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Do fiscal constraints prevent default? Historical evidence from U.S. municipalities

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Abstract Through the nineteenth century numerous U.S. states developed extensive municipal fiscal constitutions. These generally came in the wake of financial crises and large-scale default of public debts. Although the constraints were imposed in order to minimize the likelihood that such outcomes would occur in the future, little work has been undertaken to analyze whether they were successful in achieving that goal. Therefore, this current study attempts to do so by empirically investigating how procedural safeguards and outright prohibitions on debt accumulation, along with hard budget constraints, and tax limits impacted the likelihood of default. This is done by evaluating municipal defaults that centered on the Panic of 1893. Overall, the results suggest that outright prohibitions on debt accumulation and hard budget constraints actually reduced the likelihood of municipal default across states, while tax limits and procedural safeguards increased that likelihood.

Keywords Default · Sovereign debt · Fiscal constraints · Panic of 1893 · Credible commitments

JEL Classification D78 · H73 · H74 · N21 · N41

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1 Introduction

Through the nineteenth century U.S. state and local fiscal policy was a constant ebb and flow of public investment in the economy meant for economic development. At times this led to the rapid accumulation of public debt in order to finance many of these projects (dubbed “internal improvements”). In several instances this accumulation led to default and repudiation after macroeconomic financial crises hit. This pattern was witnessed in the aftermaths of the Panic of 1839, the Panic of 1873, and during Civil War Reconstruction.

Specifically, as a result of the Panic of 1839 eight states and one territory defaulted on their debt obligations, with five of those states repudiating all or part of those outstanding debts. A similar situation arose during Civil War Reconstruction when all of the former Confederate states, after having accrued large debts to finance internal improvement projects, also defaulted and repudiated sizeable portions of those debts.¹ Finally, the Panic of 1873 culminated with nearly twenty percent of all outstanding municipal debt (again largely incurred for the construction of railroads and other internal improvement projects) being defaulted on at some point (Hempel 1964; Hillhouse 1936).

However, after each of these episodes numerous state legislatures and state constitutional conventions implemented various constitutional reforms in order to ensure that similar behavior was not pursued in the future. Thus, through the 1840s states passed constitutional amendments that significantly limited or prohibited those governments from issuing debt in the future, limited the ability to raise revenue through early variants of tax and expenditure limits, and limited the ability of states to invest in private companies. This situation also arose during Reconstruction, when a number of former Confederate states also imposed various fiscal restrictions.

An unintended side effect of these constraints was that through the 1850s and into the 1870s municipal governments began to accumulate large debts in order to finance these internal improvement projects, especially railroads. However, due to the Panic of 1873 many of these projects were shown to be unprofitable, which left many municipal governments unable to pay their outstanding obligations, forcing them into default and repudiation. Thus, similar restrictions as those that had been placed on state governments were finally also forced on local governments across numerous states.

All of these limits were meant to minimize or prevent similar behavior from occurring in the future. Both contemporary accounts of the time and more recent research would suggest that this was the purpose these fiscal constitutions were to serve (Dove 2012, 2014; Thies 2002; Hillhouse 1936; Ratchford 1941).² However, no work has been done to formally evaluate whether these constitutional limitations were successful in preventing future default. Therefore, the purpose of this study is to provide a brief historical account of the development of these constitutional rules, especially those imposed on municipal governments, and to then empirically examine how these fiscal constitutions affected the likelihood that municipal governments would default in the future.

¹ See Scott (1893), Ratchford (1941), McGrane (1935) for detailed discussions of both periods.

² Anecdotal evidence from contemporary sources will be discussed in greater detail in a later section.

This latter work is done by evaluating the period through the Panic of 1893, with default data covering 1890 through 1905 for local and county governments. Importantly, the Panic of 1893 and ensuing depression was an even more severe financial crisis that beset the country than was the Panic of 1873. However, whereas the aftermath of the Panic of 1873 left nearly 20 % of all outstanding municipal debt in default, in the wake of the Panic of 1893 less than 10 % of all outstanding municipal debt met the same fate with no state governments defaulting (Hillhouse 1936; Hempel 1964). Therefore, this period provides an opportunity to see how, if at all, these fiscal constitutions impacted the likelihood that a given municipal government would default.

Overall, the results suggest that outright prohibitions on the accumulation of debt significantly decreased the likelihood of default, while procedural safeguards increased that likelihood, though the latter result is not robust. Further, strict tax limits also increased that likelihood whereas hard budget constraints reduced the likelihood of default.

The remainder of the paper is structured as follows: Sect. 2 discusses the relevant literature. Section 3 provides a brief historical account of the development of these fiscal constitutions at the state and local level. This section also evaluates the state and local defaults and repudiations that occurred through the nineteenth century and the possible mechanisms that may have been in place to minimize municipal default during the Panic of 1893 and ensuing depression. Section 4 describes the data and empirical specification employed in order to evaluate how these constraints affected municipal default between 1890 and 1905. Section 5 presents and discusses the results, while Sect. 6 concludes.

2 Literature review

This paper adds to several important strands of the literature. The first is the extent to which fiscal constraints might affect fiscal outcomes.³ This has been a heavily studied issue within the public finance literature. Some of this work has focused on how fiscal restrictions affect debt burdens (Alesina and Bayoumi 1996; Bohn and Inman 1996; Primo 2006; Alt and Lowry 1994; Kiewiet and Szakaly 1996), with much of this research finding a direct link between the strength of a state's balanced budget requirements (BBRs) and the level of debt and deficits that exist. Specifically, this research finds that BBRs are relatively effective at lowering state borrowing costs and reducing debt burdens.

More recent studies have also examined the impact that the many nuances within these BBRs have had (Bohn and Inman 1996; Hou and Smith 2006). Hou and Smith (2006) develop measures of state BBRs based on both technical (i.e. no carry-over rules, debt limits etc.) and political (i.e. the governor must submit a balanced budget, the legislature must pass a balanced budget etc.) rules. Hou and Smith (2010) test these implications and find that technical rules have a larger impact than do political rules.

³ For recent literature reviews on these issues, especially as they relate to U.S. states see Rose (2010) and Krol (2007).

