Do Women Political Leaders Enhance Government Financial Conditions?
Evidence from U.S. Cities.

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Abstract

This paper analyzes the effect of electing female political leaders on financing cost of local government debt. Using a regression discontinuity design to address endogeneity of female leadership, we examine 604 female-male contested mayoral elections in 336 U.S. cities during 1990-2014. We find that yield spreads of municipal bonds issued by cities with women mayors are around 33 basis point lower than cities with male mayors. This gender effect is more pronounced in cities with high financial distress risk before elections. Furthermore, we find that female mayors issued fewer debt than their male counterparts and improved municipal fiscal status during their incumbency.

Keywords: women political leaders, regression discontinuity design, municipal bonds.

JEL-Classifications: O31, D72, P48.

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1 Introduction

"If it has been Lehman Sisters rather than Lehman Brothers, the world might well look a lot different today."

Christine Lagarde

U.S. national debt has reached 23 trillion dollars by the end of 2019, which implies $70,130 debt per citizen and $187,290 debt per tax payers.[1] The U.S. is not exceptional. Government debt has reached historical records in many countries around the world. When this paper is written, many countries started a new round of fiscal stimulus plan in response to the covid-19 pandemic. Expectantly, government debt would be further soaring. The uncontrolled debt exacerbated fiscal deficit, triggered the dispute on intergenerational equality, and cast a long shadow on the stability of the world economy. In this paper, we ask whether empowering female political leaders would help curb the climbing public debt and improve governmental financial status.

A large body of experimental studies finds that women are more risk-averse and long-term oriented than men (Byrnes et al., 1999; Croson and Gneezy, 2009; Agnew et al., 2008; Borghans et al., 2009). Research on female business leaders also shows that firms with female executives adopt more conservative strategies than firms with male executives (*e.g.*, Huang and Kisgen (2013); Faccio et al. (2016); Barua et al. (2010); Francis et al. (2015); Sahay and Cihak (2018)). Motivated by this literature, we ask the question whether female leaders are more like to choose conservative public financing policies. In particular, we use the reaction of capital markets to female mayors to gauge the effect of female leaders on government debt.

Women political leaders are rising around the world and their impact is non-negligible. Women parliamentary representation has increased at the international level from 2% in 1970 to almost 25% in 2017.[2] An increasing number of countries have introduced various types of gender quotas for public elections and half of the countries of the world today use some type of electoral quota for their parliament.[3] While both the rise of female politicians and the rocketing of government debt are substantial, little is known about the consequence of female political leaders for government fiscal condition. Existing literature mainly focus on the impact of female policymakers on redistribution policy or gender-related topics (*e.g.*, Besley and Case (2003); Chattopadhyay and Duflo (2004); Ferreira and Gyourko (2014)). To the best of our knowledge, this is the first paper that examines how capital markets react to female political leadership in affecting the financing cost of local governments.

Specifically, this paper studies how municipal bond pricing changes following elections of female mayors in U.S. cities. To address endogeneity of political leadership, we employ a regression discontinuity (RD) design

[1] According to the USdebtclock.org.

[2] According to the report by International Parliamentary Union, 2017. https://www.ipu.org/resources/publications/infographics/2017-03/women-in-politics-2017

[3] According the International Institute for Democracy and Electoral Assistance.

to analyze close mayoral elections between female and male mayoral candidates. Our strategy compares the financing cost of municipal bonds issued by cities where women mayoral candidates barely won against their male competitors with bond outcomes of cities where women candidates narrowly lost. Following Lee (2008) and Lee and Lemieux (2010), such narrowly decided elections provide quasi-random variation in election winners, because which candidate wins is likely to be determined by chance and idiosyncratic factors, as long as contestants cannot systematically manipulate the election outcome.

We use two primary datasets. First, we complement already existing records on mayoral elections by Ferreira and Gyourko (2009) with information on the gender for each of the top two mayoral candidates and extend the data sample to 2014. Second, we use municipal bond issuance data provided by Thomson Reuters Securities Data Company's (SDC) Global Public Finance U.S. new issues database. Matching these two datasets results in a final sample of 6,697 municipal bonds issued during 1990-2018 and related to 604 mayoral elections in 336 U.S. cities during 1990-2014. We use yield spreads between municipal bonds and matched treasury bonds to measure the financing cost of municipal bonds.

