

In the Shadow of State Government: Revenue Diversification and Changes in Municipal Spending After Two Recessions

Abstract

This research estimates a model of own-source revenue diversification and a model of changes in operational spending in municipal governments from 1997 to 2012 to determine how these governments have adapted to the two significant recessions that occurred during this time period. The first model examines factors that affect this revenue diversification, focusing on the state-local fiscal context and how the level of urbanization of the area surrounding the municipality impacts the effect of state-local context and other factors. The second model examines how municipal governments in the US have adapted their spending to the two severe recessions of the 2000's, focusing on how state context, revenue diversification, and other factors affect changes in operational spending. Finally, this research also looks at the conditional effects of the size of government on the impact of state context, environmental pressures, and revenue structure on changes in operational spending.

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I. Introduction

There are many who consider the 2000's to be a fundamental turning point for local governments in the US. Some claim that this decade has established a 'new normal' in financing local services that threatens to permanently reduce the level and quality of public goods and services provided at the local level (Martin et al. 2012). At the time, the 2001 recession was considered to be the worst recession that general purpose local governments had experienced since the Great Depression due to significant reductions in both own-source sales taxes and state aid. The latter was precipitated by a steep drop in shared income taxes brought about the severe contraction of the booming stock market in the late 1990's (Pagano and Hoene 2003, Dye and Reschovsky, 2008). Many local governments had not fully recovered from this recession when the Great Recession hit in 2008 that, unlike prior recessions, reduced property values and property tax levies on which local governments rely most heavily. Some claim that this decade has fundamentally altered local governments' ability to generate enough revenue to fully meet service obligations, and it has exacerbated the infrastructure deficits and underfunding of pension obligations that have existed for some time at both the state and local levels (McFarland and Pagano 2014; Pew Center for the States 2011).

If local governments have, indeed, experienced a fundamental shift in the scarcity of their fiscal environment, to borrow a term from Allen Schick (1980), then it is important to know whether and how these governments have adapted to such conditions and what challenges they may face in the future. The concept of adaptation has been used since the 1950's to describe how organizations adjust both structurally and procedurally to changing environments, especially extreme events. (Lawrence and Lorsch 1967; Thompson 1967; March and Simon, 1958).

Generally speaking, successful adaptation occurs when the organization's structure and processes are balanced with its environment. Adaptation is even more successful when the

organization changes its structure and processes to reduce its vulnerability to future environmental changes.

In the late 1970's and early 1980's, this concept was applied to local governments to describe how they reacted to the fiscal stresses and resource scarcity that many were facing at that time (Clark and Ferguson, 1983; Levine, 1978; Levine et al, 1981; Schick, 1980). This body of research demonstrated that how governments adapted to these conditions depended on the options available to them, which were determined in part by the severity and length of the fiscal stress they were facing. Additionally, governments with more financial constraints and fewer options for responding to fiscal stress had more difficulty adapting.

Drawing from more recent research on government revenue structure, responses to fiscal stress, and the fiscal policy space of local governments (Pagano and Hoene, 2003), these theoretical underpinnings and this research suggest several interesting research questions about the fiscal adaptation of governments in the current context of resource scarcity. First, revenue diversification has been identified as an important structural feature that helps governments manage revenue volatility by spreading the effects the business cycle (fiscal stress and munificence) over time, which allows them to maintain spending during these cycles. One question is whether revenue diversification, especially in municipal governments, has helped municipalities to adapt to the high levels of fiscal scarcity in the 2000s. Given its importance to adaptation, another question is what factors have most affected the diversification of revenue in municipal governments. Third, state-local relations and other features of the fiscal policy space frame many aspects of the environment that impact municipal resources, expenditures, and strategies for managing fiscal stress. What effect does state context that defines state-local

relationships have on how governments have adapted their revenue structure over time and how they respond to fiscal stress in the short-term?

To answer these three questions this research estimates two models that examine: 1) the effects of state context and other factors on the diversification of non-enterprise, own-source revenue, and 2) the effects of revenue diversification, state context, and other factors on the change in non-enterprise operational spending in all municipalities in the US from 1997 to 2012. The first model is also estimated separately and with interaction terms for metropolitan, micropolitan, and rural areas to reflect the fundamental differences in the fiscal policy space and processes of these regions. The second model is also estimated separately and with interaction terms for different sizes of the government to reflect fundamental differences in the fiscal policy spaces and processes of large and small governments.

This research finds, not surprisingly, that revenue diversification is affected most by the size of the government (larger municipalities have a more diverse government revenue structure), state constraints on taxation, and resources. It also finds that the impacts of some of these factors is different for metropolitan regions than other areas. For the second model, the research finds that a more diversified revenue structure helps governments adapt, defined here as avoidance of operational spending cuts, but only when governments are very small. This research also finds that state context does not consistently affect changes in municipal spending during this time period, but the effects of state context and other factors do vary by the size of the government.

The next section describes how governments adapt to fiscal stress and the level of fiscal stress likely faced by municipal governments due to the two recessions. The third section describes important state-level factors that determine the diversification of revenue and

municipal fiscal policy space for responding to the 2001 and Great Recessions. Section four presents the two models and their variables, and section five presents some key revenue and spending trends for this time period and the results of estimating the models

II. Government Adaptation to the Fiscal Environment

In his ground-breaking book, *The Sciences of the Artificial*, Herbert Simon (1969, 7-9) defines adaptation as changes to the inner environment of an organism or artifact to achieve homeostasis or equilibrium with its external environment. This approach has precipitated a large body of empirical research across different fields that explains organizational (and governmental) behavior using this concept. Much of this research focuses on examining and explaining how organizations respond to different types of environments using a contingency theory approach, which argues that different organizational forms and processes will evolve from different environments (Lawrence and Lorsch, 1967). More specifically, the form and processes of a successful organization will be matched to the demands, constraints, and opportunities of the environment. For instance, seminal work in this area indicates that governments' internal environments will adapt to the complexity and variety of its external environment over time by becoming more complex and differentiated (Meyer and Rowan, 1977; DiMaggio and Powell, 1983). Environmental munificence, which is defined as the scarcity or abundance of the external environment, is considered to be another important environmental dimension affecting the adaptation of organizational form and process (Castrogiovanni, 1991).

In the late 1970's and throughout the 1980's, many scholars used this theoretical approach to study how local governments adapted to the decline of central cities, the growth of the suburbs, and the ending of federal revenue sharing for cities in 1986. Central to this body of research, Clark and Ferguson (1983, 44) defined governments' financial adaptation in term of

financial condition and whether there is a balance (or imbalance) between governments' internal and external fiscal environments. Here, the features of their internal fiscal environment are the product of officials' decisions about everything financial, including revenues, spending, surplus resources, and borrowing (Hendrick, 2011, chapter 2). A government in good financial condition has balanced or adapted its internal fiscal characteristics to conditions in its external environment.

