

# Local Origins and Implications of the 1930s Urban Debt Crisis

Samara Gunter

James Siodla

srgunter@colby.edu

jrsiodla@colby.edu

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## Abstract

Rising incomes and automobile ownership encouraged widespread suburbanization and urban growth during the 1920s. These developments were facilitated by debt-financed infrastructure spending on the part of local governments. When the Great Depression struck, it brought a crisis in which cities were forced to reschedule debt, were at risk of default, and were weakly positioned to respond to local economic crisis. This paper seeks to identify the factors that led to high city debt loads in 1929 and the implications for urban communities in the downturn. We find that cities constrained by strict government debt limits and a supermajority popular-vote requirement for borrowing were significantly less indebted in 1929, while cities facing strict tax limits were more indebted. Cities carrying high debt loads into the Depression made bigger spending cuts in critical areas between 1931 and 1933. These results shed light not only on the urban experience during the downturn, but also the effectiveness of institutional constraints on local government borrowing during the early twentieth century.

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## 1 Introduction

American cities entered the Great Depression with very high levels of debt. The urbanization, rapid economic growth, and land speculation of the 1920s encouraged profligate borrowing

that left cities with little financial flexibility in the early 1930s when relief rolls swelled and tax receipts fell. Although demands for more city services were universal in the 1920s, the extent to which cities ran up debt to finance these public goods rather than relying on tax financing varied substantially. The differences in their degree of indebtedness had important implications for local governments' ability to respond to the fiscal crises of the Great Depression.

Many cities defaulted on debt obligations in the early 1930s. Many more struggled to fund regular city services due to the weight of debt service payments Dykstra (1934). As property values fell and the real value of the dollar declined, debt-to-value ratios increased, tightening the effects of statutory and constitutional debt limits and increasing the weight of debt payments on the municipal budget.

The downturn beginning in 1929 made debt levels an immediate problem, since debt payments were not easily abrogated. In this study, we examine what explains the variation in debt run-up by cities in the 1920s, and to what extent the debt-financed spending of the Roaring Twenties led to austere local fiscal policies during the early years of the Great Depression.

Cities vary across several key dimensions that may explain differences in debt reliance during the 1920s. First, cities differ in their demand for local public goods, especially those associated with suburbanization. Some cities were better positioned to grow in the 1920s due to more unincorporated area into which to expand or differences in zoning rules governing expansion. Real estate speculation and the connections between developers and city government could determine the extent to which city budgets were used to subsidize development.

Second, cities faced different constraints on their ability to finance this local public good spending through either tax revenue or debt. A number of institutional factors are likely to have generated differences in the relative price of tax vs. debt financing across localities. First, state-level regulations restricted municipal debt loads, property tax rates, or both

in many areas. These created a variety of incentives. Limits on property tax rates, for example, might incentivize higher property value assessments as well as raising the relative cost of tax financing relative to debt. Limits on debt, which often applied only to specific components of the municipal budget or to specific sub-state governmental organizations such as municipalities or school districts, incentivized local governments to spin off special districts for schools, sewer districts, and other special functions so that those debts did not count toward the municipal debt load. This limited the effectiveness of debt limits because they could be so easily circumvented by municipalities. Additionally, state laws governed the political process surrounding municipal bond votes. Some states required two-thirds majority votes to approve debt, while others required simple majorities, creating variation in the political feasibility of debt financing.

Third, cities' use of mayor-council vs. city manager governments could cause differences in political incentives to use debt vs. tax financing. Different local government structures could also lead to different fiscal mismanagement decisions and speculative investments on the part of city governments in the 1920s.

Cities that entered the Depression with higher debt loads had fewer policy options available to respond to economic crisis than their more restrained counterparts. In the second part of our paper, we examine how city indebtedness on the eve of the Depression impacted city spending through the early 1930s prior to the roll-out of the New Deal.

This study explores two questions: (1) what explains the variation in local government behavior with respect to debt growth in the 1920s, and (2) how did 1929 debt loads affect subsequent policy actions during the worst years of the Great Depression prior to the New Deal? We find that debt loads varied considerably across cities by the end of the 1920s and that suburbanization-related demand factors, state limits on local debt, and local form of government all contribute to drive this variation. Cities that expand their borders and that issue more building permits experience higher 1929 debt per capita, supporting the

historical narrative that expenses associated with suburbanization drove debt. In addition, certain types of state limits on local debt were effective at constraining it. In contrast, we find no evidence that property tax limits increased debt once we control for debt limits. Mayor-council (rather than city manager) governments are associated with lower debt. We then estimate how debt positions carried into the downturn impacted city spending and other policy actions in the early 1930s. We find that a major policy action of highly indebted cities was to significantly reduce spending in critical areas after 1930. Our study sheds light the effectiveness of institutional constraints on local government borrowing during the early twentieth century and on the urban experience during the Depression.

## **2 Historical Background**

### **2.1 Local Spending and Urban Growth in the 1920s**

Cities were important government spenders before the New Deal shifted power toward state and federal governments. Before the New Deal, local, state, and federal government contributed about 50, 20, and 30 percent of total government expenditures respectively. After 1940 when the New Deal was fully implemented, these shares shifted to roughly 30, 24, and 46 percent (Wallis (1984)). This shift from decentralized to centralized government, however, had already begun in the 1920s. The local government share of total government spending peaked at about 63 percent in 1913 just before introduction of the federal income tax. The introduction of state income taxes, beginning with Wisconsin in 1911, contributed to the steady rise of the state share of government spending in the 1920s.

Although the shift toward centralization of spending and taxation was already underway in the 1920s, local governments still funded the majority of local spending and were actively engaged in capital investment. Herbert Hoover, as secretary of the Department of Commerce, convened a conference following the 1920–1921 recession encouraging spending

by governments on public works projects to stave off economic downturns. Cities responded by issuing bonds in record numbers in 1921 and 1922 (Rothbard (2000, p. 193)). The federal income tax introduced in 1913 made tax-exempt municipal bonds attractive as an investment vehicle. The combination of the credit boom of the decade and the tax incentive meant that cities easily found buyers for their debt.

More than half of the growth in local government spending during the 1920s was from investment in roads and schools (Wallis (2001)). The large expenditures on the part of cities and towns impacted local economies and had potentially large multiplier effects. However, the credit boom also stimulated real estate speculation. Cities participated in this speculation by establishing special assessments and local improvement districts that “...were created to permit the improvement of undeveloped and speculative areas” (U.S. Advisory Commission on Intergovernmental Relations (1973, p. 15)). This expansion of unplanned subdivisions resulted in lots with no housing, but plenty of infrastructure, all made possible by the immense growth in municipal bond issues in the 1920s (Joffe (2013)). A famous example of this type of local spending took place in Florida, which experienced a large population boom in the 1920s and the debt to accompany it. Local officials spent money in response to optimistic growth projections during the land boom, leading to a rapid rise in bonds outstanding for cities across the state (Joffe (2013, p. 15)).

This speculation led to many platted but undeveloped subdivisions, which introduced immense costs to development in subsequent years and delayed recovery in local markets (Field (1992)). The Detroit metropolitan area saw acres platted increase by 81 percent between 1920 and 1930, with much of this subdivision occurring between 1924 and 1926 (Michigan Planning Commission (1939, p.10)). Much of this remained undeveloped by 1939. A study by the National Housing Agency in 1945 noted that hundreds of thousands of plots in cities across the nation were “already equipped with paved streets, curbs, sidewalks, water and other utility mains into which millions of dollars have been sunk—enough, indeed;

to have bankrupted many townships and villages...” (National Housing Agency (1945, p. 36)).<sup>1</sup> Bird (1936, p. 14) claimed, “Municipal bonds carried the load for many a shoestring subdivider; realtors ran many local governments, in fact, sometimes were local governments.”

The prosperity of the 1920s pushed budgets to the brink of disaster. On the revenue side, property taxes grew steadily with the general rise in real estate values. This provided city policymakers with the luxury of being unconcerned with losing revenues in boom years, and allowed them to spend in a profligate fashion.<sup>2</sup> Mayors had incentives to spend money in ways that appeased voters and interest groups, an approach that could be kept up as long as times were good. The aim was to spend to appease taxpayers, keep taxes low, and issue debt to make up the shortfalls. Regarding the immense growth in public services and investment during the 1920s, one government report noted that, “...many municipal units were unwilling to pay the higher level of taxes required to finance these improvements and services; therefore, the indebtedness rose very rapidly” (U.S. Advisory Commission on Intergovernmental Relations (1973, p. 15)). The fissures of fiscal stress were evident as the 1920s wore on. Urban debt had accumulated at a faster pace than wealth and income over the decade, and even grew faster than local populations. Adding to the stress was the high importance of making debt payments in order to maintain good bond ratings.

The bill for debt spending in the 1920s came due with the Great Depression, which resulted in exogenous shocks to revenue sources and rising expenditure requirements, all combined with high debt service costs. Cities had to adjust to a new reality, and quickly. By March 1934, 37 of the largest 310 cities had defaulted on debt payments (Bernanke (1983)).

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<sup>1</sup>This quote is on p. 282 in Alexander Field’s book, *A Great Leap Forward*.

<sup>2</sup>At this point, property taxes were the major source of revenue, making up roughly two-thirds of total revenues.

## 2.2 Urban Fiscal Responses to the Great Depression

The Great Depression generated economic headwinds that came after the crash of the stock market: a decline in taxable income and wealth, bank failures, increased demand for relief services, and rising tax delinquencies. It also made the debt spending of the 1920s an immediate problem. The recent Great Recession has spurred many studies of urban finances focusing on the causes and consequences of fiscal stress (Cromwell and Ihlanfeldt (2015); Skidmore and Scorsone (2011); Thompson (2016); Thompson (2017)). Although a number of papers examine the New Deal and its impact on city and state governments (Wallis (1984); Coen-Pirani and Wooley (2018)), city responses to the onset of the Great Depression prior to the New Deal have received little attention from economists and economic historians. The New Deal changed the composition of city services offered by local governments, but before the sweeping changes that came with new federal programs, local governments faced the depth of the Depression on their own. This is a unique period in history, a time in which cities could not rely on alcohol tax revenue due to Prohibition and in which local governments were the chief providers of many welfare and relief services that would soon be assumed at the national level. The short window of time after the crash and the beginning of the New Deal programs is a time in which debt-ridden, service-laden cities had to respond to drastic fiscal changes. The debt loads cities accrued before the downturn gave local governments less budgetary flexibility in responding to the crisis, with implications for the quality and quantity of services provided in subsequent years of deep economic contraction.

