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RESEARCH ARTICLE

Debt restrictions and municipal indebtedness in American cities: evidence from the Roaring Twenties

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Abstract

Widespread municipal defaults in the late 19th century prompted U.S. states to pass laws restricting the amount of debt cities could incur. These restrictions generally did not bind until the 1920s, when suburban growth spurred local governments to invest in infrastructure, most of which was financed by bonds. We study the relationship between several major debt restrictions – debt limits, supermajority voting referenda, and debt exceptions – and municipal indebtedness in the Roaring Twenties. We find that cities that faced more restrictive debt rules were less indebted by 1929. We also find that debt limits reduced the amount of capital spending in cities during the 1920s and 1930s, while stricter voting rules reduced the likelihood of municipal default in the 1930s. These rules thus determined not only the degree of debt accumulation in early 20th century cities, but also their infrastructure investment and financial health.

Key words: Debt restrictions; Great Depression; municipal borrowing; municipal default; Roaring Twenties

JEL codes: H74; N42; R51

In the late 19th century, many U.S. states adopted constitutional or statutory restrictions on the amount of debt that could be held by local governments. These debt rules were enacted in response to a wave of defaults on local government railroad bonds in the 1870s and were intended to restrict local borrowing and constrain government investments in public infrastructure to those generating positive social returns (Wallis and Weingast, 2008). The new debt restrictions guided the fiscal practices of cities during the lead-up to World War I, but their effectiveness went largely untested until the 1920s, when a booming economy, rising homeownership, and suburbanization driven by adoption of automobiles prompted cities to invest heavily in infrastructure through the issuance of bonds. In the largest U.S. cities – those with more than 30,000 people – real spending on capital improvements increased over 60 percent between 1923 and 1927; nearly 70 percent of this spending was financed with bonded debt (Hillhouse, 1936: 4). On the surface, this overall growth in municipal debt suggests that state-imposed debt restrictions were ineffective. Yet, as we show, cities differed greatly both in the amount of debt that they had incurred by the end of the 1920s and the severity of the state-imposed debt restrictions they faced. Did stricter state-level restrictions constrain municipal debt accumulation during this period?

We examine the impact of the state-level debt restrictions established in the 19th century on municipal debt behavior in the 1920s. We build a dataset that combines information on municipal debt restrictions that vary across states with city debt measures for 213 large cities collected from historical census reports. We focus on municipal debt positions up to 1929 and consider the following three state-imposed restrictions and provisions in place during this time: (1) debt limits expressed as a percentage of assessed valuation; (2) supermajority voting rules that required more than half of the voting populace to approve the issuance of bonds; and (3) exceptions that allowed cities to incur debt outside

the limits for certain purposes. We find that cities with the state-sanctioned ability to accumulate more debt through higher debt limits had higher per capita debt levels by 1929, as did cities in states with looser voting requirements regarding bond issuance and more exceptions to debt limits. These debt restrictions had negligible effects on debt levels at the beginning of the 1920s and their influence increased during the decade. Supermajority voting rules and tight debt limits – those restricting debt to below 6 percent of assessed valuation – were the most important restrictions. These results are robust to the inclusion of many variables, including those capturing local demand factors and other confounders. We also find evidence that stricter debt limits reduced the amount of capital spending in cities during the 1920s and the early 1930s, while stricter voting rules reduced capital spending and the likelihood of default in the 1930s, indicating that debt restrictions had lasting impacts on local infrastructure development and municipal financial health.

We contribute to a research agenda in public finance that examines the impact of fiscal rules on government debt levels and borrowing costs. At least two challenges typically plague studies of the impact of fiscal rules on government behavior. First, the decision to adopt such rules is often endogenous: governments implement rules limiting fiscal behavior when facing situations that demonstrate the need for discipline. Second, many fiscal rule changes arise from national governments imposing new restrictions on subnational governments, resulting in all units being treated with the same policy at the same time. Our context is advantageous for addressing both of these challenges. By using variation in the strictness of state policies adopted primarily in the late 19th century to examine municipal government behavior in the 1920s, we test the effectiveness of fiscal rules using debt restrictions that do not arise from contemporary circumstances, and we make use of rules that vary across jurisdictions in their type and strictness.

Our study also builds on previous literature of U.S. state-imposed debt restrictions by looking at the impact of such rules on infrastructure investment and the likelihood of default during the 1920s and 1930s, a pivotal period for cities and urban governance. The historical context of the Roaring Twenties and the Great Depression allows us to explore how state actions aimed at constraining municipal debt positioned cities for future growth.

Past work has examined the impact of the debt restrictions we study but focuses on borrowing costs and default during the late 1800s and first decade of the 1900s. Between 1880 and 1890, these restrictions led to lower borrowing costs for cities by encouraging prudent debt management (Dove, 2014). Debt limitations also reduced the likelihood of municipal default between 1890 and 1905, particularly in the aftermath of the panic of 1893 (Dove, 2016). Wallis and Weingast (2008) show that local debt restrictions may have also reduced local debt measured at the state level between 1870 and 1902, although their results are statistically imprecise. Nevertheless, they argue that such restrictions shaped the infrastructure investment that local governments have undertaken over the last two centuries.

Studies of more recent periods have generally found that stringent fiscal constraints, including debt limits and other fiscal rules, are generally effective at curbing local borrowing.[1] Federally imposed fiscal rules on municipalities reduce borrowing in European cities (Cabases, et al., 2007; Grembi, et al., 2016). State-imposed rules on local borrowing have also been fairly effective in the late 20th century USA, although the results are mixed. Pogue (1970), using a summary binary indicator, finds that more restrictive debt rules significantly reduced general spending in 173 U.S. cities between 1957 and 1962, although their impact on debt levels is imprecisely estimated. In an aggregated analysis at the state level, McEachern (1978) finds that supermajority voting referenda are associated with lower local debt levels in the mid-1970s. Farnham (1985) shows that, in the late 1970s, the presence of debt limits – which existed in 94 percent of sample communities – reduced per capita debt in local governments while supermajority voting referenda did not impact local debt levels.