For example, the levels of taxation in a government that is fiscally healthy will be balanced with or appropriate to the wealth of the tax bases, spending will be balanced with the level of need or demands of citizens, and a government will not borrow more than it can expect to pay back in the future. Additionally, governments that anticipate fiscal scarcity in the future or have more volatility in their fiscal environment may maintain higher fund balances and rainy-day funds (a buffering feature of the internal environment) to delay the negative effects of the business cycle on financial condition. Similarly, general purpose local governments that are in states that allow them to levy sales and income taxes will have a more diversified tax structures than governments that have access only to property taxes.

Other research into the fiscal adaptation of governments to financial conditions during the 1980s produced several important findings for understanding the effects on the two recessions on governments currently. One finding is that the level of scarcity that governments experience can be conceptualized as stages rather than a clear linear process. Based on his observations of budgeting at the federal and state level, Allen Schick's (1980) described governments as facing conditions of relaxed, chronic, acute, or total scarcity of resources. The second finding is that governments' actions to adapt to different levels of scarcity also proceeds in stages. According to the work of Levine and his colleagues (Levine, 1978; Levine et al., 1981), governments will

implement several levels of strategies to adapt to environmental changes that correspond to the different levels of scarcity that they face and how long they have been coping with that degree of scarcity.

Under *relaxed scarcity* governments are well adapted. They have sufficient resources to provide services at current or higher levels, absorb normal cost increases due to growth and inflation, and undertake new commitments. Spending by governments at this level of scarcity is likely to be increasing, all other things being equal, and they are not likely to be implementing strategies that cut-back on expenditures or increase revenue burden.

Under *chronic scarcity*, governments have sufficient resources to continue services at existing levels, but insufficient to cover program expansion, growth in demand and needs, or costly new initiatives. Spending by governments at this level of scarcity is likely to be flat. Governments facing chronic scarcity can absorb the effects of regular boom and bust cycles through buffering mechanisms that *delay or absorb* the impact of such changes. These stage one, buffering tactics include delaying capital spending, drawing down fund balances, reducing discretionary spending, and using unsustainable, and one-time budget gimmicks.

If the economic downturn is severe or prolonged, a government in chronic stress is likely to move to a state of *acute scarcity* in which it is unable to absorb incremental increases in service delivery costs to maintain current service levels and quality. If governments have, in effect, used up all the buffers for delaying or absorbing scarcity, then they move to *stretching and resisting strategies* that spread existing resources more thinly over existing services and resist visible revenue increases and spending cuts. Examples of tactics that governments are likely to implement at this stage include across the board cuts, reducing employees through attrition,

raising fees and charges, decreasing pension contributions, reducing administrative staff, and salary and hiring freezes.

If the external environment becomes more fiscally scarce, then governments move to *total scarcity* in which it cannot provide adequate basic services at a sustainable level of revenue burden. If governments have exhausted stretching and resisting options, then they move to *cutting and smoothing* strategies that involve more fundamental changes to revenues and spending. Examples of tactics at this stage are elimination of programs, closing facilities, laying off employees, transferring services to other governments, and raising visible and unpopular revenue sources.

If there is, indeed, a new normal of local government finance and service provision due to the two severe recessions in the 2000s, then it suggests that by 2010 many governments were likely experiencing acute or even total scarcity. Many of these governments had probably exhausted or nearly exhausted their first-stage, buffering tools and possibly their second-stage stretching and resisting strategies in managing the 2001 recession. In many cases, governments had not rebuilt their buffers or eliminated the effects of stretching and resisting by the time the Great Recession hit (Hendrick, 2011). Thus, many governments were likely to be cutting operational spending relative to some unit of service delivery or effort, such as population or per square mile, in order to adapt to these relatively extreme and long-term recessionary effects. The question is whether revenue diversification and other factors are likely to lessen government's need to reduce spending in order to adapt to these levels of fiscal scarcity.

III. Revenue Diversification and State-Local Relation

Much of the research on government revenue diversification has examined its impact on either tax effort or revenue volatility. Much of the research on the impact of revenue

diversification on level of spending and revenues is grounded in the fiscal illusion and Leviathan view of government financial decisions. Based on the work of James Buchanan (Buchanan, 1967; Brennan and Buchanan, 1980) and others, this view holds that revenue diversification obscures the true revenue burden from taxpayers, which gives governments the opportunity to increase the burden beyond what taxpayers are willing to pay.¹ As noted by Sjoquist and Stephenson (2010) in their review of this literature, there is a great deal of empirical support both for and against this view. Empirical research by Wagner (1976), Baker (1983), Suyderhoud (1994), Jordon and Wagner (2008), and Chernick et al. (2011) find that revenue diversification and greater complexity in the tax structure increases tax burden in state and local governments. However, contrary results were obtained by in Ladd and Weist (1987) and Hendrick (2002) in their empirical research on the effects of revenue diversification on tax efforts in state and local governments combined and municipalities respectively. Additionally, studies by Jung (2001) and Sjoquist et al. (2004) find that having a local sales taxes reduces property taxes in local governments, and Pagano and Johnston (2000) find that cities with greater reliance on property taxes have greater revenue burden.

With respect to revenue volatility, many scholars and practitioners agree that revenue volatility is not desirable for government or organizations in other sectors. More than 30 years ago, the Advisory Commission on Intergovernmental Relations advocated that governments strive to create a “balanced” revenue structure to minimize the disadvantages associated with overreliance on taxes for taxpayers and governments (e.g. homeowners bearing all the burden for financing government services), reduce dependence on higher levels of government, and stabilize revenues in the same way that a diversified investment portfolio stabilizes the total

¹ See Afonso (2014) for a review of this perspective on government finances.

value of the investments in the portfolio (Shannon, 1987; Ladd and Weist, 1987). Ten years later the National Advisory Council on State and Local Budgeting Practices advocated revenue diversification for similar reasons (NACSLB, 1998), as did Sjoquist and Stoycheva (2012) more recently. However, empirical research on the impact of revenue diversification on revenue volatility shows that its effects are conditional upon different factors such as stability of the economic base (Yan, 2011), how the taxes are structure (Dye and McGuire, 1991), and the correlations of all revenues in the portfolio (Misolek and Perdue, 1987).