According to Fuchs (1992, p. 49), “The Depression had acted as a swift catalyst causing local fiscal problems to reach epidemic proportions all over the nation.” When the downturn hit, cities delayed spending adjustments and issued short-term debt to finance operating deficits, but this was not sustainable for long.<sup>3</sup> Every city faced the crunch of the Great

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<sup>3</sup>Cromwell and Ihlanfeldt (2015) study local government responses to the shock of the Great Recession and show that cities and counties raised tax rates and cut expenditures.

Depression, but cities with smaller debt loads when the downturn began faced the crash in better financial positions.<sup>4</sup>

One of the biggest concerns weighing on local policymakers at the start of the Great Depression was the prospect of meeting expenses. For highly indebted cities, whose debt-service payments were much larger as a proportion of total expenses, the situation was even graver. Cities facing such dire circumstances could have responded in several ways. One possibility was to increase property tax rates to help shore up budget gaps. This option, of course, was not palatable for voters whose wealth and income had dropped considerably. Other options for cities were to take on short-term debt to meet current expenses before tax revenues were collected or refund existing debt in order to reduce interest payments. Some cities certainly did so, but this was not a sustainable course of action over the duration of the downturn (Fuchs (1992, p. 40)). As the crisis deepened, banks became less and less apt to lend, especially to excessive borrowers.<sup>5</sup> One last option was to cut spending. Between 1929 and 1931, the average city in our balanced panel increased real per capita spending in order to provide relief services in the downturn, but soon had to cut back: spending fell nearly 15 percent between 1931 and 1934.<sup>6</sup>

We analyze the relationship between indebtedness and each of these tax, debt, and spending responses during the Depression. Debt is a drain on city revenues, since debt incurred today must be paid from future receipts. In this way, debt loads in 1929 limited the spend-

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<sup>4</sup>Recent studies have shown that fiscal prudence matters significantly for how cities respond to negative shocks. Thompson (2017) shows that, in Ohio, labeling a city as fiscally stressed—which requires local governments to implement financial recovery plans—leads to expenditure cuts, lower housing prices, and minimal impact on the quality of public services. These responses varied based on local government types. School districts with the label raise tax revenue and cut expenditures, which tends to have a negative impact on housing prices in these communities (Thompson (2016)). In Michigan cities, greater fiscal stress led to spending cuts in general government, public works, and parks and recreation, and larger cuts in capital expenditures between 2005 and 2009 (Skidmore and Scorsone (2011)).

<sup>5</sup>Fuchs (1992, p. 16) suggests that fiscal crises begin to emerge for cities when banks refuse to continue lending money to them.

<sup>6</sup>To put this in context, in response to the Great Recession, Chernick et al. (2011) predicted that real per capita spending would fall by 7 percent in the average central city between 2009 and 2013.



ing flexibility of cities after 1930, especially before greater intervention from the federal government began under President Roosevelt in 1933. Grants distributed after 1933 helped shoulder the burden of cities by providing economic relief to communities across the nation (Fishback et al. (2003)).

### 3 Data

The primary outcomes in this study relate to city finances. In response to the progressive urban reform movement that gained momentum in the early twentieth century, governments began to collect statistics on city revenues, spending, debt, and other financial variables. The U.S. Census Bureau collected and compiled these data into annual reports, which were called *Financial Statistics of Cities*. There is variation in the number of cities appearing across years, but the largest cities were nearly always featured. In earlier years, the reports contained cities with a population over 30,000 people, while beginning in 1932, this threshold rose to 100,000 people. Data exist for 94 cities across all years between 1929 and 1935, while 249 cities have data for the shorter interval between 1929 and 1931. Because of its unique circumstances, we exclude Washington, D.C. from the analysis, so that our sample sizes are 93 and 248. The 93-city sample represents the largest cities in the country at the time, making up 30% of the U.S. population in 1930.

We use information on debt (aggregate and by category), levy rates, levy amounts, spending, and assessments from the *Financial Statistics of Cities*. City population data were also gathered from those reports in order to compute per capita values for each relevant variable, and we also use land area data from the financial reports. All monetary variables are translated into 1967 dollars using the Consumer Price Index (CPI) given in U.S. Census Bureau (1975, pp. 210-211, Series E-135). Each report gives information by fiscal year, with the exact month on which it ends varying by city. For example, the 1929 report gives informa-

tion for the fiscal year that began in a particular month in 1928 and ended near that same month in 1929 (e.g., July 1, 1928–June 30, 1929). Most fiscal years ended mid-to-late year. To put this time frame in the context of macroeconomic trends, the NBER dates the Great Depression from August 1929 to March 1933, with a later recession in 1937–1938.<sup>7</sup> This study focuses on the period up to 1935 to isolate the early years of the Depression in which cities bore the heaviest burden of responding to the crisis and to avoid the impact of the late 1930s recession. However, we are interested primarily in debt levels in 1929 and in spending in the years up to 1933, which is when New Deal spending began. While some fiscal years ended in December, the start of the Great Depression should not have had a major influence on the average city’s debt level in the fiscal year ending 1929 since the vast majority of this debt was incurred well before any indication of a downturn. Thus, 1929 provides a good starting point for analyzing the impact of debt carried into the Depression on urban policy actions.

We also gather a number of additional variables to strengthen our analysis. We link our city financial variables to county-level demographic measures and state-level per capita income to control for a variety of determinants of urban fiscal behavior. We also construct variables on building permits, adoption of zoning ordinances, property tax limits, debt limits and local voting authority, and city-level government form to examine determinants of city debt growth in the 1920s. These data and their construction are further described in the Data Appendix.

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<sup>7</sup>A list of business cycle expansions and contractions, as determined by the National Bureau of Economic Research, is at <http://www.nber.org/cycles/cyclesmain.html>.

### 3.1 Debt Growth in the 1920s

Figure 1 shows total nominal debt for the 89-city balanced panel for which there is data for 1915–1935.<sup>8</sup> Generally, growth of local debt was relatively flat before 1920, but increased quickly in the 1920s. The vast majority of the debt is city debt, but debt held by school districts and other districts grew during this period from only 6 percent of total debt in 1915 to 13 percent in 1929.

Most local debt was funded or fixed long-term debt, as shown in Figure 2. Current revenue bonds, which capture short-term debt, became more common in the 1930s as cities used them to fund expenses in the Depression. Although special assessment bonds contribute a small amount relative to overall debt, the figure also shows that special assessment debt rose during the latter half of the 1920s, consistent with the historical narrative.

Suburbanization and real estate speculation put pressure on municipalities to expand city services. Figure 3 shows the magnitude of suburbanization-related infrastructure debt. In 1929, road and highway debt constituted 27 percent of general long-term city debt; school debt contributed another 24 percent, and sewers made up 17 percent.

However, rapid or “mushroom” development did not predestine cities to high debt levels (Bird (1935)). Although there was an overall trend toward higher debt, cities exhibited wide variation. Figure 4 shows debt in 1929 for all cities in our balanced panel of 89 cities. Median debt per capita in 1929 was \$294 (in real 1967 dollars) for these cities, while twenty cities had debt levels below \$200 per capita and ten cities had debt levels above \$450 per capita. New York had the highest debt load among cities in our balanced panel at approximately \$800 per capita, but the smaller cities of Atlantic City, New Jersey and St. Petersburg, Florida had substantially higher per capita debt levels of \$1121 and \$1487 respectively.

Cities also behaved differently in their rates of accumulating debt. Figure 5 shows the

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<sup>8</sup>Of the 93 cities in our large-city sample, four do not have data for a portion of the pre-1929 period and are not included in the graphs. These cities are Gary, Indiana (no data before 1918); Long Beach, California (no data before 1923); Miami, Florida (no data before 1926); and Tulsa, Oklahoma (no data before 1923).

change in debt from 1923 to 1929 for the 89 cities in our balanced panel. Although New York ended the 1920s with higher debt per capita than other major cities, other municipalities increased their debt loads at a quicker pace, with Philadelphia taking on an additional \$300 in debt per capita. Smaller cities that are not in our balanced panel were even more aggressive, with Atlantic City, New Jersey, Greensboro, North Carolina, and Passaic, New Jersey all increasing debt by more than \$400 per capita in a six-year period. Nine cities actually reduced their per capita debt during this time.

We next consider a number of possible drivers of variation in debt.

## 4 Empirical Models and Results

### 4.1 Debt Loads in 1929

Clearly there is much variation in municipal debt to explain. Furthermore, this variation was noticed at the height of the crisis in the 1930s. In a report on city debt burdens written in 1935, Frederick L. Bird, a contemporary observer of municipal finances, explored this variation along a number of dimensions, including demographic, financial, and institutional variables. We take his analysis as a starting point.

We consider the following model relating 1929 debt loads to demographic, economic, and institutional variables:

$$\begin{aligned}
 Debt_{i,1929} = & \alpha + \beta_1 SurbanizationFactors_{i,1929} + \beta_2 DebtLimits_{i,1929} \\
 & + \beta_3 TaxLimits_{i,1929} + FormofGovernment_{i,1929} + \beta_5 X_{i,1929} \\
 & + \beta_6 County_{c,1920} + \beta_7 StateInc_{s,1929} + Region_r + \varepsilon_i \quad (1)
 \end{aligned}$$

We explore the role of suburbanization, state-imposed institutional constraints around debt limits and tax limits, and form of city government in explaining the variation in debt

loads in 1929. We control for additional city and county characteristics:  $X_{i,1929}$  is a vector of city characteristics including population, per capita tax base, and land area.  $County_{c,1920}$  is a vector of county-level demographic characteristics as measured in 1920: fraction of population that is black, fraction that is foreign born, and fraction that is illiterate. These variables account for differences across cities in the need for welfare services or racial discrimination.  $StateInc_{s,1929}$  is state-level per capita income in 1929, which accounts for state-level economic activity and income.<sup>9</sup>  $Region_r$  represent census region fixed effects.<sup>10</sup> Financial and income variables are in real terms (1967 dollars). Tax base, land area, population, and state income are expressed in natural logs. Standard errors are robust to heteroskedasticity.<sup>11</sup>

Table 1 shows the relationship between these factors and 1929 per capita debt. Columns (1)-(4) separately examine variables associated with suburbanization, debt limits, tax limits, and type of city government, while columns (5) and (6) include all these with and without additional controls.

