves, S. M., and M. G. Valente. 1994. Evaluating Financial Condition: A Handbook for Local Government. Washington, DC: ICMA.
- Groves, S. M., W. Maureen Godsey, and Martha A. Shulman. 1981. "Financial Indicators for Local Government." Public Budgeting & Finance 1 (2): 5.
- Haar, Charles M. 1975. Between the Idea and the Reality: A Study in the Origin, Fate, and Legacy of the Model Cities Program. New York: Little, Brown.
- Haveman, Mark, and Terri A. Sexton. 2008. Property Tax Assessment Limits: Lessons from Thirty Years of Experience. Cambridge, MA: Lincoln Institute of Land Policy.
- Hendrick, Rebecca. 2004. "Assessing and Measuring the Fiscal Health of Local Governments: Focus on Chicago Suburban Municipalities." Urban Affairs Review: 78-114.
- Holian, Matthew J., and Marc D. Joffe. 2013. Assessing Municipal Bond Default Probabilities. Sacramento, CA: State of California Treasurer's Office, California Debt and Investment Advisory Commission.
- Honadle, B. W., and M. Lloyd-Jones. 1998. "Analyzing rural local governments' financial condition: An explanatory application of three tools. *Public Budgeting & Finance* 18 (2): 69-86.
- Horrigan, James O. 1968. "A Short History of Financial Ratio Analysis." Accounting Review 43 (2): 284-94.
- Hsieh, Chang-Tai, and Enrico Moretti. 2015. "Why Do Cities Matter? Local Growth and Aggregate Growth." Working paper 21154. Cambridge, MA: National Bureau of Economic Research.
- ICMA (International City/County Management Association). 1980. "Financial Trends Monitoring System." Washington, DC: ICMA.
- Inman, Robert P. 2003. "Should Philadelphia's Suburbs Help Their Central City?" Business Review quarter 2: 24-36.
- ———. 2009. "Chapter 11: Financing City Services." In Making Cities Work, edited by Robert P. Inman, 328-361. Princeton, NJ: Princeton University Press.
- Inman, Robert P., Steven Craig, and Thomas Luce. 1994. "The Fiscal Future for American Cities: Lessons from Three Cities." Research Impact Paper 4. Philadelphia: The Wharton School of the University of Pennsylvania.
- Jacob, Benoy, and Rebecca Hendrick. 2012. "Assessing the Financial Condition of Local Governments." In *Handbook* of Local Government Fiscal Health, edited by Helisse Levine, Eric A. Scorsone, and Jonathan B. Justice. Burlington, MA: Jones & Bartlett Learning.

- Kahn, Matthew E. 2006. Green Cities: Urban Growth and the Environment. Washington, DC: Brookings Institution Press.
- Kleine, Robert, Philip Kloha, and Carol S. Weissert. 2002. "Fiscal Distress Indicators: An assessment of current Michigan law and development of a new early-warning scale for Michigan localities." East Lansing, MI: Institute for Public Policy and Social Research at Michigan State University.
- Kloha, Philip, Carol S. Weissert, and Robert Kleine. 2005. "Developing and Testing a Composite Model to Predict Local Fiscal Distress." *Public Administration Review* 65 (3): 313–23.
- 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.
- Martin, Isaac W. 2009. "Proposition 13 Fever: How California's Tax Limitation Spread." In After the Tax Revolt: *California's Proposition 13 Turns 30*, edited by J. Citrin and I. W. Martin. Berkeley, CA: Berkeley Public Policy Press.
- McDonald, Bruce III. 2017. "Measuring the Fiscal Health of Municipalities." Working paper WP17BM1 Washington, DC: Lincoln Institute of Land Policy.
- McFarland, Christiana, and Michael A. Pagano. 2017. City Fiscal Conditions 2017. Washington, DC: National League of Cities.
- Mead, Dean Michael. 2000. What You Should Know about Your Local Government's Finances: A Guide to Financial Statements. 2nd edition. Washington, DC: Governmental Accountability Standards Board.
- Mikesell, John L. 2012. "The Disappearing Retail Sales Tax." State Tax Notes: 777-81.
- Musgrave, Richard A., and A. Mitchell Polinsky. 1970. "Revenue Sharing: A Critical View," in *Financing State and Local Governments*, edited by the Federal Reserve Bank of Boston, 17–51. Boston: Federal Reserve Bank of Boston.
- Nathan, Richard P., and Charles Adams. 1976. "Understanding Central City Hardship." *Political Science Quarterl*: 91(1): 47-62.
- Nollenberger, Karl, Sanford M. Groves, and Maureen G. Valente. 2003. *Evaluating Financial Condition: A Handbook for Local Government*, 4th ed. Washington, DC: International City/County Management Association.
- Pagano, Michael A., and Christopher Hoene. 2010. "States and the Fiscal Policy Space of Cities." In the Property Tax and Local Autonomy, edited by Michael E. Bell, David Brunori, and Joan Youngman, 243–84. Cambridge, MA: Lincoln Institute of Land Policy.
- Pew Charitable Trusts. 2012. The Local Squeeze: Falling Revenues and Growing Demand for Services Challenge Cities, Counties, and School Districts. Washington, DC: Pew Charitable Trusts.
- ---. 2013. The State Role in Local Government Financial Distress. Washington, DC: Pew Charitable Trusts.
- ---. 2016. State Strategies to Detect Local Fiscal Distress. Washington, DC: Pew Charitable Trusts.
- Plerhoples, Christina, and Eric Scorsone. 2011. "Proposed Alterations to the Local Government Fiscal Stress Indicator System for the State of Michigan." Staff Paper Series 2011-03. East Lansing, MI: Michigan State University.
- Rafuse, Robert W. 1990. "Representative Expenditures: Addressing the Neglected Dimension of Fiscal Capacity." Information report M-174. Washington DC: Advisory Commission on Intergovernmental Relations.
- Randall, Megan, Tracy Gordon, Solomon Greene, and Erin Huffer. 2018. Follow the Money: How to Track Federal Funding to Local Governments. Washington, DC: Urban Institute.
- Ratcliffe, Kerri, Bruce Riddle, and John Yinger. 1990. "The Fiscal Condition of School Districts in Nebraska: Is Small Beautiful?" *Economics of Education Review* 9 (1): 81–99.