Our baseline model finds that municipal bonds spreads are around 33 basis points lower in cities where a female candidate won a close election compared to cities where the male candidate won. This effect is robust to specifications using different bandwidths and polynomial orders of the assignment variable, with or without covariates, and using various measures of bond yield spreads. One concern is that candidates' gender is strongly correlated with their party affiliation and hence our results might be driven by party differences. To disentangle the gender from the partisan effect, we split the sample into two sub-samples: elections with both female and male candidates are from the same party, and elections with female and male candidates coming from different parties. Our test reveals that the gender effect on bond spreads is even more pronounced in elections involving candidates from the same party. Therefore, we conclude that the gender effect is not contaminated by the partisan effect.

We further explore the potential mechanism. One possible explanation is that investors expect female mayors to choose a conservative financing policy to reduce financial distress risk. If this conjecture is true, we expect that the gender effect is stronger in cities with more severe financial problems. We use pre-election debt per capita ratio and debt to revenue ratio to measure the degree of financial distress risk. We find consistent results that the gender effect is indeed stronger in cities with a higher level of debt.

The above finding suggests that the decrease of municipal bond yields may reflect market expectations on changing financial policies that female mayors may adopt. Do female mayors really enhance financial status after elections? To answer this question, we further investigate the effects of female political leadership on fiscal strength and budget balance during the first mayoral term. We find cities with female mayors have lower debt per capita and debt to revenue ratio than cities with male mayors. Moreover, using a dynamic

RD design, we show that the debt ratios are reduced gradually over the four-year mayoral term with the magnitude of effect increases with the mayoral tenure. In addition, we find that the average municipal bond size issued by cities with women mayors is smaller than that issued by cities with men mayors. These findings suggest that female mayors indeed reduce government debt and improve the financial sustainability of cities they govern.

Additional robustness tests further affirm our main findings. First, we analyze a re-election subsample, in which incumbent mayors defeat their opposite gender challengers. In this scenario, we estimate gender effect using two mayoral terms (*i.e.* 8 years). The effect estimated using this sub-sample is larger than our baseline model, in which only one mayoral term is considered, suggesting that gender effect increases with mayoral terms. Second, we consider pivotal elections, in which the gender of winning mayors changed from previous mayors. As expected, the gender effect is stronger than baseline model.

Our paper extends the literature on gender affecting policy outcomes in two aspects. First, existing literature mainly focuses on the gender difference of policy preferences (Besley and Case (2003), Chattopadhyay and Duflo (2004), Clots-Figueras (2012), and Ferreira and Gyourko (2014)). Given the extensive literature on gender differential of risk preferences from experimental and field studies on female managers, it is surprising that there is no prior study examining the relation between female political leader and riskiness of public policies. We fill this void by showing that the gender of political leaders has a causal impact on financial cost of local government debt. Second, rather than focusing directly on policy outcomes, we examine financial market reaction to the gender of political leaders. Due to institutional and/or organizational restrictions, newly elected politicians may not be able to steer public policies immediately. Nevertheless, financial markets may respond timely in anticipation of possible policy changes resulted from election shocks.

Our paper supports the notion that personal traits of political leader matters(*e.g.*, Jones and Olken (2005)). A stream of research advocate that risk preference of managerial team affect corporate policies (*e.g.*, Benmelech and Frydman (2015), Gormley and Matsa (2016), Pan et al. (2017), and Bernile et al. (2017)). Regarding whether political leaders' personal characteristics affect public policy outcome, it is ambiguous. The political science literature provides theoretical frameworks, in which politician's personal preference may or may not affect policy choices (see the related literature review in next section). We provide evidence showing that politician's risk preference has causal impact on borrowing cost of public debt.

Our paper is also related to the literature of municipal bond borrowing costs. Prior works suggest that borrowing cost of municipal bonds are affected by corruption (Butler et al. (2009)), cross-state regulation on municipal bankruptcy Gao et al. (2019b), city-level media monitory (Gao et al. (2020) and political uncertainty (Gao et al. (2019a)). In this paper, we show that politician characteristics, *i.e.,* gender in particular, also matters.

The rest of the paper proceeds as follows. Section 2 discusses related literature on gender difference. Section 3 explains the data collection and presents summary statistics. Section 4 describes about the identification strategy and the validity of the empirical design. Section 5 presents results and section 6 concludes.

2 Related Literature

We review three streams of research on gender difference: experimental studies, research on female business leaders, and research on female political leaders. These researches together provide a complex but insightful picture of whether and how female political leaders would perform differently from their male counterparts. We develop our testing hypothesis based on prior literature.