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[1]The sovereign debt crises in a number of EU countries have prompted a re-investigation of the effectiveness of fiscal rules in constraining deficits and debt and limiting moral hazard issues associated with the promise of bailout (Asatryan et al., 2018; Dovis and Kirplani, 2018). The effectiveness of such rules placed on countries is questionable: a recent meta-analysis that suggests that fiscal rules are more efficacious at the municipal level than at the national level (Heinemann, et al., 2018).

Differences across studies regarding which fiscal rules are most effective may be due to differences in the level of aggregation used, the measurement of debt restrictions employed, or the nature of the demand for debt across different time periods and government structures. Our paper builds on these studies by using variation across states in each type of debt restriction for the largest cities in the USA during a particularly important period for urban growth, and contributes to the literature examining changes in fiscal federalism around the time of the Great Depression. The New Deal marked a turning point in the move away from a government system dominated by local spending to a system dominated by federal spending (Wallis, 1984). Cities' appeals to centralized authorities for financial assistance during the Great Depression helped usher in this transition to increased federal dominance (Gelfand, 1975).[2] The debt-spending behavior of cities in the 1920s preceded these appeals. Contemporary observers themselves recognized a link between the municipal problems of the 1930s and the fiscal decisions of the 1920s (Bird, 1936; Hillhouse, 1936).[3] Thus our focus on the variation in debt restrictions across states yields insight into the effectiveness of stricter policies in curbing municipal debt accumulation during the 1920s, and by implication, the involvement of the federal government in local affairs in the 1930s. We now turn to the history of these restrictions and an examination of their impact on municipal debt accumulation leading up to the Great Depression.

1. Historical background

1.1 Establishment of state-level municipal debt restrictions

The debt restrictions we study originated in the 19th century when local governments began lending their credit to aid railroad construction in their jurisdictions. These governments were motivated to invest in railroads – even after it was clear that they posed significant financial risks – because they increased real estate values and bolstered property tax revenues (Heckelman and Wallis, 1997). Local debt increased 20-fold between 1841 and 1870, far eclipsing the less-than-twofold increase in state debt over the same period (Wallis, 2000: 66, Table 2). Much of this increase in local debt was driven by the issuance of municipal bonds. Debt obligations became a salient burden when the 1873 depression forced many cities into default; an estimated one-fifth of all municipal debt went unpaid at some point during the downturn and its aftermath (Hillhouse, 1936: 39).

State legislatures and local politicians viewed the rise in bond issues aimed at railroads as overly exuberant and the wave of subsequent defaults as avoidable (Sbragia, 1996: 81). In response, according to Monkkonen (1995: 39), states responded to 'uncontrolled local excesses' by putting the brakes on local debt accumulation through a variety of measures, principally through restrictions on lending credit to private corporations and debt limits expressed as a percentage of a jurisdiction's assessed valuation. Some states, including Iowa (1857) and Illinois (1870), already had constitutional debt limitations in place before the downturn began in 1873. The adoption of these limits was determined by the votes of state delegates who represented the economic and political interests of their counties, and was thus influenced by factors outside the scope of any single jurisdiction (Monkkonen, 1995). Other states followed the framework built in Iowa and Illinois when writing debt limits into state constitutions or otherwise establishing limits through the legislative process (Sbragia, 1996: 82). By 1929, nearly all states had established either constitutional or statutory municipal debt limits, although the choice of debt limit figures varied considerably across states. Some observers argued that the specific figures for debt limits lacked an economic foundation or a scientific basis (Williams and

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[2]Failures in municipal bond markets emerged as a central component of the 1930s financial crisis: 37 of the largest 310 cities had defaulted on obligations by March 1934, thereby contributing to the financial crisis and the economic downturn (Bernanke, 1983: 260). Many cities struggled to fund services and capital expenditures throughout the 1930s due to the rise in the real value of fixed debt payments incurred through the infrastructure spending of the 1920s (Siodla, 2020). The federal government came to the aid of local governments by increasing federal transfers and introducing debt-adjustment legislation for defaulting municipalities in 1934 (Lehmann, 1950).

[3]Recent concerns about systemic risk in municipal bond markets in the COVID-19 recession has focused attention on many historical episodes in which municipal finances suffered (Bordo and Duca, 2021).

Nehemkis, 1937: 182). Furthermore, states generally implemented a single limit value for all of their municipalities, which suggests that they were not determined by the needs of particular local governments (Williams and Nehemkis, 1937: 183).

Courts also helped institutionalize debt limits. Following the wave of local defaults after the depression of 1873, many state courts ruled that municipal governments were 'creatures of the state' – an idea formulated by judge John Dillon (Sbragia, 1996: 89). The U.S. Supreme Court ruled that cities were bound to state laws restricting public–private partnerships in local affairs, which helped create a distinction between public and private purposes of investment. These rulings helped structure the workings of the municipal bond market and the boundaries within which cities could borrow in that market (Sbragia, 1996: 99). Many of these rulings took place in the late 19th century, so that by the time of the Great Depression, judicial and legal precedent had been established regarding states' roles in governing municipal debt accumulation.

Two other debt provisions were established by states. First, some state constitutions set strict voting rules requiring three-fifths or two-thirds majorities for the approval of bond issues. For instance, California required voters to approve all bond issues with a two-thirds popular vote, while New Jersey gave voters no direct control over local government borrowing. Other rules, written into state constitutions or established through judicial precedent, allowed debt accrued for specific purposes – such as for refunding, special assessments, or utilities – to be exempt from debt limits. These exceptions structured the incentives for debt financing across different local government activities, and provoked skepticism among municipal practitioners regarding the effectiveness of debt limits in managing debt (Hillhouse, 1936: 456; Lancaster, 1936: 316).

