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POLITICAL BONDS:
POLITICAL HAZARDS AND THE CHOICE OF MUNICIPAL FINANCIAL INSTRUMENTS

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ABSTRACT

We study the link between the choice of rule-based public contracts and political hazards using the municipal bond market. While general obligation bonds are serviced from all municipal revenue streams and offer elected officials financial flexibility, revenue bonds limit the discretion that political agents have in repaying debt as well as the use of revenues from the projects financed by the debt. We predict that public officials choose revenue bonds when elections are very contested to signal trustworthiness and transparency in contracting to the voter. We test this hypothesis on municipal finance data that includes 6,500 bond issuances nationwide as well as election data on over 400 cities over 20 years. We provide evidence that in politically contested cities, mayors are more likely to issue revenue bonds. The correlation is economically significant: a close victory margin of winning candidates and more partisan swings increases the probability of debt being issued as a revenue bond by 3–15% and the probability of issuing bonds through competitive bids by 7%. We test a few additional hypotheses that strengthen the argument that the choice of revenue bonds is a political risk adaptation of public agents so as to signal commitment and lower the likelihood of successful political challenges of misuse of funds.

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1 Introduction

Municipal bonds are commonly issued by cities and states to raise money for public projects. These securities comprise a substantial fraction of the overall American securities market. The municipal bond market accounted for $3.7 trillion in 2014, roughly 10% of the American public debt.

The are two main types of securities in this market: general obligation (G.O.) bonds and revenue bonds. In this paper, we analyze municipal bonds as a type of long-term public (debt) contract entered into by an elected official. These two types of bonds have different characteristics. The proceeds of G.O. bonds are used at the discretion of the elected official and the bonds are backed by all forms of city finances, including general tax revenues, and offer politicians flexibility in spending. In contrast, revenue bond proceeds are earmarked for specific purposes and are backed by the revenues related to the investment project they finance. A combined treatment of municipal finance and political governance is herein proposed. Analogously to Williamson (1988), where "debt governance works mainly out of rules, while equity governance allows much greater discretion," we argue that revenue bonds are more rule-based than G.O. bonds. Accordingly, we consider a G.O. bond to be a flexible, incomplete-type contract and a revenue bond as a specific-type contract. Moreover, by selecting revenue bond financing the politician can self-restrict the scope of her discretion to insulate from charges of improper use of public monies.

We use the municipal bond market to explore the determinants of public contracts. A significant body of previous work on private and public contracting focuses on concerns related to efficiency (such as the choice of auctions versus negotiations to sell contracts). Another prominent strand of literature related to government contracts centers on how contractual discretion relates to the accountability of public officials (elected and appointed) with contracting power.

Research suggests that financial needs and risk allocation are the main factors influencing the choice of municipal bond type (Kidwell and Koc 1982; Ingram, Brooks, and Copeland 1983). In this paper, we offer empirical evidence for a complementary explanation and empirically test for the importance of electoral considerations in public contracting, specifically in issuing city bonds.

We draw on recent theoretical work about the threats imposed by "third-party/political opportunists" on public officials and conjecture on several reasons why elected officials select revenue bonds when elections are tight. First, by choosing revenue bonds city officials signal "probity" (i.e., transparency and trustworthiness to deliver a project) and limit speculation on the discretionary use of public monies to enrich themselves and buy political favors. Second, earmarked proceeds limit the discretion of a successful challenger in the event that the incumbent loses the next elections. For example, consider a city where the incumbent's constituents care about roads, but the challenger's constituents care about schools. If the incumbent's winning margin is close (so the mayor's seat is more contestable), she will issue revenue bonds to lower the challenger's discretion of use of funds for, say, schools *ex post*.[1] Third, unsecured debt (i.e., G.O. bonds) requires more information disclosure to lenders on municipal financials than secured debt (Myers and Majluf 1984), which a public agent in a politically contested position maybe less likely willing to provide.

This article proceeds as follows. We first motivate this topic with a discussion of the theoretical literature. We then describe the model as well as the institutional setting in which we will test it. A description of the data and proposed empirical test follows, and then the results of this estimation exercise. Finally, we provide some concluding thoughts.

2 Conceptual Framework

2.1 Relevant Literature and Proposed Contribution

This study relates to two streams of research on contracts. One common view in economic literature is that in the context of contracts for goods and services, competition (auctions) gives firms strong incentives to be efficient and reveal their private costs, relative to negotiations (Bulow and Klemperer 1996). Moreover, because open auctions are a transparent sale procedure, they are considered less vulnerable to either corruption or favoritism. This view explains why competitive auctions are often used to award large contracts in public procurement. Recent work suggests, however, that the trade-off between auctions and negotiations in procurement may be more accurately determined by the complexity of the project. When dealing with complex projects, buyers may have difficulties specifying all possible contin-

[1] Analogously to a selective debt overhand effect (Myers 1977).

gencies. Thus incomplete contracts may give rise to costly ex-post adaptations (Bajari and Tadelis 2001). This line of research suggests that simple projects should have detailed designs and be procured using fixed-price (competitive) contracts. Complex projects, on the other hand, are better managed by investing less in project design but using cost-plus contracts to facilitate easier negotiations in the course of contract completion. Recent empirical work gives support to this hypothesis (Bajari, Houghton, and Tadelis 2014).

Another substantial body of literature about government officials' contractual discretion has focused on public accountability of officials. Contracting "rigidities" here are the large number of formal processes put in place to insure against governmental opportunism. "Red tape" regulations are designed to reduce public employees' ability to take actions that are potentially at odds with the general public interest (Kurland and Egan 1999). In other words, such regulations are bureaucratic instruments that restrict public officials' discretion.

These studies are part of the literature exploring the determinants of contract form (e.g., fixed-price versus cost-plus) on the basis of economic efficiency considerations. There has, however, been less study of how political factors influence elected officials and features of public contracts. Laffont and Tirole (1993) suggest that the connection "between procurement and regulation and the associated administrative and political constraints is still unknown to us or is still in a state of conjecture ... [I]nstitutions are endogenous and should as much as possible be explained." To fill this gap, Spiller (2008) and Moszoro and Spiller (2012, Moszoro and Spiller (2014) have recently proposed a complementary rationale for unique features of public contracts in the presence of competitive political markets (multiple competing political parties). They argue that the choice of contract by an official is also likely to be influenced by her perceived political hazards, such as challengers for her public office.

In the Moszoro and Spiller (2012) approach, there are four players involved in a public contract: the incumbent political agent, the private contractor who can provide the public good/service, the potential political opponent, and the voting public. The public is implicated in any transaction between politician and private contractor because contracts affect social welfare and the public budget. A political challenger can be involved for similar reasons, as well as intrinsic motivation to be elected to office. When competing for office, an opponent can mobilize the public to scrutinize an incumbent public official's decisions. Such scrutiny

has the potential to reveal corruption, favoritism, or other improprieties in public contracting. This public auditing of politicians is a challenge to what Williamson (1999) calls the "probity" of the public official (and is why Spiller often refers to political challengers as "third-party opportunists"). Public auditing induced by political challengers may discredit the official in power, and at the very least, can lead her to incur expenses while defending her actions. In extreme cases, incumbents may be vulnerable to losing office.

The "political contestability" framework of Moszoro and Spiller (2012) thus leads to the prediction that in political environments where elections are heavily contested, politicians will make procurement decisions that avoid the appearance of indiscretion to deter successful political challengers. Using this recently developed theoretical framework, we contribute to the literature on features of public contracts by empirically examining how city-level debt contracts are correlated with political competition and its accompanying public auditing, or "third-party opportunism." We use municipal bond issuances as a contractual setting in which to test this hypothesis.

2.2 Institutional Setting: U.S. Municipal Finance

Local governments have been issuing public bonds for decades. They are generally used to finance public infrastructure needs such as roads, schools, power and water facilities, hospitals, public housing, etc. The U.S. municipal bond market is a large component of domestic public finance, with the total outstanding debt equaling an all-time high of 22% of U.S. GDP in 2010. The management of public debt, both from the perspective of the borrowing entity and the market system in general, is critical to financing infrastructure.