Experimental studies provide many insights into how women and men are different. Byrnes et al. (1999) conduct a meta-analysis of 150 studies and find that women are more risk-averse in 14 out of 16 types of risk-taking activities. Croson and Gneezy (2009) reviewed a large body of experimental studies on gender difference and conclude that there is robustness evidence that women are more risk-averse, less likely affected by overconfident bias, and less willing to take competition than men. Croson and Gneezy (2009) also find that in terms of social preference such as altruism and inequity-aversion, gender effect is mixed. They suggest this is because women are more sensitive to social cues in determining appropriate behavior than men. Hence, women 's social preference is more contingent on context.

Sharply contrast to the consistency evidence from experimental studies on gender difference of risk preference, field studies on the effect of female leaders on business performance are ambiguous. Matsa and Miller (2013) find that Norwegian gender quotas for corporate boards reduce short-term profits and job losses whereby employment levels and relative labor costs increase for affected firms. Barua et al. (2010) and Francis and Ramey (2005) show that firms with female CFOs are more conservative in accounting. Barber and Odean (2001) documents that females are less overconfident and hence trade less frequently in stock investment compared with men. Huang and Kisgen (2013) shows that female executives take fewer acquisitions and issue debt less frequently than male executives and market responses more positively with higher announcement returns to the M&A and debt issuance conducted by female executives. Faccio et al. (2016) find firms run by female CEOs have lower financial leverage, less volatile earnings, and a higher chance of survival than otherwise similar firms run by male CEOs. An IMF report by Sahay and Cihak (2018) studies the interaction between women and finance. They find that greater inclusion of women as leaders of financial institutions and regulators of financial agencies enhances stability in the banking system and promotes economic growth. Overall, this set of papers suggests that female business leaders are more likely to choose a conservative strategy, which is consistent with the findings in experimental studies.

However, the following subset of papers draws opposite conclusions. Atkinson et al. (2003) don't find significant gender differences in terms of performance, risk and other fund characteristics between female and male fixed-income mutual fund managers. Adams and Funk (2012) examine survey data of directors and find that female directors are more risk-loving than their male counterparts. A possible explanation to the above findings is selection. In male-dominated business and politics, women often need to break the glass ceiling to obtain leadership positions. Therefore, female leaders behave more like their male counterparts. Adams and Ferreira (2009) show that gender-diversified firm boards have a negative impact on firm value. Ahern and Dittmar (2012) finds that a female director quota in Norway reduces firm value because it forces firms to hire inexperienced directors.

Interestingly, research on female *business* leaders mostly explores the gender difference of risk attitudes whereas research on female *political* leaders largely studies the gender difference of social preferences. Besley and Case (2003) shows a strong relationship between women representatives in state legislature and government spending on education and health issues. Chattopadhyay and Duflo (2004) use the political reservations for women in Indian village councils as a randomized experiment and find that female leaders invest more in public goods that benefit the needs of female population. Clots-Figueras (2011, 2012) also studies the female quotas in Indian legislatures and find that in general female policymakers are more likely to support women-friendly laws and government spending on educations but the gender effect depends on geographic locations and female politician's castes. Brollo and Troiano (2016) study the close mayoral elections in Brazil and find female mayors are less likely to engage in corruption. Overall, the above mentioned papers support the notion that gender of politicians matters on outcomes of public policies. One exceptional is Ferreira and Gyourko (2014), which study the policy outcomes resulted from close U.S. mayoral elections and find no gender effect on government size, the composition of municipal spending, employment or crime rates. They argue that the lack of gender effect may be because municipalities are more homogeneous and/or mayors have less opportunism in policy making because cities facing more constraints than higher levels of governments do.

Classical theories in political science suggest that personal preference of politicians may or may not affect policy outcomes. Downs (1957) suggests that politician's preference should have no impact on policy outcomes because candidates would converge their policy platforms to cater the preference of median voters. Alesina (1988) develops a partisan model, in which political parties care not only about winning elections but also about policy implementation after elections, and rational voters take this partisan incentive into account. Consequently, policy platforms of parties would divergence rather than converge, and partisanship affect policy outcomes. Besley and Coate (1997) develop a citizen-candidate model, in which candidate will choose their most preferred policy because they cannot credibly commit to other policies, and voters will vote for candidates based on their policy preferences and ability. In the framework of Alesina (1988) and Besley and Coate (1997), candidate's personal preference, *i.e.*, gender preference in our setting, would have real impact on policy outcomes.

