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Local Public Finances**

Ron Cheung, Chris Cunningham, and
Stephan Whitaker



FEDERAL RESERVE BANK OF CLEVELAND

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Household Debt and Local Public Finances

Ron Cheung, Chris Cunningham, and Stephan Whitaker

In the wake of the Great Recession, steep declines in state and local government expenditures and employment were a large and persistent source of economic weakness. The business cycle was also characterized by large increases and decreases in household debt. We estimate the extent to which variation in local government revenues and expenditures can be explained by variation in the expansion of household debt from 2002 to 2007, and the contraction thereafter. We merge individual credit balance data with municipal financial data from the Census of Governments. Using Census block indicators, we are able to place approximately 12 million credit bureau records into over 6,000 cities and 4,500 school districts. Our results indicate that a one percent additional increase in mortgage debt caused a 0.15 percent increase in local governments' own revenue and a 0.17 to 0.21 percent increase in expenditures. These relationships were evident during the expansion and contraction of mortgage debt. We also find evidence linking nonmortgage debt to municipal finances.

Keywords: Consumer Credit; Public financial management; Leverage cycles.

JEL Codes: H71, H72, R51.

Suggested citation: Cheung, Ron, Chris Cunningham, and Stephan Whitaker, 2014. "Household Debt and Local Public Finances," Federal Reserve Bank of Cleveland, working paper no. 14-31.

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1 Introduction

The business cycle of the last twelve years featured two unusual trends. Household indebtedness expanded by approximately 50 percent from 2002 to 2007, and then began a steep decline, which continued for several years into the recovery (see figures 1 and 2). During the expansion, local government employment increased, and local revenues and expenditures increased in aggregate real terms from 2002 to 2007 (see figures 3, 4, and 5). In 2008 through 2012, the US witnessed declines in real local government revenues and expenditures, as well as employment. The Congressional Budget Office noted that weak state and local expenditures during the recovery as the single biggest contributor to the weak recovery (2012). Over the past sixty years and nine recessions, only the recession of 1981 exhibited any appreciable decline in local government expenditures and employment. Sales and income tax revenue fell 3.5 percent and 10 percent from 2008 to 2010 before partially recovering in 2011. Property tax revenue continued to grow from 2007 to 2009 due to the lags built in to the property tax assessment process. In 2010 and 2011, this revenue source also began to decline in the national aggregate. During this same time period, many states made sharp cuts in intergovernmental aid because state revenues depend more heavily on cyclical sales and income taxes. From 2008 to 2012, local governments cut 220,000 noneducational positions and 304,000 educational positions. These declines of 1.6 and 1.4 percent took place despite continuing population growth.

The objective of this analysis is to quantify the connection between household debt and municipal finances. Using the precise geographic location of borrowers in the Federal Reserve Bank of New York Consumer Credit Panel/Equifax data, we are able to place borrowers in the jurisdiction observed in the Census of Governments. Using the variation between cities, we can observe the extent to which the expansion and contraction of household credit affected local government revenues. We would expect municipal finances to reflect the business cycle to some extent, although, as mentioned above, they historically held steady through downturns. Cross-sectionally, jurisdictions with growing populations need to increase their

revenues and expenditures for any services that are scalable rather than purely nonrival public goods. Likewise, if municipal services are a normal good, we should see municipal revenues and expenditures rise where incomes rise. We posit the mechanism for expansion beyond income and population growth is as follows. In past recessions that were caused by the misallocation of investment capital, such as the dot-com bubble, municipal finances would mainly be indirectly impacted by wealth effects among households that held related stocks. On the other hand, the extensive and intensive expansion of mortgage credit in the mid-2000s fed directly into the largest local government revenue source via property values. Also, since homes are much more widely owned than any investment security, their appreciation could induce additional consumer spending among a much larger fraction of households. This increased spending feeds into sales tax revenue.

This analysis treats the expansion of household credit as an exogenous shock that hit municipalities to varying degrees. The local tax base expands more if more local residents were marginal borrowers (they could only get credit during the period of lowered underwriting standards), if land was available for new construction, if home price appreciation was greater, or if the municipality had regional shopping centers to capture increasing retail sales. Municipalities could respond by raising tax rates and providing additional services, by leaving rates unchanged, or by lowering their tax rates. Later, in the aftermath of the recession and in the face of falling income tax, sales tax and intergovernmental revenues, local governments could raise their tax rates to offset the declines. Our estimates are a characterization of the net changes in the municipalities' fiscal outcomes given the shock of the credit cycle and the municipalities' responses.

In hindsight, the expansion of household credit was unsustainable. During the expansion, millions of homebuyers and investors made financial decisions that imply they believed the expansion was permanent. These same people, as voters, did not cut tax rates and lower expenditures so that when the credit expansion eventually reversed, they would have a smooth continuity of municipal services. Rather, it appears that local governments did not distin-

guish between revenue growth supported by fundamentals and revenue growth supported by intertemporal transfers of consumption. This is evident in the positive association between household credit balances and local government revenue and spending, during the expansion, recession, and recovery. The revenue and expenditure increases that are explained by the household debt changes are in addition to the increases that can be explained by population and income growth.

This paper proceeds as follows. The next section presents a literature review of the connection between home values, personal debt, and the local fiscal conditions. We then describe the empirical model and data, and then we present the results in Section 4. Finally, Section 2 concludes.

2 Literature

Since the recession of 2007-2008, numerous articles have documented the links between home values, household debt, and the business cycle. The recent iteration of this line of literature began with Mian and Sufi demonstrating that household leverage in 2006 was a strong predictor of the severity of the recession in US counties (2010b). On several measures, including purchases of durables, consumer defaults, house prices, employment, and residential investment, declines during and after the recession were more severe in the counties where household leverage had grown the most during the expansion. Mian and Sufi argued that this household leverage cycle was a primary driver of the last recession, and the household deleveraging that continued after the recession was largely responsible for the slow growth in the following years (2010a). The variation in household leverage that allows the authors to identify its impact of that leverage on economic activity arose from an intersection of expanded access to credit and restrictions on the supply of housing (2011). In regions with elastic housing supply, the extension of credit to marginal borrowers was met with expanded housing construction. In regions with topographic and regulatory restrictions on construc-

tion, the credit expansion drove strong increases in home prices. Home price increases resulted in greater household expenditures via a wealth effect; the higher home values enabled credit-constrained households to take on additional nonmortgage debt by leveraging their home equity.

Brown, Stein and Zafar also showed, using credit report data from 1999 to 2012, that all types of homeowners increased both housing and nonhousing debt as a result of the housing boom (2013). However, the authors find substantial differences across borrower ages and creditworthiness. Older and prime borrowers substitute out of credit card debt and into home equity debt when house prices increase, and the reverse when prices decline, reflecting a portfolio reallocation and little net change in nonmortgage debt. Young and marginally creditworthy borrowers are much more cyclical, taking on more total nonmortgage debt during housing booms and shedding it during housing busts.

Relationships between home values and household debt have been found in UK data (Disney and Gathergood, 2011; Gathergood, 2012) and peer-to-peer lending data in the US (Ramcharan and Crowe, 2013). Connections between home equity and aggregate consumption have been found in Canadian data (Kartashova and Tomlin, 2013). Gabe and Florida estimated the overall link between housing prices and employment (2013), supplementing Mian and Sufi's finding of the linkage between household leverage and employment.

The literature that relates the business cycle to the fortunes of municipalities is older, but it has also received renewed attention since the financial crisis of 2008. Research using pre-crisis data considered the sensitivity of state and local revenue streams to macroeconomic conditions (Berg et al., 2000; Hildreth and Miller, 2014; Seyfried and Pantuosco, 2003; Wagner and Elder, 2007; Garrett, 2009; Carroll, 2009). McCubbins and Moule found that tax and expenditure limits tend to increase the pro-cyclicality of municipal revenues (2010). Rodden and Wibbels examined seven countries with decentralized federal governments and found that intergovernmental transfers cannot overcome the cyclical nature of the subnational governments revenues (2010). McGranahan recently surveyed the changes in state tax

revenue following the recession (2012).

Balanced budget requirements generally link changes in state and local expenditures to changes in revenues. Studies of state expenditures find that, like revenues, they are at least moderately pro-cyclical (Levinson, 1998; Hines, 2010; Craig and Hoang, 2011; Abbott and Jones, 2012). Skidmore and Scorsone used microdata on local governments in Michigan to estimate the fiscal responses to financial distress (2011). They found that municipalities facing revenue declines curtailed capital spending, but generally maintained public safety spending. Bellante and Porter presented evidence of a ratchet theory of local government employment in which government employment is increased during expansions but not decreased during recessions (1998). The substantial declines in local government employment following the recession of 2007-2008 require an alternate explanation.

Two recent studies have explored the relationship between cyclicity and municipal debt. Wang and Hou set out to contrast the volatility of capital expenditures under systems of bond financing and pay-as-you-go financing (2009). Chino, Choi, and Rice were interested in public sector unions (2013). They argue that stronger unions increase the use of public debt during fiscal downturns because they reduce the municipality's fiscal flexibility. While our research relates to the business cycle and local government fiscal responses, it is focused on a particular channel of the business cycle, that of household credit.

In the literature that has been published since the most recent recession, links between housing and state and local finance have been explored. Studies of single states have been undertaken in cases where researchers had very localized house price measures and local government fiscal data. Doerner and Ihlanfeldt find small increases in tax revenues, including property taxes, in Florida municipalities with rising home values (Doerner and Ihlanfeldt, 2011). The experience in Georgia was similar, with the stability of property tax revenues delaying and cushioning the shocks of the recession for local governments (Alm et al., 2011). Vlaicu and Whalley's study of California finds a large response in property tax revenue in the presence of real estate appreciation, despite the Proposition 13 limit on assessed value

growth (2011). They also identify offsetting reductions in other local government revenues. Chernick, Langley, and Reschovsky forecasted fiscal responses to the housing crisis in the largest US cities (2011). They found minimal impacts of house depreciation on property tax revenue during their study period. Estimates of state and metro-area aggregates of local government revenues and expenditures are also available annually based on a sampling of smaller cities and districts. Lutz used aggregate observations in the housing-boom period and estimated a one percent increase in housing prices led to a 0.4 percent increase in property tax revenue (2008). Lutz, Molloy, and Shan used state aggregates to estimate that house price declines reduced state tax revenues by 3 percent between 2006 and 2009 (2011). They found minimal impacts of house depreciation on property tax revenue during their study period, which they attribute to the lag in property tax assessments.