Additionally, analyzing different time periods, [Poterba and Rueben \(2001\)](#) and [Lowry and Alt \(2001\)](#) find that both anticipated and unanticipated deficits increase state borrowing costs, however the existence of a BBR mitigates this effect. Similar evidence is also reported by [Hallerberg and Wolff \(2008\)](#) within the EMU, and by [Johnson and Kriz \(2005\)](#), the latter showing that BBRs, expenditure limits, and debt restrictions lower borrowing costs, while revenue limits increase them. Further research also indicates that BBRs may minimize political budget cycles ([Streb and Torren 2013](#)).

Finally, [Hopland \(2013\)](#) finds evidence that centrally imposed fiscal limits on Norwegian local governments that run chronic deficits lead to stronger operational surpluses in those local governments once implemented. These surpluses do not appear to be driven by central bailouts, but rather through reductions in local expenditures. Tied to this [Hopland \(2014\)](#) shows that these fiscal limits, once placed on Norwegian local governments, signal poor fiscal performance to voters who respond by increasing the likelihood of voting an incumbent out of office.

A related area of research concerns tax and expenditure limits (TEs). Here early work suggested that TEs had little impact on state and local fiscal outcomes ([Abrams and Dougan 1986](#); [Bails 1982, 1990](#); [Joyce and Mullins 1991](#); [Mullins and Joyce 1996](#)). However, later research has in some instances found a stronger and statistically significant effect, especially when panel data is incorporated and potential endogeneity is accounted for ([Bails and Tieslau 2000](#); [Shadbegian 1996, 1998](#); [Rueben 1997](#); [Bae and Gais 2007](#)). Other studies have found that tax limits increase state and local borrowing costs while expenditure limits decrease those costs ([Bayoumi et al. 1995](#); [Eichengreen 1992](#); [Johnson and Kriz 2005](#); [Lowry and Alt 2001](#); [Poterba and Rueben 1999](#)).

Similar work has attempted to pinpoint how or even if state and local TEs may limit government growth. For instance, using a principle-agent framework, [Seljan \(2014\)](#) finds that TEs are only effective at limiting public sector growth when limited-government preferring agents oversee them. Further, [Kousser et al. \(2008\)](#) show that there is no single TE restriction that systematically limits government growth, outside of a handful of states, while [Amiel et al. \(2014\)](#) suggest that the overall restrictiveness of a TE plays a crucial role in its ability to limit government growth.

This current paper also adds to the literature on the impact that hard budget constraints have, especially within a system of federalism ([Goodspeed 2002](#); [Oates 2005](#); [Qian and Roland 1998](#)).⁴ Here much of this research focuses on the necessity of central authorities to avoid bailing out lower-level governments when fiscal imbalances emerge as a result of negative macroeconomic shocks. If accomplished, such a policy will credibly convey a central authority's commitment to fiscal discipline and will avoid general moral hazard problems associated with soft budget constraints. Additional empirical evidence indicates that in the Italian context, an important component of local government expenditures is the expectation of future transfers from the central government ([Padovano 2014](#)), while municipal bailout expectations in Sweden appear to account for nearly 20 % of existing municipal debt ([Pettersson-Lidbom 2010](#)).

⁴ For an overview of this issue see [Kornai et al. \(2003\)](#) and [Rodden et al. \(2003\)](#).

3 A brief historical account

Throughout the nineteenth century state and local governments experimented heavily with investments in quasi-public/private development projects (known as internal improvements), usually in the form of bank, canal, and later railroad investment. Much of this initial experimentation came during the 1820s and 1830s in response to the success that the state of New York had with its heavy financial involvement in the construction of the Erie Canal. There, New York had used public funds and debt finance to support the canal's construction.

The belief in supporting the effort (and those endeavors that other states later invested in) was that through such investment the state would be able to increase economic growth and development by promoting trade and commerce. It was also thought that once constructed the accrued debt would easily be paid off through the revenue generated by the internal improvement. Thus these investments were considered to be virtually riskless. This was especially true as in the event that some of these internal improvements did not come to fruition it was also thought that under such an extreme, the obligations were ultimately the responsibility of the company that received the financial backing and not the state.

This led a number of states to pursue similar activities in their own economies, especially through bank and canal investment. Much of this aid to these internal improvements came through either explicit government guarantees of the debt issued by the private companies constructing the improvements, the outright purchase of private stock by those states, or through the issuing of state debt to be used in order to finance those projects (Pinsky 1963).⁵ Thus, between 1830 and 1840 total indebtedness of state governments increased by roughly \$178,500,000 (Porter 1880).

Although this method of public finance was sustainable while economic activity was progressing, with the onset of economic downturn the situation could and would change. This occurred during the Panic of 1839, which began as a banking panic and rapidly spread across the country. As a result of this financial crisis, many of the internal improvement projects that had been invested in were abandoned as it was realized that they were not financially viable, while those that were completed generally did not net near the returns originally envisioned (Ratchford 1941). This led numerous publicly funded banks and internal improvement projects to fold, forcing many of those outstanding debt obligations onto the state governments that had either issued or guaranteed them. However, most states were in no position to cover those obligations. Thus, eight states and one territory defaulted on those debts, with five states eventually repudiating all or part of them.⁶

Comparable events also occurred during Civil War Reconstruction. Most former Confederate states, in an attempt to rebuild devastated economies, began to accrue large amounts of debt in order to fund internal improvement projects and also aid in the construction and reconstruction of railroads. However, these debt obligations

⁵ For an overview of state public finance policy during this period see Grinath et al. (1997).

⁶ The eight states were Arkansas, Illinois, Indiana, Louisiana, Maryland, Michigan, Mississippi, and Pennsylvania. The territory was Florida. Of these Arkansas, Florida, Louisiana, Michigan, and Mississippi repudiated at least a portion of those outstanding debts.

began to mount rapidly, culminating in the eventual default and repudiation by every Confederate state on many of these obligations.⁷

The aftermath of these two episodes was one of constitutional change meant to significantly constrain future governments from pursuing similar behavior. This came in several forms including early versions of today's tax and expenditure limits, procedural safeguards or outright prohibitions on the issuing of debt, the purchase of private stock, and the guaranteeing of private debt among several others.