Compared to the level of research on the effects of revenue diversification, there is little empirical research on what factors affect revenue diversification other than Carrol and Johnson (2010) who look at how revenue diversification varies for town governments based on whether they are home rule and are subject to local tax and expenditure limitations (TELS) by state government. This is somewhat surprising given the professed advantage of revenue diversification relative to its disadvantages (Sjoquist and Stoycheva, 2012). In this case, understanding what factors contribute to revenue diversification may help place parameters on expectations about which governments are likely to diversify and provide context for interpreting the empirical research on the impact of revenue diversification on revenue volatility and tax effort. The question is, what other factors besides home rule and TELS are likely to affect how governments' revenue structure adapts over time?

The work by Pagano and Hoene (2010) on the fiscal policy space of local governments and cities specifically provides a good conceptualization of these key features of governments' external environments. They identify five environmental dimensions that determine the financial constraints within which municipal governments must adapt, the range of fiscal policy choices available to government officials, and mandates and pressures regarding the goals and

actions of these governments. These dimensions are: 1) state (and other intergovernmental) context, 2) the economic base of the government, 3) service responsibilities and demands, 4) locally imposed fiscal controls and policies, and 5) political culture. Of these five dimensions, the first is of greatest relevance to revenue diversification due to its relatively consistent effects on the choices available to government external environments over time.

On the revenue side, state governments control the taxes that local governments can levy and how much they can levy, but states also determine what services local governments must provide, *the types of overlapping governments that share tax space with the municipalities*, and the limits of municipal borrowing that exert pressure on local governments resources. States also provide a great deal of financial aid to local governments that greatly affects how much they spend and leaves them vulnerable to decisions by state government to reduce this source of funds, especially if local governments rely on state aid to finance core services. Three of the factors identified by Pagano and Hoene (2010) within this dimension of the fiscal policy space--the existence of tax and expenditure limitations, the level of state aid, and access to general taxes on sales, income, and income—are included in the models presented here since they are likely to affect both revenue diversification and how local governments adapt to changes within the external environment.

Several hypotheses are suggested from applying these concepts to explain how municipal governments have adapted their revenue structure to these conditions and how these conditions affect their adaptation to environmental changes from 1997 to 2012. With respect to revenue diversification, the municipalities in states that allow these local governments to levy sales and/or income taxes should have adapted their revenue structure very differently than municipalities in states with taxing authority limited primarily to property taxes. Similarly,

having access to another significant tax source besides property taxes gives municipalities more revenue options for adapting to environmental changes and downturns in the economy. On the other hand, property taxes are more stable and governments that rely on them more may be able to maintain their spending levels during economic downturns to a greater degree than governments that rely on sales or income taxes.

State imposed TELs, which primarily target local property taxes, is another contextual factor identified by Pagano and Hoene (2010) that determines the state fiscal policy space within which governments adapt. There is a large body of research on the effect of TELs on local governments that is summarized by Brunori et al. (2008), and Stallmann et al. (2017) and shows that TELs reduce the rate of growth in property taxes (Dye and McGuire, 1997; Dye et al, 2005), increase reliance on non-property taxes and property tax burden (Sun, 2014; Skidmore, 1999; Shadbegian, 1999), and increase reliance on state aid (Mullins and Joyce, 1996; Skidmore, 1999; Kioko and Martell, 2012). There is also evidence that more stringent TELs limit the level and growth of total revenue and expenditures (Shadbegian, 1999, 1998).

State aid, a third contextual factor in the state and intergovernmental dimension of the fiscal policy space concept, is distributed to municipal governments in the form of shared revenue and grants. There is a great deal of research on the impact of state aid on local government spending based on the proposed flypaper mechanism in which state aid appears to reduce the price government services. Because both citizens and governments want more services at a lower price, grants stimulate spending in governments. In other words, grant dollars do not replace government revenue for these services. Rather, as has been observed in much of the empirical research on this factor (Hines and Thaler, 1995; Inman, 2008), grants raise spending beyond an increase in local income of an equivalent size.

State aid, however, is only one side of state-local fiscal relations. States also mandate service responsibilities for municipal and county governments that establish a pattern of local funding and service provision relative to state governments. State governments that devolve services and governing authority to the local level are considered to be decentralized. The revenues and expenditures of local governments in a fiscally decentralized state-local system represent a greater share of the total revenue and spending for state and local governments combined. In centralized systems, state governments have more spending and revenues relative to local governments. There is a large body of research on the decentralization (or centralization) of state-local fiscal relations, including studies that assess and develop measures of the systematic variation in these attributes.²

IV. A Model of Revenue Diversification and Its Impact on Municipal Responses to Environmental Pressures

This research estimates two models for approximately 18,300 municipalities in all 50 states from 1997 to 2012 to determine how municipal governments have adapted their revenue structure to the state context and whether this context and their revenue structure have impacted how they have adjusted to changing conditions prior to and after two major recessions. The first model examines the impact of state context and basic indicators of the wealth of the economic base and service demands on the diversification of their revenue structure across five categories of revenue. This model is also estimated separately for metropolitan, micropolitan and rural regions (and with interaction terms for most variables) to account for the fundamentally different nature and impacts of environmental pressures in areas with different levels of urbanization.

² See Connolly et al (2010) for summary of research on fiscal decentralization between state and local governments in the US.

The second model examines the impact of state context, revenue diversification, and changes in resources, costs, and demands on changes in per capita operational spending. This model also includes a measure of financial condition or fiscal scarcity in these governments and is estimated separately for governments with four levels of operational spending to account for the fundamentally different nature and impacts of environmental pressures in different sizes of governments. The assumption here is that governments that successfully adapt to the high levels of fiscal scarcity during this time period are able to maintain or even increase operational spending compared to governments that experience reductions in operational spending, all other factors being equal.

Equations for the two models estimated here are shown below and Table 1 shows the descriptive statistics, data sources, and level of measurement (municipal, county, and state) for all variables in both models. Much of the data used here to construct the variables that represent change measures were obtained from the US Census Bureau for 1997, 2002, 2007, and 2012 that conducts a Census of Governments every five years.³ Because financial data for 1992 was not collected to produce change variables for 1997 in model 2, it is estimated for 2002, 2007, and 2012 only.