#### 4.1.1 Suburbanization

First, we document the relationship between cities' growth and suburbanization and the demand for debt. We proxy for growth and suburbanization using four different measures: (1) the change in city land area between 1923-1929; (2) the cumulative number of building permits issued by a city from 1923-1929; (3) the change in population both for 1920-29 and for 1910-20; and (4) the adoption of zoning ordinances, which determined the nature and density of new development, affect debt accumulation. The land area and building permit variables, especially, capture changes in demand for city infrastructure supporting new housing, such as schools, roads, and sewer and water lines.

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<sup>9</sup>We thank Price Fishback for providing these data. Further description is in the Data Appendix.

<sup>10</sup>There were regional differences in debt accumulation, with lower debt levels in New England and particularly high debt growth in many of the southern states. New England experienced slow population growth and had fewer overlapping districts, and also practiced a more conservative approach and rapidly retired debt. Florida and North Carolina, in contrast, experienced real estate booms and widespread speculation.

<sup>11</sup>Results remain significant at similar levels when standard errors are clustered at the state level.

As shown in columns (1) and (4) of Table 1, expansion of city boundaries between 1923-1929 is highly predictive of 1929 debt per capita. Slightly over half the cities in the sample expanded territory during this period, and of expanders, the median increase in land area was 10 percent. The results indicate that a ten percent greater increase growth in land area was associated with a 4.1-5.5 percent higher per capita debt in 1929. Building permits are similarly associated with higher debt.

Zoning might be expected to increase debt because zoning laws generally decreased density. Less density cities necessitated more roads and longer spans for sewer and water infrastructure. Our measure of zoning is crude, but specifications (5) and (6) do show higher debt in cities regulated by zoning ordinances for longer periods.

#### **4.1.2 Debt Limits**

We next examine the extent to which state-level restrictions on municipal played a meaningful role. All but twelve states had constitutional restrictions on debt (generally dating from the railroad debt defaults in the 1800s) and most states had extensive (though generally confusing) statutory restrictions. Two of the most important constraints were debt limits, expressed as a percentage of local assessment value, and the requirement of a supermajority popular vote in order to borrow. We focus on these two determinants of debt loads.

Contemporaneous sources describe debt limits both as binding in the 1930s and as easily evaded Hillhouse (1936). Debt limits were often not binding due to the overlapping structure of local governments. The overlap between city governments, school districts, water districts, and other special assessment districts resulted in multiple claims on the same underlying tax base. As noted by Bird (1936, p.14), “Because of the multiplicity of overlapping local governments, each with independent borrowing power, the citizens of the average community have no intelligent conception of the weight of their local public debt.” Concerns about use of overlapping districts to avoid debt limits were echoed by Hillhouse (1936). Because limits

applied only to specific components of the municipal budget or to specific districts such as school districts, the limits also incentivized municipalities to spin off special districts for schools, sewer districts, and other special functions so that those debts did not count toward the municipal debt load.

But in the 1930s, the combination of debt limits and falling home values resulted in tighter limits on borrowing. “Declining property values in 1931 and 1932 reduced the total assessed values in most cities more rapidly than the bond issues of such cities were retired in those years. Municipal bonds are usually retired serially at the rate of five per cent of the principal each year. But if assessed values declined at the rate of ten per cent in each of the years 1931 and 1932 a municipality with a narrow debt margin would have found itself with a total indebtedness in excess of the limit even though it had not issued any new bonds or incurred any new indebtedness.” Hirschboeck (1935, p. 68)

States also limited local debt with constitutional requirements for popular votes on bonds, sometimes requiring a supermajority vote. Bird (1936) saw this as effective, comparing the moderate debt of many California cities that experienced rapid growth to New Jersey cities that had some of the highest debts in the nation. California required voters to approve all bond issues with a two-thirds popular vote, while New Jersey voters had no direct control over local government borrowing.

Columns (2), (5), and (6) of Table 1 examine the effect of debt limits (expressed as the percent of assessed value allowed) and supermajority popular vote requirements. Debt limits range from 2 percent (Indiana) to 25 percent (Arkansas).<sup>1213</sup> These policies were generally imposed at the state level, so that they impacted all cities within a given state and cannot

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<sup>12</sup>Several cities in our sample are in states with no debt limits. We assign these states a debt limit of 100 and include a dummy variable for “no limit” states in order to allow us to keep all cities in our sample. Results are very similar when we exclude cities with no limit from the sample.

<sup>13</sup>We treat states as having a supermajority requirement if they require that two-thirds of voters approve debt. Several states require 60 percent approval. Our results are similar when using a less restrictive definition of supermajority approval.

be distinguished from state fixed effects (which not included).

Both debt limits and supermajority vote requirements appear important in constraining debt. Although city-level descriptive analysis (available from the authors) indicates that cities routinely exceeded their debt limits, those debt limits nevertheless appear important in restricting debt, as higher limits are positively and significantly associated with higher debt. Supermajority votes play a large role: cities in the nine states with supermajority requirements have approximately 41 percent less debt than states with lower public support thresholds.<sup>14</sup>

### 4.1.3 Tax Limits

States also constrained cities' ability to raise funds through taxes. States began imposing property tax rate limits on local governments in the 1800s. By 1929, twenty states limited either property tax rates or levies for at least some levels of local government. Limits on county property tax rates were most common, but states also limited municipal and school tax rates, imposed overall rate limits that accounted for multiple levels of government, or limited total levies (Paquin (2015)).

We consider three types of property tax limits: (1) Rate limits for specific units of government; (2) overall rate limits; and (3) levy limits. As with debt limits, the effectiveness of property tax limits depends on whether they bind. Many states imposed rate limits on specific units of local government: counties, school districts, and/or municipalities. Such limits on tax rates may not reduce taxes for two main reasons. First, taxing (and spending) responsibilities can be shifted from governmental units subject to the limits to those that are not, so that limits on specific units of government are less binding than overall limits that constrain the overall rate paid by taxpayers to all levels of government. Second, governments control both the tax rate and the schedule for and process of assessment, so local governments

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<sup>14</sup> $\exp(0.347) = 1.41$ .



can circumvent tax rate limits through changes in assessment. For this reason, levy limits are usually viewed as more restrictive than rate limits (Paquin (2015)).

Columns (3), (5), and (6) of Table 1 show the association between property tax limits and 1929 debt. As expected, property tax rate limits for specific units of government do not affect debt: they do not appear to be strong enough to induce local governments to substitute debt for tax financing. Overall property tax rate limits, which are more binding, do appear to prompt cities to substitute debt for tax financing, as do levy limits (in some specifications). One challenge is that, because both tax and debt limits are imposed at the state level, it is hard to separate the effects of tax and debt limits from other state characteristics.

#### **4.1.4 Form of Government**

The sections above show that both differences in suburbanization-driven demand for debt and differences in state-level institutional constraints on the availability of debt determined 1929 debt loads. Even within states with similar borrowing restrictions, differences in the structure of local governments affected the aggressiveness with which cities pursued borrowing opportunities. Form of government could determine the political cost of choosing debt vs. tax financing for local spending, and could lead to differences in quality of fiscal management. Urban reformers in the Progressive Era pushed for better accounting practices in how local governments handled their finances. The aim was to take power from corrupt political machines that controlled cities and place it in the hands of municipal managers and experts in order to ensure efficiently run cities (Tyer and Willard (1997)). This did not always work, as other factors contributed to bloated and mismanaged budgets. Thus, differences in use of mayor-council governments versus city-manager governments may be important for explaining city variation in debt.

We reexamine our results by including an indicator for whether a city had a mayor-

council form of government rather than a city manager government.<sup>15</sup> The results are shown in Table 1 columns (4), (5), and (6). We find that cities with mayor-council forms of government experience a 28-35 percent lower per capita debt load than cities with city managers, although the results are only present when we control for other city characteristics. Early work on the relationship between form of city government and spending found mixed results. However, our results are consistent with recent work by Coate and Knight (2011), who explicitly model spending decisions under the two forms of government and predict that spending will be higher under city manager governments. Their empirical strategy, which relies on changes in government form, finds that mayor-council governments spend less than city manager governments.

## 4.2 Spending

Cities could use higher debt either to increase spending or to reduce taxes. In Table 2, we examine how the debt determinants we explored above affected 1929 city spending and revenue per capita.

The results show an interesting difference between different aspects of suburbanization. Land area growth is associated large percent increases in debt, but increases in spending are one-fourth the size and not statistically significant. In contrast, increases in building permits increase spending at two-thirds the debt at the same rate. We speculate this may be due to real estate speculation and development of previously undeveloped land. Building infrastructure prior to development demands debt financing. Once building permits are issued, the land more rapidly converts into valuable, taxable assets. If true, then land area growth in the absence of permits might indicate cities taking on debt to establish roads, sewers, and water

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<sup>15</sup>Another form in place at this time are commission governments, which were similar to the city manager form in many ways. We combine these two to simplify the analysis, but regression results with another dummy for either commission or city manager forms yield the same broad conclusions regarding the impact of mayor-council governments.

lines in advance of development. Contemporary sources suggest that capital investment did often occur ahead of building. A study by the National Housing Agency in 1945 noted that hundreds of thousands of plots in cities across the nation were “already equipped with paved streets, curbs, sidewalks, water and other utility mains into which millions of dollars have been sunk—enough, indeed; to have bankrupted many townships and villages...” (National Housing Agency (1945, p. 36)).<sup>16</sup>

Value of assets might determine the extent to which cities rely on tax or debt financing of public goods. City governments could opt to incur debt rather than raise taxes in order to finance the increased spending of the 1920s. Overall, local property taxes (both tax rates and tax bases) were rising during the 1920s at the same time debt was rising. Interestingly, the value of the tax base in per capita terms has very similar relations with spending and revenue as well as similar (though somewhat lower) associations with debt. This suggests that differences in the value of the property tax base across cities are not the key determinant of the differences in 1929 debt loads.