For instance, in the wake of the Panic of 1839 and ensuing defaults, former governor of Indiana James Whitcomb in his annual message to the legislature of 1848 suggested that, "The constitution should be amended, [so] as to prohibit the creation of any public debt, except under restrictions as to amount, and object" (House Journal 1849). Further, former Democratic governor of New York, Silas Wright, suggested the following as to why the state saw a major push toward constitutional reform:

The recent free use of the public credit, in over-hastening loans for state works, and in lending to irresponsible corporations, the embarrassed condition of our finances, and the consequent call for direct taxation to restore public confidence, have doubtless given rise to these proposed [constitutional] amendments." (Senate Journal 1846).

Similar sentiments were echoed after the Southern defaults during Reconstruction. For example, former Chief Justice of the Alabama Supreme Court and member of the state's constitutional convention of 1875, Samuel Davies Weakly, noted that the purpose of the convention was:

[T]he prevention of appropriations for any but public purposes, the saving of the credit of the state ...by denying it use in aid of private enterprise ...and the preservation of the property of a citizen from large tax levies." As quoted in McMillan (1955, p. 234).

Although states were significantly constrained from investing in internal improvement projects municipal governments, beginning in the 1850s, started to invest heavily in many of those same projects, especially in railroad aid. Interestingly, although the constitutional constraints that had been imposed limited the ability of states to pursue those policies, most did not prohibit municipal governments from doing so. Thus, a significant amount of municipal aid poured into railroad investment, in much the same manner as state aid had poured into internal improvement projects previously.

As Table 1 indicates this led to a substantial increase in outstanding municipal debt, which was again sustainable so long as the economy was growing. However, with economic downturn this situation rapidly deteriorated. The downturn came with the onset of the Panic of 1873, which culminated in nearly 20% of all outstanding municipal debt entering a state of default during that period (Hillhouse 1936). The aftermath of this episode followed closely to that of the Panic of 1839, with numerous states passing constitutional amendments akin to those imposed on state governments earlier. These fiscal constitutions were largely meant to restrict municipal governments

⁷ See Summers (1984) for a full historical account of this period and the economic policies Southern states pursued.

Table 1 State and local indebtedness in dollars

Year	State debt	% Change	Local debt	% Change	Combined debt	% Change
1840	176,819,394 ^a	–	27,536,422 ^b	–	20,43,55,816	
1850	192,527,913 ^c	8.88	^d	–	19,25,27,913	–5.78789644
1860	25,74,06,940	33.70	200,000,000 ^e	–	45,74,06,940	137.5795452
1870	35,28,66,698	37.09	51,58,10,060	158	86,86,76,758	89.91333144
1880	27,47,45,772	–22.14	84,85,32,875	65	1,12,32,78,647	29.30916324
1890	21,12,10,487	–23.13	92,59,89,603	9	1,13,72,00,090	1.239357931

Data from U.S. Census Bureau 1870, 1880, and 1890

^a Data interpolated from 1839 and 1841 data

^b Data for 1843

^c Data for 1853

^d No data available

^e Estimated

from irresponsible public investment and to also minimize potential future defaults. For instance, as an editorial in the New York Times pointed out regarding municipal safeguards in the state of New York:

The principal objects of these amendments are to limit the power of the cities of the State to create debt, and to surround the keeping and outlay of the public money with more effectual safeguards than are now provided.” (NYT Oct. 9, 1877).

Table 2 provides a list of the four main constraints that states imposed on municipalities by state and year of adoption, and are the limits that this paper specifically seeks to analyze.⁸ These include procedural safeguards on the issuing of debt (*DebtGuard*), outright prohibitions on the issuing of debt above a specified limit (*DebtProhibit*), binding tax limits based on a percentage of assessed property values (*TaxLimit*), and finally hard budget constraints (*HardBudget*). In order to employ these variables in a manner suitable for empirical analysis, each is converted into a dummy variable represented by a “1” if a state had adopted the given constraint and “0” otherwise.

The first two limits stipulated some binding cap on the amount of debt that a municipality could accumulate. For those municipalities that faced a strict prohibition, it meant that they could not increase their total indebtedness above that limit, while other municipalities could, but only after meeting some procedural hurdle. Many of these procedural safeguards required at least a majority, and in many instances a supermajority of the citizens within a given municipality to vote in the affirmative to increase the debt limit above the specified cap. Others required legislative approval, while some required both citizen and legislative approval.

Further, municipal tax limits generally tied tax rates to a certain percentage of assessed property values, while the hard budget constraints explicitly prohibited state

⁸ The bulk of these amendments were compiled from the NBER/University of Maryland State Constitution Project (Wallis 2015). When constitutions were not available, the remaining amendments were hand collected.

Table 2 Municipal constitutional restrictions by state and year

State	<i>DebtProhibit</i>	<i>DebtGuard</i>	<i>HardBudget</i>	<i>TaxLimit</i>	<i>Census Region</i>	State	<i>DebtProhibit</i>	<i>DebtGuard</i>	<i>HardBudget</i>	<i>TaxLimit</i>	<i>Census regions</i>
Connecticut					Northeast	Illinois	1870		1870		Midwest
Delaware					Northeast	Indiana	1881		1851		Midwest
Maine	1878				Northeast	Iowa	1846		1846		Midwest
Massachusetts					Northeast	Kansas					Midwest
New Hampshire					Northeast	Michigan					Midwest
New Jersey					Northeast	Minnesota	1872				Midwest
New York	1873		1873		Northeast	Missouri	1900		1875	1875	Midwest
Pennsylvania	1874	1857			Northeast	Nebraska				1875	Midwest
Rhode Island					Northeast	North Dakota*	1889		1889		Midwest
Vermont					Northeast	Ohio					Midwest
Alabama				1867	South	South Dakota*	1889		1889	1889	Midwest
Arkansas		1868		1868	South	Wisconsin	1874				Midwest
Florida					South	Arizona					West
Georgia	1877				South	California		1879			West
Kentucky	1891	1891		1891	South	Colorado	1876				West
Louisiana	1894	1879		1878	South	Idaho*		1890	1890	1890	West
Maryland	1867				South	Montana*	1889		1889		West