We think we are improving on the published studies in several ways. We are using national microdata sets, rather than a single state's data, aggregate data, or data limited to very large cities. Our disaggregated analysis at the state level demonstrates the great variation between states, which limits the usefulness of single-state findings. Using state aggregates fails to leverage the variation that exists within states and between normal-sized jurisdictions to identify the connection between household expenditures and local government revenue. Finally, our data recognizes that most of the population of the US lives in smaller jurisdictions that cannot diversify their tax revenue streams to the extent a major city can.

3 Data

3.1 Household Debt

The household debt data are created using samples drawn from the Equifax Consumer Credit Panel. The panel contains outstanding balances by type of debt for approximately five percent of all US residents with a credit history. Our samples are drawn from data as of the end of the second quarters of 2002, 2007, and 2011. The samples contain approximately 12

million individual records. Each record has an indicator of the census block containing the current address of the credit record. We use the block to place each record in a municipality. The outstanding balances are aggregated at the city and school district level and then matched with Census of Governments data, described below, by jurisdiction.

3.2 Government Finances

We turn to the U.S. Census Bureau’s Census of Governments (2002, 2007) and Annual Survey of Governments (2011) for our local spending and revenue variables. The 2002 Census comes already aggregated into broader categories (for example, “general expenditure”). For 2007 and 2011, data are in a disaggregated, line item-by-item format that requires some reconstruction using the Census Bureaus Classification Manual in order to obtain categories that have the same coverage as the 2002 census.

For the city specifications, we examine five revenue variables, all measured in changes: own-source general revenue, which covers all types of revenue except intergovernmental; property taxes; sales taxes; income taxes; and fee revenue. On the expenditure side, we examine the change in the following variables: total operating expenditures; wages and salaries; benefits; public safety (police, fire, corrections, courts, and safety inspections); water and sewage; roads; and parks and recreation. Finally, we also look at the change in the public debt outstanding. For the school district specifications, we examine changes in five variables: own revenue, property taxes, fees, total operating expenditures, and public debt outstanding.

We note that the sample sizes differ depending on which years we examine. 2002 and 2007 are complete census years, where every local jurisdiction (city and school district) in the country is sampled. On the other hand, the latest year on which we can obtain government data is 2011, and it is only an Annual Survey of Governments year. Annual surveys have a nonrandom sampling of jurisdictions, with the likelihood of sampling increasing with city’s population or the school district’s enrollment. The Annual Survey in 2011 surveys only

about 30 percent of the universe of governments, and they are heavily skewed toward larger jurisdictions. Therefore, our sample size in the 2007-2011 regressions is only one-half the sample size in the 2002-2007 regressions. This may affect our results, as small cities, which are more likely to be dropped in 2011, might have seen faster growth and construction.

3.3 Demographic Controls

The demographic controls used throughout the analysis are derived from the 2000 Decennial Census and the American Community Survey's five-year estimates. In the models of the pre-crisis years (2002-2007) the demographic controls include both a baseline measure and the change between from the 2000 Census and the 2005-2009 ACS estimates. In the post-crisis models (2007-2011), the baseline demographics are the values estimated in the 2005-2009 ACS and the difference between those estimates and the 2007-2011 ACS estimates. These data sets were chosen because they are the only ones available at the tract level. There are municipality and school district ACS estimates available starting with 2005-2007 data, but these are only available for jurisdictions with populations above 20,000. Most suburbs, towns, and school districts fall below this threshold. By using tract-level population estimates, we are able to cross-walk the tracts into jurisdictions, sum populations within those jurisdictions, and create estimates for every city and school district, regardless of size.

While having demographic estimates for 2002 would be ideal, the ACS estimates are not available until after 2005. Census 2000 estimates offer the best measures available for 2002. To create tract-level estimates, the ACS must aggregate five annual samples. The 2005-2009 estimates are the oldest available at the tract level, and we use these to measure demographics for 2007. Likewise, for 2011, the best representation available is the 2008-2012 ACS estimates. The coefficients on the demographic baseline and change measures are not perfectly comparable because of the different span of years. Changes in the later period will likely be understated because they are based on two sets of samples that overlap. These differences will also be reflected in the coefficients on our household debt measures, which

is an additional reason why the coefficients of interest are not perfectly comparable between the pre- and post-crisis periods.

The baseline demographic measures are intended to account for the type of municipality, while the changes reflect how it is evolving. Higher representation of certain types of households, such as married couples with young children, may have caused both growing debt levels and growing municipal expenditures. Controlling for these attributes of the cities helps us to isolate the marginal effect of the credit expansion itself.

Changes in population and income between 2000 and 2005-2009 serve as the change measures in the 2002-2007 regressions. For the second period, 2007 to 2011, population changes between the five-year estimates ending in 2009 and 2011 are included as controls. These change measures are understated because the 2007, 2008, and 2009 survey responses are used in both estimates. We annualize the population and income changes in both periods to improve the comparability of the coefficients, but the coefficients should still be interpreted with caution. We do believe the understatement of the population and income changes between the overlapping five-year estimates should be both consistent across all tracts and orthogonal to the variables of interest. They are the best available measures and sufficient as controls.

3.4 Descriptive Statistics

Tables 1 and 2 provide descriptive statistics for the dependent variables of interest, independent variables of interest, and controls. The increases in revenue, expenditures, and debt between 2002 and 2007 are remarkable. They correspond to 28 percent, 37 percent, and 46 percent of the base year (2002) expenditures. Property taxes and fee revenue increased by an average of approximately 2 percent per year in real terms. The expansions of mortgage credit in the sampled cities were also massive over the short five-year period. On average, mortgage balances were 66 percent higher in US cities in 2007 relative to 2002, and consumer debt balances (including credit cards, home equity, student loan, and auto debt) were 24

percent higher. In the 2007-2011 period, the observations are limited to the sampled cities, and there is much more muted growth in revenues, expenditures and debt. Own-source revenues averaged only 4.3 percentage points of growth during this period, while expenditures grew 15.8 percent and debt 25 percent. The measure of household credit reflects deleveraging, with mortgage balances in the sampled cities falling 8 percent over the four year period. Population growth continued at a modest pace, but income growth, on average, was negative in the sampled cities.

3.5 Empirical Model Specification

In our analysis, we have scaled all revenue and expenditure changes by the municipality or district's total expenditures in the base year. We did not want to equate "50 percent increases" in two cities if, for example, the change in one city was sales tax revenue rising from 4 to 6 percent of expenditures while in another city it was rising from 40 to 60 percent. We trimmed changes that were below -100 percent and above 300 percent. In these cases, we feel there may be data errors, or major restructuring (unincorporations, mergers, etc.) that cause the changes to not be meaningful. The same trimming (<-100, >300 percent) is applied to the changes in mortgage and consumer debt. Bond issuances are often multiple of annual expenditures, so they were trimmed at -250 and 750 percent of expenditures. In our regressions, we weight the city observations by their population as estimated with the 2005-2009 ACS. This weighting allows us to make statements about the experience of the average American city resident. Without the weighting, the small municipalities would dominate the estimation, and our results would mainly speak to the experience of the fifth of the population that lives in cities with populations below 10,000.

Most specifications include measures of the change in nonmortgage debt, income and population measured at two geographic levels—the jurisdiction and its surrounding county. This specification recognizes that a city's tax base includes all the residents of neighboring cities who patronize the stores, restaurants, auto dealerships, etc. in the city's jurisdiction.

For cities that host a regional shopping center, a majority of their sales tax revenue could be derived from nonresidents. Therefore, the expanded indebtedness of households in neighboring cities could cause revenue and expenditure growth, just as growing county incomes and populations could. Because cities in the same county share the same estimates of consumer debt, income, and population, we cluster the error on the county in each specification.

4 Results

4.1 Main Results

We now move to estimated results from our econometric model. In the tables that follow, the dependent variable will be changes in municipality revenues or expenditures, either for a period before the recession or after the recession. The key covariate of interest will be the change in mortgage balances in the same period.

We begin by examining local revenues during the expansion period of 2002 to 2007. As given in table 3, during this period, the growth of households' mortgage balances in a city appears to have caused increases in all the major types of municipal revenue. In table 3, we see that in the presence of controls for population, income, and intergovernmental transfers, a one percent increase in mortgage balances outstanding for residents of a city increases the city's revenue by 0.15 percent of its 2002 expenditures. A one standard deviation increase in mortgage balances (41.8) would cause a one-quarter of a standard deviation (6.2) increase in the growth of own-source revenue. This increase appears primarily in property taxes and fees. In contrast, if city and county incomes and populations were all one standard deviation higher, this would only imply higher own-revenue on the order of 11 percent of a standard deviation. The coefficients in table 3 on the consumer debt balances of city residents are all positive, but not statistically significant. In the case of county residents' consumer debt balances, the model detects a strong positive impact on property tax revenue.

Next, table 4 report results from the local expenditures model during the expansion

period. They suggest significant positive impacts of mortgage and consumer credit expansion on total expenditures. A one standard deviation difference in mortgage debt growth is associated with one-fifth of a standard deviation of growth in total expenditures. A one standard deviation difference (27) in consumer debt of the city's residents is associated with 2.8 percentage points, or 7.2 percent of a standard deviation of expenditure growth. As the revenue growth came from multiple sources, a variety of expenditures also appears responsive to household debt. Salaries, public safety, water, roads, and parks expenditures all have positive coefficients relating their growth to that of household indebtedness.