There are two basic types of public debt securities issued by municipalities: general obligation and revenue bonds. These two types differ in the source of future debt repayment and the use of funding. General obligation debt instruments commit the full faith and credit of the issuing city (or state) government to repay debt obligations from any available revenue stream. In other words, for G.O. bonds, general tax revenues can (or must) be used to pay the bonds. Revenue-backed debt, on the other hand, is supported from dedicated project fees or other explicitly allocated sources of revenue. Debt from revenue bonds is thus guaranteed to be repaid only through the net operating revenues (operating and maintenance costs subtracted from annual completed project revenues) of the public enterprise. Revenue-backed

projects may include airports, toll roads/bridges, or parking garages. Given these differences in how funds can be used and how debt must be serviced, the two debt instruments impose different constraints on public officials. Debt through G.O. bonds gives cities flexibility in how municipal funds are used to fund government projects and how debt is later repaid. Revenue bonds, on the other hand, constrain public officials' use of project funds and revenues.

In principle, the nature of the project to be financed should determine the type of debt to be utilized. Revenue bonds are typically used in public enterprises that later generate revenue through service charges or user fees. By contrast, G.O. bonds were initially used for projects that generate less revenue, such as roads and government office buildings. In practice, however, general obligation debt can be, and often is, used for revenue-generating projects because of its cost advantages (i.e., lower transaction costs) over revenue bonds (Vogt 2004). Revenue bonds often require additional components not found in general obligation debt instruments, such as conducting a feasibility study, as well as covenants and indentures to protect investors (Howell-Moroney and Hall 2011). Revenue-backed debt often requires rigorous revenue forecasts, project sensitivity tests, and various forms of risk analysis to be successful. These elements add significant costs to municipalities that are often resource-constrained.

The choice between general obligation bonds and revenue bonds can also be thought to follow the rationale developed for corporate versus project financing (Esty 2003; Yescombe 2013). In corporate finance, projects are financed from a pool of resources, and debt is serviced from corporate cash flows. When a corporation chooses to undertake an investment project, cash flows from existing activities fund this project. The firm has the option to roll over the project's capital into newer ventures within the company, without submitting decisions to the discipline of the capital market. Lenders have recourse to the assets of the corporation. Thus, corporate financing is a more flexible form of financing.

Conversely, in project finance, debt is served only from the cash flows generated by the financed asset, typically through a special purpose vehicle (SPV), and the lenders have no (or limited) recourse to the shareholders. In this way, the specific cash flows and risks of a project can be isolated from the corporate cash flows and risks.

In sum, revenue bonds impose rigidities on public officials in how they use public funds

and service public debt relative to general obligation debt. There are also additional transaction costs associated with issuing revenue-backed debt. Thus, we propose that revenue bonds can be conceptualized as a rigid debt contract.

3 Moszoro-Spiller Model of Contractual Rigidity in the Context of Public Debt

3.1 Description of Model

Moszoro and Spiller (2012) develop a model to account for the role of political risk faced by politicians in contracting as discussed in Section 2. This model suggests that the lack of flexibility in public procurement is a deliberate part of contract design that reflects an elected official's political risk adaptation to limit hazards from opportunistic political opponents. We now present some key results (adapted for our context) to motivate our empirical test.

Public officials' choices regarding contract features will be influenced in part by the need to prevent public suspicion of favoritism or corruption that may be associated with flexible/discretionary contracts. Contract rigidity thus serves to insulate public officials from allegations of impropriety in heavily contested political markets. In the context of local public finance, a revenue bond is a more specific and rigid financial contract than a general obligation bond, since G.O. bonds are secured by a city's ability to use all legally available resources, such as tax revenues, to repay bond holders.

Contracting cost rises exponentially with contract specificity and rigidity, and helps determine the trade-off between mayoral flexibility in using city finances and the cost of contract writing (Schwartz and Watson 2012). In the Moszoro-Spiller model, elected officials minimize both security issuance costs and political costs, which are given by:

$$\min_{R} \Phi = T_0 \ \rho(R)\tau(R) + K(R) \tag{1}$$

where R is the rigidity of a bond. As described above, G.O. bonds represent low-rigidity instruments, and revenue bonds are high-rigidity instruments. $K(R)$ indicates the cost to a public official of issuing a bond that rises in bond rigidity. ρ is the likelihood of a challenge by a political opponent (in the language of Spiller (2008, Moszoro and Spiller (2014), an "opportunistic third party"), and τ is the likelihood of success of an opportunistic challenge. ρ and τ are both decreasing in bond rigidity.

The intuition for these assumptions is that when contract terms leave more discretion to the public official, there is more room for outsiders to challenge the official. As such, the cost to a political challenger increases with the rigidity of the contract, R; thus, ρ and τ decrease with R. T_0 is the political cost incurred by the official if a challenge by third parties is successful. Thus, the left term indicates a politician's expected political cost from a bond, and the right term is the issuance cost.

Potential challengers to a public official know their prospective benefits from challenging an incumbent. However, the elected official does not know *ex ante* the particular value of these benefits for the third parties. Third parties' overall benefits from an opportunistic challenge correspond to a random normally distributed variable $\widetilde{T_0}$.

The ability of opportunistic political opponents to challenge public officials will depend on the political environment in which officials make contracting decisions. Opportunistic challenges of public contracts require "political contestability" of elected officials or a fragmentation of the market for politicians (Spiller 2013). In other words, there must be a certain level of competition between opposing parties: "centralized party power limits the upward mobility of political mavericks, and thus the potential for internal third party opportunists."

Moszoro and Spiller (2012) show that in equilibrium, political opportunists challenge a contract (and perhaps more directly, the incumbent official) only if the expected gains $\widetilde{T_0}\zeta\tau$ are bigger than the challenging costs $c(R)$. These costs may include campaigning to raise public awareness, lobbying, and reputational costs borne by the challenger:

$$\rho \equiv \Pr[\widetilde{T_0}\zeta\tau(R) > c(R)], \tag{2}$$

where $\zeta \in (0, 1]$ is a political concentration parameter. If $\zeta = 1$, a challenger's benefits are symmetrical to the incumbent's political costs (e.g., a bipartisan political market); if $\zeta < 1$, the political market is fragmented and the challenger does not internalize all benefits from a successful protest.

Challenging costs $c(R)$ rise in R. Reduced flexibility by earmarked financing and rigid bond servicing limits the likelihood of opportunistic challenge lowering third parties' expected gains (increasing the costs of a challenge). Any deviation from equilibrium rigidity R^* makes the elected official worse off:

(a) If $R < R^*$, then $\tau(R) > \tau(R^*), c(R) < c(R^*)$, therefore $\rho > \rho^*$ and $T_0\ \rho(R)\tau(R) -$

$T_0\ \rho(R^*)\tau(R^*) > K(R^*) - K(R)$ (the increased political cost of reducing rigidity offsets any decreases in bond issuance cost)

(b) If $R > R^*$, then $T_0\ \rho(R^*)\tau(R^*) - T_0\ \rho(R)\tau(R) < K(R) - K(R^*)$ (the cost increase of issuing more rule-based debt outweighs the decrease in political cost)

3.2 Hypotheses: Bond Features under Political Contestability

We argue that whether municipal projects should be financed by revenue bonds or G.O. bonds depends not only on the characteristics of the assets, but also on the political hazards of the incumbent public agent. Political-cost reasoning supports the use of revenue bonds (rules) to finance public interest assets, while idiosyncratic political capital is financed by G.O. bonds (discretion).

Moszoro and Spiller's (2012) model suggests that elected officials will respond to greater political risk with higher contractual rigidity to lower the likelihood of a successful challenge. Forming contracts with more rule-based terms signals transparency and integrity to constituents. We thus have empirically testable hypotheses on how the design of municipal bond issues depend on the political environment: in cities where public officials face a high level of political competition (where candidates face viable competitors who can mobilize public scrutiny of their decisions or, alternatively, high ζ), revenue bonds will be chosen more often than in non-competitive municipalities (low ζ). When political opposition is weak (lower ζ), the incumbent will not insulate herself from political challenges through contractual rigidities. In the extreme, a very low ζ environment resembles a single party system.