[Table 1 about here]

$$RD_{it} = \alpha + \beta_1 RS_{it} + \beta_2 SC_{it} + \beta_3 SE_{it} + \beta_4 R_{it} + \beta_5 Y_{it} + \varepsilon_{it} \quad (1A)$$

$$RD_{it} = \alpha + \beta_1 RS_{it} + \beta_2 (RS_{it} * R_{it}) + \beta_3 SC_{it} + \beta_4 (SC_{it} * R_{it}) + \beta_5 SE_{it} + \beta_6 (SE_{it} * R_{it}) + \beta_7 R_{it} + \beta_8 Y_{it} + \beta_9 (Y_{it} * R_{it}) + \varepsilon_{it} \quad (1B)$$

$$\Delta OS_{it} = \alpha + \beta_1 \Delta RS_{it} + \beta_2 FS_{it} + \beta_3 RD_{it} + \beta_4 SD_{it} + \beta_5 SC_{it} + \beta_6 SP_{it} + \beta_7 R_{it} + \beta_8 Y_{it} + \varepsilon_{it} \quad (2A)$$

$$\Delta OS_{it} = \alpha + \beta_1 \Delta RS_{it} + \beta_2 (\Delta RS_{it} * SE_{it}) + \beta_3 FS_{it} + \beta_4 (FS_{it} * SE_{it}) + \beta_5 RD_{it} + \beta_6 (RD_{it} * SE_{it}) + \beta_7 SD_{it} + \beta_8 (SD_{it} * SE_{it}) + \beta_9 SC_{it} + \beta_{10} (SC_{it} * SE_{it}) + \beta_{11} SP_{it} + \beta_{12} (SP_{it} * SE_{it}) + \beta_{13} R_{it} + \beta_{14} Y_{it} + \beta_{15} (Y_{it} * SE_{it}) + \varepsilon_{it} \quad (2B)$$

³ There are over 19,500 municipal governments in the US. About 1,200 governments were eliminated from the analysis for model 2 due to values of zero for operational spending for some years.

It is important to note that operational spending excludes capital and construction spending and spending for utilities (water, transit, gas, electric), sewerage, and hospitals. Measures of own-source revenue diversification also exclude charges for these enterprises. If municipalities provide these services, they usually account for the services through enterprise funds and not the general fund. Although there is a degree of fungibility of resources between the general fund and enterprise funds, financial decisions about enterprises are made separately and have different criteria than financial decisions about services provided through governmental funds. Also, most governments have policies that the services provided through enterprise funds are not supported with general taxation. Thus, excluding enterprises presents a more realistic picture of local governments' behavior for general operations. On the other hand, much of the capital spending in these governments uses state and federal grants, so enterprise revenues are included in the calculation of state and federal aid as a percentage of total revenue.

IV-A: Variables in the Models

Revenue diversification (**RD**) is measured using a reversed Herfindahl-Hirschman Index (HHI) that is calculated for five primary categories of own-source revenue in these governments: property tax, sales tax, fines and licenses, income and other taxes, and charges. The equation for revenue diversification is shown below where R_j is the fraction of revenue generated by each category. The equation shows that the sum of the squared proportions are subtracted from zero to reflect diversification (not concentration) and divided by the highest level of diversification to standardize the values between 0 and 1.

$$RD_{it} = \frac{1 - \sum_{j=1}^4 R_j}{.80} \quad (3)$$

Changes in conditions affecting revenue and spending demands (**RS**) are represented with four variables in model 1 and five variables in model 2. For model 1 the variables are percent

change in municipal population in years t (relative to t-5) and t-5 (relative to t-10), median household income, and percent state and federal revenue (intergovernmental) of total revenue. For model 2 the variables are percent change in municipal population in years t and t-5, percent change in federal and state aid per capita, percent change median household income, and percent change in the average annual pay for all workers in all industries in the county.

Revenue diversification is likely to be higher in governments with growing populations over both five and ten-year periods of time as more opportunities for levying charges and other taxes increases. However, spending per person is likely to decrease in growing jurisdictions in the short run due to increasing economies of scale, and increase in the future as semi-fixed and variable costs increase. Thus, two time periods of population change are included in both models. Spending per person is also likely to increase in model 2 if salaries paid by the government are increasing.⁴

On the revenue side, federal and state aid is a significant source of revenue for municipalities that is likely to vary by state. Greater reliance on intergovernmental sources of revenue could motivate governments to diversify their own-source revenue as a buffer against these threats these threats, or antitax sentiments among voters may motivate governments to rely on this revenue and not raise or diversify their own-source revenue. On the other hand, changes to federal and state aid per capita are likely to drive spending changes in municipal governments in a similar direction.

Median household income has been used as a general measure of the wealth of municipal economic bases and the base for calculating total tax burden (Berne and Schramm, 1986). It is

⁴ Average annual pay for all industries is used because average annual pay for government is missing for many counties. Also, the correlation of annual pay with median household income is only.03, indicating that income and average annual pay are not measuring the same phenomenon.

also used as an indicator of median voter spending and taxation preferences. Research on the median voter model indicates that wealthy populations have higher spending demands (Holcombe and Williams, 2008, Holcombe, 1989, Mueller, 2003, 243-46), but says little about how wealthy populations will affect the revenue structure of municipal governments. As reported in the data for 2012, 49 percent of the municipalities are in metropolitan areas. Given the nature of suburban areas and the opportunity and likelihood for sorting of populations (Tiebout, 1956; *citiations*) in urban areas, a negative relationships between median household income and revenue diversification may indicate that wealthier populations in suburbs may prefer municipalities that are more residential with a greater reliance on property taxes than other sources of revenue.

The models include three variables that measure different aspects of the state context (*SC*) that determines the fiscal relations between state and local governments and municipal taxing authority. The first variable is an index of state-local fiscal decentralization developed by Hendrick and Shi (2015) and is very similar to indices developed by Stephens and Wikstrom (2000) and Zimmerman (1995). The index includes three separate measures of state-local fiscal decentralization for each state in 2007 that are standardized as Z-scores and then summed. These measures are: 1) the local share of responsibility for state and local spending (service production); 2) the portion of total state and local revenue that local governments collect (service provision) minus state aid, and 3) state aid to local government (reversed). In this case, governments in states that are more centralized should have greater revenue diversification, but it is unclear how decentralized systems would affect how governments adapt to environmental pressures. The evidence is very mixed regarding whether decentralization should constrain

spending increases or drive spending higher to accommodate citizen demands (Forbes and Zampelli, 1989; Nelson, 1987; Oates, 1985; Raimondo, 1989; Wallis and Oates, 1988).

The second state-level variable is an index of TEL stringency developed by Amiel et al. (2009) that accounts for the following characteristics about local TELs in 2005: type of TEL that is imposed by state government on municipal governments, degree of limitation, types of overrides or exemptions, method of override, and whether the TEL is constitutional. Because TELs are most likely to constrain property taxes, governments that are faced with more stringent TELs should be motivated to diversify their own-source revenue structure. TELS will also constrain governments from increasing their revenues to deal with fiscal stress, which means they will be more likely to reduce spending to cope with the two recessions.