In the post-recession period, we can estimate similar models, but the differences should be kept in mind. Rather than a full census, the 2011 municipal finance data is a survey that covers all large cities and a sampling of smaller cities. The population, income, and demographic controls are all estimated with American Community Survey five-year aggregates. Despite the substantial difference in the direction and magnitude of the changes in mortgage debt and municipal revenue, the coefficients relating the two are similar in the periods of housing boom and housing bust. In the bust, table 5 shows that a one percent higher mortgage credit balance growth is associated with 0.15 percent higher growth in own-source revenue. The portion coming through property taxes is .04 (compared to .06 in 2002-07), and the coefficient in the fees model is 0.8. Growth (or a lesser decline) in consumer credit balance for residents of the surrounding county is also associated with higher growth in revenue, but in the 2007-2011 period, this appears in fee revenue rather than property taxes. In the 2007-2011 expenditures models (table 5), mortgage debt growth is related to expenditure growth by a highly significant coefficient of 0.21. This is comparable to the coefficient of 0.17 in the pre-2007 period. Again, mortgage debt growth is significantly positively related to spending on public safety, water and sewage, roads, and parks. The relationship between the expansion of consumer credit and municipal expenditures is not significant in most cases, which is different from the pre-2007 results. In the case of expenditures on roads, the model returns a significant negative coefficient on the change in city residents' consumer

debt balances.

Tables 7 and 8 present the results of the models in which the household debt, revenues, expenditures, and income variables are all converted to per capita terms. In this specification, the relationship between mortgage debt expansion and revenues and expenditures is quite similar to that seen in the models with population as a control. The more remarkable change is in the estimates of the impacts of consumer debt. In ten of the eighteen models, the expansion of consumer debt by the resident of the city is estimated to have significant positive effect on revenues or expenditures. In several instances, a significant negative relationship between consumer credit changes at the county level appears to offset the impact of the same measure at the city level.

Models estimated using school districts rather than cities have similar results. The specification is simpler because school districts' funding is concentrated in property taxes and intergovernmental revenue. Over three-quarters of school districts report no sales tax revenue, so we omit the consumer credit measures. The estimates presented in table 9 suggest that for each additional one percentage point increase in mortgage debt outstanding for the school district's residents corresponded to additional own-source revenue equal to 0.04 percent of 2002 total expenditures and a 0.05 percent greater increase in total expenditures. Intergovernmental revenue and property taxes appear to be substitutes. Revenue and spending both display stronger positive correlations with mortgage growth in the recession and recovery period.

4.2 Alternate Specifications

Table 10 presents alternative specifications of ten models from tables 3 and 4. When the models are estimated without the demographic controls and without any controls, we can see that the coefficients relating mortgage credit growth to revenues and expenditures remain fairly steady. Apparently mortgage balance growth is not highly correlated with any of the controls. In sharp contrast, it appears that some of the demographic controls are absorbing

substantial explanatory variation that would otherwise be attributed to the expansion of consumer credit for city residents. Without the demographic controls, there are large significant coefficients relating consumer credit growth to each type of revenue and expenditure.

Removing the county variables for consumer credit growth, population growth, and income growth (see table 11) also results in significant coefficients relating consumer credit expansion to revenue from property taxes and all own sources, as well as expenditures on salaries, public safety, water, and roads.

Table 12 presents models estimated for California, the three other sand states, and the balance of the US. California is an interesting case because it had high levels of home-price appreciation during the study period, but it also has limitations on how quickly property taxes can rise. The coefficient relating the growth of mortgage debt and property tax revenue is 0.083 in California, well above the 0.015 observed in the non-sand states. Evidently, turnover was sufficient to allow California's cities to raise assessments. The relationship between mortgage growth and own-source revenues and expenditures is much stronger when estimated on Arizona, Florida, and Nevada. Including state fixed effects in a pooled model leads to only modest changes in the results.

Dividing the data and estimating the models for small/large and growing/steady places (see tables 13 and 14) reveals that the relationships between mortgage growth, total revenues, and total expenditures are larger in magnitude in growing and large places. However, neither growing nor large places are driving the pooled results alone. Places with steady populations and places with smaller populations both display significant positive coefficients in almost every model, primarily for mortgage growth.

5 Conclusions

The aim of this research was to quantify the relationship between household debt and municipal finances. We find that between 2002 and 2007, an additional one percent increase in

mortgage debt for a city's residents is associated with additional own source revenue equivalent to 0.15 percent of the city's expenditures in 2002. Positive relationships are found with property, sales, and income taxes and fee revenue. A one percent increase in mortgage debt is also associated with a 0.17 percent increase in expenditures, and a one percent increase in the residents' consumer debt is associated with 0.1 percent higher expenditures. During the 2007-2011 period, the relationship between mortgage debt and own-source revenues remains the same, despite the massive changes in the economy. The relationship between mortgage debt and expenditures increases to an elasticity of 0.21. All of these estimates are conditional on the population and income changes observed in the city and its surrounding county.

These findings should caution local officials to look for ways to avoid linking their city's finances to household debt. Our results suggest that local government revenue was capturing funds created by the expansion of household indebtedness. This enabled cities to increase their expenditures beyond the levels they would have been at based on population and income growth. When the contraction of household debt began, the link between mortgage debt and city expenditures forced spending cuts beyond those necessitated by declining incomes and intergovernmental transfers.

To avoid being caught in future cyclical swings of household debt, cities could set their revenue targets as functions of their population or aggregate household income. Alternately, before setting millages, sales tax rates, or income tax brackets, they could set a dollar amount of revenue as a collection goal. They would then have to recalibrate their tax rates at least annually to equate their revenue with the target amount. While more complicated to implement, this system would place the share of the tax incidence according to residents' housing wealth, consumption, or income, as intended. It would have the advantage of not causing revenue and expenditures to fluctuate with cyclical changes in household debts.

We are grateful to Joel Elvery, Ellyn Terry, Chris Vecchio, and Patricia Waiwood for their work on collecting and processing data for this research.

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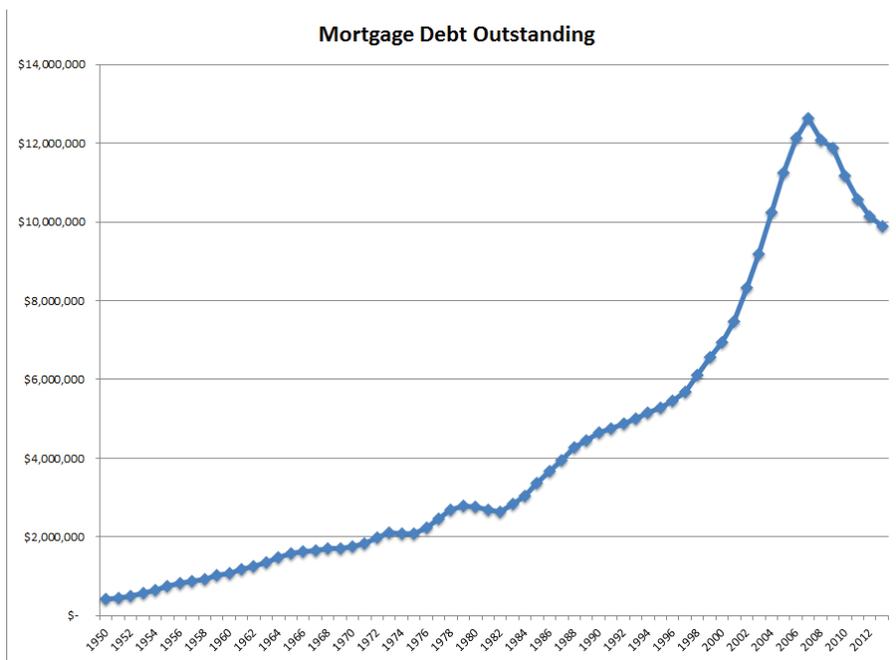


Figure 1: Mortgage Debt Outstanding. Units: Millions of 2013 dollars. Source: Federal Reserve Board.

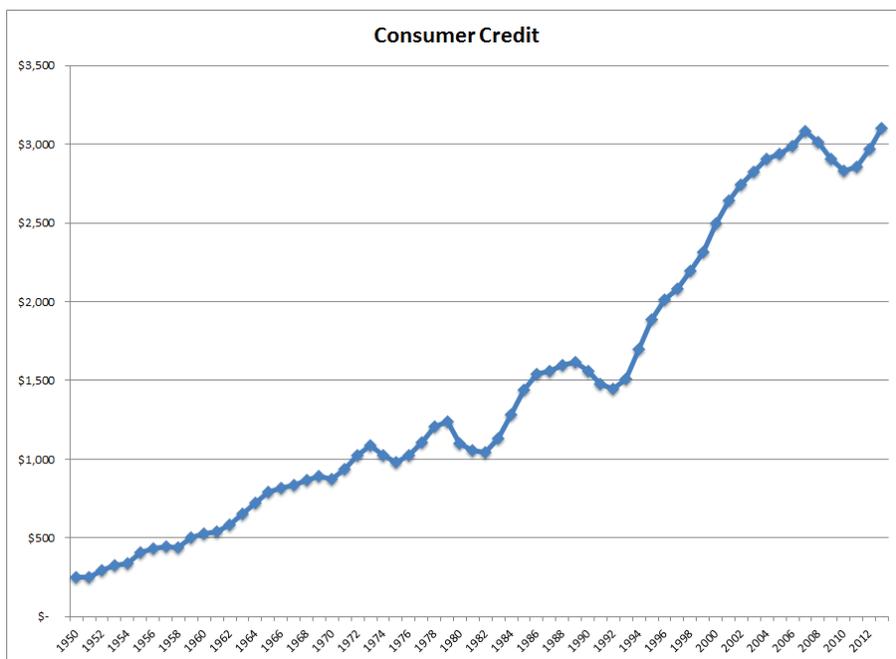


Figure 2: Consumer Debt Outstanding (Nonmortgage). Units: Billions of 2013 dollars. Source: Federal Reserve Board.