If political risk affects elected officials' contract choices, then the time when bonds are issued are implicated. In particular, officials may engage in strategic timing of issuing different bond types, choosing more restrictive bonds to signal transparency and integrity closer to an election (i.e., in years 3 and 4 of a typical four-year political cycle).

In sum, we test the following hypothesis:

Hypothesis 1 *Elected officials are more likely to issue revenue bonds in politically contested municipalities.*

Hypothesis 2 *Elected officials are more likely to issue revenue bonds in politically contested municipalities closer to the next elections, i.e., later in a mayoral term.*

Our definition of political risk as political contestability will rely on the outcomes of city general elections for mayor. We now discuss how we construct these measures as well as our methodological approach.

4 Data and Empirical Methodology

4.1 Data Description

To carry out this study, we construct a national dataset of municipal debt issuances, mayoral elections, as well as economic and demographic characteristics for U.S. cities and towns. In this section, we describe the dataset used in our empirical analysis.

We are interested in analyzing how political risk affects public officials' contracting, using characteristics of municipal bonds as a measure of contractual rigidity. To this end, we first create a comprehensive database of municipal bond information using information on all public bonds from Bloomberg Financial LP. We gather data for all municipal issues between 1980 and 2002. Each city-issuance observation contains several pieces of information, including the specific issuer (including city and usually the affiliated municipal agency), the date of issue, the coupon type (fixed, zero coupon, etc.), the size of the project for which the bond is issued, the commercial grade of the bond, the industry in which the project requiring financing is being undertaken, the sale method for the security (i.e., whether the issuance was negotiated or competitively bid-for),[2] and most importantly for our purposes, the bond type—G.O. or revenue bond.

The mayoral election data used in this paper is based on a sample of cities described in Ferreira and Gyourko (2009). The city-level information is based on a survey of all cities in the United States with more than 25,000 inhabitants as of the year 2000. Information was requested on the timing of all mayoral elections since 1950, the name of the elected mayor and the runner-up candidate, vote totals for each candidate (and aggregate vote totals), partisan affiliation, the type of election (i.e., partisan or non-partisan), as well as other information related to specific political events, such as runoff elections or special elections. We start with data for more than 5,500 elections held in 575 cities between 1950 and 2005. Importantly,

[2] A sale of public debt allocated by a competitive bid mechanism is one in which buyers compete by offering lower interest rates.

Ferreira and Gyourko (2009) suggest that the data are representative of cities nationwide across many observable dimensions (although the municipalities in the sample are larger than the average municipality).

We are able to collect data on 38,904 different municipal debt offerings made by US municipalities between 1980 and 2002. Not all of the debt-issuing cities over this time period are contained in the sample for which we have election data. Using a computerized "fuzzy match," though, we are able to match the bonds sold for 416 of the 575 cities for which we have political data. In total, we are able to match 6,505 of the bonds for which we have data to election and controls data.

As other studies point out (see for example, Gao and Qi (2012)), there are potential confounding factors that may affect a mayor's choice of flexible or rigid funding choices. We thus control for several local-level attributes. Using data from the U.S. Census Bureau, we account for the size of a municipality using population and population density.[3] Moreover, we control for a city's overall economic conditions using both real income per capita and the unemployment rate from the U.S. Bureau of Economic Analysis. At the current time, we were only able to obtain this information at the county level, but argue that this data is highly correlated with city-level traits, and hence would still serve our purposes well for this empirical exercise. Finally, we control for a city's financial stability/the riskiness of projects undertaken using bond ratings data from Moody's and Standard & Poor's (S&P). We converted the bond ratings into cardinal codes as in Anderson, Mansi, and Reeb (2003). The ratings conversion codes are in Table 1. We then averaged the conversion numbers for each municipality, year, and type of bond.

After collecting all the data, we link the municipal bond data to city election outcomes.

4.2 Empirical Strategy

Our goal is to understand if a public official's exposure to political competition and political risk affects the type of debt instruments that she uses. All results presented here are correlational.

Elections typically occur every two or four years, so there are many more municipal-year

[3] We use the natural logarithm of population and population density to normalize their distributions.

observations in our bond data than in the elections data. As such, we adopt two strategies for our empirical analysis to analyze the correlation between political contestability and bond type. First, we use a linear probability model and the bond-level data to measure if political contestability,PC, is predictive of type of individual bonds. We regress a dummy variable (revenue bond = 1) on various measures of political risk and control variables. Second, we aggregate bond data by both year and election cycles. Both of these approaches allow us to assign all bonds within a mayor's term to that mayor.

The basic linear probability specification for the first strategy is as follow:

$$BondType_{i,m,t} = \alpha_0 + \beta_1 PC_{i,t} + \gamma X_{i,m,t} + \varepsilon_{i,m,t} \tag{3}$$

where i is the bond index, t is the year of issue, and m is the municipality of issue. PC_m is our political contestability measure that describes the extent to which the mayor presiding over the municipal bond issue is subjected to the risk of opportunistic challengers.

To estimate the the coefficient on PC_m we use two main sets of political risk measures that are adopted from Moszoro, Spiller, and Stolorz (2013), who analyze how the political risks faced by governors affect procurement contract rigidity as proxied by length and contractual features. We measure both the closeness of both individual mayoral races as well as the degree to which the political party in control of the mayor's seat changes over time (i.e., the frequency of "partisan swings").

The first measure we denote *margin*, and it is defined as the difference in a mayoral election between vote shares obtained by the winning party candidate and the runner-up. We create three variants of this measure, with the first being the straight-forward victory margin:

$$Margin_{m,t} = W_{m,t} - RU_{m,t} \tag{4}$$

$$Margin^2_{m,t} = (W_{m,t} - RU_{m,t})^2 \tag{5}$$

$$Large\ margin_{m,t} = \begin{cases} 1 & \text{if} \quad |W_{m,t} - RU_{m,t}| > \lambda \\ 0 & \text{if} \quad \text{else} \end{cases} \tag{6}$$

where $W_{m,t}$ and $RU_{m,t}$ are the winning and runner-up parties' vote share in municipality m at time t. For *large margin*, λ is an *a priori* threshold for a given level of "high" political contestability (usually 10% for national and 20% for local races in the U.S.; we use $\lambda = 20\%$), all in basis percentage points. The intuition for using *margin* as a possible measure

political contestability measures is straight-forward: a large margin of victory indicates a less competitive political market. In our framework, if a mayor is elected by a slim vote margin (and hence faces a highly competitive political market and credible political challenges), she will enjoy less flexibility to issue unconstrained municipal debt. To prevent future political challenges, she will engage in more transparent contracts to signal probity to voters. In the context of municipal finance, we expect that in cities with large victory margins, mayors will be less likely to issue revenue bonds, where the mayor cannot control the use of funds nor the method of debt servicing. In most regressions, we use *margin quintiles* to correct for the abnormal distribution of *margin*. Margin quintiles correspond to the "ranking" of political contestability.[4]

Our second measure of the political contestability faced by elected officials is the degree to which the mayor's seat changes party hands over time, also adopted from Moszoro, Spiller, and Stolorz (2013). We denote this risk measure *partisan swings* defined as:

$$Partisan\ swings_{m,t} = \sum_{t=1}^{3} PartyChange_{m,t} \tag{7}$$

where $PartyChange$ is a dummy variable equaling one if a mayor's seat changes party hands in municipality m at time t.

These two basic measures of political risk (six including variants of the margins and swings) faced by a mayor are used in Equation (3) for PC. The coefficient of interest is then β_1. As described above, we also control for several factors that may also explain the choice of G.O. or revenue bonds. We account for project complexity using the size of the deal. We control for economic conditions using per capita income and size by city population. We also control for municipality and time fixed effects to account for unobserved fixed regional effects or time-specific effects. We also control for the riskiness of projects and city finance by controlling for a city's average bond rating (Rubinfeld 1973). In future work, we hope to also control for municipality indebtedness to tax revenue.