- Ravitch, Richard. 2014. So Much to Do: A Full Life of Business, Politics and Confronting Fiscal Crises. New York: Public Affairs.
- Reschovsky, Andrew. "Are City Fiscal Crises on the Horizon?" In *Urban Finance Under Siege* edited by Thomas R. Swartz and Frank J. Bonello, 107-138. New York, NY: M. E. Sharpe.
- Rodden, Jonathan, Jennie Litvack, and Gunnar Eskeland. 2003. Fiscal Decentralization and Challenge of Hard Budget Constraints. Cambridge, MA: MIT Press.
- Sawicky, Max B. 2001. "An Idea Whose Time Has Returned: Anti-Recession Fiscal Assistance for State and Local Governments." Briefing paper 117. Economic Policy Institute. Washington, DC.
- Scorsone, Eric. 2014. "Municipal Fiscal Emergency Laws: Background and Guide to State-Based Approaches." Working Paper. Arlington, VA: Mercatus Center at George Mason University.
- Spiotto, James E., Ann E. Acker, and Laura E. Appleby. 2016. *Municipalities in Distress: How States and Investors Deal with Local Government Financial Emergencies*. 2nd ed. Washington, DC: Chapman and Cutler LLP.
- Standard & Poor's. 2013. "U.S. Local Governments General Obligation Ratings: Methodology and Assumptions." Ratings Direct. New York: Standard & Poor's.
- Standard & Poor's. 2018. Diagnosing Distress in U.S. Local Governments. New York: Standard & Poor's.
- Stone, Samuel B., Akheil Singla, James Comeaux, and Charlotte Kirshner. 2015. "A Comparison of Financial Indicators: The Case of Detroit." *Public Budgeting & Finance* 35 (4).
- Tannenwald, Robert. 1998. "Come the Devolution, Will States Be Able to Respond?" New England Economic Review May-June: 53-83.
- Tannenwald, Robert. 1999. "Fiscal Disparity among the States Revisited." New England Economic Review July– August: 3–26.
- Tannenwald, Robert, and Nicholas Turner. 2006. "Interstate Fiscal Disparity in State Fiscal Year 1999." Boston: Federal Reserve Bank of Boston.
- US Bureau of the Census. 2006a. Government Finance and Employment Classification Manual. Washington, DC: United States Bureau of the Census.
- ---. 2006b. Historical Overview of U.S. Census Bureau Data Collection Activities About Governments: 1850 to 2005.
 Washington, DC: US Bureau of the Census.
- US Department of the Treasury. 1978. Report on the Fiscal Impact of the Economic Stimulus Package on 48 Large Urban Governments. Washington, DC: US Department of the Treasury, Office of State and Local Finance.
- Wang, XiaoHu, Lynda Dennis, and Yuan Sen Tu. 2007. "Measuring financial condition: A study of U.S. states." Public Budgeting and Finance, 27 (2):1–21.
- Yilmaz, Yesim, Sonya Hoo, Matthew Nagowski, Kim Rueben, and Robert Tannenwald. 2006. "Fiscal Disparities across States, FY 2002." Washington, DC: Urban-Brookings Tax Policy Center.
- Yilmaz, Yesim, and Robert Zahradnik. 2008. "Measuring the Fiscal Capacity of the District of Columbia: A Comparison of Revenue Raising Capacity and Expenditure Need—Fiscal Year 2005." Washington, DC: Office of Revenue Analysis.

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