Contemporary observers had mixed views on the effectiveness of debt restrictions. Perhaps the most favorably viewed restriction was the supermajority voting rule. Bird (1936) saw these voting referenda as effective at limiting debt. In contrast, some observers argued that debt limits were easily evaded and thus artificial (Bird, 1936; Hillhouse, 1936). One means of evasion from debt limits was to create overlapping local government structures, a growing phenomenon in the wake of the economic crash in 1929 (Advisory Commission on Intergovernmental Relations, 1964: 1; Burns, 1994: 53).[4] 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 create special districts for parks, water and sewer provision, and other special functions so that those debts did not count toward the state-imposed limit. This behavior resulted in multiple claims on the same underlying tax base (Bird, 1936). Overall, the historical literature is unsettled as to the relative effectiveness of these debt restrictions.

Debt limits and voting referenda were largely unchanged in the years and decades following their initial implementation. Indeed, they were often carried over when many constitutions were revised around the beginning of the 20th century (Lancaster, 1936: 314). Although some states made adjustments during the early 20th century, such as adding exceptions to debt limits (Williams and Nehemkis, 1937), the changes involved only minor modifications of the old restrictions (Advisory Commission on Intergovernmental Relations, 1961: 21). The adjustments 'essentially maintained the structure of control that the states imposed in the latter part of the nineteenth century' (Sbragia, 1996: 81), so that the institutional foundation for municipal borrowing was determined well before the twenties came roaring.

1.2 Credit boom and suburbanization of the 1920s

Although debt restrictions were enacted in most states before the turn of the century, it was not until the 1920s that they were tested by intense demand for capital investment and the palpable pressure to acquire debt across a large group of cities. As in the period of railroad construction, municipal

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[4]President Roosevelt himself urged cities to create special districts in order to evade debt restrictions and thus increase local capital spending (Burns, 1994: 53).

governments in the 1920s aimed to boost the growth of local economies through partnerships with private developers. But this time developers built housing subdivisions rather than railroads (Hillhouse, 1936).

The rise of the automobile spurred demand for housing in the suburbs. Municipal governments helped facilitate housing construction through capital investment in roads, schools, and other infrastructure, financed primarily through the issuance of bonds (Monkkonen, 1988).[5] Contemporaries argued that real estate speculation typified the era, the costs of which were often borne by city governments. According to Bird (1936: 14), 'Municipal bonds carried the load for many a shoestring subdivider; realtors ran many local governments, in fact, sometimes were local governments'. As a result, city landscapes were often scarred with platted but undeveloped subdivisions in the aftermath of the wave of investment (Field, 1992). Special assessment bonds, in particular, were often used to help finance the activities of property developers. These bonds were backed by fees collected from taxpayers and were issued for many local improvements, including streets, street lights, sidewalks, curbs, sewers, and water mains (Chatters and Hillhouse, 1939: 187). The 1940 U.S. Census linked the use of these bonds in the 1920s to the speculative real estate construction of the era (U.S. Census Bureau, 1940: 204).[6]

In addition to housing-driven demand for local investment, national policies and borrowing conditions further motivated eager buyers and sellers of municipal bonds. The earnings from municipal bonds were exempt from the federal income tax introduced in 1913. Heavy income taxes on the heels of World War I encouraged investors to purchase the tax-preferred bonds of local governments. Following the 1920–1921 recession, local governments were encouraged by Herbert Hoover, at a conference he convened as secretary of the Department of Commerce, to build public works projects to help stave off future downturns. Cities responded by issuing bonds in record numbers in 1921 and 1922, jumpstarting an era of growth in bonded indebtedness (Rothbard, 2000: 192–193). Low costs of borrowing fostered further growth in municipal bonds. Indeed, observers in municipal finance were already worried in the early 1920s about the potential for dangerous consequences from such favorable conditions (Raymond, 1923: 257). We now turn to our framework for estimating the impact of state-level debt restrictions on municipal indebtedness in the 1920s.

2. Empirical framework

We focus our analysis on the impact of state-implemented debt restrictions – debt limits as a percentage of assessed valuation, supermajority voting rules, and debt limit exceptions – on the level of municipal per capita debt in 1929. We identify the impact of debt restrictions among cities using variation in their stringency across states.[7] We rely on the following primary specification:

$$y_{ir} = \alpha + \beta_1 DebtLimit_i + \beta_2 SuperMajority_i + \beta_3 Exceptions_i + \beta_4 X_i + \beta_5 Region_r + e_{ir} \qquad (1)$$

where y_{ir} is the log of 1929 real per capita debt for city i in census region r, $DebtLimit_i$ represents the debt limit facing the city as a proportion of assessed valuation, $SuperMajority_i$ is an indicator for supermajority voting requirements for approval of new debt, $Exceptions_i$ captures the number of debt exception categories, X_i is a set of controls with values from either 1919 or 1920, $Region_r$ is a set of census region dummies, and e_{ir} is an error term. We use controls that predate the 1920s to

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[5]Municipal governments rapidly increased their spending between 1905 and 1930. Cities' spending on capital improvements increased most dramatically in the 1920s, relative to other time periods, as the prices of capital goods declined (Swanson and Curran, 1976).

[6]Cities often established districts supported by special assessment fees to '…permit the improvement of undeveloped and speculative areas' (U.S. Advisory Commission on Intergovernmental Relations, 1973: 15). Heim (2015) further describes the distributional conflicts associated with the targeted financing of urban infrastructure, comparing the implementation of special assessment fees in mid-19th century Chicago to development impact fees in modern-day Phoenix.

[7]We use within-state variation in two cases. Springfield, MO and Mobile, AL have debt limits that differ from their state's general limit and are codified in state law.

account for variation in initial (pre-boom) conditions across cities and to reduce concerns about endo-geneity. Standard errors are robust to heteroskedasticity.