The previous literature on female political leadership focused on policy outcomes such as employment, government spending or the size of government. Our paper on the contrary traces how the capital markets react to such leadership changes. We aim to study whether and how gender difference of mayors affect the financing cost of government debt. Motivated by the experimental evidence on gender differences on risk preference, and the large evidence on female business leaders adopting more conservative economic strategies, we conjecture that the electing female mayors would lead to decrease in financing cost of municipal bonds.

We are aware that there are a number of factors that prevent us to find any evidence. First, due to the selection as mentioned above, the gender difference of risk preference between female and male political leaders may be much smaller than that in the general population. Second, as mentioned in Ferreira and Gyourko (2009, 2014), preference of mayors may not matter in municipal levels because mayors have lower discretion power to change policies than politicians in high-level governments. Taken together, it is not obvious that gender difference will affect financing policies of municipal governments. We believe that it is an empirical inquiry.

3 Data

3.1 Data Sources

We compile data from two main sources. Data on mayoral elections come from Ferreira and Gyourko (2009). Merging these two datasets leads to a final dataset of 9,000 mayoral elections in roughly 1,000 U.S. cities between 1945 and 2014. It contains information on the name, vote share and party affiliation of the winner and runner-up candidates. The election dataset is limited to cities with more than 25,000 inhabitants as of the year 2000. We also collect information on the gender of the top two candidates in the following way. First, we match the first names of the mayor and the runner-up candidate with a list of common first names provided by the U.S. Census, which contains gender information. Second, for candidates with gender-neutral or gender-ambiguous names (*e.g.*, Blair, Tracy, Jamie), we search for evidence of the person's gender via Internet searches, emails and phone calls. This is precisely the approach used by Ferreira and Gyourko (2014).

Data on municipal bond issues come from the Securities Data Company's (SDC) Global Public Finance U.S. new issues database. We collected data from SDC on municipal bond issues from 1990 to 2018, which is four years (*i.e.*, one mayor term) after the last year of our election data. This bond dataset includes issuer name, issuer county, offering terms, ratings, use of proceeds and most importantly pricing information such as offering yields, coupon rates, and gross spreads. Using city and state name information in the complementary SDC Muniprofiles^{TM} dataset, we can match bond data to our election data. We drop all bonds where the issuer is a state-level entity.[4] By matching to bond data, we can connect municipal elections to many municipal finance outcomes of interest, such as bond coupon rates, yields, and ratings.

Two data constraints reduce the number of observations. First, bond data start in 1990. Second, the RD design requires us to analyze only elections where a woman candidate runs against a male candidate and requires also that a substantial number of these elections be close. Fortunately, the latter is not a significant limitation; Ferreira and Gyourko (2014) find that well over 20% of elections since 1990 involve male-female races, with female win-share hovering close to 50%. Out of 3,258 mayoral elections between 1990 and 2018, 834 are male-female elections. After merging with municipal bond data, we obtain a final sample of 604 male-female elections consisting of 6,697 bonds issued by 336 cities with non-missing covariates and outcome variables for the respective city. We collect the demographic data of municipalities from the U.S. census, and municipal financial data such as revenue and debt from the Government Finance Database complied by Pierson et al. (2015).

In the end, we have a panel of bond data matched with female-male elections across cities and years. We can then compare bond outcomes across cities and time. For example, our RD framework allows us to draw causal inferences by comparing bond outcomes in city A, where a woman candidate won a close election in the year 2001, with city B in the year 1990, where a woman candidate narrowly lost the election against her male competitor. In particular, we are interested in comparing yields of bonds issued during the first term of a female mayor with that of bonds issued during first terms of male mayors.

3.2 Estimation of Bond Yield Spread

We use bond yield spread to proxy the financing cost of municipal bonds. Since bonds are issued at different times and offering yields of bonds change with interest rate and other macroeconomic factors, we cannot directly compare the offering yield of bonds[5]. We use the yield of a coupon-equivalent risk-free bond to calculate municipal bond yield spread, following the methodology in Longstaff et al. (2005). In particular, for each municipal bond, we calculate the present value of its future coupon payments and principal value payment using the U.S. Treasury yield curve from Gürkaynak et al. (2007). This present value calculation

[4]More specific, we keep all bonds where issuer type variable is coded as County/Parish, City/Town or Village, College/University, District and Local authority.