The third state contextual variable is a dummy variable that indicates whether the state does not allow municipal governments to levy a general sales or income tax. In this case, a value of one for the variable shows that the government has access only to property taxes and was constructed using documentation of local sales tax privileges by state by Afonso (2017) and documentation of local income tax privileges by Sjoquist and Stoycheva (2012). Similar to TELs, own-source revenue diversification will be much less in governments that are constrained to levying only property taxes, not sales or income taxes, and they will more constrained from increasing taxes during periods of fiscal stress. Irrespective of whether governments have access to sales and/or income tax, all governments are constrained from increasing their reliance on property taxes due to the unpopularity of these taxes and pressures from citizens to avoid increasing “the worst tax” (Fisher, 1996). Property taxes are also paid in a lump sum compared to general sales taxes, which make property taxes very visible to taxpayers (Oates, 2001; Carroll, 2009). Thus, municipal government with sales taxes have both the opportunity and motive to

raise sales taxes to recover from a recession rather than raising property taxes. It should be noted that all the state context variables are relatively time-invariant during this time period, so the values for all three variables are fixed across all years of data and fixed for all municipalities in the same state.

The fiscal scarcity (*FS*) of the governments, which is an important factor in their budgetary solvency (Wang et al., 2007), is measured as the percentage of the surplus or deficit (total revenues minus operational spending) of operational spending in the prior year. This variable has been used to represent the level of fiscal stress experienced by a government (*citations*), but it also represents the extent to which a government's buffering mechanisms have been depleted. When faced with fiscal stress, governments that have exhausted their delay and absorb options will move to more extreme stage two and stage three strategies that require cutting expenditures in order to adapt to these pressures.

Spending changes are also likely to vary with whether the municipality provides K-12 education (*SD*) and by the size of the government, which is measured as total operational spending minus spending for enterprises (*SE*) in model 1 and population (*SP*) in model 2. Because many municipalities, especially in suburban areas, may have a high level of industrial and commercial property, it is more accurate to gauge the size of these governments by their operating expenditures rather than their population. However, because the dependent variable in model 2 is change in operational spending, population rather than operational spending was included as independent variable in this model. Revenue diversification is likely to be greater in larger governments, and larger organizations tend to have more buffers (Scott, 2002, chapter 10). Having more buffers gives large organizations more delay and absorb strategies, which

postpones their use of higher-level strategies for managing fiscal stress and avoid spending decreases.

The models also include a set of dummy variables to account for year (**Y**) fixed effects and a set of dummy variables to account for the whether the municipality is in a metropolitan or micropolitan region (**R**) relative to a rural area that is not a designated Core-Based Statistical Area (CBSA). The Office of Management and Budget designates a CBSA as an area that has an urban center of at least 10,000 people and adjacent areas that are socioeconomically tied to the urban center by commuting. Micropolitan CBSAs are based around urban clusters of at least 10,000 and fewer than 50,000 people. Metropolitan areas have greater than 50,000 population and rural areas are not part of a CBSA.⁵ Additionally, the model of revenue diversification is estimated separately for the three different regions and estimated with interaction variables for all independent variables in the equation. The purpose of this is to examine whether municipal governments in areas with different levels of urbanization have adapted their revenue structure differently to conditions within their boundaries and state context. These regions not only have very different fiscal policy spaces, but also different processes with respect to economic and service-demands.

The model of change in operational spending is also estimated separately for different sizes of government defined here as levels of operational spending. The model is also estimated with interaction variables for all independent variables in the equation to determine how these governments' adaptation and response to conditions represented in the model is likely to vary by the size of governments. Within the theoretical framework that recognizes adaptation, size of

⁵ <https://www.census.gov/programs-surveys/soma/about/characteristics-data.html>. Note that CBSA designations were used after 2003. Prior to that year they were called Metropolitan Statistical Areas (MSA): <https://www.census.gov/geographies/reference-files/2003/demo/metro-micro/99-msa-to-03-cbsa.html>

organization is a critical structural factor that fundamentally alters many processes and other structural features of organizations. Compared to small organizations, large ones are more differentiated, complex, and dense in both structure and process, which is likely to alter the impact of the environment on the organization. For instance, revenue diversification may not matter as much in large organizations because its differentiation, complexity, and density provide more buffers and other options for managing changes in the environment than exist for small organizations. On the other hand, the lack of these characteristics make small organizations more flexible and responsive to environmental changes (Scott, 2002).

It is important to remember that the majority of the municipal governments in this sample are quite small. Table 1 shows that the median level of operational spending for all governments (over 18,000 municipal governments) for all years in the analysis is about \$750,000, which represents an extremely small government with few services. By comparison, there are 300 to 600 governments in each of the four years with operational spending that is greater than \$100 million. These two sets of governments represent fundamentally different organizations with dramatically different scales of operation and levels of differentiation in their internal environment. In this case, operational spending is divided into four categories for analysis: 1) spending less than \$2 million; 2) \$2 million to \$15 million; 3) \$15 million to \$100 million; 4) spending greater than \$100 million.

V. Results of Estimation of the Models

Table 2 provides some context for interpreting the results of the model for key variables and understanding how the two recessions have affected these governments. It shows that own source revenue in municipal governments has increased since 1997 and reliance on property taxes has decreased. Percent of total revenue from federal and state aid has declined in these

governments since 2002, and their surpluses have been reduced, which suggests that their fiscal stress has increased during this time period. Additionally, operational spending per capita in real dollars has increased noticeably, which suggests that governments have been able to adapt to the recessions, but revenues per capita have not increased greatly. In fact, mean and median spending per capita is greater than revenues per capita in 2007 and 2012, which indicates these governments have been facing greater fiscal scarcity since the Great Recession and have likely used up their delay and absorb strategies for managing these conditions.

Table 3 shows the results of estimating the first model for all governments and separately for metropolitan, micropolitan, and rural areas. The intercept of the model with all governments represents 1997, rural regions, and states that allow municipal sales or income taxes. The standard errors are calculated using the cluster option in Stata to correct for intragroup correlation by state and which is robust against heteroskedasticity. The results for all governments show that only the TEL stringency index and dummy variables for 2002, 2012, and both metropolitan and micropolitan areas are not statistically significant at the .10 level. Thus, revenue diversification does not vary by level of urbanization.

[Table 3 About Here]

Overall, the results show that revenue diversification is higher in municipal governments that are larger, have greater population increase in the prior 10 years, and are in states that are fiscally decentralized. Revenue diversification is lower in governments that rely more on intergovernmental revenue, are in a state that does not allow municipal governments to levy a sales or income tax, and have wealthy residents. Revenue diversification also increased significantly after the 2002 recession compared to the Great Recession in 2008. According to the reported betas (standardized slopes) the variables with the greatest impact on revenue

diversification are government size, being in a property tax only state, median household income, and reliance on federal and state aid.