Differences in local debt were driven partly by variation in voter preferences in demand for city services and infrastructure. We proxy for preferences using income and demographic variables and include in X_i real per capita income, real per capita taxable wealth, total population, fraction of the population that is black, fraction of the population that is foreign-born, fraction of the population over 20 that is illiterate, the proportion of the population that is 45 or older, and the proportion of the population that is 14 and under.[8] These demographic groups represent a variety of preferences for either supporting or opposing debt spending. Per capita income is measured at the state level, while taxable wealth is the market value of each city's real and personal property tax base. Population, income, and wealth are in logs. In various specifications, we also include the total number of residential building permits issued for single- and multi-family housing between 1921 and 1929 (in logs) and population growth between 1920 and 1929.

We also account for several additional institutional factors that could have influenced municipal debt accumulation in the 1920s. State limits on property tax rates may have incentivized municipal governments to incur less debt because higher debt loads increased tax burdens (Advisory Commission on Intergovernmental Relations, 1961: 30). Particular forms of municipal government may have fostered political incentives to issue bonds or borrow long-term to finance current expenses (Bird, 1936: 15). Mayor–council governments, for instance, which require both mayor and council approval, face greater constraints – and thus tend to spend less money and take on fewer projects – than do council–manager forms of government, which require only council approval (Coate and Knight, 2011). In some specifications, we include a dummy for overall property tax rate limit and an indicator for mayor–council form of government. The next section describes the data and provides a visual preview of our main results.

3. Data

Two centralized sources provide information on debt restrictions in the 1920s. *The Municipal Yearbook 1936* (Lancaster, 1936: 319–324) includes a table of state-level debt limits, supermajority popular vote rules, and the number of debt exceptions as of 1936. This source indicates the years in which state constitutional provisions were adopted and state legislation was passed regarding debt limits. We use this information to construct a dataset that reflects constitutional and statutory municipal debt restrictions as of 1929. We corroborate these data with information in volumes on government securities published by Moody's Investors Service throughout the 1920s (Moody, 1921, 1925, 1931).[9] We combine the debt exceptions into three broad categories that account for actions related to refunding, special assessments, and all other permissions, so that we capture the number of exemption categories from zero to three for each city. These policies generally impacted all cities within a state, but in several cases, there are restrictions specific to particular cities.

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[8]We focus on the proportion of a city's population that is 45 or older – rather than, say, 65 or older – to better capture sizable voting blocs and variation in demographics across cities. Our results are not sensitive to the value of the age cutoff.

[9]While the sources generally agree, in several cases, the Moody's volumes provide either more information or different debt-limit values than the yearbook. We use information from the Moody's volumes when the yearbook does not provide a clear indication of debt limits for particular cities in the 1920s, or when the yearbook indicates that a particular state may have passed legislation after 1929 that potentially impacted debt limits. Municipal debt limits were given as a range in the yearbook for Iowa, Georgia, and Pennsylvania; we code according to the upper value in these cases. The following states passed legislation related to debt restrictions in the 1920s: Arkansas (1921), Louisiana (1921), Missouri (1920), Nebraska (1922), North Carolina (1921), and Ohio (1927). It is unclear in some cases whether cities indeed faced debt limits (Rhode Island) or when they were introduced (Tennessee and Texas). The main results of the study are robust to exclusion of cities in these nine states. More details about the data construction are available upon request.

We use city debt and finance data from the U.S. Census Bureau's *Financial Statistics of Cities*, a series of comprehensive annual reports for cities above a given population threshold. Our main outcome is the level of total per capita debt in 1929. The report for fiscal year 1929 (U.S. Census Bureau, 1932), which includes information for 250 cities with population of 30,000 or greater in that year, serves as our source of municipal debt levels.[10] We exclude Washington, D.C., from the analysis because of its unique institutional arrangement. Cities in Maryland and Oregon did not have explicit constitutional or statutory debt limits in 1929, and thus we also exclude cities in these states.[11] Because we control for 1919 state per capita income in most specifications, we rely on taxable property-value information from the 1919 report, which reduces our sample to 213 debt-restricted cities with observations in both 1919 and 1929.

Importantly, the reports account for geographical coverage of cities and the services offered within their boundaries. For instance, the data account for annexations or losses of territory in any given year. They also include financial information for districts (e.g. school, sewer, water, etc.) that are coextensive with the cities themselves, which facilitates comparisons across cities. In many cities, all municipal services are administered by the city corporation; in others, municipal functions are conducted by separate independent government units, each with its own taxing authority. The overlapping structure of the data in the financial reports means that, for each city, our debt measure includes the city corporation's debt as well as the share of the debts of all independent government divisions or special districts that overlap the municipality, proportionate to the share of the district or division that lies within the municipal limits.[12]

We consider other time periods and outcomes in some analyses. We use data from the *Financial Statistics of Cities* reports produced between 1915 and 1935 to examine the changing relationship between debt restrictions and debt levels over time. We study the relationship between debt restrictions and capital spending using the log of real per capita cumulative capital spending from 1923 to 1929 and from 1930 to 1935. In 1932, the Census Bureau changed the population threshold for inclusion in the *Financial Statistics of Cities* to 100,000, so that for 1930–1935 our sample size falls to 88 cities. We use data from Joffe (2013) to study municipal defaults: the data reflect non-payment of general obligation bonds between 1930 and 1936.[13]

Debt and all other monetary variables are deflated (in 1967 dollars) using the consumer price index given in U.S. Census Bureau (1975: 210–211, Series E-135). When computing per capita values, we use city population data from the 1929 financial report, which lists census population values for each city in 1910, 1920, and 1930 (U.S. Census Bureau, 1932: 84, Table 1). We linearly interpolate between these years to arrive at population estimates for 1919 and 1929.