[5]Nevertheless, our main results preserve if we use raw offering yields to proxy financing cost

gives us the price of a risk-free bond with the same payoff structure as the municipal bond, which is then used to calculate the yield-to-maturity on this synthetic risk-free bond. The municipal bond yield spread is calculated as the difference between offering yield of municipal bond and yield-to-maturity of the synthetic risk-free bond. The main advantage of this approach is that the benchmark risk-free bonds has the same payoff structure as the municipal bond. Thus, changes in interest rates will not have a differential effect on the yields spread between a municipal bond and its risk-free benchmark.

It is worth noting municipal bonds are usually tax-exempted but treasure bonds are not. Hence, the yield spreads between municipal bonds and matched treasure bonds are often negative. To account for the tax effect, we estimate the tax-adjusted yield spread. We obtain top income tax rates by state and year from the TAXSIM model provided by the NBER. The tax-adjusted yield spread is calculated by dividing municipal bond yield by the sum of top state and federal income tax rates and then subtract the matched treasury bond yield.[6]

Most municipal bonds are serial bonds with fractions of the outstanding bonds maturing at regular intervals. Bonds within series share common features such as issuer and underwriters but have different maturity dates and hence are priced differently. For each series, the SDC reports the coupon, yield, and maturity for three bonds: the first, the last and the highest coupon bonds within series. In our baseline analysis, we combine the three bonds for each series by taking the average yield spreads whenever any of them are available. Our main results hold if we alternatively use yield spread of any of the three bonds.

3.3 Summary Statistics

In Figure 1, we depict the proportion of elections with at least one female mayoral candidate (red line), elections with female winners (blue line), and the total number of election (grey bar). The zigzag pattern is because there are more elections in odd number year than in even number years. The proportion of elections with female candidate increases steadily from 13% in 1975, and reaches the peak of 44% in year 1998 and then gradually slides down to 27% in 2014. The proportion of elections with female winners increased from only 5% in 1975 to 25% in 1998 and then gradually declined to 15% during 2000-2013. Conditional on running elections, women on average won 46% of male-female contested elections between 1975 and 2014.

Panel A of Table 1 reports the summary statistics of bond outcome variables. These are bonds issued by related cities during the first mayoral terms following female-male elections. The average yield spread without tax adjustment (*Spread(unadj.)*) is -0.17%. The average spread with tax adjustment (*Spread(tax*

[6]We are aware that this tax adjustment may cause measurement errors because we didn't consider the city-level tax and assume that municipal bond investors face top income tax rates. However, given the plausibly exogenous variation from close elections, these measurement errors should not be systematically different across cities which are around the cutoff of election margin. Therefore, we don't think the measurement error would bias our results.

adj.)) is 2.64%. The average bond amount is hugely skewed with mean of $40.55 million and a median of $13.24 million. We therefore take a natural logarithm transformation of bond amount to make it closer to normal distribution in regressions. Panel B of Table 1 reports the summary statistics of city characteristics. Among all of 604 male-female elections, the average female win margin is -5% and the standard deviation is 32% suggesting a large variation of this variable. The mean of debt per capita ratio is 2.42 indicating on average, every citizen bears $2,420 of municipal debt. However, this variable is heavily right-skewed with the median of $1,800 and the 99 percentile of $11,530, suggesting a small number of cities borrow a large amount of debt. In the regression, we take a natural logarithm transformation of debt per capital to make it closer to normal distribution. The average and median of debt to revenue ratio is 1.28 and 1.16 respectively, indicating that most cities have outstanding debt exceeding revenue. We calculate the number of bond issues during four-year mayoral term following elections. The median is 6 bond issues, but the 99 percentile is 147 bond issues.

Table 2 shows the difference in bond characteristics between female and male-governed cities.[7] On average, female mayors issued bonds with a longer maturity (16.3 vs. 15.5 years) and less general obligation bonds (52.2% vs 55.3%) than male mayors. These bond feature differential suggests that bonds issued by female mayors might have higher yield spreads. Although these differences are statistically significant different from zero, the economic magnitude is small. All other bond characteristics seem not to differ between female and male governed cities.

4 Empirical Strategy

Since women mayors are not randomly assigned to American cities, identifying the causal effect of women political leaders is convoluted by endogenous selection. Naive comparisons of bond outcomes in woman-governed cities with that in male-governed cities might be biased because unobserved characteristics might be correlated with both the chances that a woman candidate wins and bond outcomes. Cities with high support for women candidates might systematically differ from cities that lack such support in ways that affect debt financing cost of these cities. For instance, if political progressive cities are more likely to vote for women and also tend to have higher public spending, then women mayorships will be correlated with higher public debt levels and higher debt cost, even though the former does not cause the latter.