Debt limits, tax limits, and form of government all play important roles in determining per capita 1929 debt levels, but do not explain per capita spending or revenue. Although it seems surprising that factors that constrain debt would not also affect spending and revenue, this may hide heterogeneous effects: cities may differ in whether they respond to lower debt by cutting spending or increasing revenue, possibly explaining the lack of results for these outcomes.

In Table 3, we explore this further by examining the effects of the debt determinants considered above on four subcategories of spending: general spending, public spending, interest, and capital spending. Increases in building permits increases spending in most categories but has a particularly large impact on capital spending, consistent with the story that new construction demanded new infrastructure spending. Land area growth in the

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<sup>16</sup>This quote is on p. 282 in Alexander Field’s book, *A Great Leap Forward*.

absence of new construction does not drive capital spending. Overall property tax limits increase interest spending while both lower debt limits and supermajority popular votes decrease it, consistent with the idea that tax and debt restrictions prompt cities to shift between tax and debt financing.

### 4.3 Indebtedness and Policy Responses in the 1930s

Collectively, our results above show that suburbanization, debt and tax constraints imposed by state governments, and form of city government were all important determinants of the variation in debt cities accumulated in the 1920s. When the Depression hit, highly indebted cities faced tough policy choices. Honoring debt payments was important for city reputations, but so was providing economic relief and city services in the midst of the crisis.

To what extent did debt-fueled spending of the 1920s have an impact on policy choices in the early 1930s, and how did cities cope? To explore this question, we consider the following model of the relationship between indebtedness as of 1929 and policy outcomes, estimated for the years between 1930 and 1935:

$$y_{it} = \alpha + \delta_t Debt_{i,1929} + \gamma_t Spend_{i,1929} + \beta_1 X_{it} + \beta_2 StateInc_{st} + City_i + Year_t + \varepsilon_{it}. \quad (2)$$

All variables are as previously defined, except *Debt* and *Spend*, which are total debt and expenses in 1929. In order to use these in our panel fixed effects specification, we interact these with year dummies for 1931-1935 to examine the evolution of the impact of 1929 debt and spending on cities in the 1930s. Of primary interest is  $\delta_t$ , which represents the impact throughout the 1930s of 1929 debt loads relative to 1930, the omitted year. To account for the size of each city's services in 1929 (bigger governments took on more debt), we control for the impact through time of total spending in 1929. Starting the downturn with more expenses may have determined policy decisions in the 1930s. All variables are expressed in

natural logs, and other than the tax rate, are also in real per capita terms. Standard errors are clustered at the city level.<sup>17</sup>

Table 5 shows the results of estimating equation (2) using OLS, where the dependent variables are the possible actions indebted cities could have taken to shore up budgets in the downturn: increasing property tax rates (amount per \$1,000 of assessed valuation), issuing short-term debt (all debt excluding funded or fixed debt), refunding existing debt, or reducing spending.<sup>18</sup> Column 1 shows the results for tax rates, which suggest that they were not adjusted in response to indebtedness, although local governments balanced tax payments with tax rate hikes in response to falling tax base values. Highly indebted cities may have feared an erosion of revenues by way of tax delinquencies if tax rates were increased to cover large debt payments.

Columns 2 through 5 show city responses regarding different debt-related options. Not all cities took these options. Thus, columns 2 and 4 first test whether highly indebted cities were more or less likely to issue short-term debt or restructure existing debt. Overall, we find no evidence that highly indebted cities were more or less likely to either issue short-term debt to meet expenses or refund existing debt to lower interest payments. This latter result is largely consistent with analysis by Bird (1935), who suggests that both low-debt and high-debt cities refunded bonds in fairly equal proportions during the Depression.<sup>19</sup> It seems these actions were a general phenomenon.

But for cities that took these options, did indebtedness impact how much they issued or restructured? Results in columns 3 and 5 answer this question. Of the cities that issued short-term debt at any time in the Depression, highly indebted cities issued significantly less

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<sup>17</sup>Including a one-year debt lag leads to very similar results.

<sup>18</sup>Being the largest city, and having connections to the federal government that other cities did not have at the time, makes New York a very special case. In the 1930s, the city was able to largely maintain spending during the Great Depression, even with high levels of debt. Thus, including New York biases against our hypothesis. The results are similar (yet stronger) when dropping New York City from the analysis.

<sup>19</sup>Bird (1935, p. 16) further suggests that low-debt cities refunded for relatively minor reasons, while high-debt cities did so due to deeper fiscal problems.

than less-indebted cities throughout the 1930s. And for cities that refunded existing debt, highly indebted cities refunded significantly more existing debt in 1931 and 1932.

While highly indebted cities did not more aggressively seek debt-related policy options compared to other cities, they did face significantly different bond financing. Overall, indebtedness hurt cities' ability to issue short-term debt in order to meet expenses, which would lead them to have to reduce spending. But high debt also encouraged more refunding, which lowered existing debt service payments and thus allowed more flexibility for meeting expenses. While these two phenomena worked in opposite directions, the short-term debt effect was likely stronger since interest payments were not a substantial proportion of total expenses.<sup>20</sup>

Highly indebted cities were thus forced to consider spending cuts. Column 6 tests whether 1929 debt loads impacted spending in the Depression years. In each year through 1933, high 1929 debt loads led to significantly deeper spending cuts and thus hampered local government responses to the downturn. A 10 percent higher debt load in 1929 led to a total spending cut of 2 percent between 1931 and 1933. Curtailing spending was an expedient means for making up financial ground. Relative to 1930, the biggest cuts due to debt occurred in 1932 and 1933.

Further exploration shows where these cuts were greatest, as depicted in Table 8. In the reports, total spending is broken down into four broad categories: general department spending, public service enterprise expenses, interest payments, and capital outlays. Column 1 shows the impact of debt on general department spending, which includes relief services and many other areas. Highly indebted cities made bigger spending cuts in this area in 1931 and 1932. On the other hand, public service spending was not adversely affected by debt loads. Interest payments were cut by highly indebted cities. All years show up as negative, although 1932 is the only significant year. Although this result is consistent with

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<sup>20</sup>For all cities in 1929, interest payments made up roughly 10 percent of total city expenses.

city defaults during the period, which were more likely from cities that accumulated massive debt in the twenties, it is also consistent with refunding that lowers immediate debt service obligations. Column 4 shows the impact on capital spending, which was more sensitive to initial debt loads than general spending. However, the effect is only precisely estimated for 1931, at which time the sample shrinks.<sup>21</sup> Overall, in the worst years of the downturn, highly indebted cities had to cut back significantly more on both general expenses and local capital investment.

Table 7 breaks down general department spending even further. Areas where highly indebted cities significantly cut spending in the early 1930s include police and fire protection, health services, sanitation, and highways. Between the critical years of 1931 and 1933, a 10 percent increase in 1929 debt load led to cumulative cuts between 1.3 and 2.3 percent for protective services, health services, sanitation, and road spending. Administrative expenses, charitable spending (which includes relief), and miscellaneous expenses were not adversely impacted by indebtedness. Nor were education and recreational spending largely impacted, although column 7 shows a small increase in education spending in 1931 for highly indebted cities, and column 8 shows that recreation spending had suffered by 1935.

The Depression forced debt-laden cities to make significant spending cuts in key areas. Cities that fueled spending in the 1920s with debt were thus unable to spend heavily on local services and capital projects in the worst years of the Depression, leading to greater retrenchment in the 1930s.

Indebted cities were able to keep up relief efforts, as the results for charitable spending show. But to meet this obligation in the early years of the Depression, cities needed to cut in other important areas. Detroit provides an interesting case. In 1930, Frank Murphy won a mayoral election on the promise of providing unemployment relief. Detroit, already facing

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<sup>21</sup>Recall that 1932 is the year in which the city financial reports limit the sample to cities with a population of over 100,000 people.

a high debt load, provided more relief than any other city for its unemployed workers, but had to face the consequences. To avoid default on its debts in 1931, the city cut spending on health and recreation services, as well as police and fire departments (Gelfand (1975)). The regression results suggest that this was the general experience of indebted cities in the Depression.<sup>22</sup>

## 5 Conclusion

While general patterns drove a lot of urban economic activity and local government spending during the Roaring Twenties and Great Depression, not all cities faced similar experiences in these years. This paper finds that there was much variation across cities in both debt growth in the 1920s as well as the response to the crisis. We find that multiple factors explain the variation in per capita debt in 1929. Suburbanization and expansion of cities into new territory, which occurred to different degrees in different cities, contributed significantly to debt run-up. Debt limits and supermajority popular vote requirements were important institutional constraints that explain much of the variation in per capita debt in 1929, while property tax limits do not appear to have pushed cities toward higher debt levels. While nearly all cities experienced some form of a population and real estate boom in the 1920s, those with state-imposed constraints on debt spending came through in better financial shape, and cities with mayor-council governments accumulated less debt.

The Great Depression forced city governments to make difficult policy decisions regarding local spending, at a time when such spending would have helped buoy economic activity. Local governments that financed a lot of their spending with debt in the 1920s faced more fiscal stress in the 1930s. We find that this largely led to spending cuts in several important

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<sup>22</sup>Fishback et al. (2010) show that relief spending during the Roosevelt years deterred crime. Some cities may have exploited this by reducing spending on police and fire protection in order to maintain relief efforts, which could double as a crime deterrent.



categories, including police and fire protection, health, sanitation, highway maintenance, and capital projects. Taking on less debt in prosperous times, and thus having a smaller drain on revenues in leaner times, allowed cities to better respond to the needs of their local communities in the worst years of the crisis.

## Data Appendix

*Financial data.* Financial data are from the *Financial Statistics of Cities*. Data were collected from a variety of tables in each year, including assessed valuation of property, tax rates, gross debt, and many different spending categories as described in the text.