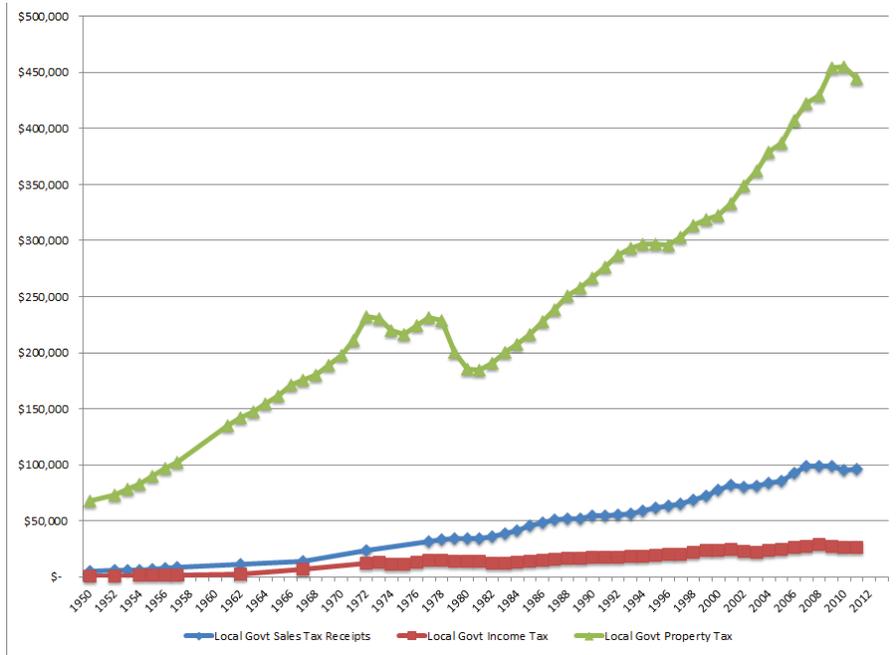


Figure 3: Local Government Own Source Revenue. Units: Millions of 2013 dollars. Source: Census Bureau.

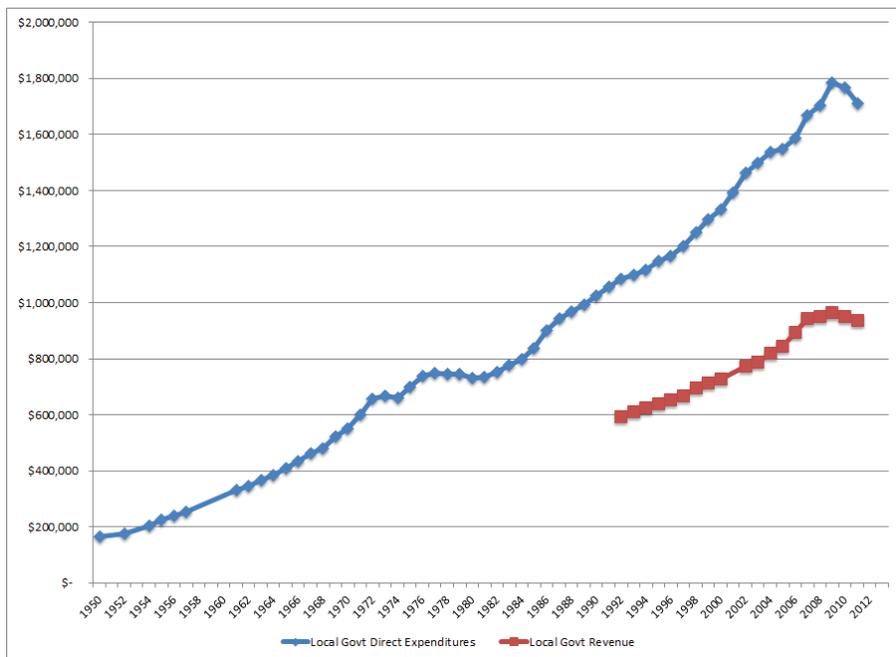


Figure 4: Local Government Expenditures. Units: Millions of 2013 dollars. Source: Census Bureau.

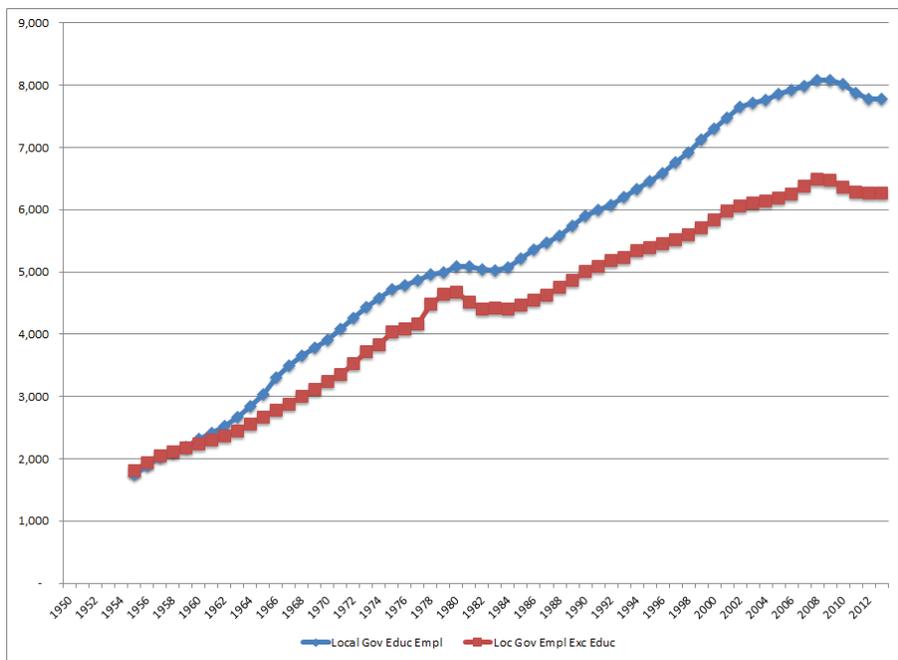


Figure 5: Local Government Employees. Units: Thousands. Source: Bureau of Labor Statistics.

Table 1: Summary statistics 2002-2007. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, the 2000 Decennial Census, and the American Community Surveys 2005-2012.

Variable	Mean	SD	Min.	Max.	N
Revenue Changes 2002 to 2007					
Revenue - Own Sources	28	25.4	-91.2	283.3	6255
Property Taxes	9.6	11.1	-90	112.5	5999
Sales Taxes	5.6	8.1	-55.1	140.9	4408
Income Taxes	6.6	5.9	-17.2	76.4	842
Fees and Misc.	10.5	15.7	-85.4	281.9	6256
Revenue - Intergovernmental	4.1	12.6	-79	254.1	6253
Expenditure Changes 2002 to 2007					
Total Expenditures	36.9	38.2	-82.6	299.8	6262
Salaries	8.1	10.9	-88.1	142.7	6257
Benefits	2.6	2.8	-43.4	29.3	902
Long Term Debt Outstanding	45.7	72.9	-249	744.1	5347
Police and Fire	6.9	7.7	-28.6	180.7	5102
Water	7.1	15.5	-84.5	247.3	4419
Roads	3.3	10.6	-63.6	247.9	6087
Parks and Recreation	2.2	7.1	-49.8	161.9	5617
Household Debt Balance Changes 2002 to 2007					
Mortgages	65.7	41.8	-100	298.7	6126
Consumer Debt - City	24.3	27	-100	295.8	6241
Consumer Debt - County	26.3	20.9	-69.3	185.4	6255
Control Variable Changes 2000 to 2005-2009					
City Population	0.2	2.3	-10.2	159	6262
County Population	0.5	1.7	-8.1	76.5	6262
City Income	4.2	3.6	-11.1	229.5	6260
County Income	4.3	2.7	-7.2	97.8	6262
Married, no children	-11.4	5.5	-74.5	20	6261
Married with children	-12.7	3.3	-35.5	17.5	6261
Single Parent	-4.4	3.4	-25.8	18.6	6261
Foreign Born	1.4	2.2	-28.4	44.8	6262
Less than High School	-0.9	4.9	-38.6	46.9	6262
College Degree	2.4	2.2	-12.3	41.2	6262
Graduate Degree	1.6	1.6	-13.5	15	6262
Age < 20 years	-1	1.7	-32.1	35.4	6262

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... table 1 continued

Variable	Mean	SD	Min.	Max.	N
Age 20-29	0.4	1.7	-18.6	23.3	6262
Age 30-39	-1.7	1.5	-13.1	9.8	6262
Age 40-49	-0.1	1.2	-15.6	13.6	6262
Age 60-69	0.7	0.9	-12.7	36.9	6262
Age 70+	-0.2	1.3	-19.3	41.2	6262
Recent Local Movers	9.2	4.8	-5.4	52.2	6262
Recent Distance Movers	-0.9	1.7	-14.3	30.6	6262
Not in Labor Force	10.6	5.8	-16.4	62.5	6262
Unemployed	1.6	3.3	-64.8	56.5	6261
Commute < 20 minutes	-15.7	5	-45.8	18.4	6261
Commute > 45 minutes	5.7	3.8	-13.8	34	6261
Control Variable Levels 2000					
Married, no children	36	7.3	10.9	100	6261
Married with children	33.1	7.4	0	79.9	6261
Single Parent	15.1	5.2	0	42	6261
Foreign Born	14.6	12.8	0	80.8	6262
Population Density	4.7	6.4	0	54.6	6262
Less than High School	17.6	7.7	0	63.5	6262
College Degree	15.7	7.1	0	49.5	6262
Graduate Degree	8.8	5.5	0	62	6262
Age < 20 years	28.8	4.2	3	65.7	6262
Age 20-29	15.1	4.5	0	57.3	6262
Age 30-39	15.6	2.1	0	29.4	6262
Age 40-49	14.3	1.7	0	24.8	6262
Age 60-69	7	1.7	0	27.1	6262
Age 70+	8.9	3.5	0	56	6262
Recent Local Movers	5.6	1.2	0	14.8	6262
Recent Distance Movers	4.3	1.7	0	18.1	6262
Not in Labor Force	23.7	6.2	1.4	65.7	6262
Unemployed	6.9	3.2	0	77.6	6262
Commute < 20 minutes	62.1	15.2	0	100	6262
Commute > 45 minutes	14.6	9.6	0	51.2	6262

Table 2: Summary statistics 2007 to 2011. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, the 2000 Decennial Census, and the American Community Surveys 2005-2012.