In addition to our binary choice regressions, we also aggregate the bond data to the city-year level, and perform similar estimations to above. We then re-test hypothesis (1) by

[4] Quintiles are different in the span of margin of victory, with their width increasing in the upper quintiles. We also run the regressions using fixed 20%-margin bins instead of quintiles and obtained similar results.

estimating OLS regressions of the share of revenue bonds of total bond issues (both by year and cycle) on our measures of political contestability:

$$\left[\frac{RB}{GO+RB}\right]_{m,t} = \alpha_0 + \beta_1 PC_{m,t} + \gamma Controls_{m,t} + \varepsilon_{m,t} \tag{8}$$

where m is the municipality index. The coefficient of interest β_1 indicates the significance of political risk to city officials when choosing the proportion of overall debt that will be issued as the more rigid form of debt. PC_m are the same political contestability instrumental variables in municipality i as described above. RB is the total value of all revenue bonds issued in city m, while GO is the total value of all general obligation bonds issued. We use the same set of controls as above, except bond-level attributes now are a deal-weighted average.

5 Results

5.1 Descriptive Statistics

Before moving to the main analysis, we discuss some basic features of the city-level data, which is summarized in Table 2. Panel A suggests that we are able to analyze a broad range of municipalities. There are 416 cities across 45 states in our dataset, with a range of demographic and economic characteristics. The cities range from very urban (around 32,000 residents per square mile) to quite rural (10 residents per square mile). There is also variation in size—the average county population (which we use temporarily as a proxy for city population) is 1.5 million, but the range of the population distribution is over 9.5 million. The cities vary by economic conditions as well. Average unemployment over the sample ranges between 2 and 13% over the time period of our sample. Similarly, there are some cities that are wealthier than others, as judged by median per capita income. The average municipal median income is 9,043 USD.

There is also heterogeneity within the city-level election data (see Table 2, panel B). There is a relatively even distribution of elections in which Democratic candidates win (39%) and Republicans win (32%). The average margin of victory for a winning mayoral candidate is 39%. This large margin, however, can be attributed to the fact that several elections in our dataset are uncontested (just one candidate, who wins by default). Excluding these elections, the average margin decreases substantially to 20%. Importantly, however, taking victory margin as a measure of competitiveness, the political races vary substantially between very

competitive (suggesting high political contestability) and noncompetitive (not contestable environments for political challengers).

General obligation bonds and revenue bonds account for 27.55% and 52.19% of our observations, respectively (see Table 2, panel C). Other types of bonds issued by municipalities are: Certificate of Participation (3.84% of observations), G.O. Limited Bonds (2.11%), Notes (0.02%), and Special Assessment (3.07%), Special Tax (2.60%), and Tax Allocation (3.62%) bonds.

Because G.O. and revenue bonds are by far the main types in our sample, we collapse these categories into a dichotomous "G.O. or revenue bond" categorization. On average, municipal bonds are issued for deals worth approximately 86 million USD. According to the summary statistics, public bonds are issued for a variety of types of projects. In our sample, bonds are issued most commonly to finance education projects (i.e., building schools, universities, etc.). Interestingly, the majority of the bonds in our sample are issued via a sale mechanism. Only 17% are issued via a competitive bid process (bonds are awarded to the bidder offering the lowest interest cost). The average bond rating across two indices is between AA and A+ according to S&P (Aa3 and A1 for Moodys). Bond ratings are concentrated at the higher end of the ratings scale.

5.2 Main Results

We start by estimating Equation (3) using a linear probability model, and probit and logit models for robustness. Table 3 provides estimates from the sparse baseline specification, separately using the three different measures of political contestability and few city control variables. We control only for the size of the municipal offering (log-transformed deal size) and the riskiness of the city's finances (the average bond rating). All regressions were estimated using heteroskedasticity-robust standard errors.

The results provide evidence that political risk does influence a city's selection of bond type. As discussed above, the main independent variable of interest is PC_m, which is some variant of either *margin* or *swings* as defined in Equations (4) through (7). In column (1) of Table **??**, we see that the margin of victory in a mayoral election is negatively correlated with the likelihood of issuing debt as a municipal bond rather than a G.O. bond. The negative sign on the coefficient is as expected, since an increase in the margin of victory suggests

a less competitive political market. This less competitive institutional environment raises the likelihood that a public official will issue the more flexible form of debt contract. The coefficient is economically and statistically significant, suggesting that an increase in the margin of victory by quintile lowers the probability of issuing a bond as revenue-backed debt by 1.9%.

The sign on the *large margin* is negative and significant. The larger magnitude is as expected, since our theoretical framework suggests that if a mayor's margin of victory is arbitrarily large (in our case, a difference in winner and runner-up vote shares larger than 20%), then the likelihood of issuing a revenue bond should be relatively low. The coefficient on *large margin* is indeed negative and larger than the coefficient on *margin*: large margins of victory are associated with 4.5% decrease in the probability of issuing revenue bonds.

The results in column (3) in which our measure of political contestability is the number of partisan swings in the previous three elections further suggests that political risk is a factor in public debt issuance. One change of a mayoral political party in recent election cycles increases the likelihood of issuing revenue-backed debt rather than general obligation debt by 11.2%. We also conducted the same regressions using a probit (columns 4–6) and logit (columns 7–9) specifications; the results are qualitatively similar.

Table 3 also provides further interesting evidence about how political factors may affect public officials' contracting decisions. In particular, when testing Hypothesis 2 it appears that the year within a mayor's political cycle may be meaningfully correlated with the likelihood of issuing a revenue bond. In particular, holding other factors constant, the issuance of debt as a revenue bond is most likely in the third and fourth years of an election cycle, ranging between 5.2 and 9.4%. One possible explanation for this is that in the early years of a mayor's term she feels less need to insulate herself from allegations of impropriety, so issuing more flexible debt is less risky at the beginning of a mayor's term. However, in their third year, a mayor is beginning to prepare for a potential reelection campaign, and so issues the more rigid form of municipal debt to maintain the appearance of probity. The same can be said for the fourth year, although perhaps by this point, a mayor's image is more crystallized in the minds of voters.

To sum up, our baseline estimates suggest that political contestability is a meaningful

determinant of whether a municipal bond is issued as a revenue bond. The results are consistent with the hypothesis that in cities with a high degree of political competition, as approximated by low margins and more shifts in political power over time, one is less likely to observe more flexible G.O. bonds issued.

In Table 4, we adopt city-specific and bond-specific controls in the spirit of Gao and Qi (2012). We also include state and year-fixed effects to control for either time-invariant state conditions and laws, or nationwide shocks that may affect the selection of bond features.

We again begin with margin-of-election-win as our measure of political contestability. An increase by a quintile in *margin* is associated with a 2.3% decrease in the likelihood of issuing a revenue bond. The point estimate for *large margin* is significant: a victory above 20% the mayor race is correlated with a 3.7% decrease in likelihood of an issuance being a revenue bond. The estimate in column 3 using *party swings* as the independent variable of interest is also qualitatively similar: more party swings are correlated with a 14.7% increase in the likelihood of issuing revenue bonds. The results are consistent with the hypothesis that in districts where the party in power is historically susceptible to change (suggestive of more evenly distributed political power and more political competition), mayors are more likely to insulate themselves from opportunistic challengers by issuing securities as revenue bonds.

Finally, to address potential concerns about within-group or serial correlation, in columns 4–6 we adjust the standard errors by allowing for correlation in the error term by city. With clustered standard errors, the results remain similar to without this correction. Margin measures of political risk are not significant. This may be due to the short time series and low within-city variation, as we only have 5–6 elections for each city.

In Table 5, we run the regressions of models 1–3 from Table 4 in subgroups by the ruling political party at the moment of debt issuance. Interestingly, the relationship is not symmetrical: politicians affiliated with opposing parties do not react similarly when facing similar political hazards. Independent officials seem to be the most responsive to political hazards. Democrats are more sensitive to political hazards than Republicans. This may suggest that Democrats are politically driven, while Republicans are agenda/ideologically driven.