*Population.* Total population at the middle of each city's fiscal year is given in the *Financial Statistics of Cities*. These estimates were either determined through linear interpolation between census years, or were based on an estimation of immigration and migration patterns as determined at county and state levels. City population in 1910 and 1920 is based on U.S. Census figures as reported in Table 1 in U.S. Census Bureau (1929, p. 84).

*Land area.* Total land area (in acres) is from Table 1 in U.S. Census Bureau (1929, p. 84). Change in land area is the difference in land area from Table 1 in U.S. Census Bureau (1923) to Table 1 in U.S. Census Bureau (1929).

*Building permits.* Building permit data were provided by Price Fishback. JIM—NEED MORE HERE.

*Zoning laws.* JIM—NEED SOURCE.

*Debt limits.* Debt limit data are from Table VIII in Ridley and Noltino (1936, p. 319). The table lists by state the local government units (e.g., counties, cities, school districts, etc.) that are affected by debt limits.

*Supermajority popular vote.* Vote data are from Table VIII in Ridley and Noltino (1936, p. 319). The table gives information by state on the voting outcome needed in order for local governments to incur debt.

*Property tax limits.* Property tax limit data are from Appendices A and B in Paquin (2015).

*Form of city government.* JIM—NEED SOURCE.

*County demographics.* Demographic data are from Haines and ICPSR (2010). The data

are given at the county level. Black, foreign-born white, and illiterate shares were calculated as a proportion of total county population.

*State income per capita.* State income per capita data were provided by Price Fishback and used in Thomasson and Fishback (2014). The series is based on the data provided in Martin (1939).

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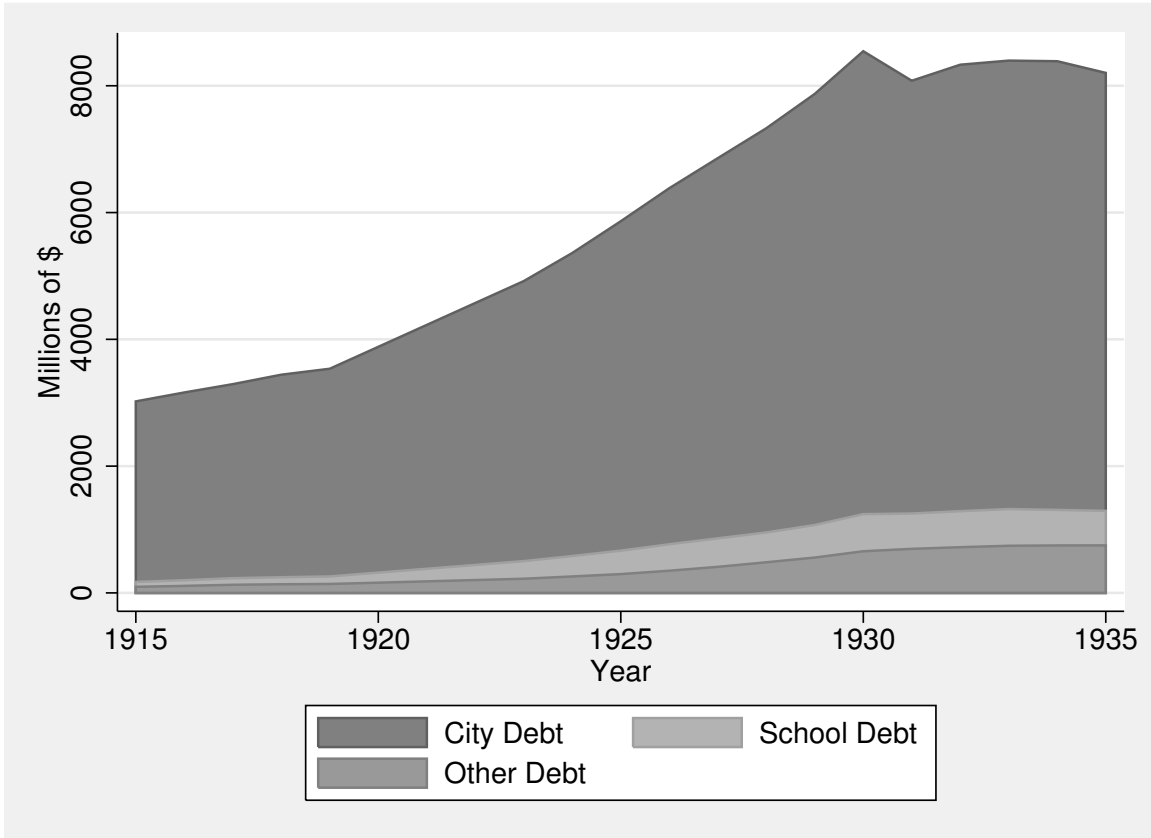


Figure 1: Total Debt, 1915–1935 (89-City Balanced Panel)

*Note:* Graph shows total nominal debt for each city. Debts from multiple levels of government are combined to present total debt loads from municipal governments, school districts, and other special assessment districts.



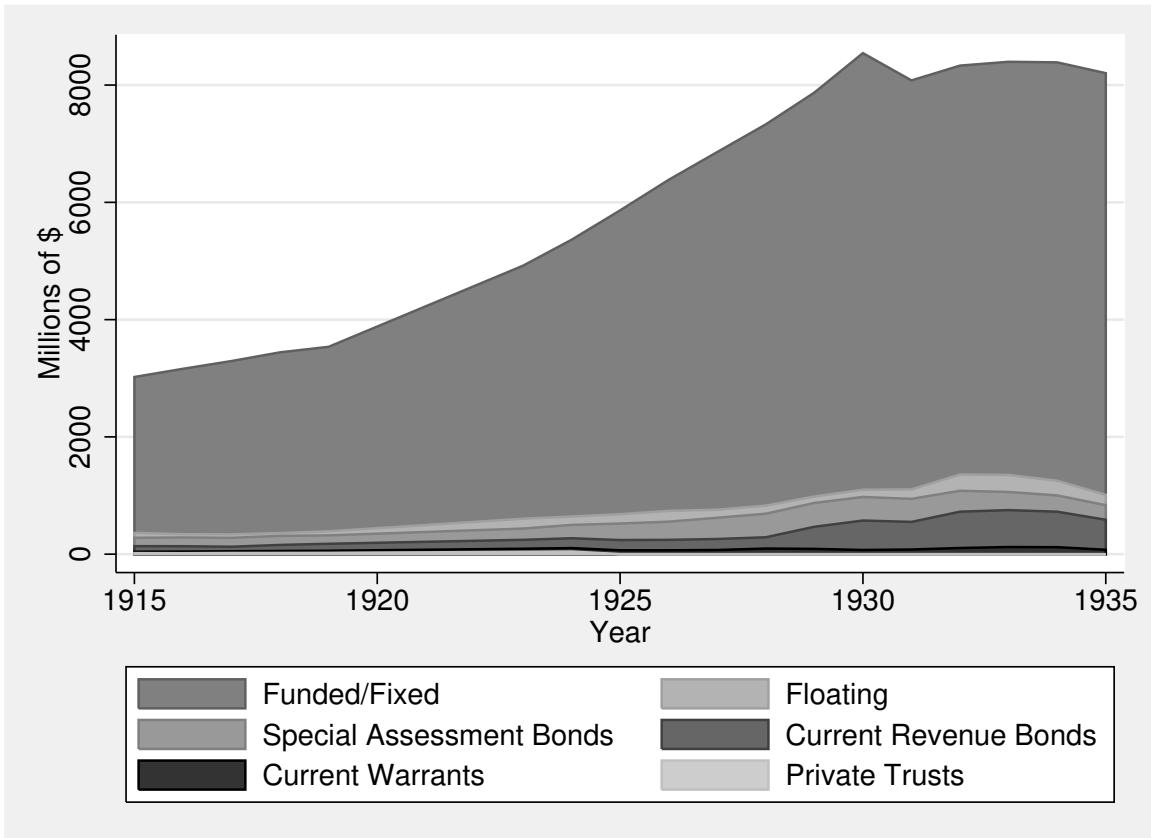


Figure 2: Total Debt by Type, 1915–1935 (89-City Balanced Panel)

*Note:* Graph shows total nominal debt for each city. Funded or fixed debt is long-term in nature. Other categories are considered short-term in nature according to descriptions in the *Financial Statistics of Cities*. Debts from multiple levels of government are combined to present total debt loads from municipal governments, school districts, and other special assessment districts.

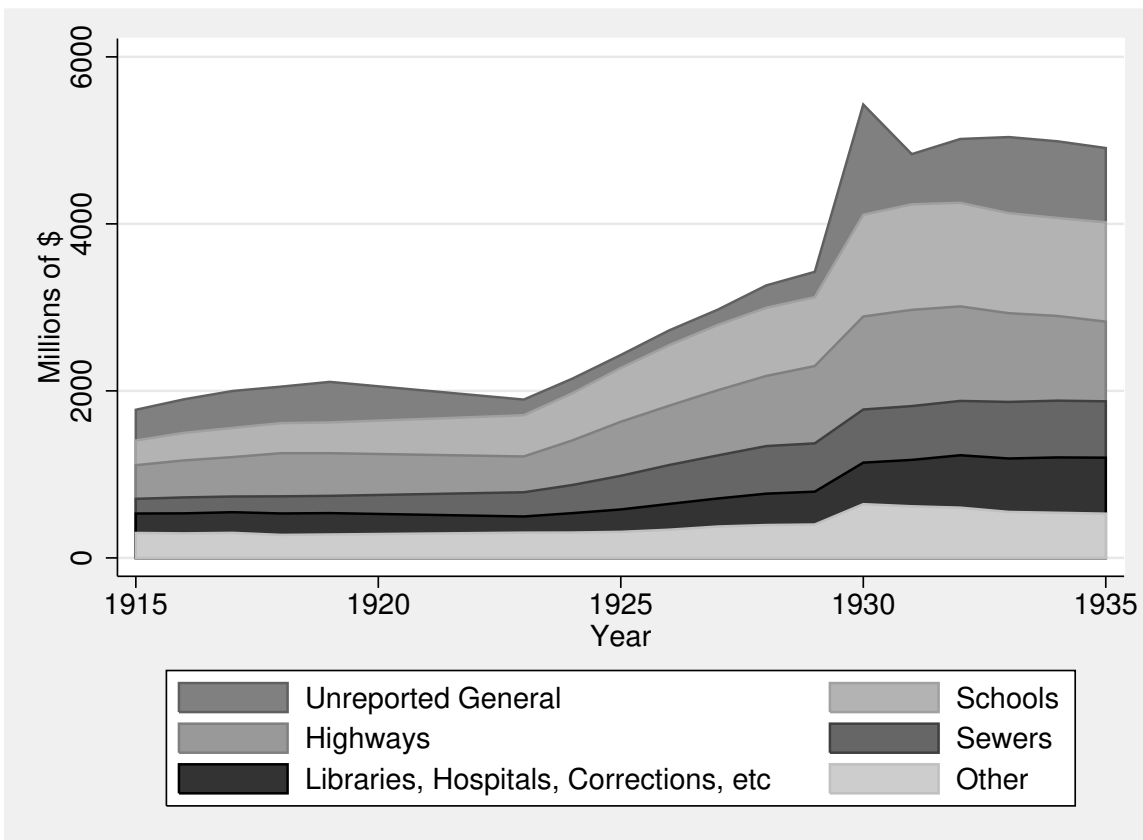


Figure 3: The Role of Suburbanization, 1915–1935  
 Breakdown of Funded, Floating and Special Assessment Debt (88-City Balanced Panel)