Variable	Mean	SD	Min.	Max.	N
Revenue Changes 2007 to 2011					
Revenue - Own Sources	4.3	12.6	-92.8	252.5	3252
Property Taxes	3.5	5.5	-63.7	92.8	3177
Sales Taxes	0.5	4	-80.3	121.2	2500
Income Taxes	0.6	4.3	-50.9	78.7	383
Fees and Misc.	1.1	9	-92.8	203.7	3251
Revenue - Intergovernmental	2	8.4	-93.1	299.4	3263
Expenditure Changes 2007 to 2011					
Total Expenditures	15.8	22.9	-99.2	287.9	3265
Salaries	2.2	7.4	-59.9	125.4	3214
Benefits	2.1	2.2	-7.8	13.1	311
Long Term Debt Outstanding	24.7	43	-99.9	290.3	2950
Police and Fire	4.5	5.1	-49.8	67	2752
Water	2	9.9	-83	249.5	2584
Roads	0.4	5.7	-70.2	198.2	3184
Parks and Recreation	0.2	4.5	-49.9	88.6	2982
Household Debt Balance Changes 2007 to 2011					
Mortgages	-7.7	14.3	-100	278.7	3244
Consumer Debt - City	-15.1	8.2	-100	250.4	3257
Consumer Debt - County	-14.3	5.7	-98.1	74.5	3264
Control Variable Changes 2005-2009 to 2008-2012					
City Population	0.4	1.9	-22.1	38.6	3265
County Population	0.7	1.3	-24.8	39.5	3265
City Income	-0.3	2	-21.4	36.2	3265
County Income	0	3.9	-69.1	115.1	3265
Married, no children	0.1	1.4	-13.8	18.4	3265
Married with children	-1.1	1.4	-28.4	13	3265
Single Parent	0.1	1.2	-11.3	8.9	3265
Foreign Born	0.5	1.2	-14	19.3	3265
Less than High School	-0.9	1.3	-14.5	21.6	3265
College Degree	0.4	1.1	-9.1	10.7	3265
Graduate Degree	0.5	0.8	-6.6	8.7	3265
Age < 20 years	-0.7	1.1	-17.7	8.6	3265

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... table 2 continued

Variable	Mean	SD	Min.	Max.	N
Age 20-29	0.1	1.2	-8	10.3	3265
Age 30-39	-0.4	0.9	-9	6.7	3265
Age 40-49	-0.6	0.8	-8.6	6	3265
Age 60-69	1	0.7	-5.5	9	3265
Age 70+	-0.1	0.7	-10.6	10	3265
Recent Local Movers	-0.5	1.7	-13.2	15.4	3265
Recent Distance Movers	-0.3	0.8	-14	9.3	3265
Not in Labor Force	0.2	1.6	-22.4	19	3265
Unemployed	1.6	2.7	-51.8	14	3265
Commute < 20 minutes	-0.5	2	-23	22.7	3265
Commute > 45 minutes	0	1.6	-21.1	14.8	3265
Control Variable Levels 2005-2009					
Married, no children	23.9	5.1	8.8	57.1	3265
Married with children	19.9	6.9	4.6	64.3	3265
Single Parent	11	3.3	0	30.9	3265
Foreign Born	16.4	12.6	0	71.2	3265
Population Density	5.1	6.8	0	48.3	3265
Less than High School	16.8	7.8	0.3	58.4	3265
College Degree	18.3	6.6	1.5	49.4	3265
Graduate Degree	10.5	5.6	0	52.3	3265
Age < 20 years	27.8	3.8	8	52.8	3265
Age 20-29	16	4.2	2.8	53.2	3265
Age 30-39	14.1	2.2	2	32.3	3265
Age 40-49	14.2	1.8	3.5	31	3265
Age 60-69	7.5	1.6	1.7	26.3	3265
Age 70+	8.4	2.7	0.6	31.3	3265
Recent Local Movers	15	4.7	0	50.1	3265
Recent Distance Movers	3.5	2.1	0	29	3265
Not in Labor Force	33.9	5.2	3.8	68.2	3265
Unemployed	8.5	3.4	0	64.3	3265
Commute < 20 minutes	46.1	15.9	14.8	99.6	3265
Commute > 45 minutes	20.1	11.9	0	61	3265

	Own Revenue	Property	Sales	Income	Fees
Mortgage Debt - City	0.148*** (0.022)	0.055*** (0.010)	0.020 * * (0.006)	0.028+ (0.015)	0.064*** (0.016)
Consumer Debt - City	0.037 (0.031)	0.002 (0.017)	0.008 (0.015)	0.091 (0.068)	0.021 (0.019)
Consumer Debt - County	0.054 (0.041)	0.110*** (0.027)	-0.019 (0.019)	-0.094+ (0.051)	-0.005 (0.030)
Income - City	0.126 (0.347)	0.292+ (0.164)	-0.312+ (0.171)	0.012 (0.290)	0.180 (0.267)
Income - County	-0.037 (0.356)	0.189 (0.211)	-0.053 (0.146)	-0.692* (0.298)	-0.256 (0.270)
Population - City	0.855 (0.523)	-0.144 (0.250)	1.011 * * (0.363)	-0.234 (0.345)	0.083 (0.425)
Population - County	0.216 (0.486)	-0.523+ (0.302)	0.083 (0.230)	1.088* (0.536)	0.713+ (0.384)
Intergovernmental	0.234+ (0.138)	-0.030 (0.022)	0.015 (0.029)	0.006 (0.035)	0.225 (0.137)
Constant	-485.283 * * (147.700)	-207.167*** (60.938)	-105.569+ (60.190)	-196.465 (146.159)	-206.094+ (118.534)
N	6133	5904	4322	837	6144
R ²	0.324	0.360	0.187	0.395	0.174

Table 3: Revenue Changes 2002-2007. Dependent variables are the changes between 2002 and 2007 in the municipalities' revenue as a percentage of 2002 total expenditures. The independent variables are changes as a percent of the base-year value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. All regressions include the demographic controls listed in table 1. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, the 2000 Decennial Census, and the American Community Surveys 2005-2009. Significance key: + for $p < .1$, * for $p < .05$, ** for $p < .01$, and *** for $p < .001$.

	Expenditures	Salaries	Benefits	Bonds
Mortgage Debt - City	0.174*** (0.028)	0.031*** (0.007)	0.001 (0.006)	0.106 (0.077)
Consumer Debt - City	0.103* (0.045)	0.020 (0.015)	-0.020 (0.017)	0.211 (0.128)
Consumer Debt - County	0.031 (0.062)	0.058 ** (0.021)	-0.013 (0.017)	-0.421* (0.183)
Income - City	0.324 (0.466)	-0.043 (0.161)	0.130 (0.116)	0.458 (1.349)
Income - County	-0.322 (0.490)	-0.152 (0.159)	-0.144 (0.094)	-2.678+ (1.517)
Population - City	0.822 (0.715)	0.392+ (0.235)	-0.152 (0.151)	1.211 (1.876)
Population - County	0.916 (0.701)	0.122 (0.237)	0.338* (0.160)	6.218 ** (2.325)
Intergovernmental	0.906*** (0.055)	0.080 ** (0.025)	0.040*** (0.012)	0.121 (0.131)
Constant	-447.566* (217.538)	-91.064 (71.092)	-108.919+ (58.621)	-406.084 (618.729)
N	6111	6149	909	5253
R ²	0.339	0.160	0.292	0.086

	Safety	Water	Roads	Parks
Mortgage	0.034*** (0.006)	0.019 (0.015)	0.037 ** (0.011)	0.017 ** (0.005)
Consumer Debt - City	0.006 (0.012)	0.123*** (0.032)	0.028+ (0.015)	-0.009 (0.012)
Consumer Debt - County	0.038* (0.015)	-0.072* (0.035)	-0.003 (0.022)	0.027* (0.013)
Income - City	-0.174 (0.127)	-0.260 (0.296)	-0.074 (0.137)	-0.020 (0.084)
Income - County	0.026 (0.107)	-0.019 (0.277)	-0.026 (0.130)	0.190+ (0.097)
Population - City	0.599 ** (0.206)	0.674 (0.510)	0.385+ (0.205)	0.168 (0.129)
Population - County	-0.166 (0.169)	0.424 (0.456)	0.177 (0.189)	-0.221 (0.157)
Intergovernmental	0.066*** (0.017)	0.233*** (0.047)	0.095*** (0.028)	0.047*** (0.010)
Constant	-9.517 (47.896)	52.567 (108.104)	-113.575 (72.984)	-4.903 (36.243)
N	5007	4330	5988	5539
R ²	0.275	0.163	0.125	0.104

Table 4: Expenditure Changes 2002-2007. Dependent variables are the changes between 2002 and 2007 in the municipalities' expenditures as a percentage of 2002 total expenditures. The independent variables are changes as a percent of the base-year value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. All regressions include the demographic controls listed in table 1. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, the 2000 Decennial Census, and the American Community Surveys 2005-2009. Significance key: + for $p < .1$, * for $p < .05$, ** for $p < .01$, and *** for $p < .001$.