Table 2 continued

State	DebtProhibit	DebtGuard	HardBudget	TaxLimit	Census Region	State	DebtProhibit	DebtGuard	HardBudget	TaxLimit	Census regions
Mississippi					South	Nevada			1864		West
North Carolina	1868				South	New Mexico					West
Oklahoma					South	Oregon	1857		1857		West
South Carolina	1896				South	Utah		1895	1895		West
Tennessee					South	Washington*		1889	1889		West
Texas		1876		1883	South	Wyoming*	1889			1889	West
Virginia	1902		1870		South						
West Virginia	1872		1863	1872	South						

* Dates listed correspond to the first appearance in a state constitution. However, a number of states adopted these constraints into territorial ordinances and charters prior to statehood, meaning they are much older than the date listed

governments from assuming the debts of their respective municipal governments. This latter prohibition came as a direct result of several states, including Illinois and New York, having had various bills introduced into their respective legislative chambers which would have mandated that the state government assume any existing defaulted municipal debt. The New York Times suggested the following regarding Illinois' legislative attempt to assume defaulted municipal debt:

The injustice of such a measure will be readily perceived. Cities and counties entirely free, or nearly so, from debt will be compelled to pay the debts of other cities and counties. This is a matter in which, of course, certain speculators are greatly interested. (NYT Jan. 3, 1875).

This issue is what the remainder of the paper intends to evaluate. Specifically, did these constraints live up to their stated goal of limiting municipal debt and default? Importantly, the Panic of 1893 and the period around that episode offer an opportunity to empirically evaluate that very question as the Panic of 1893 led to an even more severe depression than did the Panic of 1873, yet it saw fewer state and municipal financial difficulties than did the Panics of 1839 and 1873.⁹ As noted, whereas the Panic of 1873 left nearly 20% of all outstanding municipal debt in default, the aftermath of the Panic of 1893 saw less than 10% of all outstanding debt in default, with no states defaulting at any point (Hillhouse 1936). This even given the fact that next to the Great Depression, the panic and depression of the 1890s was the deepest and most severe in U.S. history, with national unemployment rates above 11% for five years running (Romer 1986).

4 Data and model specification

In order to empirically evaluate how the above mentioned fiscal constraints may have affected the likelihood of municipal default I have taken a list of all the known municipal defaults between 1890 and 1905. This information was drawn from Hillhouse (1930), who compiled those defaults between 1830 and 1930 in the United States, gathered from a number of first hand sources.¹⁰ Although this source does have some limitations in that it does not include unreported municipal defaults over the period, nor does it necessarily differentiate between a missed or delayed interest payment versus a principal payment, it is the most comprehensive list of nineteenth and early twentieth century municipal defaults in existence.¹¹

⁹ For important historical analyses of the Panic of 1893 and the ensuing depression see Hoffman (1970), Steeples and Whitten (1998), and White (1982).

¹⁰ Importantly, although municipal defaults are available to 1930, after 1905 states again went through an extended period of constitutional revision. Thus, extending the analysis beyond 1905 brings in endogeneity concerns that can otherwise be largely avoided over the sample period explored. Further, in order to alleviate any endogeneity problems that may exist, those constraints that were adopted by a state through the period under analysis are dropped. For example, Louisiana passed *DebtGuard* in 1894. Therefore, all Louisiana *DebtGuard* observations are excluded from the entire analysis 1890 to 1905.

¹¹ Per Hillhouse, "Any failure to meet an interest or principle payment on time was treated as a default" (1930, pg. iii).

Hillhouse (1930) included all listings of municipal defaults from the *Bond Buyer Magazine*, *The Commercial and Financial Chronicle*, state case law, statutes, and various histories. Here I look at all county and municipal defaults over the sample, but exclude any school district defaults. This was done as school districts normally fell under separate rules and requirements apart from what general municipal governments faced.

Additionally I aggregate these defaults to the state level and specifically consider the total defaults that occur within each state by year over the given sample. This aggregation is largely the result of a dearth of municipal-level data during this period. However, aggregating in this manner provides an opportunity to evaluate the probability that a particular fiscal constraint may increase or decrease municipal default and thus provide an overarching understanding of how these constraints affected municipal fiscal health.

Based on this analysis then Table 3 shows all municipal defaults by state, the number of repeat municipal defaults that occurred by state (where repeat defaults are those municipal governments that defaulted again in the future after an initial default), along with the percentage of total and repeat municipal defaults by state, and finally the total and percentage of each state aggregated by Census region.¹²

The table shows that the state with the largest percentage of total and repeat defaulters was Kansas with almost 15 and 18 % of each respective default occurring in that state. Further, the Midwest region was clearly the group of states with the largest percentage of defaults with almost 50 % of total and 52 % of repeat defaulters existing in that region. Finally, the Northeastern states had the fewest defaults with 6 and 4 % of total and repeat defaulters.

Next, Fig. 1 tracks both the total and repeat defaulters by year from 1890 to 1905. As shown, total municipal defaults begin to rise significantly in 1893 and peak in 1897 before generally declining thereafter. This pattern appears to track national economic trends through this period. The actual depression that emerged from the panic persisted through the 1890's, as best indicated by unemployment rates. Based on Romer (1986) unemployment rose from 3.7 to 8.1 % between 1892 and 1893, peaking at 12.4 % in 1897 and falling to 5 % by 1900.

Given the non-negative count nature of the default data employed and the significant number of no defaults observed in a number of states, OLS regression analysis would be inappropriate. Thus, a better model would be either a Poisson or Negative Binomial to account for this issue. Due to detected overdispersion within the results, I opt for the Negative Binomial as the obtained results are more efficient than those found with a Poisson model, while it also allows for predicted probabilities to be obtained (here the probability that a given fiscal constraint will increase or decrease municipal default).¹³

¹² The U.S. Census Bureau groups states into specific geographic regions for statistical reporting purposes. In this paper I include the four major and broadest regions used by the Census Bureau, which are the Northeast, South, Midwest, and West regions.

¹³ For a more thorough discussion of these issues see Cameron and Trivedi (2013).