*Note:* Graph shows nominal debt associated with suburbanization for each city. Panel of 88 cities includes cities for which there is data from 1915–1935. This graph excludes New York City, which did not provide a breakdown of types of general debt. Debts from multiple levels of government are combined to present total debt loads from municipal governments, school districts, and other special assessment districts.

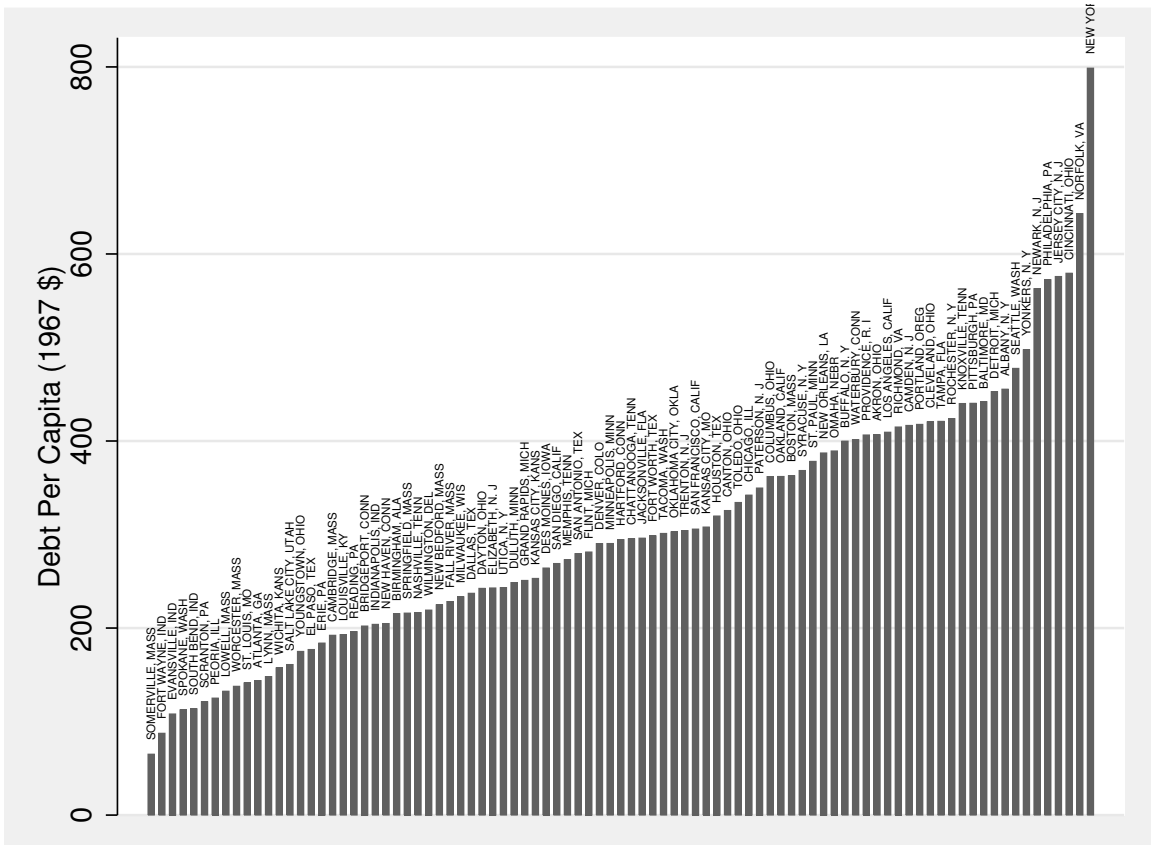


Figure 4: Variation in Real Per-Capita Debt Levels in 1929

Note: Graph shows real per capita debt for each city in 1929. Debts from multiple levels of government are combined to present total debt loads from municipal governments, school districts, and other special assessment districts.

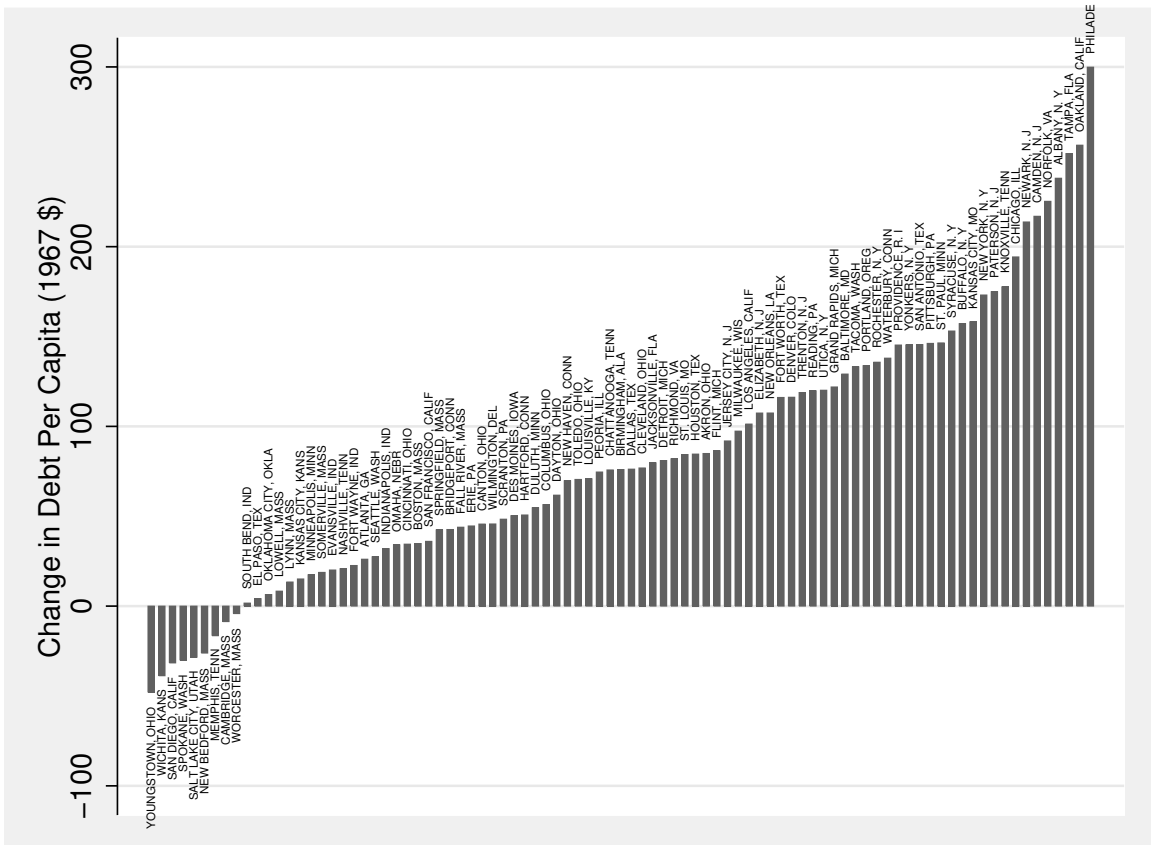


Figure 5: Change in Real Per-Capita Debt, 1923-1929

Note: Graph shows the change in real per capita debt for each city between 1923-1929. Debts from multiple levels of government are combined to present total debt loads from municipal governments, school districts, and other special assessment districts.

Table 1: Determinants of 1929 Debt Loads

	(1) Expansion	(2) Debt	(3) Tax	(4) Gov	(5) All	(6) All
Land area growth, 1923-29	0.551*** (0.179)				0.408*** (0.126)	0.090 (0.177)
ln(Total building permits p.c., 1923-29)	0.334** (0.140)				0.445*** (0.111)	0.051 (0.087)
Years since zoning ordinance adopted	0.001 (0.009)				0.017** (0.008)	0.035*** (0.010)
Debt limit (Percent of assessed value)		0.025** (0.012)			0.030** (0.012)	0.050*** (0.013)
Supermajority popular vote		-0.370*** (0.107)			-0.347*** (0.097)	-0.293*** (0.110)
Property tax rate limits for specific units			0.018 (0.099)		-0.097 (0.086)	0.047 (0.099)
Overall property tax rate limit			0.345** (0.162)		0.512*** (0.139)	0.374** (0.151)
Property tax levy limit			0.394** (0.198)		0.146 (0.286)	0.256** (0.117)
Mayor-council form				-0.350*** (0.085)	-0.283*** (0.076)	-0.146 (0.091)
Population growth, 1920-1929	-1.309*** (0.418)	-0.512* (0.258)	-0.265 (0.291)	-0.398 (0.309)	-1.463*** (0.347)	
Population growth, 1910-1920	0.328 (0.214)	0.506*** (0.179)	0.453** (0.195)	0.445** (0.213)	0.187 (0.155)	
ln(Population)	0.098 (0.098)	0.052 (0.084)	0.080 (0.098)	0.129 (0.092)	0.066 (0.078)	
ln(Tax base p.c.)	0.044 (0.157)	0.108 (0.163)	0.054 (0.160)	0.301** (0.142)	-0.106 (0.163)	
ln(Land area)	0.167 (0.105)	0.210** (0.095)	0.222* (0.113)	0.151 (0.100)	0.147* (0.079)	
Percent black, 1920	0.003 (0.008)	0.014* (0.007)	0.017** (0.008)	0.019*** (0.006)	-0.002 (0.007)	
Percent foreign-born, 1920	0.000 (0.009)	0.014* (0.007)	0.010 (0.009)	0.012 (0.008)	0.013* (0.007)	
Percent illiterate, 1920	-0.031 (0.029)	-0.083*** (0.029)	-0.069** (0.032)	-0.061** (0.025)	-0.055** (0.025)	
ln(State income p.c.)	0.487** (0.231)	0.418* (0.228)	0.480** (0.227)	0.682*** (0.237)	0.297 (0.197)	
Observations	92	93	93	93	92	92
Adj. $R^2$	0.350	0.476	0.363	0.443	0.613	0.309
Region FEs	Y	Y	Y	Y	Y	N

\*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels.