We now discuss results when aggregating bonds by year and election cycle. The results

are similar. Table 6 shows the correlation between political contestability as measured by election victory margin and the percentage of municipal bonds issued as revenue bonds within a year (columns 1–3) and mayor's term, i.e., her political cycle (columns 4–6). The signs on the coefficients of interest are as expected: as the margin of victory in a mayoral election increases the proportion of revenue bonds decreases. The *margin* and *large margin* variables are of the expected sign, statistically significant, and economically meaningful: an increase in one quintile in the winning margin decreases by 3.9–4.1%, and a *large margin* of win increases by 8.3–10% the share of revenue bonds in the portfolio of debt issuance. *Partisan swings* are of the right sign, but not significant at the year and election cycle aggregation.

5.3 Sale Method: Negotiated versus Competitive

Previous empirical papers have focused on the economic efficiency considerations that affect the choice of award procedure for contracts. In their widely-cited article, Bulow and Klemperer (1996) show the benefits of competitive auctions as a mechanism for the sale or procurement of government goods and services. Recent work highlights the potential limits of competitive sale mechanisms. Work by Bajari, McMillan, and Tadelis (2009), for example, suggests that the decision between auctions and negotiations should depend on the project's complexity.

Using data on the method of bond sale, we explore whether political considerations can play a role in awarding mechanisms for public (debt) contracts. We supplement our main hypothesis by exploring whether political contestability risk is significantly correlated with the method of sale. If the desire to demonstrate probity to the voting public significantly affects current politicians, we would expect mayors in more contested municipalities to use competitive bid procedures to sell bonds. Negotiated sales of public debt represent a more discretionary form of public contracting. Under this sale method, an underwriter is selected to purchase the public securities, and the security terms are tailored to meet the demands of the underwriter's demands. On the other hand, competitive sales are analogous to auctions and are a more rigid sale mechanism: the bond is simply awarded to the bidder offering the lowest interest cost.

Using the same data as before, we test whether in areas with less political scrutiny mayors choose the negotiated sale procedures to issue public debt. Confirmatory evidence

would further support the notion that political considerations may supplement economic efficiency considerations as an explanation for features of public contracts. As in our first set of regression above, we estimate linear probability regressions with the sale method as the dependent variable (with a dummy variable equal to one if the method is competitive sale). The specifications are otherwise identical to those above.

The results from this set of regressions are consistent with our predictions. Table 7 presents estimates from a linear probability regression of the competitive sale dummy variable on political contestability as measured by the margin of victory, large winning margin, and partisan swings. Similar to Table 3, the coefficients on the political risk measure are signed as expected and significant. The point estimates suggest that an increase in the winning candidate's margin of victory one quintile is correlated with a 1.7% decrease in the probability of debt being issued in a competitive bid. The *large margin* variable is larger in magnitude—5.4%—suggesting that very contested municipalities are more likely to issue bonds through competitive sales at a level that is both economically and statistically significant.

We see similar results using the number of party swings to measure political risk (column 3). The sign is as expected and significant. The point estimate on *partisan swings* suggests that one additional political party change in the last three cycles increases the likelihood of using a competitive sale procedure by 7.4%.

When including city-level economic and demographic controls (columns 4–6), the signs and significance of the coefficients remain the same, with even higher magnitudes. When clustering at the city level (columns 7–9), we only lose significance on margin measures (we have a limited number of elections per city). As a robustness check, we rerun the same specification with logit regressions: Results remained qualitatively the same (see Table 8).

6 Limitations and Prospective Research

Our research is stinted by a number of limitations. First, our time series are from 1980 to 2002, with a maximum of five elections and three partisan swings in this period. The within-city variation is too small to check for political contestability clustered at the city level. Second, the demographics and financial data on municipalities is not standardized, so we had to rely on county-level data. Third and most notably, all regressions presented

here are correlations between political risk and either the probability of issuing a revenue bond or the composition of revenue bonds relative to total bonds. One possible way to test for a potential causal relationship between political risk and bond type would be to exploit an exogenous shock to political risk (e.g., an external event that affects electoral changes of incumbents differentially). Unfortunately, we are unable to exploit such variation with our data.

Two alternative (and interrelated) stories to the third-party political opportunism hypothesis might confound our results. Foremost, observed project types might be endogenous to the political environment of the public agent and correlated with financing bond type. For example, perhaps, where political contestability is high, mayors are more likely to issue public debt to fund more popular and visible projects, such as schools, rather than debt for projects that impact, let's say, public utilities (Robinson and Torvik 2005). Subsequently, a mayor might be unable of issuing G.O. bonds due to debt overhung from former administrations and forced to issue revenue bonds. In both cases, revenue bonds will be correlated with political contestability.

Although we are not able to fully reject these alternative explanations empirically, in our opinion the aforementioned factors are of lesser concern to our setup. First, a preference for popular expenses would bias our estimates downwards (i.e., political contestability would be rather correlated with more G.O. bonds.) Second, even if the type of project is correlated with the type of bond, it does not diminish the fact that the choice of projects and adequate financing instruments was driven by political concerns. In this case, the type of bond can be interpreted as an "instrument" of the preferences for the type of project under political competition. Finally, should political contestability lead to general debt overhung initially and, next, to forced revenue bond financing, our estimates would be netted by the preference for G.O. in previous contested administrations, for which we control with the *partisan swings* variable.

There are a number of tests that can be prospectively conducted, both to check the robustness of the results presented here as well as to test additional hypotheses:

(a) *Mayors versus city managers*

Our empirical test relies on the assumption that mayors are responsible for issuing public

debt. If mayor are not responsible for issuing bonds, then our political risk variables should not be predictive of bond type. Thus, following Levin and Tadelis (2010), we explore whether our results are robust to differentiation between mayor-run and manager-run cities. There is variation across cities in the form of governance, with the two most common forms being Council-Manager and Mayor-Council (Levin and Tadelis 2010). In a Council-Manager government, a professional city manager—who is appointed by the city council—is responsible for administration. The city council is generally prohibited from interfering with the city manager's administration, but the manager serves at the councils discretion. The position of "mayor" in these cities is largely ceremonial. In contrast, a Mayor-Council government consists of an elected mayor who serves as the city's chief executive officer. These cities may also appoint a city manager, but the mayor maintains authority over city operations. Given the differences between these two forms of local governance, measures of political risk should not be a factor in bond type in cities where mayors do not have the administrative authority to issue municipal securities. Thus, our results can be tested by estimating the baseline specification above for the subset of cities that have a Council-Manager form of government. We expect the political contestability variables to have no explanatory power over bond features. To perform this test, it is necessary to collect data on whether the cities in our sample have Council-Manager forms of governance or Mayor-Council governance.

(b) *Term limits*

We might expect that mayors who are in the final term of office before being "termed out" would not be sensitive to political risk (although they may still be concerned about their legacy and the party's reputation). As such, for this subset of mayors who are in their final term of office as mayor, political risk should not be a determinant of bond type. Conducting this check will require collecting data on the term limit for all cities in our sample.

(c) *Debt Ceilings and Referenda*

Being up against a local debt limit can encourage local governments to use revenue bonds (often exempted from debt limits under the "special fund" doctrine). If cities close to their debt limits are more likely to have competitive elections (e.g., because voters are unhappy

with the excessive debt), they may issue more revenue bonds. Similarly, cities often do not have to submit the issuance of revenue bonds to a referendum, in contrast with general obligation bonds. Cities with debt referenda requirements might be politically more competitive (e.g., they may have been enacted because of an involved electorate), and may use more revenue bonds. In both cases, revenue bonds would be correlated with political contestability, but not for the probity reasons we suggest.

Unfortunately, we do not have data on standardized debt levels by cities for our whole sample. Even though we do control for city credit ratings (time-varying average of two major agencies notch by notch, which should arguably take into consideration debt constraints if debt limit is a function of debt capacity), debt closer to the limit would not necessarily be rated worse than a similar city with a similar debt load and no debt limit. After all, a lender to a city with a debt limit may think that the city will not keep borrowing further, endangering its ability to pay the lender back. Conversely, a lender to a similar city without a debt limit might be afraid that the city will keep borrowing, making their investment worse. Moreover, debt limits are set by state constitutions (i.e., by a different sovereign) and are often long in the tooth, and thus are plausibly exogenous to municipal politics.