	Own Revenue	Property	Sales	Income	Fees
Mortgage Debt - City	0.150*** (0.032)	0.036 ** (0.012)	0.040*** (0.011)	0.038 (0.030)	0.075 ** (0.027)
Consumer Debt - City	-0.101* (0.049)	0.008 (0.024)	-0.002 (0.019)	0.100* (0.044)	-0.100* (0.041)
Consumer Debt - County	0.164+ (0.084)	0.014 (0.036)	0.014 (0.028)	-0.116 (0.075)	0.124+ (0.067)
Income - City	0.258 (0.317)	-0.133 (0.152)	0.035 (0.141)	-0.442 (0.444)	0.419+ (0.245)
Income - County	-0.052 (0.143)	0.089 (0.069)	0.095 (0.061)	0.058 (0.205)	-0.180 (0.114)
Population - City	-0.197 (0.392)	0.131 (0.190)	0.084 (0.155)	0.908+ (0.497)	-0.376 (0.287)
Population - County	0.220 (0.549)	-0.243 (0.228)	-0.043 (0.212)	-0.166 (0.673)	0.413 (0.396)
Intergovernmental	0.034 (0.072)	0.003 (0.016)	-0.028 (0.029)	-0.012 (0.025)	0.060 (0.059)
Constant	28.519 (35.874)	-24.376+ (12.436)	4.311 (12.491)	-17.588 (27.279)	43.491 (26.707)
N	3252	3181	2498	384	3249
R ²	0.117	0.123	0.102	0.311	0.053

Table 5: Revenue Changes 2007-2011. Dependent variables are the changes between 2007 and 2011 in the municipalities' revenue as a percentage of 2007 total expenditures. The independent variables are changes as a percent of the base-year value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. All regressions include the demographic controls listed in table 2. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, and the American Community Surveys 2005-2012. Significance key: + for $p < .1$, * for $p < .05$, ** for $p < .01$, and *** for $p < .001$.

	Expenditures	Salaries	Benefits	Bonds
Mortgage Debt - City	0.214*** (0.058)	0.004 (0.020)	-0.008 (0.020)	0.085 (0.121)
Consumer Debt - City	-0.131+ (0.070)	0.011 (0.040)	0.001 (0.035)	-0.071 (0.195)
Consumer Debt - County	-0.063 (0.132)	0.059 (0.051)	0.041 (0.046)	-0.343 (0.294)
Income - City	-0.208 (0.547)	0.023 (0.206)	-0.362 (0.232)	-0.439 (1.257)
Income - County	0.169 (0.280)	0.001 (0.095)	0.065 (0.103)	1.409* (0.600)
Population - City	0.773 (0.706)	0.271 (0.203)	-0.265 (0.234)	2.151+ (1.242)
Population - County	-0.394 (0.975)	0.263 (0.397)	0.366 (0.442)	-0.820 (1.815)
Intergovernmental	1.067*** (0.091)	0.014 (0.035)	-0.024 (0.024)	0.141 (0.151)
Constant	73.253 (54.255)	-13.407 (19.441)	13.293 (25.367)	-469.206*** (114.594)
N	3242	3218	312	2947
R ²	0.215	0.081	0.545	0.110

	Safety	Water	Roads	Parks
Mortgage Debt - City	0.022 (0.014)	0.057* (0.022)	0.034 * * (0.012)	0.022* (0.011)
Consumer Debt - City	0.020 (0.030)	-0.039 (0.047)	-0.051* (0.023)	-0.014 (0.020)
Consumer Debt - County	-0.007 (0.040)	-0.093 (0.073)	0.034 (0.031)	-0.057 (0.036)
Income - City	0.307* (0.145)	0.603+ (0.324)	-0.065 (0.152)	0.087 (0.141)
Income - County	-0.072 (0.071)	-0.035 (0.150)	0.036 (0.074)	0.012 (0.064)
Population - City	0.030 (0.172)	-0.426 (0.359)	0.194 (0.155)	0.177 (0.145)
Population - County	-0.086 (0.280)	0.328 (0.452)	-0.267 (0.251)	-0.137 (0.209)
Intergovernmental	0.075*** (0.018)	0.312*** (0.055)	0.110*** (0.018)	0.028* (0.013)
Constant	10.662 (15.332)	36.074 (30.462)	11.676 (16.079)	-0.070 (10.570)
N	2750	2578	3186	2982
R ²	0.093	0.108	0.075	0.050

Table 6: Expenditure Changes 2007-2011. Dependent variables are the changes between 2007 and 2011 in the municipalities' expenditures as a percentage of 2007 total expenditures. The independent variables are changes as a percent of the base-year value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. All regressions include the demographic controls listed in table 2. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, and the American Community Surveys 2005-2012. Significance key: + for $p < .1$, * for $p < .05$, ** for $p < .01$, and *** for $p < .001$.

	Own Revenue	Property	Sales	Income	Fees
Mortgage Debt	0.157***	0.056***	0.028***	0.059***	0.059***
- City PC	(0.015)	(0.008)	(0.006)	(0.017)	(0.011)
Consumer Debt	0.234***	0.085***	0.057***	0.148 * *	0.107***
- City PC	(0.023)	(0.014)	(0.010)	(0.052)	(0.016)
Consumer Debt	-0.092 * *	0.042*	-0.037 * *	-0.031	-0.083***
- County PC	(0.034)	(0.018)	(0.013)	(0.030)	(0.022)
Income	0.296	0.491 * *	-0.314*	-0.200	0.300
- City PC	(0.399)	(0.180)	(0.159)	(0.364)	(0.313)
Income	-0.225	0.052	0.093	-0.956 * *	-0.400
- County PC	(0.464)	(0.252)	(0.167)	(0.363)	(0.319)
Intergovernmental PC	0.240+	0.011	0.002	0.058	0.248+
	(0.141)	(0.017)	(0.017)	(0.040)	(0.136)
Constant	-285.554*	-107.294*	-84.430	-107.481	-142.001
	(132.756)	(54.488)	(52.239)	(155.846)	(104.992)
N	5705	5528	4000	820	5722
R ²	0.272	0.339	0.147	0.341	0.149

	Expenditures	Salaries	Benefits	Bonds
Mortgage Debt	0.192***	0.039***	0.002	0.056
- City PC	(0.020)	(0.008)	(0.006)	(0.054)
Consumer Debt	0.320***	0.125***	0.006	0.332***
- City PC	(0.034)	(0.011)	(0.010)	(0.071)
Consumer Debt	-0.105*	-0.001	-0.025+	-0.416 * *
- County PC	(0.047)	(0.017)	(0.013)	(0.128)
Income	0.483	0.176	0.122	0.208
- City PC	(0.458)	(0.186)	(0.122)	(1.177)
Income	-0.466	-0.283	-0.203+	-2.488
- County PC	(0.546)	(0.210)	(0.117)	(1.537)
Intergovernmental PC	0.949***	0.116***	0.052***	0.138
	(0.052)	(0.025)	(0.012)	(0.096)
Constant	-181.280	-19.848	-87.025	-18.181
	(186.965)	(71.044)	(59.010)	(492.998)
N	5645	5732	902	4749
R ²	0.326	0.174	0.264	0.069

Table 7: Per Capita Models 2002-2007. Dependent variables are the changes between 2002 and 2007 in the municipalities' per capita revenue as a percentage of 2002 total expenditures per capita. The independent variables are changes in per capita values as a percent of the base-year per capita value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. All regressions include the demographic controls listed in table 1. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, the 2000 Decennial Census, and the American Community Surveys 2005-2009. Significance key: + for $p < .1$, * for $p < .05$, ** for $p < .01$, and *** for $p < .001$.

	Own Revenue	Property	Sales	Income	Fees
Mortgage Debt	0.160***	0.043***	0.044***	0.051+	0.075 * *
- City PC	(0.034)	(0.013)	(0.012)	(0.030)	(0.027)
Consumer Debt	0.109+	0.066 * *	0.025	0.081+	0.005
- City PC	(0.058)	(0.022)	(0.016)	(0.043)	(0.045)
Consumer Debt	0.004	-0.033	-0.011	-0.075	0.039
- County PC	(0.085)	(0.032)	(0.025)	(0.069)	(0.069)
Income	0.679*	0.024	0.089	-0.494	0.585*
- City PC	(0.338)	(0.164)	(0.138)	(0.463)	(0.263)
Income	-0.074	0.208	0.245	0.274	-0.467
- County PC	(0.461)	(0.208)	(0.184)	(0.620)	(0.367)
Intergovernmental PC	0.043	0.006	-0.025	-0.022	0.065
	(0.070)	(0.016)	(0.029)	(0.023)	(0.058)
Constant	44.305	-21.957+	4.121	-13.306	49.915+
	(35.966)	(12.037)	(13.245)	(27.436)	(26.876)
N	3224	3158	2474	384	3224
R ²	0.131	0.123	0.107	0.262	0.063

	Expenditures	Salaries	Benefits	Bonds
Mortgage Debt	0.201***	0.017	-0.026	0.099
- City PC	(0.061)	(0.019)	(0.020)	(0.124)
Consumer Debt	0.070	0.055	0.151***	0.309
- City PC	(0.078)	(0.039)	(0.044)	(0.189)
Consumer Debt	-0.174	0.021	-0.107+	-0.745 * *
- County PC	(0.123)	(0.043)	(0.059)	(0.269)
Income	0.343	0.096	-0.317	-0.665
- City PC	(0.571)	(0.211)	(0.298)	(1.222)
Income	0.918	-0.078	0.462	4.852 * *
- County PC	(0.825)	(0.344)	(0.458)	(1.703)
Intergovernmental PC	1.090***	0.021	0.000	0.216
	(0.089)	(0.033)	(0.033)	(0.150)
Constant	87.980+	-11.247	10.087	-462.531***
	(50.820)	(19.461)	(29.172)	(108.360)
N	3215	3195	305	2923
R ²	0.234	0.059	0.572	0.104

Table 8: Per Capita Models 2007-2011. Dependent variables are the changes between 2007 and 2011 in the municipalities' per capita revenue as a percentage of 2007 total expenditures per capita. The independent variables are changes in per capita values as a percent of the base-year per capita value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. All regressions include the demographic controls listed in table 1. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, and the American Community Surveys 2005-2012. Significance key: + for $p < .1$, * for $p < .05$, ** for $p < .01$, and *** for $p < .001$.