Figure 1 provides a visual representation of the key variables and results in our study. The figure shows real per capita debt in 1929 for each city in our 213-city sample, organized by state. The left panel shows cities in states with supermajority requirements for debt approval, while the right panel shows cities in states without such a requirement. Within the panels, states are ordered from those with the highest (and least restrictive) to the lowest (and tightest) debt limits. There is substantial variation in debt levels both within and across states and in the debt restrictions across states. Debt

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[10]Fiscal years often ended late in the calendar year. Ending our analysis in 1929 allows for exploration of the entire 1920s while reducing the likelihood that municipal governments' reactions to the Great Depression, which began in the fourth quarter of that year, could influence our results.

[11]The state of Oregon passed debt restrictions in 1929 through legislative action (see Moody, 1931). Although we exclude cities in Maryland and Oregon in our main analysis, results are very similar when assigning these cities a debt limit of 100 and including a dummy variable indicating that they are in a state without a limit.

[12]Results from Table 2 are similar when restricting the sample to only those 80 cities that do not have coextensive government divisions according to the *Financial Statistics of Cities* reports. Coefficients on the debt limit are very similar in magnitude, although statistically insignificant; coefficients on the supermajority popular vote and debt limit exceptions are larger in magnitude and are statistically significant at similar levels.

[13]We are grateful to Marc Joffe for sharing these data, which were collected from *Moody's Municipal and Government Bond Manuals*, *Daily Bond Buyer*, *Bond Buyer*, and other sources. See Joffe (2013: 1) for details.

Municipal Debt per Capita, 1929 (1967 $)

Figure 1. Cities' 1929 real debt per capita, by state debt limits and supermajority debt approval requirements.
Note: Hollow circles indicate individual cities in our 213-city sample and show within-state dispersion of real per capita debt in 1929. States are listed in the order of strictness of debt limit as a percentage of assessed value. Two cities in our sample (Springfield, MO and Mobile, AL) have debt limits that differ from their state's general limit and are shown separately. Vertical lines indicate median per capita debt in 1929 across the full 213-city sample.

limits themselves range from 2 percent of assessed value (Indiana) to 25 percent (Arkansas). Ten states in the sample had supermajority voting requirements for the approval of debt. Low and high debt limits existed in both supermajority and non-supermajority states, which suggests that these policies were independently determined. Two features of the data are worthy of note. First, cities with higher debt limits tended to hold more debt in 1929. This outcome holds in both supermajority and non-supermajority states. Second, cities in supermajority states generally had low levels of per capita debt in 1929: only 29 percent of the cities in our sample in states with supermajority debt rules had per capita debt values above the median value (indicated by the vertical line), while 63 percent of cities in non-supermajority states had debt levels above the median value.

While the results in Figure 1 are suggestive of the importance of debt restrictions in the accumulation of municipal debt in 1920s, they do not account for other sources of variation. To address this, we link our debt and state-level restriction variables to the demographic, income, and wealth measures described in section 2. Demographic measures are collected from the 1920 volume of the U.S. Census of Population (U.S. Census Bureau, 1922). State-level per capita income is provided in Martin (1939).[14] Taxable wealth is measured as the market value of a city's real and personal property tax base and is collected from U.S. Census Bureau (1921). We further link these data to variables that account for a variety of period-specific explanations for debt accumulation in the 1920s. Blanket property tax limits are gathered from Paquin (2015). Building permit data, which measure the total number of single- and multi-family housing units permitted in each city between 1921 and 1929, are collected from annual bulletins issued by the U.S. Bureau of Labor Statistics in the 1920s.[15] Data on government form as of 1929 are collected from a report issued by the city of Detroit in 1931 (Detroit Bureau of Governmental Research, Inc., 1931).

Table 1 provides summary statistics. The average debt limit was 7 percent of assessed valuation and over one-third of cities had a supermajority voting rule. Less than 20 percent of cities had either refunding or special assessment debt exceptions, while the majority of cities had other types of

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[14]These data were shared by Price Fishback and used in Thomasson and Fishback (2014).
[15]These data were provided by Price Fishback. See U.S. Bureau of Labor Statistics (1923) as an example of one such bulletin.

Table 1. Summary statistics, estimation sample ($n = 213$)

	Mean	St. dev.	Min	Max
Debt and other outcomes				
Municipal debt per capita, 1929 (1967 $)	249.13	140.71	65.4	1,128.7
Local government has multiple divisions	0.14	0.35	0.0	1.0
Capital expenditures per capita, 1923–1929 (1967 $)	229.65	110.47	13.8	757.5
Capital expenditures per capita, 1930–1935 (1967 $)	149.75	83.59	19.6	489.6
Defaulted on bonds between 1930 and 1936	0.16	0.37	0.0	1.0
Debt restrictions				
Debt limit (% of assessed value)	7.11	3.88	2.0	25.0
Supermajority popular vote	0.37	0.48	0.0	1.0
Debt limit exceptions, no. of categories	1.17	0.75	0.0	3.0
Debt exception, refunding	0.19	0.39	0.0	1.0
Debt exception, special assessment	0.16	0.37	0.0	1.0
Other debt exceptions	0.83	0.38	0.0	1.0
Other determinants of local debt				
Overall property tax rate limit	0.08	0.26	0.0	1.0
Residential permits issued, 1921–1929 (thousands)	16.25	67.77	0.1	867.0
Population growth rate, 1920–1929	17.18	16.11	−15.5	70.9
Mayor–council form	0.49	0.50	0.0	1.0
City- and state-level controls				
Taxable property value per capita, 1919 (1967 $)	2,426.63	790.50	1,083.8	6,058.8
State income per capita, 1919 (1967 $)	674.60	148.27	369.6	913.6
Population, 1920 (thousands)	159.67	453.93	30.1	5,620.0
Black, 1920 (%)	7.86	12.05	0.1	47.6
Foreign-born, 1920 (%)	16.91	10.99	0.6	41.4
Illiterate, 1920 (%)	5.44	3.59	0.3	16.3
14 and under, 1920 (%)	27.02	3.31	18.9	38.1
45 and over, 1920 (%)	21.42	3.93	11.2	36.9

Note: Building permit data are only available for 196 cities. Capital expenditures for 1930–1935 are only available for 88 cities.

exceptions. In addition to the variation in 1929 debt levels and debt restrictions shown in Figure 1, substantial variation also exists among other potential determinants of debt loads. For example, the differences in housing construction and population growth across cities are considerable. The variation in these measures, along with that of city-level demographics, state income, and taxable wealth, suggests the importance of accounting for them in our analysis.