Table 3 Total municipal defaults by state and geographic region

State	Total defaults	Repeat defaults	% All defaults	% Repeat	Region	State	Total defaults	Repeat defaults	% All defaults	% Repeat	Region
Connecticut	0	0	0	0	Northeast	Illinois	31	11	5.254	6.111	Midwest
Delaware	1	0	0.169	0	Northeast	Indiana	12	1	2.034	0.556	Midwest
Maine	1	0	0.169	0	Northeast	Iowa	17	4	2.881	2.222	Midwest
Massachusetts	1	0	0.169	0	Northeast	Kansas	86	32	14.576	17.778	Midwest
New Hampshire	0	0	0	0	Northeast	Michigan	11	0	1.864	0	Midwest
New Jersey	5	1	0.847	0.556	Northeast	Minnesota	12	1	2.034	0.556	Midwest
New York	22	5	3.729	2.778	Northeast	Missouri	27	10	4.576	5.556	Midwest
Pennsylvania	8	1	1.356	0.556	Northeast	Nebraska	28	10	4.746	5.556	Midwest
Rhode Island	0	0	0	0	Northeast	North Dakota	0	0	0	0	Midwest
Vermont	0	0	0	0	Northeast	Ohio	41	15	6.949	8.333	Midwest
Alabama	14	7	2.373	3.889	South	South Dakota	14	5	2.373	2.778	Midwest
Arkansas	0	0	0	0	South	Wisconsin	10	4	1.695	2.222	Midwest
Florida	0	0	0	0	South	Arizona	6	4	1.017	2.222	West
Georgia	1	0	0.169	0	South	California	49	24	8.305	13.333	West
Kentucky	16	2	2.712	1.111	South	Colorado	23	10	3.898	5.556	West
Louisiana	0	0	0	0	South	Idaho	3	1	0.508	0.556	West
Maryland	0	0	0	0	South	Montana	0	0	0	0	West
Mississippi	3	0	0.508	0	South	Nevada	1	0	0.169	0	West
North Carolina	13	1	2.203	0.556	South	New Mexico	7	4	1.186	2.222	West

Table 3 continued

State	Total defaults	Repeat defaults	% All defaults	% Repeat	Region	State	Total defaults	Repeat defaults	% All defaults	% Repeat	Region
Oklahoma	1	0	0.169	0	South	Oregon	1	0	0.169	0	West
South Carolina	21	10	3.559	5.556	South	Utah	3	1	0.508	0.556	West
Tennessee	10	4	1.695	2.222	South	Washington	13	4	2.203	2.222	West
Texas	52	13	8.814	7.222	South	Wyoming	0	0	0	0	West
Virginia	3	0	0.508	0	South						
West Virginia	1	0	0.169	0	South						
Northeast	38	7	6.441	3.889		Midwest	290	93	49.153	51.667	
South	135	37	22.881	20.556		West	106	48	17.966	26.667	

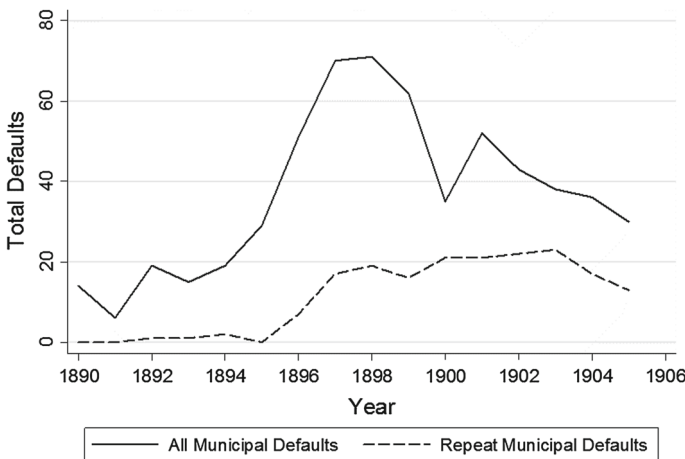


Fig. 1 Total municipal defaults by year 1890–1905

The model takes the following form.¹⁴

$$E (Default_{it}|\alpha_i, X_{it}) = \alpha_i e^{X'_{it}\beta} \tag{1}$$

where $i = 1, 2, \dots, 46$ and $t = 1890, 1891, \dots, 1905$.

Parameter estimates are obtained from the above equations, while finding $\frac{\partial E(Default_{it}|\alpha_i, X_{it})}{\partial X_{itj}}$ nets the marginal effects from the model.

Each of the main variables of interest (*DebtProhibit*, *DebtGuard*, *HardBudget*, and *TaxLimit*) are as discussed in the previous section. $Default_{it}$ is a count variable representing the number of municipal defaults that were reported in state i in year t . The analysis also includes a set of socioeconomic control variables, along with a set of year fixed effects to control for any unobservable differences that may arise over time.¹⁵ First I control for the number of incorporated local governments in each state. This information was taken from U.S. Census data for 1890, 1900, and 1910 with all off years interpolated. This control variable is included as, presumably, an increase in the number of total local governments will increase the likelihood that defaults will occur.

Similarly, I also include total population as another control along with the percent of the population that is urban. This latter variable may help to proxy for the level of economic development in a state, and may also negatively impact municipal default as a more urbanized population could require additional municipal services, which may lead to a strain on municipal finances. However, a larger urban population might also increase the tax base available to municipal governments and

¹⁴ This model largely follows from [Blundell et al. \(1995\)](#), [Allison and Waterman \(2002\)](#), and [Cameron and Trivedi \(2013\)](#). For the sake of space it is presented in a much reduced form here.

¹⁵ Due to the time invariant nature of most of the main independent variables involved, state fixed effects could not be incorporated into the model.

thus decrease the likelihood of default. Thus, the impact of this variable should be ambiguous. Further, I include a control variable for the number of years since a state formally entered the Union. This variable should also help proxy for overall economic development, as older states are generally more integrated with the national economy relative to more newly admitted states. Additionally, I include per capita state debt to proxy for fiscal capacity within a state. However, its overall impact on municipal default may be ambiguous. A larger debt burden may leave fewer resources available to municipal governments which may increase the likelihood of default. However, it may also be the case that the provision of public goods is more centralized in these states, which places a smaller fiscal burden on municipal governments overall.