School Districts - 2002 to 2007 (N = 5341)				
	Own Source	Property	Expenditure	Salaries
Mortgage	0.04* (0.02)	0.03+ (0.01)	0.05** (0.02)	0.02 (0.04)
Income	-0.30 (0.41)	0.00 (0.28)	-0.38 (0.49)	-0.25 (0.95)
Population	1.04+ (0.54)	0.62 (0.38)	1.61* (0.74)	2.78+ (1.59)
Intergovernmental	-0.09* (0.04)	-0.14*** (0.03)	0.89*** (0.06)	0.16 (0.11)
Constant	-697.77*** (169.21)	-604.88*** (131.31)	-786.70*** (189.79)	-298.01 (424.25)
R ²	0.46	0.46	0.49	0.13

School Districts - 2007 to 2011 (N = 5389)				
	Own Source	Property	Expenditure	Salaries
Mortgage	0.07*** (0.02)	0.06*** (0.01)	0.14*** (0.03)	0.12 (0.11)
Income	0.75*** (0.15)	0.58*** (0.13)	0.85** (0.27)	1.88+ (1.07)
Population	-0.23 (0.24)	-0.15 (0.21)	-0.39 (0.29)	0.22 (1.19)
Intergovernmental	-0.07 (0.07)	-0.08 (0.06)	0.75*** (0.15)	0.99* (0.37)
Constant	28.59 (20.61)	24.77 (18.32)	66.94* (28.93)	-63.68 (87.98)
R ²	0.21	0.22	0.28	0.11

Table 9: School District Fiscal Changes. Dependent variables are the changes in the school districts' fiscal measures as a percentage of base year total expenditures. The independent variables are changes as a percent of the base-year value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. All regressions include the demographic controls listed in table 1. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, and the American Community Surveys 2005-2009 and 2008-2012. Significance key: + for $p < .1$, * for $p < .05$, ** for $p < .01$, and *** for $p < .001$.

Main Specification												
	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks		
Mortgage	0.148*** (0.022)	0.055*** (0.010)	0.020** (0.006)	0.064*** (0.016)	0.174*** (0.028)	0.031*** (0.007)	0.034*** (0.006)	0.019 (0.015)	0.037** (0.011)	0.017** (0.005)		
Consumer City	0.037 (0.031)	0.002 (0.017)	0.008 (0.015)	0.021 (0.019)	0.103* (0.045)	0.020 (0.015)	0.006 (0.012)	0.123*** (0.032)	0.028+ (0.015)	-0.009 (0.012)		
Consumer County	0.054 (0.041)	0.110*** (0.027)	-0.019 (0.019)	-0.005 (0.030)	0.031 (0.062)	0.058** (0.021)	0.038* (0.015)	-0.072* (0.035)	-0.003 (0.022)	0.027* (0.013)		
No Controls												
	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks		
Mortgage	0.170*** (0.030)	0.054*** (0.014)	0.016* (0.008)	0.082*** (0.017)	0.229*** (0.043)	0.029*** (0.008)	0.038*** (0.008)	0.028+ (0.016)	0.037** (0.012)	0.015** (0.006)		
Consumer City	0.202*** (0.032)	0.066*** (0.014)	0.062*** (0.018)	0.075*** (0.018)	0.311*** (0.055)	0.072*** (0.018)	0.043** (0.014)	0.180*** (0.033)	0.076*** (0.014)	0.032** (0.010)		
Consumer County	0.021 (0.042)	0.123*** (0.029)	-0.074*** (0.018)	-0.022 (0.030)	-0.085 (0.067)	0.019 (0.021)	0.019 (0.014)	-0.131*** (0.039)	-0.045* (0.022)	0.010 (0.010)		
N	6149	5917	4331	6161	6121	6167	5019	4339	5998	5551		
R ²	0.210	0.255	0.024	0.069	0.154	0.082	0.123	0.047	0.054	0.045		
Population, Income, Intergovernmental, but No Demographic Controls												
	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks		
Mortgage	0.161*** (0.028)	0.057*** (0.013)	0.012* (0.006)	0.075*** (0.017)	0.206*** (0.038)	0.026*** (0.008)	0.037*** (0.007)	0.022 (0.015)	0.034** (0.012)	0.013* (0.005)		
Consumer City	0.128*** (0.027)	0.043** (0.016)	0.033** (0.012)	0.049** (0.018)	0.209*** (0.043)	0.050** (0.019)	0.017 (0.012)	0.146*** (0.031)	0.058*** (0.013)	0.020* (0.010)		
Consumer County	0.068+ (0.039)	0.145*** (0.029)	-0.060*** (0.015)	-0.008 (0.026)	-0.005 (0.056)	0.031+ (0.018)	0.039** (0.014)	-0.107** (0.034)	-0.034+ (0.020)	0.019+ (0.011)		
N	6133	5904	4322	6144	6111	6149	5007	4330	5988	5539		
R ²	0.270	0.279	0.105	0.127	0.290	0.124	0.208	0.116	0.095	0.067		

Table 10: Alternate Specifications Fiscal Changes 2002-2007. Dependent variables are the changes between 2002 and 2007 in the municipalities' revenue as a percentage of 2002 total expenditures. The independent variables are changes as a percent of the base-year value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. Unless noted, regressions include the demographic controls listed in table 1. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, the 2000 Decennial Census, and the American Community Surveys 2005-2009. Significance key: + for $p < .1$, * for $p < .05$, ** for $p < .01$, and *** for $p < .001$.

		Mortgages Only									
	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks	
Mortgage	0.167*** (0.022)	0.075*** (0.011)	0.019** (0.007)	0.069*** (0.016)	0.208*** (0.027)	0.046*** (0.007)	0.042*** (0.006)	0.040** (0.015)	0.044*** (0.012)	0.019*** (0.005)	
N	6138	5909	4326	6149	6116	6154	5011	4333	5993	5543	
R ²	0.322	0.346	0.187	0.173	0.337	0.154	0.271	0.156	0.124	0.102	
		No County Variables									
	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks	
Mortgage	0.150*** (0.021)	0.060*** (0.010)	0.019** (0.006)	0.063*** (0.016)	0.175*** (0.028)	0.032*** (0.007)	0.035*** (0.006)	0.017 (0.015)	0.037*** (0.011)	0.019*** (0.006)	
Consumer	0.060* (0.024)	0.052*** (0.014)	-0.001 (0.014)	0.016 (0.019)	0.113** (0.037)	0.044** (0.016)	0.024* (0.010)	0.085*** (0.023)	0.026* (0.011)	0.004 (0.010)	
N	6134	5905	4323	6145	6112	6150	5008	4331	5989	5540	
R ²	0.323	0.350	0.187	0.172	0.339	0.157	0.272	0.160	0.125	0.101	
		State Fixed Effects									
	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks	
Mortgage	0.135*** (0.020)	0.038*** (0.009)	0.024*** (0.006)	0.061*** (0.016)	0.150*** (0.027)	0.026*** (0.007)	0.028*** (0.005)	0.031* (0.015)	0.032** (0.011)	0.013* (0.005)	
Consumer City	0.037 (0.029)	-0.001 (0.017)	0.013 (0.014)	0.023 (0.019)	0.102* (0.044)	0.025+ (0.015)	0.012 (0.011)	0.111*** (0.031)	0.026+ (0.015)	-0.007 (0.012)	
Consumer County	0.101* (0.045)	0.080** (0.028)	0.016 (0.020)	0.026 (0.038)	0.114 (0.070)	0.063* (0.026)	0.043** (0.016)	-0.030 (0.042)	0.016 (0.024)	0.043* (0.018)	
N	6133	5904	4322	6144	6111	6149	5007	4330	5988	5539	
R ²	0.394	0.472	0.328	0.206	0.382	0.220	0.329	0.215	0.148	0.125	

Table 11: Alternate Specifications Fiscal Changes 2002-2007. Dependent variables are the changes between 2002 and 2007 in the municipalities' revenue as a percentage of 2002 total expenditures. The independent variables are changes as a percent of the base-year value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. Unless noted, regressions include the demographic controls listed in table 1. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, the 2000 Decennial Census, and the American Community Surveys 2005-2009. Significance key: + for $p < .1$, * for $p < .05$, ** for $p < .01$, and *** for $p < .001$.