*Note:* The dependent variable is the total per capita debt in 1929 (in natural logs). Debt, tax base, and income variables are in real terms (1967 dollars). Standard errors are robust to heteroskedasticity. All regressions include a constant.

Table 2: Debt Determinants and 1929 Municipal Debt, Spending, and Revenue

	(1) Debt	(2) Spending	(3) Revenue
Debt limit (Percent of assessed value)	0.030** (0.012)	0.011 (0.007)	0.003 (0.007)
Supermajority popular vote	-0.347*** (0.097)	0.035 (0.057)	-0.013 (0.051)
Land area growth, 1923-29	0.408*** (0.126)	0.105 (0.128)	0.206* (0.105)
ln(Total building permits p.c., 1923-29)	0.445*** (0.111)	0.302*** (0.076)	0.113 (0.084)
Years since zoning ordinance adopted	0.017** (0.008)	0.005 (0.005)	0.005 (0.006)
Property tax rate limits for specific units	-0.097 (0.086)	-0.077 (0.057)	-0.051 (0.050)
Overall property tax rate limit	0.512*** (0.139)	-0.033 (0.086)	-0.035 (0.077)
Property tax levy limit	0.146 (0.286)	-0.141 (0.192)	0.117 (0.140)
Mayor-council form	-0.283*** (0.076)	-0.039 (0.046)	0.027 (0.045)
Population growth, 1920-1929	-1.463*** (0.347)	-0.645*** (0.230)	-0.353 (0.234)
Population growth, 1910-1920	0.187 (0.155)	0.126 (0.095)	0.063 (0.112)
ln(Population)	0.066 (0.078)	-0.003 (0.050)	0.000 (0.050)
ln(Tax base p.c.)	-0.106 (0.163)	0.175** (0.086)	0.174* (0.091)
ln(Land area)	0.147* (0.079)	0.091** (0.043)	0.128*** (0.045)
Percent black, 1920	-0.002 (0.007)	0.002 (0.005)	0.001 (0.004)
Percent foreign-born, 1920	0.013* (0.007)	0.007* (0.003)	0.010** (0.004)
Percent illiterate, 1920	-0.055** (0.025)	-0.039*** (0.013)	-0.035** (0.015)
ln(State income p.c.)	0.297 (0.197)	0.364** (0.148)	0.192 (0.146)
Observations	92	92	92
Adj. $R^2$	0.613	0.643	0.666
Region FEs	Y	Y	Y

\*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels.

*Note:* The dependent variables in columns (1)-(3) are total per capita debt, total per capita expenditure, and total per capita levies in 1929 (in natural logs). Expenditure, debt, levies, tax base, and income variables are in real terms (1967 dollars). Standard errors are robust to heteroskedasticity. All regressions include a constant.

Table 3: Debt Determinants and 1929 Spending (4 Categories)

	(1) General	(2) Public	(3) Interest	(4) Capital
Debt limit (Percent of assessed value)	0.004 (0.005)	-0.036 (0.067)	0.031*** (0.011)	0.014 (0.017)
Supermajority popular vote	0.074* (0.039)	1.237** (0.568)	-0.225** (0.097)	-0.075 (0.165)
Land area growth, 1923-29	0.113 (0.091)	0.297 (1.334)	0.385*** (0.138)	0.008 (0.323)
ln(Total building permits p.c., 1923-29)	0.119** (0.055)	0.223 (0.987)	0.378*** (0.116)	0.719*** (0.198)
Years since zoning ordinance adopted	0.005 (0.004)	-0.085 (0.065)	0.017** (0.008)	0.002 (0.014)
Property tax rate limits for specific units	0.018 (0.039)	0.162 (0.530)	-0.079 (0.087)	-0.276* (0.159)
Overall property tax rate limit	-0.069 (0.076)	-0.195 (0.903)	0.701*** (0.139)	-0.084 (0.229)
Property tax levy limit	0.050 (0.157)	-0.346 (0.859)	0.289 (0.287)	-0.552 (0.350)
Mayor-council form	-0.004 (0.041)	-1.108*** (0.412)	-0.317*** (0.077)	0.029 (0.112)
Population growth, 1920-1929	-0.405** (0.159)	-2.136 (2.281)	-1.235*** (0.342)	-0.882 (0.609)
Population growth, 1910-1920	0.040 (0.094)	0.121 (1.266)	0.209 (0.166)	0.158 (0.285)
ln(Population)	0.006 (0.037)	0.021 (0.379)	0.009 (0.076)	0.034 (0.135)
ln(Tax base p.c.)	0.227*** (0.073)	2.375** (0.978)	-0.074 (0.164)	0.173 (0.256)
ln(Land area)	0.074** (0.029)	0.215 (0.568)	0.133* (0.068)	0.129 (0.134)
Percent black, 1920	0.007* (0.004)	0.072 (0.052)	0.004 (0.007)	-0.015 (0.013)
Percent foreign-born, 1920	0.010*** (0.003)	0.066 (0.045)	0.023*** (0.007)	-0.019 (0.013)
Percent illiterate, 1920	-0.027*** (0.010)	-0.407*** (0.144)	-0.072*** (0.027)	-0.039 (0.043)
ln(State income p.c.)	0.275*** (0.092)	1.470 (1.474)	0.098 (0.202)	0.612* (0.343)
Observations	92	92	92	92
Adj. $R^2$	0.771	0.152	0.594	0.396
Region FEs	Y	Y	Y	Y

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\*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels.

*Note:* The dependent variables in columns (1)-(3) are total per capita expenditure, total per capita debt and total per capita levies in 1929 (in natural logs). Expenditure, debt, levies, tax base, and income variables are in real terms (1967 dollars). Standard errors are robust to heteroskedasticity. All regressions include a constant.

Table 4: Debt Determinants and 1929 Spending (9 Categories)

	(1) Gov't	(2) Prot	(3) Health	(4) Sanitary	(5) Highway	(6) Charity	(7) Educ	(8) Rec	(9) Misc
Debt limit (Percent of assessed value)	0.026* (0.013)	0.001 (0.008)	-0.003 (0.019)	-0.013 (0.011)	-0.001 (0.011)	0.026 (0.054)	0.001 (0.005)	-0.008 (0.014)	-0.005 (0.019)
Supermajority popular vote	0.009 (0.115)	0.074 (0.061)	0.165 (0.157)	-0.020 (0.094)	0.069 (0.089)	0.568* (0.298)	0.030 (0.040)	0.040 (0.120)	0.073 (0.144)
Land area growth, 1923-29	0.039 (0.215)	0.194* (0.103)	0.009 (0.300)	0.385 (0.252)	0.121 (0.292)	0.048 (0.961)	0.114 (0.084)	0.222 (0.310)	0.293 (0.384)
ln(Total building permits p.c., 1923-29)	-0.033 (0.129)	0.156** (0.076)	0.150 (0.195)	0.265** (0.112)	0.241* (0.140)	-0.093 (0.529)	0.156*** (0.053)	0.037 (0.180)	-0.060 (0.196)
Years since zoning ordinance adopted	0.001 (0.009)	0.003 (0.006)	-0.001 (0.017)	0.007 (0.010)	-0.013 (0.010)	0.019 (0.030)	0.009** (0.004)	-0.013 (0.015)	0.029** (0.013)
Property tax rate limits for specific units	0.040 (0.100)	-0.064 (0.060)	0.016 (0.134)	0.059 (0.071)	0.098 (0.092)	0.407 (0.328)	0.024 (0.036)	0.188 (0.115)	-0.139 (0.171)
Overall property tax rate limit	-0.144 (0.168)	-0.359*** (0.120)	-0.430 (0.296)	-0.038 (0.155)	0.305* (0.159)	0.001 (0.690)	0.068 (0.073)	-0.919*** (0.261)	0.556*** (0.181)
Property tax levy limit	-0.136 (0.525)	0.108 (0.160)	-0.119 (0.295)	0.043 (0.169)	-0.128 (0.207)	0.692 (1.156)	0.023 (0.129)	0.186 (0.300)	0.177 (0.347)
Mayor-council form	0.059 (0.111)	-0.010 (0.053)	0.061 (0.141)	0.125* (0.075)	0.109 (0.077)	0.223 (0.291)	-0.065* (0.036)	0.035 (0.102)	0.236** (0.117)
Population growth, 1920-1929	-0.471 (0.357)	-0.634** (0.242)	-0.483 (0.615)	-0.740** (0.344)	-0.659 (0.425)	1.456 (1.713)	-0.461*** (0.172)	0.671 (0.610)	-0.336 (0.563)
Population growth, 1910-1920	0.061 (0.203)	-0.039 (0.130)	-0.262 (0.311)	0.231 (0.239)	-0.132 (0.225)	-2.187** (1.060)	0.206** (0.100)	-0.700 (0.439)	-0.506* (0.301)
ln(Population)	0.129 (0.084)	0.025 (0.050)	0.099 (0.128)	0.131 (0.086)	-0.077 (0.084)	0.092 (0.315)	-0.071** (0.034)	0.087 (0.105)	0.016 (0.118)
ln(Tax base p.c.)	0.339** (0.150)	0.269*** (0.076)	0.463 (0.297)	-0.047 (0.138)	0.199 (0.156)	1.780*** (0.586)	0.098 (0.078)	0.463* (0.244)	0.047 (0.203)
ln(Land area)	0.154* (0.081)	0.022 (0.049)	0.022 (0.110)	0.011 (0.093)	0.246*** (0.077)	0.146 (0.264)	0.067* (0.035)	-0.075 (0.088)	0.303** (0.128)
Percent black, 1920	0.011 (0.008)	0.014*** (0.005)	0.012 (0.011)	0.017** (0.007)	0.009 (0.012)	0.048 (0.041)	-0.004 (0.003)	0.015 (0.013)	0.024 (0.017)
Percent foreign-born, 1920	0.013* (0.007)	0.012*** (0.004)	0.017 (0.011)	0.009 (0.006)	0.007 (0.008)	0.070* (0.041)	0.005 (0.003)	0.022*** (0.008)	0.009 (0.012)
Percent illiterate, 1920	-0.055** (0.024)	-0.018 (0.012)	-0.018 (0.042)	-0.034 (0.025)	-0.044 (0.035)	-0.105 (0.103)	-0.010 (0.012)	-0.042 (0.033)	-0.075* (0.045)
ln(State income p.c.)	0.460** (0.228)	0.394** (0.161)	0.318 (0.567)	0.856*** (0.178)	0.239 (0.218)	0.507 (1.294)	0.063 (0.100)	0.369 (0.289)	1.111*** (0.345)
Observations	92	92	92	92	92	88	92	92	92
Adj. $R^2$	0.581	0.655	0.337	0.567	0.413	0.298	0.711	0.393	0.684