Laws governing bond referenda, on the other hand, may be a complementary mechanism through which our story can work. If a city has a referendum requirement for issuance of new G.O. debt but not for revenue bonds (a frequent setup), politicians in closely contested cities may seek to use revenue bonds to avoid the referendum (because there will be organized opposition in it), whereas uncompetitive cities see that there is little organized opposition that they will have to face down, and thus find the referenda requirement for G.O. debt unthreatening.

7 Concluding Remarks

In this paper, we test whether political contestability is a determinant of the type of bond issued by municipalities. Using several types of specifications and measures of political risk, we find empirical evidence that is consistent with the hypothesis that mayors in more contested political environments issue more rigid bond types. In both the baseline regressions as well

as the regressions using city-level control variables, the point estimates on both the closeness of mayoral races and degree that the mayor's seat changes party hands are of the expected sign and significant. These results are seen using both bond-level and city-level data.

We find also evidence that revenue bonds are more likely to be issued during the later years of mayoral terms and that more contested municipalities are more likely to issue bond through competitive bidding instead of discretionary negotiations.

Table 1: This table provides bond rating conversion codes for Moody's and S&P ratings used in the analysis.

Conversion number	**Moodys ratings**	**S&P ratings**
23	Aaa+	AAA+
22	Aaa	AAA
21	Aa1	AA+
20	Aa2	AA
19	Aa3	AA–
18	A1	A+
17	A2	A
16	A3	A–
15	Baa1	BBB+
14	Baa2	BBB
13	Baa3	BBB–
12	Ba1	BB+
11	Ba2	BB
10	Ba3	BB–
9	B1	B+
8	B2	B
7	B3	B–
6	Caa1	CCC+
5	Caa2	CCC
4	Caa3	CCC–
3	Ca	CC
2	C	C
1	D	D

Table 2: This table presents summary statistics of city traits, political variables, and municipal bonds.

Variable	Mean	Std. Dev.	Min.	Max.	N
Panel A: City Traits					
County Population (thousands ppl.)	1454.49	2105.22	18.11	9663.08	1173
Median Real Per Capita Income ($)	23380.68	9043.66	3474.1	63205.38	1181
Unemployment Rate	5.48	1.66	2.3	12.8	1105
Population Density	1925.51	4084.15	10.31	32082.28	1173
Panel B: Political Variables					
Democrat (mean=%)	0.4	0.49	0	1	819
Republican (mean=%)	0.32	0.47	0	1	819
Victory margin (%)	38.61	31.54	0.01	100	792
Partisan swings	0.2	0.45	0	3	819
Panel C: Municipal Bonds					
Revenue Bonds (mean=%)	0.65	0.48	0	1	6505
Bond Total Size ($ millions)	86.19	165.26	0.05	985	6491
Bond Face Value ($ millions)	9.87	28.71	0.01	650	5776
Moodys Rating	17.95	2.92	2	22	3941
S&P Rating	18.61	2.36	1	22	3604
Competitive Bidding Mech.	0.17	0.37	0	1	6505
Industry-Trans. (mean=%)	0.03	0.17	0	1	6505
Industry-Housing (mean=%)	0.12	0.33	0	1	6505
Industry-Education (mean=%)	0.21	0.41	0	1	6505
Industry-Economic Dev.(mean=%)	0.05	0.22	0	1	6505
Industry-Public Utility (mean=%)	0.1	0.29	0	1	6505
Fixed Coupon Bond (mean=%)	0.63	0.48	0	1	6505
Zero Coupon Bond (mean=%)	0.24	0.43	0	1	6505
Adj. Coupon Bond (mean=%)	0.12	0.32	0	1	6505
Maturity Length (yrs)	22.17	6.8	1	100	6505

Table 3: This table presents results from linear probability, probit, and logit regressions of the choice of bond structure (revenue bond=1) on political contestability. Political contestability measures are given by election margins of victory quintiles, a dummy equal to 1 when the winning margin was large (above 20%), and the number of political party swings in mayoral control. Controls include a city's average bond ratings, the natural logarithm of deal size, and the year within a mayor's term. The sample period is 1980-2002. In probit and logit regressions we report marginal effects. T-statistics are in parenthesis; * denotes significance at 10%, ** significance at 5%, and *** significance at 1%.

Election Outcome and Choice of Revenue Bonds

	(1) OLS	(2) OLS	(3) OLS	(4) Probit	(5) Probit	(6) Probit	(7) Logit	(8) Logit	(9) Logit
Margin Quintiles	-0.0192***			-0.0186***			-0.0194***		
	(-3.99)			(-3.91)			(-4.09)		
Large Margin		-0.0449***			-0.0432***			-0.0455***	
		(-3.23)			(-3.13)			(-3.31)	
Partisan Swings			0.112***			0.112***			0.116***
			(9.14)			(9.16)			(9.19)
Avg. Rating	-0.0354***	-0.0361***	-0.0378***	-0.0423***	-0.0431***	-0.0449***	-0.0412***	-0.0421***	-0.0438***
	(-14.19)	(-14.57)	(-15.32)	(-14.93)	(-15.35)	(-16.11)	(-14.50)	(-14.94)	(-15.68)
Deal Size	0.0516***	0.0528***	0.0447***	0.0508***	0.0521***	0.0436***	0.0512***	0.0524***	0.0436***
	(12.28)	(12.69)	(10.57)	(12.78)	(13.25)	(10.76)	(12.78)	(13.22)	(10.67)
2nd year in office	-0.0131	-0.0200	-0.0189	-0.0105	-0.0176	-0.0163	-0.0120	-0.0193	-0.0191
	(-0.76)	(-1.18)	(-1.13)	(-0.62)	(-1.06)	(-0.99)	(-0.71)	(-1.17)	(-1.17)
3rd year in office	0.0863***	0.0797***	0.0864***	0.0943***	0.0878***	0.0911***	0.0929***	0.0861***	0.0897***
	(4.28)	(4.00)	(4.37)	(4.63)	(4.36)	(4.58)	(4.52)	(4.24)	(4.46)
4th year in office	0.0564***	0.0531***	0.0549***	0.0558***	0.0523***	0.0542***	0.0560***	0.0524***	0.0538***
	(2.78)	(2.64)	(2.77)	(2.78)	(2.62)	(2.75)	(2.76)	(2.60)	(2.71)
Observations	4654	4715	4715	4654	4715	4715	4654	4715	4715
R^2	0.075	0.077	0.091						
Pseudo R^2				0.064	0.065	0.077	0.063	0.064	0.076

Table 4: This table presents results from linear probability regressions of the choice of bond structure (revenue bond=1) on political contestability. Political contestability measures are given by election margins of victory quintiles, a dummy equal to 1 when the winning margin was large (above 20%), and the number of political party swings in mayoral control. Controls include average bond ratings, the natural logarithm of deal size, population, and population density, median real income per capita in thousand US$, unemployment rate, and the year within a mayor's term. Regressions also include year and state fixed effects. The sample period is 1980-2002. Standard errors are clustered at the city level. T-statistics are in parenthesis; * denotes significance at 10%, ** significance at 5%, and *** significance at 1%.