California

	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks
Mortgage	0.180 ** (0.057)	0.083* (0.035)	0.014 (0.015)	0.017 (0.049)	0.174 * * (0.060)	0.029 (0.029)	0.062* (0.025)	0.019 (0.066)	0.038 (0.023)	0.001 (0.022)
Consumer City	-0.247 * * (0.091)	-0.079+ (0.046)	-0.046* (0.020)	-0.033 (0.063)	-0.075 (0.108)	0.041 (0.041)	-0.019 (0.037)	0.135 (0.108)	0.003 (0.038)	-0.027 (0.028)
Consumer County	0.274 (0.194)	0.180 (0.145)	-0.039 (0.077)	-0.222 (0.151)	0.331 (0.232)	-0.154 (0.103)	0.174* (0.077)	0.156 (0.200)	0.082 (0.094)	-0.092 (0.070)
N	431	434	434	433	429	434	299	218	433	414
R ²	0.394	0.400	0.248	0.241	0.464	0.197	0.424	0.359	0.281	0.182

Arizona, Florida, Nevada

	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks
Mortgage	0.324 * * (0.109)	0.056+ (0.028)	0.065* (0.031)	0.179+ (0.094)	0.477* (0.193)	0.050 (0.038)	0.056 (0.040)	0.179+ (0.101)	0.175* (0.067)	0.062 (0.041)
Consumer City	0.001 (0.125)	0.022 (0.082)	0.005 (0.042)	-0.030 (0.132)	0.049 (0.200)	0.055 (0.071)	0.039 (0.038)	0.011 (0.179)	-0.021 (0.089)	-0.005 (0.046)
Consumer County	0.398 * * (0.143)	0.129+ (0.067)	0.002 (0.058)	0.404 * * (0.146)	0.104 (0.228)	0.152+ (0.083)	0.094 (0.059)	0.065 (0.183)	0.155 (0.097)	0.099 (0.065)
N	256	228	252	258	252	257	204	176	244	246
R ²	0.666	0.633	0.621	0.530	0.610	0.406	0.581	0.536	0.505	0.311

No Sand States

	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks
Mortgage	0.063*** (0.014)	0.015* (0.006)	0.013* (0.007)	0.042*** (0.010)	0.074*** (0.019)	0.013+ (0.008)	0.011* (0.005)	0.021 (0.013)	0.016 * * (0.006)	0.010* (0.005)
Consumer City	0.110*** (0.027)	0.030* (0.012)	0.009 (0.015)	0.045* (0.020)	0.145 * * (0.044)	0.041 * * (0.016)	0.016 (0.012)	0.098 * * (0.036)	0.015 (0.015)	-0.001 (0.013)
Consumer County	-0.117 * * (0.044)	-0.008 (0.019)	-0.011 (0.022)	-0.085 * * (0.032)	-0.094 (0.064)	0.012 (0.023)	-0.018 (0.017)	-0.093* (0.040)	-0.020 (0.023)	0.004 (0.015)
N	5446	5242	3636	5453	5430	5458	4504	3936	5311	4879
R ²	0.218	0.212	0.163	0.137	0.261	0.150	0.170	0.151	0.091	0.066

Table 12: Alternate Specifications Fiscal Changes 2002-2007. Dependent variables are the changes between 2002 and 2007 in the municipalities' revenue as a percentage of 2002 total expenditures. The independent variables are changes as a percent of the base-year value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. Unless noted, regressions include the demographic controls listed in table 1. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, the 2000 Decennial Census, and the American Community Surveys 2005-2009. Significance key: + for p<.1, * for p<.05, ** for p<.01, and *** for p<.001.

Population < 100,000										
	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks
Mortgage	0.120*** (0.017)	0.036*** (0.008)	0.017* (0.007)	0.063*** (0.010)	0.149*** (0.027)	0.020*** (0.006)	0.022*** (0.005)	0.034** (0.013)	0.020*** (0.006)	0.013** (0.004)
Consumer City	0.047+ (0.028)	0.005 (0.013)	0.014 (0.017)	0.026 (0.018)	0.068 (0.042)	0.017 (0.013)	0.016 (0.011)	0.087** (0.029)	0.016 (0.015)	0.006 (0.010)
Consumer County	0.136*** (0.038)	0.129*** (0.028)	-0.016 (0.021)	0.038 (0.031)	0.235*** (0.061)	0.029 (0.025)	0.033* (0.015)	0.018 (0.038)	0.043+ (0.022)	0.029* (0.012)
N	5908	5680	4116	5919	5887	5925	4792	4153	5763	5315
R ²	0.303	0.326	0.158	0.149	0.306	0.112	0.193	0.150	0.105	0.093

Population >= 100,000										
	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks
Mortgage	0.234** (0.079)	0.073* (0.036)	0.040 (0.027)	0.105 (0.066)	0.211* (0.090)	0.030 (0.041)	0.064** (0.022)	-0.095 (0.058)	0.074+ (0.038)	0.038 (0.025)
Consumer City	-0.314 (0.204)	-0.070 (0.129)	-0.105 (0.085)	-0.116 (0.152)	-0.193 (0.275)	0.059 (0.101)	-0.118* (0.051)	0.110 (0.161)	0.009 (0.079)	-0.151+ (0.078)
Consumer County	0.277 (0.201)	0.129 (0.105)	0.080 (0.061)	0.057 (0.133)	0.012 (0.219)	0.125 (0.105)	0.092+ (0.047)	-0.001 (0.156)	-0.010 (0.077)	0.084 (0.067)
N	225	224	206	225	224	224	215	177	225	224
R ²	0.557	0.681	0.502	0.396	0.619	0.412	0.640	0.511	0.455	0.283

Place with Population Increases										
	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks
Mortgage	0.232*** (0.039)	0.089*** (0.019)	0.019+ (0.011)	0.102*** (0.030)	0.248*** (0.053)	0.052*** (0.014)	0.043*** (0.012)	0.006 (0.031)	0.051* (0.023)	0.013 (0.011)
Consumer City	-0.017 (0.046)	-0.015 (0.025)	0.010 (0.021)	-0.007 (0.034)	0.092 (0.076)	0.003 (0.024)	0.002 (0.018)	0.164** (0.054)	0.019 (0.026)	-0.004 (0.017)
Consumer County	0.008 (0.061)	0.079** (0.029)	-0.014 (0.028)	-0.018 (0.047)	-0.034 (0.094)	0.094* (0.037)	0.033 (0.020)	-0.063 (0.057)	-0.015 (0.037)	0.039+ (0.021)
N	1765	1725	1413	1772	1756	1772	1417	1236	1735	1629
R ²	0.378	0.369	0.229	0.239	0.368	0.199	0.406	0.220	0.181	0.140

Table 13: Alternate Specifications Fiscal Changes 2002-2007. Dependent variables are the changes between 2002 and 2007 in the municipalities' revenue as a percentage of 2002 total expenditures. The independent variables are changes as a percent of the base-year value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. Unless noted, regressions include the demographic controls listed in table 1. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, the 2000 Decennial Census, and the American Community Surveys 2005-2009. Significance key: + for p<.1, * for p<.05, ** for p<.01, and *** for p<.001.

Places with Population Steady within $\pm 1.5\%$										
	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks
Mortgage	0.094*** (0.019)	0.048*** (0.011)	0.012+ (0.007)	0.028* (0.012)	0.139*** (0.026)	0.032** (0.011)	0.030*** (0.008)	-0.010 (0.018)	0.031*** (0.008)	0.013* (0.006)
Consumer City	-0.046 (0.039)	-0.019 (0.022)	-0.024 (0.020)	-0.010 (0.026)	0.070 (0.063)	0.033 (0.022)	-0.010 (0.016)	0.128** (0.039)	0.028+ (0.017)	-0.027 (0.017)
Consumer County	0.118* (0.051)	0.147*** (0.030)	0.013 (0.023)	-0.020 (0.035)	0.044 (0.079)	0.032 (0.025)	0.056** (0.019)	-0.063+ (0.036)	-0.005 (0.020)	0.029 (0.018)
N	3000	2939	2012	3006	2992	3007	2595	1980	2971	2814
R ²	0.239	0.393	0.138	0.150	0.277	0.130	0.241	0.141	0.082	0.097

Include Boom Credit Changes in Bust Period Models

	Own Source	Property	Sales	Fees	Expenditure	Salaries	Safety	Water	Roads	Parks
Mortgage	0.123*** (0.029)	0.030* (0.012)	0.033** (0.010)	0.065** (0.025)	0.212*** (0.057)	-0.010 (0.022)	0.015 (0.012)	0.061** (0.023)	0.034** (0.012)	0.018+ (0.010)
Consumer City	-0.108+ (0.055)	0.003 (0.024)	-0.006 (0.019)	-0.101* (0.046)	-0.165+ (0.098)	0.010 (0.041)	0.005 (0.028)	-0.058 (0.050)	-0.050* (0.025)	-0.014 (0.019)
Consumer County	0.105 (0.081)	0.001 (0.035)	0.011 (0.027)	0.093 (0.064)	-0.090 (0.145)	0.055 (0.049)	-0.012 (0.043)	-0.092 (0.075)	0.021 (0.035)	-0.067* (0.034)
Mortgage	-0.010 (0.014)	0.002 (0.007)	0.005 (0.004)	-0.013 (0.012)	0.048+ (0.026)	-0.013 (0.008)	0.015* (0.007)	0.034** (0.011)	0.001 (0.006)	-0.003 (0.005)
Consumer City	-0.024 (0.028)	0.002 (0.014)	0.008 (0.010)	-0.020 (0.022)	-0.099+ (0.053)	0.064*** (0.018)	-0.011 (0.014)	-0.048+ (0.026)	-0.025* (0.013)	0.004 (0.010)
Consumer County	-0.094** (0.030)	-0.043*** (0.013)	-0.038*** (0.010)	-0.015 (0.024)	-0.072 (0.051)	-0.076*** (0.022)	-0.053*** (0.015)	-0.022 (0.025)	0.006 (0.015)	-0.020 (0.012)
N	3189	3118	2451	3186	3181	3156	2705	2523	3123	2933
R ²	0.131	0.133	0.110	0.057	0.221	0.092	0.117	0.116	0.077	0.054

Table 14: Alternate Specifications Fiscal Changes 2002-2007. Dependent variables are the changes between 2002 and 2007 in the municipalities' revenue as a percentage of 2002 total expenditures. The independent variables are changes as a percent of the base-year value. Standard errors are clustered by county. Observations are weighted by their estimated population in 2009. Unless noted, regressions include the demographic controls listed in table 1. The data sources are the Census of Governments, the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, the 2000 Decennial Census, and the American Community Surveys 2005-2009. Significance key: + for $p < .1$, * for $p < .05$, ** for $p < .01$, and *** for $p < .001$.