4. Results

4.1 State-level debt restrictions and municipal debt

Table 2 presents the results from estimating equation (1) for real per capita debt in 1929. Column (1) shows a simple regression including only the three debt restriction variables and census region fixed

Table 2. Debt restrictions and other determinants of 1929 municipal debt per capita

	(1)	(2)	(3)	(4)	(5)	(6)
Debt limit (% of assessed value)	0.030*** (0.009)	0.022** (0.009)	0.022** (0.009)	0.022** (0.009)	0.020** (0.009)	0.021** (0.009)
Supermajority popular vote	−0.490*** (0.067)	−0.423*** (0.061)	−0.428*** (0.063)	−0.431*** (0.063)	−0.421*** (0.059)	−0.434*** (0.063)
Debt limit exceptions, no. of categories	0.096** (0.044)	0.128*** (0.040)	0.131*** (0.040)	0.115*** (0.041)	0.111*** (0.041)	0.103** (0.041)
Overall property tax rate limit			0.090 (0.118)			0.149 (0.119)
ln(Total residential permits, 1921–1929)				0.227*** (0.060)		0.228*** (0.063)
Population growth, 1920–1929				−0.523* (0.287)		−0.489* (0.283)
Mayor–council form					−0.114* (0.061)	−0.139** (0.063)
Observations	213	213	213	196	213	196
Adj. R^2	0.271	0.508	0.507	0.526	0.516	0.539
Controls	No	Yes	Yes	Yes	Yes	Yes
Census region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Huber/White sandwich robust standard errors in parentheses.
*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.
Note: The dependent variable is ln(1929 debt per capita, 1967 $). Controls included in columns (2)–(6) but not shown in the table include ln (1919 taxable property value per capita, 1967 $), ln(1919 state income per capita, 1967 $), and the following 1920 demographic variables: ln (population), percent of the population that is black, percent foreign born, percent illiterate, percent aged 14 and under, and percent aged 45 and over.

effects. In this specification, a 1-percentage-point increase in the debt limit is associated with a 3 per-cent increase in 1929 per capita debt, indicating that less-constrained cities acquired more debt. Voting rules were also important for 1929 debt levels: a supermajority vote requirement reduced per capita debt by nearly 50 percent. Lastly, more exceptions to debt limits led to higher per capita debt. These exceptions were workarounds for many local governments, allowing them to incur debt even when other restrictions were in place.

We next account for other factors driving municipal debt accumulation that could confound these estimates. The specification in column (2) – used as our baseline specification throughout the paper – includes demographic controls (from 1920), real per capita state income (in 1919), and a city's real per capita taxable property value (in 1919). When these are included, the coefficient on the debt limit declines in magnitude by roughly 25 percent but remains strongly significant. Voting rules and debt limit exceptions remain important.[16]

In columns (3)–(6), we test whether these debt restriction results are robust to accounting for other drivers of the growth of local debt in the 1920s. Column (3) shows that the overall property tax rate limit does not influence a city's debt load in 1929, suggesting that cities that were constrained on the tax side did not issue significantly more debt. Column (4) includes two measures of city expansion during the 1920s: total residential building permits issued and population growth. Cities that issued

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[16]We also examine the relationship between debt restrictions and the growth rate in real per capita debt between 1919 and 1929 (results available upon request). Debt limits were a controlling factor: a 1-percentage-point increase in the debt limit increased debt growth in the 1920s by four and a half percentage points. Having a supermajority popular vote measure in place reduced debt growth significantly – by 11 percentage points – although debt limit exceptions did not.

more residential building permits in the 1920s had more debt in 1929, consistent with a story of infrastructure investment driven by residential development and financed by municipal bonds. Population growth was associated with low per capita debt in 1929, although this coefficient is only marginally significant. Column (5) shows that mayor–council governments are associated with lower debt loads in 1929 relative to other forms of government. This result is consistent with Coate and Knight (2011), who find that mayor–council governments tend to spend less than council–manager governments. Including all these controls either in stages or all at once, as we do in column (6), makes little difference to the debt restriction results. The coefficients on all three debt restriction measures are stable in both magnitude and significance across these specifications.

We next take advantage of our panel data on municipal debt to examine how the importance of debt limits and supermajority voting rules changed over the course of the 1920s. Figure 2 shows the coefficients for 1915–1935 from a panel regression of annual municipal per capita debt on year interactions with debt limits (top panel) or supermajority rules (bottom panel).[17] The regressions include city and year fixed effects, but do not include census region fixed effects or demographic and policy controls because we do not have annual measures of these variables: they would be collinear with city fixed effects.[18] The top panel of Figure 2 shows that the positive relationship between higher, less restrictive debt limits and per capita debt emerged during the 1920s and remained stable in the 1930s. We do not find a relationship between debt limits and debt in the late 1910s and early 1920s when debt levels were low and the restrictions were not binding. Supermajority voting rules follow a similar pattern, emerging as strongly associated with lower debt beginning in the early 1920s as debt levels began to rise and remaining important constraints on debt through the early 1930s.