\*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels.

Note: The dependent variables in columns (1)-(3) are total per capita expenditure, total per capita debt and total per capita levies in 1929 (in natural logs). Expenditure, debt, levies, tax base, and income variables are in real terms (1967 dollars). Standard errors are robust to heteroskedasticity. All regressions include a constant.



Table 5: Indebtedness and City Policy Actions (OLS)

	(1) ln(Tax rate)	(2) Short-term debt?	(3) ln(Short-term debt)	(4) Refunded debt?	(5) ln(Refunded debt)	(6) ln(Spending)
1931 × ln(1929 debt p.c.)	0.001 (0.009)	-0.005 (0.004)	-0.154** (0.076)	0.005 (0.021)	0.222* (0.122)	-0.053*** (0.019)
1932 × ln(1929 debt p.c.)	-0.011 (0.039)	0.014 (0.032)	0.067 (0.249)	-0.022 (0.068)	0.682** (0.344)	-0.082** (0.038)
1933 × ln(1929 debt p.c.)	0.014 (0.029)	-0.031 (0.054)	-0.443*** (0.137)	0.058 (0.086)	0.461 (0.317)	-0.080* (0.045)
1934 × ln(1929 debt p.c.)	-0.005 (0.041)	0.014 (0.032)	-0.881*** (0.276)	0.148 (0.101)	0.323 (0.379)	-0.039 (0.050)
1935 × ln(1929 debt p.c.)	-0.014 (0.041)	0.028 (0.034)	-1.179*** (0.307)	-0.025 (0.137)	0.318 (0.477)	-0.023 (0.059)
ln(Tax base p.c.)	-0.276** (0.121)	0.021 (0.032)	0.295 (0.357)	-0.076 (0.172)	-1.110* (0.670)	0.340*** (0.087)
ln(Population)	-0.396** (0.186)	-0.061 (0.072)	-0.421 (0.676)	-0.433 (0.348)	-3.516 (2.319)	-0.534** (0.226)
ln(State income p.c.)	0.013 (0.068)	0.085 (0.100)	0.616 (0.852)	-0.110 (0.266)	-0.805 (0.864)	0.070 (0.130)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Year × 1929 spending p.c.	Yes	Yes	Yes	Yes	Yes	Yes
Observations	868	868	840	868	452	868
Adj. $R^2$	0.123	0.031	0.175	0.021	0.264	0.342

\*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels.

*Note:* The dependent variable in column 1 is the tax rate, which is the amount per \$1,000 of assessed valuation on property within the city's jurisdiction. The dependent variable in column 2 equals 1 if a city issued short-term debt in a particular year. In column 3, the dependent variable is the total amount of short-term debt issued in a particular year for those cities which issued such debt. The dependent variable in column 4 equals 1 if cities refunded existing debt in a particular year. In column 5, the dependent variable is the total amount of refunded debt in a particular year for cities that refunded. The dependent variable in column 6 is total spending. All spending, tax base, income, and debt variables are in real per capita terms (1967 dollars). Standard errors are clustered at the city level. All regressions include a constant.

Table 6: Indebtedness and City Spending

	Dependent variable:			
	(1)	(2)	(3)	(4)
	ln(General departments)	ln(Public enterprises)	ln(Interest payments)	ln(Capital projects)
1931 × 1929 debt p.c.	-0.013* (0.008)	0.035 (0.056)	-0.030 (0.021)	-0.177* (0.092)
1932 × 1929 debt p.c.	-0.061*** (0.022)	0.578 (0.516)	-0.103*** (0.032)	-0.211 (0.176)
1933 × 1929 debt p.c.	-0.036 (0.031)	0.552 (0.524)	-0.175 (0.108)	-0.338 (0.231)
1934 × 1929 debt p.c.	-0.038 (0.035)	0.537 (0.534)	-0.049 (0.041)	-0.177 (0.242)
1935 × 1929 debt p.c.	-0.039 (0.043)	0.578 (0.549)	0.024 (0.048)	-0.119 (0.207)
ln(Tax base p.c.)	0.271*** (0.074)	0.401 (0.492)	0.308*** (0.095)	1.204*** (0.367)
ln(Population)	-0.794*** (0.136)	-1.551** (0.694)	-0.654*** (0.172)	2.245** (1.025)
ln(State income p.c.)	-0.102 (0.089)	0.694 (0.622)	0.263** (0.120)	-0.968 (0.712)
City FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Year × 1929 spending p.c.	Yes	Yes	Yes	Yes
Observations	868	868	868	868
Adj. $R^2$	0.566	0.055	0.471	0.502

\*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels.

*Note:* All dependent variables represent spending in the categories listed. General departments include safety, health, sanitary, and relief services. Public enterprises are municipal utilities such as sewer and electricity. Interest payments represent debt obligations. Capital projects include buildings, roads, and infrastructure. All spending, tax base, income, and debt variables are in real per capita terms (1967 dollars). Standard errors are clustered at the city level. All regressions include a constant.

Table 7: Indebtedness and City Spending in General Departments

	Dependent variable:								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ln(Admin.)	ln(Prot.)	ln(Health)	ln(Sanit.)	ln(Roads)	ln(Char.)	ln(Educ.)	ln(Rec.)	ln(Misc.)
ln(Tax base)	0.223*** (0.060)	0.223*** (0.054)	0.487*** (0.073)	0.293*** (0.085)	0.253* (0.144)	0.215 (0.327)	0.259*** (0.068)	0.278* (0.153)	0.223* (0.123)
ln(Population)	-0.268 (0.332)	-0.554*** (0.149)	-0.187 (0.179)	-0.555*** (0.201)	-0.849*** (0.297)	-1.005 (0.745)	-0.779*** (0.123)	-0.470 (0.314)	-2.188*** (0.565)
ln(State income)	-0.217** (0.109)	0.024 (0.088)	-0.040 (0.146)	-0.108 (0.148)	-0.294* (0.160)	-0.929 (0.602)	-0.099 (0.077)	-0.295 (0.234)	0.087 (0.206)
1931 × ln(Debt <sub>1929</sub> )	-0.005 (0.015)	-0.013* (0.008)	0.000 (0.024)	-0.046* (0.025)	-0.044** (0.021)	-0.051 (0.049)	0.021** (0.009)	-0.032 (0.025)	0.009 (0.039)
1932 × ln(Debt <sub>1929</sub> )	0.004 (0.034)	-0.063*** (0.019)	-0.114** (0.046)	-0.085* (0.044)	-0.107* (0.059)	-0.014 (0.144)	-0.001 (0.020)	-0.083 (0.064)	-0.085 (0.080)
1933 × ln(Debt <sub>1929</sub> )	0.018 (0.051)	-0.052* (0.028)	-0.116* (0.062)	-0.010 (0.065)	0.006 (0.082)	0.060 (0.230)	0.023 (0.024)	0.021 (0.095)	-0.127 (0.108)
1934 × ln(Debt <sub>1929</sub> )	0.035 (0.048)	-0.068** (0.029)	-0.074 (0.085)	-0.060 (0.050)	-0.128 (0.086)	0.094 (0.218)	0.010 (0.026)	-0.075 (0.077)	-0.028 (0.082)
1935 × ln(Debt <sub>1929</sub> )	0.092 (0.066)	-0.066* (0.035)	-0.121* (0.065)	-0.028 (0.055)	-0.082 (0.082)	-0.066 (0.214)	0.048 (0.035)	-0.101* (0.061)	-0.048 (0.090)
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year × 1929 spending p.c.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	868	868	866	868	868	836	868	868	866
Adj. R <sup>2</sup>	0.192	0.422	0.306	0.318	0.175	0.342	0.576	0.194	0.334

\*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels.

Note: All dependent variables represent spending in the categories listed, which do not include spending on capital projects. Column 1 represents government administration spending; column 2 is spending on police and fire protection; column 3 is spending on health; column 4 is spending on sanitation and cleanliness; column 5 is road maintenance expenses; column 6 is spending on relief, corrections, and hospitals; column 7 is education spending; column 8 is recreation spending; column 9 is spending in all other areas. All spending, tax base, income, and debt variables are in real per capita terms (1967 dollars). Standard errors are clustered at the city level. All regressions include a constant.