Looking at the results estimated for governments in separate areas, the grayed cells show interaction coefficients that are statistically significant at the .10 level when all interaction terms are added to the model.⁶ The results show that how government size, population growth, and median household income affect revenue diversification is different in metropolitan areas than micropolitan or rural areas. Size has a slightly weaker effect on revenue diversification in metropolitan areas, but population growth and median household income have stronger positive and negative effects respectively in municipalities in this area than the other areas. Although not statistically significant, reliance on intergovernmental revenue and having access only to property taxes have a stronger negative effect on revenue diversification in metropolitan areas, but the effects of the two recessions on government revenue structure is weaker in this than in micropolitan or rural areas.

Table 4 shows the results of estimating the 2nd model for all municipalities and separately for the four different categories of government size (operational spending). This model is also estimated with a full set of interaction coefficients for the four categories of operational spending and with operational spending as a continuous level variable to determine how the independent variables in the model vary for a range of sizes of governments and by size continuously. The results for all governments show that change in operational spending is affected positively by the following variables at the .10 level of statistical significance: percent change in federal and state aid, percent change in population in a prior time period, percent change median household income, percent change in annual pay of industries, percent of surplus or deficit, revenue

⁶ These results are available upon request.

diversification, and being in a metropolitan area. In other words, all of these conditions promote positive changes in spending and more successful adaptation to the two recessions during this time period. Change in operational spending per capita is affected negatively by percent population change in the current time period, TEL stringency, and both recessions (2002 and 2012) at the .10 level of statistical significance. The effects of population (government size), being in a micropolitan area, having a dependent school district, state-local decentralization and being in a property tax only state does not affect change in operational spending.

[Table 4 About Here]

Similar to Table 3, the grayed cells in Table 4 show interaction coefficients that are statistically significant at the .10 level when all ordinal or continuous interaction terms are added to the model. Overall, the results show that the impacts of many variables vary significantly by the size of the government. For instance, intergovernmental aid, level of fiscal scarcity (surplus or deficit), and revenue diversification have a stronger positive effect on change in operational spending in very small governments compared to other governments. In this case, the effects of these variables weaken as the size of the governments increases, which makes sense. Larger governments have more options for delaying and absorbing fiscal stress, so these conditions have a lesser impact on how these governments adapt to fiscal pressures compared to smaller governments in which operational spending is more greatly affected by internal conditions, such as their revenue structure, and changes in the environment.

The interactive results also show that change in current population has a lesser negative effect on change in operational spending in medium sized municipalities than very large or very small municipalities. Also, change in median household income, being in a property tax only state, and change in annual industry pay have larger effects in very large cities compared to other

municipalities. Although not statistically significant, the coefficients for the effect of change in median household income on change in operational spending show a gradual increase as the size of the municipality increases.

The positive effect of being in a property tax only state on change in operational spending in very large cities relative to other cities is not expected but could be explained by a reduction in revenue volatility. In this case, large cities that rely more on property taxes have less volatile revenue, which allows them to maintain and even increase operational spending during this time period. The results for this variable in the other categories of size show that the coefficient is negative, as expected, for very small governments and statistically significant, and that the coefficients become less negative as the size of the government increases. In other words, being in a state that does not allow municipal sales or income taxes negatively affects very small and small municipalities, but it has no effect in medium sized governments and even a positive effect on adaptation in very large governments. Another interesting finding from the conditional relationships is that the negative effect of the recessions (2002 and 2012) on operational spending in governments is less as the size of the government increases.

VI Summary and Conclusion

This study has reported on how municipal governments in the US have adjusted their revenue structure and spending to adapt to the extreme financial conditions posed by the 2001 recession and the Great Recession of 2008. The severity of the fiscal scarcity experienced by local governments during this time period is well known and demonstrated by trends presented here showing that surpluses have decreased (or deficits have increased) since 1997 through 2012. Additionally, operational spending per capita has increased during the same time period, but

revenues per capita have not kept pace. In fact, revenues per capita was less than spending in 2007 and 2012.

The research estimates two models to predict revenue diversification and change in spending per capita in these governments during the same time period as examined through the lens of an organizational, adaptation explanation and research on fiscal stress in the 1980's. Revenue diversification is identified in the literature as a structural feature of government that promotes fiscal adaptation to pressures in the external fiscal policy space, especially the state context that defines state-local relationships. This research focuses on the questions of how state context affects the diversification of own-source revenue in municipal governments, and whether revenue diversification and state context affect how these governments have responded to the levels of fiscal scarcity or stress faced by most governments in the 2000s. Recognizing that adaptation is often contingent upon structural and environmental features, this research estimates each of these models under different conditions.

The research finds that revenue diversification is determined primarily by the size of the government defined as operational spending (positive), but also relatively strongly in a negative direction by resident wealth, reliance on intergovernmental revenue, and whether the municipality is in a state that does not allow municipal sales or income taxes. Thus, being in a property tax only state reduces revenue diversification as expected, but these governments do not diversify their revenue to manage the threat of greater reliance on state and federal funding. Rather, the results suggest that they use this revenue to suppress revenue growth and diversification. The estimation of the model for metropolitan, micropolitan, and rural areas (different levels of urbanization) and the significance of the interaction coefficients show that the effects of population growth, the wealth of residents, and reliance on intergovernmental revenue

are greater for municipal governments in metropolitan areas relative to micropolitan and rural areas. But the size of government has a larger effect on diversification under rural than metropolitan regions. The effects of being in a property tax only state are also stronger in metropolitan areas, but the changes are not statistically significant.

For the model that explains adaptation of municipal governments to environmental pressures in the early 2000's, this research finds that percent change in operational spending is determined positively and primarily by percent change in intergovernmental revenue and the level of fiscal scarcity in the municipal government (surplus or deficit). The finding that strategies for managing fiscal stress are most affected by the severity and length of fiscal scarcity is consistent with research from the 1980s and later. Also as expected, adaptation to financial pressures is positively affected by long-term population change, residential wealth, and payroll costs, and it is negatively affected by short-term population change and TEL stringency. However, neither of the other state context variables- being in a property tax only state and state-local fiscal decentralization- have an impact on change in operational spending. Revenue diversification has a statistically significant positive effect on change in spending, and it was most negatively affected by the Great Recession compared to the 2001 recession.

The results of the model estimation for governments of different sizes and the significance of the interactive coefficients show that the effects of many of the independent variables vary by the size of the government. In general, the effects of the variables that are statistically significant in the baseline regression are stronger in smaller governments than larger governments, including revenue diversification, except median household income and the Great Recession that have stronger effects in larger than smaller governments. The effect of TEL stringency on percent change in operational spending does not vary by size of government.