Figure 2 generally supports our argument that the 1920s were the first real test of these debt restrictions. Although we do not have data before 1915, cities in these years presumably faced even less pressure to incur debt through capital expenditures. We are thus confident that state-level debt restrictions were not likely influential determinants of municipal debt accumulation until the 1920s.

4.2 Debt limit stringency: creation of overlapping government divisions

Does the effectiveness of the restrictions vary across cities with high and low debt-limit values? Table 3 shows the coefficients on our three debt restriction measures for cities above and below the median debt limit value of 6 percent of assessed valuation. We find that cities with debt limits that are below the median for our sample (column (1)) are impacted differently by debt restrictions than cities with above-median debt limits (column (2)). Higher, less stringent debt limits result in higher debt for cities with limits tighter than the sample median, while there is no effect of debt limits on debt for cities with limits that are looser than the median. This indicates that debt limits bind when set at low levels so that debt increases as the limit increases, while higher limits may not bind and therefore have no impact on debt. We also see different impacts of supermajority vote requirements on cities with tight *versus* loose limits: supermajority vote restrictions have a smaller negative impact on debt in tight-limit cities, perhaps because the limits themselves are effective constraints in these cities. We do not see differences in the impact of debt exceptions. These outcomes suggest that states with loose debt limits may have relied on supermajority voting rules to restrict overall debt, so that the two policy measures acted as substitutes.
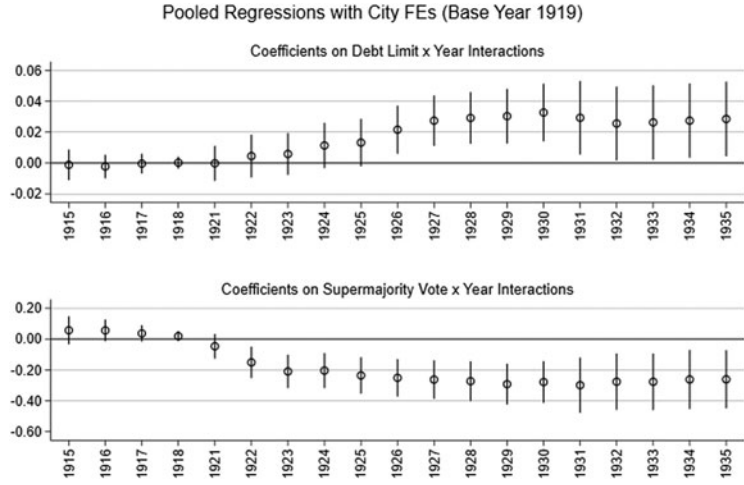
One way to circumvent binding limits was through the creation of overlapping government districts that each had the authority to issue their own debt (Advisory Commission on Intergovernmental Relations, 1961; Bird, 1936; Hillhouse, 1936). Unfortunately, there was no comprehensive assessment or data collection on these districts until the U.S. Census Bureau began to track the number of local government units in

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[17]We do not show the results for debt exceptions in Figure 2 since they may have changed in some states during the 1920s (see section 1.2).

[18]Data are not available for 1920. The panel is unbalanced due to changes in the set of cities that met the population threshold for inclusion in the *Financial Statistics of Cities* reports. Results are very similar when the sample is restricted to the balanced panel of 66 cities for which we have data for the full period.

Figure 2. Dynamics of the relationship between debt restrictions and real debt per capita, 1915–1935.
Note: The figure shows coefficients and confidence intervals from a panel regression using annual municipal debt data for 1915–1935 with interactions of the debt limit and supermajority vote (both measured as of 1929) and city and year fixed effects. The omitted (base) year is 1919. Cities in nine states with debt limit changes during the 1920s (Arkansas, Louisiana, Missouri, Nebraska, North Carolina, Ohio, Rhode Island, Tennessee, Texas) are excluded from the figure; results are similar when those cities are included. No debt information is available for 1920.

Pooled Regressions with City FEs (Base Year 1919)

Coefficients on Debt Limit x Year Interactions

Coefficients on Supermajority Vote x Year Interactions

Table 3. Stringency of debt limits; creation of overlapping government divisions

	(1)	(2)	(3)	(4)
	Debt, tight limit	Debt, loose limit	Other divisions? (0/1)	Other divisions? (0/1)
Debt limit (% of assessed value)	0.110*** (0.028)	0.001 (0.022)	0.007 (0.008)	0.006 (0.008)
Supermajority popular vote	−0.196* (0.103)	−0.646*** (0.097)	−0.085* (0.051)	−0.139** (0.064)
Debt limit exceptions, no. of categories	0.161** (0.070)	0.118* (0.068)	−0.082*** (0.029)	
Debt exception, refunding				−0.037 (0.062)
Debt exception, special assessment				−0.226*** (0.072)
Other debt exceptions				−0.013 (0.081)
Observations	109	104	213	213
Adj. R^2	0.449	0.517	0.098	0.113

Huber/White sandwich robust standard errors in parentheses.
*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.
Note: The dependent variable in columns (1) and (2) is ln(1929 debt per capita, 1967 $). The dependent variable in columns (3) and (4) is an indicator for the presence of government divisions other than a city corporation, county, or school district. All regressions include census region fixed effects and the controls used in the specification in column (2) of Table 2. Cities with tight debt limits are those below the median debt limit of 6 percent (sample in column (1)); cities with loose debt limits are those above the median debt limit (sample in column (2)).

the 1930s. Although our main source, the 1929 *Financial Statistics of Cities* report, does not contain a comprehensive census of special districts, we use the available data to construct an indicator for whether the report includes data for additional districts in 1929 aside from a city corporation, county, or school district.[19] We now explore whether city governments facing strict debt limits were more fragmented than those with loose limits.

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[19]Counties and school districts represent divisions other than city corporations. However, these other divisions were not generally created to skirt debt limits and were not newly formed in the 1920s.