I also include two variables to proxy for output and also personal income. The former is represented by the annual average manufacturing output per worker (in dollars) while the latter is represented by the annual average per worker manufacturing wage. Both of these were taken from Census data for 1890, 1900, and 1910 again with off years interpolated. Two additional variables are whether a state granted home rule authority to municipal governments and also the percentage of repeat municipal defaults that occurred over a five year running average. Through the latter half of the nineteenth century states began granting home rule authority to their respective municipal governments, which significantly decentralized authority and autonomy to those local governments. This also meant a more decentralized public provision of goods and services. Therefore, it would be expected that home rule authority would increase municipal fiscal burdens and thus, *ceteris paribus*, increase the likelihood of default. Further, it may also be the case that a current default by a municipal government may be positively correlated with an increased likelihood of future default. Table 3 would seem to indicate that this is the case. Therefore, I include a five year moving average of the defaulted municipalities over the sample. Thus, for 1890 this variable takes the percentage of municipalities that defaulted between 1885 and 1889, while for 1891 it takes the average between 1886 and 1890.¹⁶

Finally, I include several geographic variables, which are regional dummies based on the U.S. Census regions as discussed previously. This final set of variables should help alleviate at least some of the possible omitted and unobservable factors that a state fixed effect might be able to pick up but, as discussed, would be impossible to include in the analysis given the time invariant nature of many of the main independent variables of interest. Obviously, Table 3 clearly indicates regional patterns in municipal default, which would indicate that controlling for those regions would also be important. Table 4 provides the summary statistics of all of the variables discussed above.

¹⁶ This method is employed as including the lagged dependent variable would lead to coefficients that are inconsistent due to the time-invariance of the fiscal constraint variables. Therefore, including the current variable for repeat defaults should help avoid inconsistent estimates and should also help address any potential serial correlation.

Table 4 Summary statistics

Variable	Observations	Mean	SD	Min	Max
Municipal defaults	768	0.740	1.574	0	18
DebtProhibit	720	0.361	0.481	0	1
DebtGuard	720	0.168	0.374	0	1
HardBudget	736	0.391	0.488	0	1
TaxLimit	752	0.245	0.430	0	1
Total incorporated municipalities (in 100s)	768	2.033	2.117	0.030	9.986
Population (in 100,000s)	768	15.079	14.785	0.423	81.913
Per capita debt (in 1,000s)	768	391.477	447.015	0	2269.695
% Urban	758	31.163	21.786	2.640	95.900
Annual average per worker manufacturing wage (in \$)	768	2.434	0.838	0.148	5.392
Annual average per worker manufacturing output (in \$)	768	2.951	3.568	0.630	37.553
Years since statehood	768	63.600	40.324	0	118
Homerule state (1 = yes)	768	0.078	0.269	0	1
% Repeat defaults (5-year average)	768	1.290	2.531	0	20
Northeast	768	0.229	0.421	0	1
South	768	0.292	0.455	0	1
Midwest	768	0.250	0.433	0	1
West	768	0.229	0.421	0	1

5 Results and interpretation

Overall, the results provide some interesting findings and implications. Table 5 presents a very cursory inspection by presenting the simple difference-in-averages results for each of the main independent variables of interest.

Here both *DebtProhibit* and *TaxLimit* appear to increase the likelihood of default by 11 and 39 % respectively and both are statistically significant. Further, *HardBudget* and *DebtGuard* indicate the opposite effect, with both reducing the likelihood of default by 3 % though neither are statistically significant. These correlations would at least suggest that the introduction of these rules is not random, but rather may be indicative of their adoption in states with more fiscally problematic local governments. Along with Table 5, Table 6 shows a much more comprehensive analysis based on the discussion from the previous section.

All coefficients shown are the marginal effects from the above model. Columns 1 through 4 list all of the results for each of the main independent variables of interest run separately and without any controls, save the control for the number of incorporated municipal governments within a state. Now the results indicate that *DebtProhibit* (column 1) reduces the likelihood that a given municipality within a state will default by over 13 % and is statistically significant.

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Table 5 Difference in average results

Independent variable = Number of municipal defaults per year				
	(1)	(2)	(3)	(4)
DebtProhibit (1 = yes)	0.106** (0.132)			
DebtGuard (1 = yes)		-0.028 (0.175)		
HardBudget (1 = yes)			-0.027 (0.047)	
TaxLimit (1 = yes)				0.386*** (0.133)
Year fixed effect	Y	Y	Y	Y
Observations	720	720	720	720
Log likelihood	-717.691	-747.498	-753.736	-706.793

Standard errors in parentheses

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Next, *DebtGuard* (column 2) actually suggests the opposite, netting a positive result which would indicate that the presence of such a restriction actually increases the likelihood that a given municipality will default by 7%, though the result is not statistically significant. Column 3 provides the result for *HardBudget* which shows that this constraint reduces the likelihood of default by almost 22% with the result highly statistically significant. Finally, column 4 indicates that the presence of *TaxLimit* actually increases the likelihood that a municipality defaults by 15% and is statistically significant as well.

Next columns 5 through 8 present the results for each of the main independent variables run separately, but now including all of the control variables discussed above while excluding the geographic variables. Here the findings are extremely similar to those found in columns 1 through 4, with each of the sign coefficients on the main variables being identical. Specifically, *DebtProhibit* decreases the likelihood that a municipality defaults by almost 21%, while *DebtGuard* again increases that likelihood by 5%, whereas *HardBudget* decreases the likelihood by almost 27%, and finally *TaxLimit* increases the likelihood by 3%. Here again both *DebtProhibit* and *HardBudget* are statistically significant, while *DebtGuard* and *TaxLimit* are not.

Next columns 9 through 12 again show the results for each of the main independent variables of interest regressed separately, but now including all of the control variables. Again, the findings are qualitatively similar to those previously shown, with *DebtProhibit* decreasing the likelihood of default by 16%, *DebtGuard* increasing the likelihood by 20%, *HardBudget* decreasing the likelihood by 23%, and *TaxLimit* increasing the likelihood of default by 2%. As with columns 1 through 4, *DebtProhibit* and *HardBudget* are statistically significant, while *DebtGuard* and *TaxLimit* are insignificant.