Generally speaking, this research has shown that revenue diversification is an important tool that helps municipal governments adapt to current fiscal scarcity, but that tool is more useful in small governments than large governments. It also shows that state context, and primarily being in a property tax only state, affects revenue diversification but not how these governments adapt to fiscal pressures in their environment. On the other hand, TEL stringency does reduce operational spending changes in response to fiscal scarcity. Thus, state government does cast a long shadow that affects how municipal governments in the US adapt to fiscal scarcity and should be acknowledged in future research and policy recommendations. Future research and policies should also recognize that some of these relationships are conditional upon other characteristics of the governments structure and environment. Going forward, it will be important for municipal governments to diversify their revenue structure, especially if they are small, state government is cutting aid to them as in the 2000s, and they are dependent on this revenue.

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TABLE 1
Descriptive Statistics for Variables Used in Analysis: All municipalities and years

	Mean	Median	Standard Deviation	Level of Measurement	Data Source
% Change operational spending per capita ^{1,2,3}	59.3	20.3	783	municipal	US Census of Governments
Own-source revenue diversification ^{1,4}	.57	.62	.25	municipal	US Census of Governments
% Federal and state aid / total revenue ⁵	23.5	18.2	20.0	municipal	
% Change state and federal aid per capita ^{1,2,3}	108	-6.3	1,281	municipal	US Census of Governments
% Population change t and t-5 ³	3.6	1.24	16.1	municipal	US Decennial Census
% Change average annual pay all industries ^{2,3}	-1.93	-2.13	7.0	county	Bureau of Labor Statistics
% (Revenues – op. spending) / op. spending _{t-5} ^{1,3}	60.5	29.7	237	municipal	US Census of Governments
Population ³	9,337	1,117	78,838	municipal	US Decennial Census
Operational spending ^{1,3}	\$16,780,000	\$755,000	\$453,922,000	municipal	US Census of Governments
Median household income ^{2,3}	\$31,409	\$28,167	\$15,317	municipal	American Community Survey
% Change median household income ^{2,3}	-4.2	-4.71	22.5	municipal	American Community Survey
Whether the municipality provides K – 12 education (dependent school district)	12% provide this service			municipal	US Census of Governments
State-local fiscal decentralization index, 2007	0.75	.69	2.18	state	US Census of Governments (Hendrick and Shi, 2015)
TEL stringency index, 2005	17.3	18	8.6	state	Amiel, 2009
Whether state does not allow generalized sales or income tax (property tax only)	22% of municipalities have no sales or income tax			state	Alfonso, 2017; Sjoquist and Stoycheva, 2012
Whether municipality is in metropolitan area, micropolitan area, or neither (rural)	49% metro, 20% micro, 31% rural			regional	Office of Management and Budgeting definition, reported by US Census Bureau

1: Excludes enterprises: utility (water, transit, gas, electric), sewer, and hospitals

2: Corrected for inflation using BEA GDP deflator (1997=100)

3: Logged in the regression

4. Five categories of own-source revenue: property tax, sales tax, fines and licenses, income and other taxes, and charges. Excludes miscellaneous revenue (code X in Census).

5. Includes enterprises

TABLE 2
Mean and Median Values By Year

	Own-source revenue diversification ¹		Percent property tax of own-source revenue ¹		Percent federal and state aid of total revenue ²		Percent surplus (deficit) of operational spending ¹		Operational spending per capita ^{1,3}		Revenue per capita ^{1,3}	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
1997	0.532	0.600	50.9	50.0	23.8	18.8	58.6	29.9	\$461	\$304	\$649	\$405
2002	0.547	0.610	50.3	49.5	24.7	19.6	65.1	30.0	\$548	\$376	\$667	\$427
2007	0.593	0.647	47.6	46.8	23.0	17.6	57.7	29.2	\$715	\$473	\$690	\$423
2012	0.592	0.650	48.0	47.8	22.4	16.8	52.7	24.1	\$887	\$530	\$675	\$403

1: Excludes enterprises: utility (water, transit, gas, electric), sewer, and hospitals

2: Includes enterprises

3: Corrected for inflation using BEA GDP deflator (1997=100)

TABLE 3

Regression Estimates of Diversification of Revenue, no enterprises: 1997, 2002, 2007, 2012

	ALL GOVERNMENTS				METRO				MICRO				RURAL			
	Coeff.	Beta	Robust t value	Prob.	Coeff.	Beta	Robust t value	Prob.	Coeff.	Beta	Robust t value	Prob.	Coeff.	Beta	Robust t value	Prob.
Change in population (log)	0.070	0.038	2.46	0.018	0.139	0.076	3.21	0.002	0.014	0.007	0.52	0.606	-2.4E-03	-0.001	-0.13	0.900
Change in population t-5 (log)	0.085	0.037	1.95	0.057	0.128	0.064	2.72	0.009	-0.022	-0.008	-0.46	0.648	-0.049	-0.017	-1.14	0.260
Median household income (log)	-0.095	-0.147	-3.79	0.000	-0.113	-0.186	-3.77	0.000	-0.083	-0.097	-3.37	0.002	-0.054	-0.061	-2.38	0.022
Percent intergovernmental revenue of total revenue	-1.8E-03	-0.137	-5.12	0.000	-2.0E-03	-0.139	-4.37	0.000	-1.8E-03	-0.144	-4.54	0.000	-1.6E-03	-0.125	-3.90	0.000
State-local fiscal decentralization index	0.011	0.097	1.84	0.072	0.011	0.088	1.24	0.221	0.011	0.096	1.93	0.060	0.013	0.128	2.17	0.035
TEL stringency index	-2.6E-04	-0.009	-0.11	0.916	4.3E-04	0.015	0.14	0.887	-5.7E-04	-0.019	-0.24	0.809	-9.9E-04	-0.032	-0.52	0.605
Property tax only state	-0.094	-0.155	-2.21	0.032	-0.123	-0.209	-1.91	0.062	-0.057	-0.096	-1.62	0.111	-0.063	-0.098	-2.34	0.024
Operational Spending (log)	0.032	0.291	7.80	0.000	0.029	0.273	6.41	0.000	0.034	0.289	8.29	0.000	0.039	0.286	7.39	0.000
2002	5.8E-03	0.010	0.61	0.547	-3.3E-03	-0.006	-0.56	0.581	7.5E-03	0.013	0.67	0.508	0.022	0.038	1.43	0.160
2007	0.030	0.052	3.05	0.004	0.021	0.037	2.31	0.025	0.035	0.061	2.83	0.007	0.044	0.075	3.09	0.004
2012	0.019	0.033	1.60	0.116	7.2E-03	0.013	0.74	0.464	0.020	0.034	1.41	0.165	0.039	0.066	2.25	0.030
Metropolitan	-5.3E-03	-0.011	-0.30	0.766												
Micropolitan	-8.3E-03	-0.014	-0.74	0.465												
Intercept (1997, rural, sales /income tax)	0.651	..	2.61	0.012	0.349	.	1.06	0.292	1.268	.	4.55	0.000	1.133	.	4.29	0.000
Adj R ²	.18				.20				.17				.16			
N	75,167				35,419				15,816				23,932			