Column (3) of Table 3 shows the relationship between debt restrictions and the presence of other divisions, controlling for baseline city characteristics (i.e. demographics, state income, and taxable wealth). We find no relationship between debt limits and the presence of other divisions. However, we do find that cities subject to supermajority popular vote requirements are less likely to have other divisions. Since supermajority voting referenda generally applied to all government divisions within a state, cities subject to these rules would not be able to relax debt constraints by creating new districts and would be less incentivized to do so. We also find that cities with more debt limit exceptions, and hence more flexibility to incur debt, were less likely to have other districts. As shown in column (4), the key exception is for special assessment debt. Insofar as establishing new districts and issuing special assessment bonds were substitute practices aimed at increasing overall debt spending, a special assessment exception allowed cities to issue such bonds and thus reduced their incentive to create new districts within a city's boundaries. Overall, we do not find evidence that strict debt limits had encouraged the creation of overlapping government districts by 1929.

4.3 Debt restrictions, capital expenditures, and municipal defaults

Municipal borrowing allows city governments to spend on public infrastructure without the need to raise taxes today. But highly leveraged positions resulting from too much borrowing can result in default on obligations to bondholders and even reductions in city services (Siodla, 2020). How did state-level debt restrictions intended to prevent the kinds of financing schemes that led to local government defaults in the late 19th century influence capital spending in the 1920s and the likelihood of default in the 1930s?

Table 4 shows results from estimating the relationship between debt restrictions and cumulative capital spending during 1923–1929 (column (1)) and 1930–1935 (column (2)). Debt limits were the most important restriction for capital spending: a 1-percentage-point increase in the debt limit increased 1923–1929 per capita capital spending by 2 percent and 1930–1935 per capita capital spending by 3 percent. This relationship is comparable in magnitude to the effect of debt limits on 1929 debt levels, which suggests that the limits constrained debt accumulation during this period by reducing infrastructure investment. While the long-term implications of slower infrastructure investment are beyond the scope of this study, the results highlight the tradeoffs between expanding city services and limiting debt. If real estate speculation and excessive suburban development typified capital spending on the margin, then strict limits were valuable restrictions. If, instead, these capital investments positioned cities for long-run growth and development, then cities facing tight limits were at a disadvantage.

We do not find significant effects of supermajority vote restrictions on capital spending for 1923–1929 but do find negative effects for 1930–1935. This outcome suggests that the need to obtain supermajority voter approval was not a barrier to infrastructure spending during the expansionary period but that voters were more cautious in approving capital spending during the downturn. Cities with debt exceptions did not spend significantly more on capital projects than cities without such exceptions.

We now examine whether debt restrictions reduced the likelihood of default in the 1930s. As Table 1 shows, 16 percent of cities in our sample defaulted on general obligation bonds between 1930 and 1936. We confirm that, as we would expect, higher per capita debt in 1929 is positively associated with defaults in the 1930s (Table 4, column (3)). This implies that potential drivers of debt positions in 1929, including state-level debt restrictions, indirectly influenced defaults in the 1930s. Column (4) shows the results of estimating the relationship between debt restrictions and defaults. Although the debt limit and debt exception coefficients are not statistically significant, their signs are consistent with our expectations. Nevertheless, the insignificant results support the hunch of at least one government agency that percentage debt limits were ineffective at curbing defaults in the 1930s (Advisory Commission on Intergovernmental Relations, 1961: 50). The most influential debt restriction is the supermajority voting rule: such a rule significantly reduced the likelihood of

Table 4. Debt restrictions, capital spending, and municipal defaults

	(1) Capital expenditures 1923–1929	(2) Capital expenditures 1930–1935	(3) Default in 1930s? (0/1)	(4) Default in 1930s? (0/1)
ln(1929 debt per capita, 1967 \$)			0.209*** (0.058)	
Debt limit (% of assessed value)	0.021** (0.009)	0.034** (0.016)		0.010 (0.008)
Supermajority popular vote	−0.109 (0.077)	−0.212* (0.122)		−0.079** (0.040)
Debt limit exceptions, no. of categories	0.015 (0.049)	−0.094 (0.061)		0.069 (0.045)
Observations	213	88	213	213
Adj. R^2	0.187	0.487	0.207	0.177

Huber/White sandwich robust standard errors in parentheses.
*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.
Note: The dependent variable in columns (1) and (2) is ln($C_{19xx-yy}$), where $C_{19xx-yy}$ is cumulative capital expenditures from 19*xx* to 19*yy* per capita in 1967 \$. The dependent variable in columns (3) and (4) is an indicator for whether the municipal government defaulted on general debt obligations between 1930 and 1936. All regressions include census region fixed effects and the controls used in the specification in column (2) of Table 2.

municipal default. This state-level barrier to debt accumulation was ultimately effective at preventing both municipal debt accumulation during the 1920s and default in the 1930s.

5. Conclusion

This paper shows that there was substantial variation across cities in debt levels in 1929, just as the Great Depression began. While demand factors such as urban expansion and residential construction contributed to municipal debt accumulation, institutional factors imposed on cities at the state level during the 19th century helped curb such accumulation and became especially efficacious in the 1920s. In contrast to the prevailing views of municipal practitioners of the period, debt limits did constrain the accumulation of municipal debt in the 1920s, although the effectiveness of the limits was undermined somewhat by exceptions to them. Debt limits also constrained spending on capital projects by municipal governments. In this way, stricter limits may have discouraged some of the speculative local development that lawmakers in the 19th century were worried about (Wallis and Weingast, 2008). Supermajority voting rules, as suggested by those same practitioners, also served as important constraints on debt and appear to have reduced the likelihood of default during the Great Depression. Overall, the restrictions set in place in the late 19th century were generally effective during the boom years of the 1920s. While these results rely on a sample that consists of the largest cities, we suspect that smaller local government units would also have been limited by these restrictions.

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