Table 6 Negative binomial regression estimates

Independent variable = Number of municipal defaults per year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DebtProhibit (1 = yes)	-0.133** (0.0545)				-0.207*** (0.0756)			
DebtGuard (1 = yes)		0.0703 (0.0740)				0.0518 (0.0887)		
HardBudget (1 = yes)			-0.216*** (0.0534)				-0.265*** (0.0621)	
TaxLimit (1 = yes)				0.152*** (0.0607)				0.0296 (0.0551)
Total incorporated municipalities (in 100s)	0.0975*** (0.0146)	0.0858*** (0.0120)	0.101*** (0.0140)	0.0786*** (0.0113)	0.0966*** (0.0225)	0.0814*** (0.0184)	0.101*** (0.0210)	0.0800*** (0.0179)
Population (in 100,000s)					0.0105*** (0.00342)	0.00817*** (0.00286)	0.00940*** (0.00287)	0.00714*** (0.00294)
Per capita debt (in 1,000s)					-0.000345*** (0.000120)	-0.000186** (8.75e-05)	-0.000223*** (9.19e-05)	-0.000196*** (8.62e-05)
% Urban					-0.00671*** (0.00250)	-0.00375* (0.00205)	-0.00533*** (0.00225)	-0.00317 (0.00197)
Annual average per worker manufacturing wage					-0.0488 (0.0530)	0.0514 (0.0445)	0.0725 (0.0443)	0.0649 (0.0399)
Annual average per worker manufacturing output (in \$)					-0.0124* (0.00677)	-0.00518 (0.00587)	-0.00148 (0.00579)	-0.00356 (0.00573)
Years since statehood					-0.00127 (0.00134)	-0.00185 (0.00120)	-0.00259** (0.00127)	-0.00178 (0.00116)
Homerule state (1 = yes)					0.764*** (0.278)	0.385*** (0.140)	0.553*** (0.172)	0.385*** (0.135)

Table 6 continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Independent variable = Number of municipal defaults per year								
% Repeat defaults (5-year average)					0.064*** (0.013)	0.0639*** (0.012)	0.062*** (0.119)	0.063*** (0.012)
West								
South								
Midwest								
Pearson overdispersion test	1.812	2.770	3.113	3.054	1.959	2.047	1.834	2.008
Year fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Observations	720	720	736	752	710	710	726	742
Log likelihood	-666.890	-697.047	-692.014	-706.793	-593.374	-628.249	-615.679	-638.427
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
DebtProhibit (1 = yes)	-0.164** (0.0755)				-0.106* (0.0604)	-0.153* (0.0785)	-0.120 (0.0830)	
DebtGuard (1 = yes)	0.203 (0.135)			0.112 (0.0841)	0.315* (0.168)	0.338 (0.212)		
HardBudget (1 = yes)		-0.234*** (0.0639)		-0.217*** (0.0580)	-0.339*** (0.0817)	-0.261*** (0.0822)		
TaxLimit (1 = yes)			0.0243 (0.0645)	0.250*** (0.0793)	0.262*** (0.101)	0.298*** (0.122)		
Total incorporated municipalities (in 100s)	-0.0354 (0.0281)	-0.0344 (0.0251)	-0.00985 (0.0259)	-0.0348 (0.0249)	0.103*** (0.0156)	0.125*** (0.0268)	-0.00829 (0.0298)	
Population (in 100,000s)	0.0219*** (0.00551)	0.0182*** (0.00434)	0.0192*** (0.00458)	0.0170*** (0.00425)	0.0101*** (0.00362)	0.0101*** (0.00362)	0.0201*** (0.00554)	

Table 6 continued

Independent variable = Number of municipal defaults per year	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Per capita debt (in 1,000s)	-0.000413*** (0.000145)	-0.000246** (0.000108)	-0.000308*** (0.000115)	-0.000281*** (0.000108)		-0.000350*** (0.000126)	-0.000354** (0.000144)
% Urban	-0.00457 (0.00385)	0.00123 (0.00316)	-0.00168 (0.00331)	0.000461 (0.00301)		-0.00726** (0.00290)	-0.00539 (0.00420)
Annual average per worker manufacturing wage	-0.0116 (0.0582)	0.0686 (0.0497)	0.0890* (0.0509)	0.104** (0.0479)		-0.0371 (0.0594)	-0.00696 (0.0652)
Annual average per worker manufacturing output (in \$)	0.00950 (0.00826)	0.0163** (0.00770)	0.0184** (0.00776)	0.0180** (0.00776)		-0.00453 (0.00696)	0.0151 (0.00930)
Years since statehood	0.00295 (0.00185)	0.000944 (0.00168)	0.000581 (0.00163)	0.00181 (0.00175)		-0.00318* (0.00165)	0.00122 (0.00253)
Homerule state (1 = yes)	0.743** (0.297)	0.179* (0.105)	0.365*** (0.140)	0.203* (0.108)		0.572** (0.267)	0.565* (0.294)
% Repeat defaults (5-year average)	0.074*** (0.016)	0.073*** (0.015)	0.066*** (0.014)	0.069*** (0.014)		0.062*** (0.014)	0.073*** (0.017)
West	1.218** (0.574)	1.222* (0.629)	1.579** (0.731)	1.517** (0.713)			0.983* (0.590)
South	0.744** (0.377)	0.916** (0.424)	0.951** (0.438)	0.797** (0.379)			0.611 (0.396)
Midwest	2.248*** (0.845)	2.291*** (0.831)	1.987*** (0.752)	2.238*** (0.837)			1.972** (0.831)
Pearson overdispersion test	1.827 Y	1.886 Y	1.736 Y	1.825 Y	2.792 Y	1.874 Y	1.785 Y
Year fixed effect	710	710	726	742	672	662	662
Observations							
Log likelihood	-570.926	-603.653	-597.172	-615.564	-614.307	-540.273	-523.755

Finally, columns 13 through 15 list the results when all of the main independent variables of interest are regressed together, with column 13 excluding all control variables, column 14 including all controls except for the geographic variables, and column 15 including all control variables. Here, *DebtProhibit* is negative in all specifications and statistically significant in two, *DebtGuard* is positive but only statistically significant in one specification, *HardBudget* is negative and significant in every specification, while *TaxLimit* is positive and also significant in every specification.