Interactions with grayed cells are statistically significant. Results of interaction estimation available upon request
Standard errors are calculated by clustering on states

TABLE 4

Regression Estimates of Percentage Change in Operational Spending per Capita, Real Dollars: 2002, 2007, 2012

	All Municipalities				Less than \$2 million spending			
	Coeff.	Beta	Robust t value	Prob.	Coeff.	Beta	Robust t value	Prob.
% change state and federal aid per capita, log(+101)	0.156	0.309	10.7	0.000	0.173	0.323	12.9	0.000
% population change, log(+101): t, t-5	-0.762	-0.182	-27.0	0.000	-0.764	-0.174	-31.6	0.000
% population change, log(+101): t-5, t-10	0.243	0.048	5.8	0.000	0.220	0.036	5.5	0.000
% change median household income, log(+95)	0.050	0.017	3.3	0.002	0.027	0.009	1.8	0.076
% change average annual pay all industries, log(+101)	0.121	0.017	1.8	0.082	0.083	0.011	1.3	0.209
% deficit or surplus, log(+101): t-5	0.413	0.306	28.4	0.000	0.441	0.317	27.6	0.000
Revenue diversification	0.211	0.091	5.0	0.000	0.263	0.102	5.0	0.000
Population, log	0.002	0.005	0.4	0.680	-0.016	-0.026	-2.0	0.047
Metropolitan area	0.023	0.020	3.4	0.001	0.022	0.016	3.1	0.004
Micropolitan area	0.003	0.002	0.4	0.677	0.013	0.009	1.7	0.104
Dependent school district	0.025	0.015	1.5	0.147	-0.012	-0.039	-2.2	0.031
State-local fiscal decentralization index, 2007	-0.006	-0.025	-1.6	0.121	0.008	0.004	0.5	0.645
TEL stringency index, 2005	-0.003	-0.045	-2.7	0.010	-0.004	-0.048	-2.6	0.013
Property tax only	-0.020	-0.015	-1.3	0.203	-0.049	-0.029	-2.8	0.008
2002	-0.056	-0.047	-2.3	0.028	-0.042	-0.030	-1.5	0.131
2012	-0.147	-0.123	-8.1	0.000	-0.120	-0.085	-6.8	0.000
Intercept (2007, rural, sales/income tax, independent school district)	3.655		9.6	0.000	3.91		11.1	0.000
Adj R ²	.21				.22			
N	54,278 (~ 18,100 municipalities)				33,768 (62%)			

Interactions (dummy variables) with grayed cells are statistically significant. Bold results are statistically significant at .10 for full interactions. Results of interaction estimation available upon request
 Standard errors are calculated by clustering on states

TABLE 4 (continued)

	\$2 million - \$15 million spending				\$15 million - \$100 million spending				Greater than \$100 million spending			
	Coeff.	Beta	Robust t value	Prob.	Coeff.	Beta	Robust t value	Prob.	Coeff.	Beta	Robust t value	Prob.
% change state and federal aid per capita, log(+101)	0.098	0.250	5.1	0.000	0.078	0.195	5.5	0.000	0.106	0.258	5.4	0.000
% population change, log(+101): t, t-5	-0.562	-0.149	-5.5	0.000	-0.223	-0.072	-1.5	0.148	-0.735	-0.249	-3.3	0.002
% population change, log(+101): t-5, t-10	0.297	0.086	2.4	0.023	-0.093	-0.037	-0.9	0.365	0.347	0.139	2.4	0.019
% change median household income, log(+95)	0.143	0.048	4.4	0.000	0.298	0.098	4.3	0.000	0.502	0.180	4.5	0.000
% change average annual pay all industries, log(+101)	0.167	0.029	1.4	0.173	0.159	0.038	2.1	0.042	0.212	0.056	1.8	0.084
% deficit or surplus, log(+101): t-5	0.309	0.256	13.6	0.000	0.328	0.313	6.8	0.000	0.261	0.271	4.9	0.000
Revenue diversification	0.059	0.033	1.6	0.109	-0.037	-0.025	-1.2	0.244	0.013	0.014	0.6	0.540
Population, log	-0.069	-0.139	-8.7	0.000	-0.036	-0.099	-7.0	0.000	-0.020	-0.099	-4.8	0.000
Metropolitan area	0.033	0.041	2.8	0.007	0.023	0.035	0.9	0.398	0.008	0.007	0.2	0.815
Micropolitan area	0.003	0.003	0.3	0.789	-0.009	-0.013	-0.4	0.730	-0.020	-0.019	-0.4	0.670
Dependent school district	0.003	0.016	0.6	0.557	0.008	0.056	2.5	0.018	0.004	0.038	1.7	0.094
State-local fiscal decentralization index, 2007	-0.013	-0.012	-0.5	0.622	-0.013	-0.017	-0.6	0.555	0.006	0.013	0.4	0.699
TEL stringency index, 2005	-0.003	-0.064	-2.3	0.025	-0.002	-0.057	-2.0	0.056	-0.003	-0.027	-0.8	0.445
Property tax only	-0.038	-0.044	-1.6	0.108	-0.005	-0.008	-0.3	0.745	0.024	0.054	2.0	0.055
2002	-0.051	-0.060	-2.1	0.040	-0.099	-0.158	-2.2	0.032	-0.095	-0.196	-1.9	0.058
2012	-0.172	-0.210	-9.3	0.000	-0.233	-0.396	-5.7	0.000	-0.213	-0.507	-4.8	0.000
Intercept (2007, rural, sales/income tax, independent school district)	3.35		4.9	0.000	2.77		5.8	0.000	1.94		3.7	0.001
Adj R ²	.18				.25				.37			
N	13,407 (25%)				5,759 (11%)				1,344 (2%)			

Interactions (dummy variables) with grayed cells are statistically significant. Bold results are statistically significant at .10 for full interactions. Results of interaction estimation available upon request. Standard errors are calculated by clustering on states