Election Outcome and Choice of Revenue Bonds with City-level Controls and Clustered Standard Errors

DV: Revenue Bonds Dummy	(1)	(2)	(3)	(4)	(5)	(6)
Margin Quintiles	-0.0225***			-0.0225		
	(-4.15)			(-1.56)		
Large Margin		-0.0373**			-0.0373	
		(-2.46)			(-0.89)	
Partisan Swings			0.147***			0.147***
			(10.47)			(2.81)
Avg. Rating	-0.0335***	-0.0346***	-0.0349***	-0.0335***	-0.0346***	-0.0349***
	(-12.69)	(-13.12)	(-13.41)	(-5.84)	(-5.82)	(-5.83)
Deal Size	0.0291***	0.0315***	0.0255***	0.0291	0.0315	0.0255
	(6.05)	(6.54)	(5.33)	(1.03)	(1.10)	(0.94)
Population	0.0433***	0.0341***	0.0160	0.0433	0.0341	0.0160
	(4.30)	(3.41)	(1.60)	(1.19)	(0.92)	(0.45)
Density	0.0133	0.0183*	0.0254***	0.0133	0.0183	0.0254
	(1.40)	(1.93)	(2.70)	(0.42)	(0.58)	(0.78)
Income per Capita	-0.00164	-0.00323**	-0.00230*	-0.00164	-0.00323	-0.00230
	(-1.22)	(-2.44)	(-1.76)	(-0.38)	(-0.74)	(-0.54)
Unemployment Rate	0.0488***	0.0428***	0.0240	0.0488*	0.0428*	0.0240
	(3.23)	(2.83)	(1.59)	(1.89)	(1.69)	(0.90)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4143	4203	4203	4143	4203	4203
R^2	0.327	0.319	0.335	0.327	0.319	0.335
Clustered at municipality	No	No	No	Yes	Yes	Yes

Table 5: This table presents results from linear probability regressions of the choice of bond structure (revenue bond=1) on political contestability in subgroups by political parties. Political contestability measures are given by election margins of victory quintiles, a dummy equal to 1 when the winning margin was large (above 20%), and the number of political party swings in mayoral control. Controls include average bond ratings, the natural logarithm of deal size, population, and population density, median real income per capita in thousand US$, unemployment rate, and the year within a mayor's term. The sample period is 1980-2002. T-statistics are in parenthesis; * denotes significance at 10%, ** significance at 5%, and *** significance at 1%.

Election Outcome and Choice of Revenue Bonds in Subgroups by Political Parties

Dependent Variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Revenue Bonds Dummy	Dem	Dem	Dem	Rep	Rep	Rep	Other	Other	Other
Margin Quintiles	-0.0266***			-0.00806			-0.0717***		
	(-3.42)			(-0.70)			(-6.84)		
Large Margin		-0.125***			0.0475			-0.200***	
		(-5.64)			(1.57)			(-6.25)	
Partisan Swings			0.0900***			0.00579			0.486***
			(3.71)			(0.25)			(6.64)
Avg. Rating	-0.0282***	-0.0289***	-0.0270***	-0.0288***	-0.0282***	-0.0275***	-0.0649***	-0.0709***	-0.0629***
	(-7.94)	(-8.20)	(-7.64)	(-6.16)	(-6.13)	(-6.01)	(-11.13)	(-12.00)	(-10.64)
Deal Size	0.0295***	0.0290***	0.0301***	-0.0401***	-0.0384***	-0.0396***	0.126***	0.131***	0.118***
	(4.69)	(4.64)	(4.79)	(-5.03)	(-4.87)	(-4.98)	(10.34)	(10.24)	(9.42)
Population	0.0782***	0.0714***	0.0648***	0.0242	0.0164	0.0192	0.0533***	0.0216	0.0272
	(4.47)	(4.17)	(3.63)	(1.21)	(0.84)	(0.98)	(2.84)	(1.14)	(1.45)
Density	-0.0588***	-0.0512***	-0.0541***	0.106***	0.112***	0.110***	-0.125***	-0.0994***	-0.107***
	(-3.91)	(-3.43)	(-3.60)	(4.97)	(5.34)	(5.26)	(-5.71)	(-4.60)	(-4.95)
Income per Capita	-0.0116***	-0.0120***	-0.0113***	-0.00710***	-0.00876***	-0.00818***	0.0280***	0.0206***	0.0197***
	(-5.96)	(-6.28)	(-5.80)	(-2.87)	(-3.65)	(-3.40)	(8.59)	(6.48)	(6.21)
Unemployment Rate	-0.00436	-0.00619	0.00638	0.0128	-0.00237	-0.000124	0.158***	0.206***	0.125**
	(-0.19)	(-0.27)	(0.28)	(0.38)	(-0.07)	(-0.00)	(2.82)	(3.57)	(2.18)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1748	1762	1762	1529	1553	1553	866	888	888
R^2	0.450	0.459	0.454	0.396	0.399	0.398	0.506	0.463	0.466

Table 6: This table presents results from OLS regressions of the percentage of revenue bonds in a given year (Panel A) and over a mayor's term (Panel B) on political contestability. Political contestability measures are given by election margins of victory quintiles, a dummy equal to 1 when the winning margin was large (above 20%), and the number of political party swings in mayoral control. Controls include average bond ratings, the natural logarithm of deal size, population, and population density, median real income per capita in thousand US$, unemployment rate, and the year within a mayor's term. Regressions also include year and state fixed effects. The sample period is 1980-2002. T-statistics are in parenthesis; * denotes significance at 10%, ** significance at 5%, and *** significance at 1%.

Panel A: Revenue Bonds by Year

DV: Revenue Bonds %	(1)	(2)	(3)
Margin Quintiles	-0.0387***		
	(-3.39)		
Large Margin		-0.0834**	
		(-2.58)	
Partisan Swings			0.0421
			(1.34)
Avg. Rating	-0.0231***	-0.0258***	-0.0257***
	(-3.95)	(-4.42)	(-4.38)
Deal Size	0.00601	0.00903	0.00945
	(0.71)	(1.07)	(1.11)
Population	0.0307	0.0229	0.0191
	(1.40)	(1.05)	(0.87)
Density	0.00296	0.00670	0.00714
	(0.14)	(0.33)	(0.35)
Income per Capita	0.00113	-0.00108	-0.00148
	(0.38)	(-0.37)	(-0.51)
Unemployment Rate	0.0340	0.0352	0.0322
	(1.21)	(1.26)	(1.15)
Years in Office	0.0116	0.0120	0.0127
	(0.75)	(0.78)	(0.81)
Year fixed effects	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes
Observations	730	748	748
R^2	0.337	0.326	0.321

Panel B: Revenue Bonds by Election Cycle

DV: Revenue Bonds %	(1)	(2)	(3)
Margin Quintiles	-0.0415***		
	(-3.14)		
Large Margin		-0.100***	
		(-2.64)	
Partisan Swings			0.0467
			(1.18)
Avg. Rating	-0.0214***	-0.0247***	-0.0245***
	(-2.96)	(-3.43)	(-3.39)
Deal Size	0.0169*	0.0190**	0.0192**
	(1.79)	(2.01)	(2.00)
Population	0.0198	0.00964	0.00666
	(0.74)	(0.37)	(0.25)
Density	0.0109	0.0179	0.0188
	(0.43)	(0.70)	(0.74)
Income per Capita	0.000381	-0.00203	-0.00260
	(0.11)	(-0.59)	(-0.75)
Unemployment Rate	0.0223	0.0162	0.0144
	(0.71)	(0.52)	(0.46)
Terms in Office	0.00353	0.0200	0.0137
	(0.11)	(0.62)	(0.42)
Year fixed effects	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes
Observations	531	549	549
R^2	0.369	0.354	0.347

Table 7: This table presents results from linear probability regressions of the method of sale of municipal bonds (competitive bidding=1) on political contestability. Political contestability measures are given by election margins of victory quintiles, a dummy equal to 1 when the winning margin was large (above 20%), and the number of political party swings in mayoral control. Controls include average bond ratings, the natural logarithm of deal size, population, and population density, median real income per capita in thousand US$, unemployment rate, and the year within a mayor's term. The sample period is 1980-2002. T-statistics are in parenthesis; * denotes significance at 10%, ** significance at 5%, and *** significance at 1%.