Overall then, the results appear quite robust. *DebtProhibit* was statistically significant in 5 of 6 specifications and suggested that such a constraint reduced the likelihood of municipal default between 11 and 21% depending on the specification. Further, *DebtGuard* although only statistically significant in 1 specification, suggested the opposite, actually increasing the likelihood of default between 5 and 34% depending on the specification. *HardBudget* was statistically significant in 6 of 6 specifications, and suggested a reduction in the likelihood of default between 22 and 34%. Finally, *TaxLimit* was statistically significant in 4 of 6 specifications and generally suggested an increase in the likelihood of default between 2 and 30%.

These findings shed light on some interesting implications. First, relatively more binding debt limits would appear to have a larger impact especially relative to procedural safeguards. Intuitively this would make sense, given that a binding limit strictly prohibits a municipal government from increasing debt levels beyond that limit, whereas a procedural safeguard might require some voting threshold to be met before debt could be increased above a given level. Although not necessarily surprising, what is more interesting is the consistently positive sign coefficient present when debt safeguards are in place.

This result might actually run consistent with the historical record, as well as more recent research on debt limits and the voting rules employed (Persson and Tabellini 2004; Lee et al. 2014).¹⁷ Further, more recent research shows that supermajority voting rules may actually lead to inefficiently high levels of debt, given that the decisive voter under such a model has greater leverage as do other coalition groups that might be needed to approve the issue. Given this, it may be the case that the decisive voter was able to extract relatively more for himself and his constituents than would otherwise be the case for a less stringent voting rule.

Additionally, these constraints may have acted to increase the overall transparency of the entire budgetary process, especially when providing voters with an active and direct role in the process. This may have translated into greater voter support and acceptance of increased public debt through time, and may have contributed to those future defaults (see Besley (2006) and Alt et al. (2002) for a more detailed overview of this issue). Further analysis of these possibilities, and the exact mechanism through which this occurred although beyond the scope of this current work, would be worthy of future research.

¹⁷ The historical and anecdotal evidence would suggest that many times these procedural safeguards were abrogated through technicalities in the language of the voting rule itself. Although beyond the scope of this current study, for a good overview of how these procedural rules were circumvented see Hillhouse (1936).

Next, the results found for constitutionally imposed tax limits are also generally consistent with the academic literature. Here again, the findings suggest that a binding tax limit on a municipal government increased the likelihood that a municipality would default. In general, tax limits make it more difficult for municipal governments to raise the funds necessary to pay down any accrued or newly added debt, and would therefore increase the likelihood of a default. This would seem to be corroborated by much of the literature in Sect. 2, where tax limits have been found to increase borrowing costs and deficits, while expenditure limits generally have a countervailing effect.

Finally, one of the more interesting results is that found for the presence of hard budget constraints. As noted, in the wake of the Panic of 1873 several states were inundated with pressures and in some instances legislation that would have required the state government to assume the outstanding debts of defaulting municipalities, with notable examples in Illinois and New York. However, these events led a number of states to impose explicit hard budget constraints on municipal governments. The results in this study indicate that the imposition of such a prohibition may have led local governments to significantly curtail expenditures and borrowing, though this conjecture would require far greater future research in order to better evaluate the actual impact.

Overall these findings may also have some ramifications for events that are unfolding today, especially at the municipal level within the U.S. Several high profile and relatively recent bankruptcies in Jefferson County, Alabama, Detroit, Michigan, Stockton, California, and Harrisburg, Pennsylvania among others have shed light on an increasing problem within municipal public finance. Although many of these problems are tied to under and unfunded pension obligations promised to public sector employees, they emerged in the aftermath of financial crisis, just as municipal defaults occurred in the wake of the panics of 1873 and 1893.

In this context it is important to realize that municipal default or bankruptcy has not occurred anywhere near the scale today as it did during the previous periods discussed. Further, many of the constraints analyzed in this current study do still exist, albeit in altered form through constitutional, legislative, and judicial change. Given that, although beyond the scope of this current paper, it may be worthwhile to analyze how these constraints may have played a role in stabilizing or destabilizing current municipal finances through the Great Recession.

One additional consideration has been the potential erosion of hard budget constraints that are either explicit or implicit. As the above results indicate, those hard budget constraints appeared to have been the most successful at minimizing municipal default through the Panic of 1893. However, as municipal pension obligations mount this may again raise calls for state or even federal bailouts from these obligations. This very possibility became an issue in 2012 with the federally proposed Detroit Growth and Stability Act (H.R. 2012) which would have provided \$500 million in long-term debt assistance to the city at the height of its fiscal crisis. Though it never passed, it does show that the potential is there for this to become a larger issue in the future.

Combined then, each of these results not only shed light on the historical significance that these fiscal constitutions had, they also provide avenues for future research regarding their current status and potential impact, especially in the wake of the recent

defaults experienced by several high profile cities around the United States and also internationally.

6 Conclusion

This paper has explored an important, yet under researched issue regarding municipal finance and default. Specifically, this work has addressed how municipal fiscal constraints might impact the likelihood of a municipal default from occurring. Through the nineteenth century state and local defaults and even repudiations were a relatively common occurrence during times of financial crisis. The aftermath of these episodes saw the passage of binding fiscal constitutions on both state and local governments, meant to limit and minimize the prospect of these events again occurring in the future.

The scope of this study then has been to evaluate how successful these restrictions were in achieving their stated goals. Overall, the results would suggest that binding prohibitions on the accumulation of debt, rather than procedural safeguards significantly reduced the likelihood that a municipal government would default. Interestingly, but consistent with the literature procedural safeguards actually increased the likelihood. Further, municipal tax limits also increased the likelihood that a municipal government might default. Finally, hard budget constraints seemed to have the most profound effect on municipal default, significantly reducing the overall likelihood.

Given this, these results shed light on an important yet under-researched era in U.S. fiscal history and also provide a number of avenues for future researchers to pursue. Specifically, it would be important to track how and why these constraints have evolved over time and also the role that they play today or have during other moments of municipal default during the twentieth century. Along with this current work, these issues may be better able to evaluate the impact and lasting effect that these institutions have had on state and local public finance.

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