Election Outcome Margins and Method of Sale

DV: Competitive Sales Dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Margin Quintiles	-0.0166***			-0.0230***			-0.0230		
	(-3.61)			(-4.85)			(-1.50)		
Large Margin		-0.0543***			-0.0648***			-0.0648	
		(-4.26)			(-4.93)			(-1.64)	
Partisan Swings			0.0741***			0.0833***			0.0833*
			(6.46)			(6.90)			(1.94)
Avg. Rating	0.00880***	0.00919***	0.00855***	0.00786***	0.00829***	0.00778***	0.00786	0.00829	0.00778
	(3.93)	(4.14)	(3.86)	(3.36)	(3.58)	(3.36)	(1.02)	(1.09)	(1.03)
Deal Size	-0.0283***	-0.0283***	-0.0315***	-0.0325***	-0.0326***	-0.0366***	-0.0325***	-0.0326***	-0.0366***
	(-7.61)	(-7.65)	(-8.47)	(-7.62)	(-7.67)	(-8.60)	(-2.98)	(-2.97)	(-3.12)
Population				0.0166*	0.0125	0.00183	0.0166	0.0125	0.00183
				(1.94)	(1.48)	(0.21)	(0.52)	(0.38)	(0.06)
Density				-0.0143*	-0.0125	-0.00821	-0.0143	-0.0125	-0.00821
				(-1.75)	(-1.54)	(-1.01)	(-0.55)	(-0.49)	(-0.32)
Income per Capita				0.00744***	0.00699***	0.00710***	0.00744**	0.00699*	0.00710**
				(6.43)	(6.21)	(6.33)	(2.05)	(1.96)	(2.05)
Unemployment Rate				-0.0451***	-0.0474***	-0.0602***	-0.0451	-0.0474	-0.0602**
				(-3.19)	(-3.37)	(-4.26)	(-1.45)	(-1.62)	(-2.00)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4363	4423	4423	3887	3947	3947	3887	3947	3947
R^2	0.213	0.212	0.216	0.245	0.243	0.248	0.245	0.243	0.248
Clustered at municipality	No	No	No	No	No	No	Yes	Yes	Yes

Table 8: This table presents results from logit regressions of the method of sale of municipal bonds (competitive bidding=1) on political contestability. Political contestability measures are given by election margins of victory quintiles, a dummy equal to 1 when the winning margin was large (above 20%), and the number of political party swings in mayoral control. Controls include average bond ratings, the natural logarithm of deal size, population, and population density, median real income per capita in thousand US$, unemployment rate, and the year within a mayor's term. The sample period is 1980-2002. We report marginal effects. T-statistics are in parenthesis; * denotes significance at 10%, ** significance at 5%, and *** significance at 1%.

Election Outcome Margins and Method of Sale

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Margin Quintiles	-0.0157***			-0.0218***			-0.0218		
	(-3.44)			(-4.52)			(-1.43)		
Large Margin		-0.0407***			-0.0501***			-0.0501	
		(-3.28)			(-3.78)			(-1.32)	
Partisan Swings			0.0653***			0.0726***			0.0726**
			(6.06)			(6.16)			(2.14)
Avg. Rating	0.0100***	0.0102***	0.00988***	0.00951***	0.00975***	0.00968***	0.00951	0.00975	0.00968
	(4.10)	(4.23)	(4.08)	(3.68)	(3.77)	(3.75)	(1.09)	(1.11)	(1.09)
Deal Size	-0.0324***	-0.0322***	-0.0350***	-0.0385***	-0.0384***	-0.0416***	-0.0385***	-0.0384***	-0.0416***
	(-8.13)	(-8.13)	(-8.85)	(-8.13)	(-8.11)	(-8.83)	(-3.41)	(-3.28)	(-3.57)
Population				0.0214***	0.0187**	0.00789	0.0214	0.0187	0.00789
				(2.58)	(2.27)	(0.94)	(0.74)	(0.63)	(0.29)
Density				-0.0138*	-0.0142*	-0.00849	-0.0138	-0.0142	-0.00849
				(-1.74)	(-1.80)	(-1.07)	(-0.60)	(-0.62)	(-0.36)
Income per Capita				0.00543***	0.00523***	0.00511***	0.00543*	0.00523*	0.00511*
				(5.21)	(5.09)	(5.06)	(1.82)	(1.72)	(1.77)
Unemployment Rate				-0.0684***	-0.0651***	-0.0722***	-0.0684**	-0.0651**	-0.0722***
				(-4.30)	(-4.08)	(-4.47)	(-2.32)	(-2.27)	(-2.61)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4211	4272	4272	3669	3703	3703	3669	3703	3703
Pseudo R^2	0.201	0.200	0.206	0.231	0.226	0.232	0.231	0.226	0.232
Clustered at municipality	No	No	No	No	No	No	Yes	Yes	Yes

Appendix A Construction of Dataset

We merged two datasets: municipal bonds issued in 1981-2002 and election outcomes in mayor cities in 1980-2004. The bond dataset have more municipal-year observations than the elections dataset. We thus adopted a two-way strategy. First, we applied all the election-year data (which constitutes the data used to create the political risk measures) in all years between elections. We also then (separately) aggregated all bond data data by election cycles.

Specifically, we treated the data as follows:

1. In the bond database, we aggregated bonds by type and municipality-year of issuance
2. In the elections database we:
   (a) Generated a dummy variable $election\_year\_dummy = 1$ for all records
   (b) Generated $last\_election\_year = year$
   (c) Generated non-election subsequent years in $year$, and repeated all other variables—$last\_election\_year$ and last election outcomes—until the next election year observation
   (d) Generated a variable $timing_t = year_t - last\_election\_year_t$ to check for opportunistic electoral cycle timing (timing fixed effects)
   (e) Generated a variable $tenure\_years_t = \arg\max j | mayor\_name_t = mayor\_name_{t-j} \wedge j = \{1, 2, \ldots, 20\}$ for the same mayor in office (by name) to check for risk propensity and learning by mayors (tenure_year fixed effects)
   (f) Generated a variable $tenure\_cycles_t = \mathbb{Z}\left[tenure\_years_t/4\right]$ for the same mayor in office (by name) to check for risk propensity and learning by mayors (tenure_cycles fixed effects)
3. We merged the two datasets matched by municipality and year:
   (a) For year regressions, we collapsed the merged dataset summing bond issues by municipality, type of bond, and year of issuance
   (b) For political cycle regressions, we collapsed the merged dataset summing bond issues by municipality, type of bond, and $last\_election\_year$

Appendix B Types of Bonds

In addition to G.O. and revenue bonds, there are a few other common types of municipal securities. We describe these securities here. For some of these categories, because they are closely related to either G.O. or revenue bonds, we lumped them into one of the two categories.

Certificates of Participation (COPs) are a form of lease revenue bond that permit the investor to participate in a stream of lease payments, installment payments, or loan payments relating to the acquisition or construction of specific equipment, land or facilities. In theory the certificate holder could foreclose on the equipment or facility financed in the event of default, but so far no investor has ended up owning a piece of a school house or a storm drainage system.

Municipal Notes are short-term obligations, generally maturing in one year or less. The most common types are (1) bond anticipation notes (BANs), (2) grant anticipation notes (GANs), (3) revenue anticipation notes (RANs), (4) tax anticipation notes (TANs), (5) Tax and Revenue Anticipation Notes (TRANs), (6) project notes, and (7) construction loan notes.

Special Taxes and Assessments are often due on the same dates as property taxes, to compensate for their levied but still unpaid share.

Tax Allocation bonds are issued to pay the cost of land and building acquisition and their redevelopment and are repaid by the incremental increase in tax revenues produced by the increase assessed value of the area after redevelopment.

Appendix B.1 Data Treatment

In the construction of the final bond dataset, we deleted Notes (only one observation), Special Taxes and Assessments, and Tax Allocation bonds, and then aggregated:

(a) G.O. Limited Bonds into general obligation bonds and

(b) COPs and Tax Allocation bonds into revenue bonds.

Many states, such as California under Proposition 13, do not allow local governments to issue unlimited-tax general obligation debt without a public vote. A limited-tax general obligation pledge requires a local government to levy a property tax sufficient to meet its debt

service obligations, but only up to a statutory limit. Generally, local governments already levy a property tax and can choose to use a portion of the property tax it already levies, use some other revenue stream, or increase its property tax by an amount equal to its debt service payments.

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