A solution to this problem was proposed in a setting by Lee (2008) and Lee and Lemieux (2010). They suggest that one can exploit narrowly decided elections to mitigate selection bias. In particular, they assert

[7] we didn't report difference of yield spreads between male and female cities in this table. Our baseline model examines that in column (1) of Table 3.

that ex-ante uncertainty as to the outcomes of close races might provide quasi-random variation in election winners. For our purposes, the gender of the winning candidate in such elections is arguably determined by pure chance. The RD design quantitatively translates the above reasoning by assigning the treatment (woman mayorship) deterministically to those units whose assignment variable (vote share) is above the cutoff (50% vote share), while leaving units whose vote share falls below the cutoff as untreated.

4.1 RD Regression

Similar to Ferreira and Gyourko (2014), we test how women political leaders affect municipal bond financing outcomes. The causal effects of women political leaders on bond outcomes is estimated as follows:

$$Bond_c = \beta_0 + \theta_1 FemaleWin_c + P(\beta, WinMargin_c) + \gamma X_c + \epsilon_c \tag{1}$$

where $Bond_c$ represents the bond outcomes of all bonds issued during the first term of the mayor in city c. $FemaleWin_c$ is a dummy variable with value one indicating whether the woman candidate won the mayoral election in city c and zero if the woman candidate lost the mayor's race. The assignment variable $WinMargin_c$ is the vote margin of the woman candidate defined as the vote percentage obtained by the woman candidate minus the vote percentage obtained by her strongest male opponent. P stands for an nth-order polynomial in the vote share to control for different functional forms (linear, quadratic and cubic).

In order to increase the precision of the estimator of the RD treatment effect (Calonico et al., 2019), we also include predetermined control variables X_c that come from the U.S. Census, such as log(population), log(median household income), log(employment), and the poverty rate. ϵ_c is an idiosyncratic error term.

To analyze close elections, we conduct local linear regressions in a neighborhood, h, around the cutoff (Meyersson, 2014; Imbens and Lemieux, 2008; Cattaneo et al., 2018). The bandwidth h* is calculated according to the optimal bandwidth algorithm developed by Imbens and Kalyanaraman (2012) for each outcome with a linear control function of the assignment variable.[8]

4.2 Validity of the Research Design

Density of the Running Variable. A standard validity check in the RD literature is to test for discontinuity of the assignment variable at the cut-off (Imbens and Lemieux, 2008). Intuitively, a discontinuous jump of the vote margin around zero might indicate that certain candidates might have systematic advantage or

[8] Low-order (linear) polynomial approximation is substantially more robust and less sensitive to boundary and overfitting problems (Cattaneo et al., 2018). Further, such local polynomial methods employ only observations close to the cutoff, and interpret the polynomial used as a local approximation, not necessarily as a correctly specified model.

differential resources to influence the outcome and self-select into treatment. We test for endogenous sorting around the threshold by using the McCrary (2008) test. A discontinuous jump of the assignment variable around the cutoff would be a serious threat to internal validity.

However, Figure 2 shows no statistically significant discontinuous jump of the assignment variable. The local density plot (Panel A) and the histogram (Panel B) show that the densities of the assignment variable are equally distributed and smooth on each side of the cutoff. In addition, the statistical manipulation test by McCrary (2008) based on local polynomial density estimation technique yields a p-value of 0.4233. The bandwidth used by the rddensity STATA command to construct the density estimators on the two sides of the cutoff is 0.208 (left) and 0.247 (right). Therefore, it fails to reject the null hypothesis of no difference in the density of treated and control observations around the cut-off.

Covariate Balance Tests. Another standard validity check in the RD literature is to inspect whether, near the cutoff, treated units are similar to control units in terms of observable and predetermined covariates that are later used in the regression analysis for covariate adjustment. Figure 3 plots all covariates as local averages against the female win margin. In addition, the graph shows regression lines that are predicted values with separate cubic vote margin trends estimated separately on each side of the cut-off. The number of bins is selected by mimicking variance evenly-spaced algorithm using spacings estimators. The spikes depict 95% confidence intervals. We study population, employment rate, household income and poverty rate. None of the RD subgraphs exhibit significant jumps in the predetermined covariates which suggest that the assumption of continuity of potential outcomes is plausible since treated and control observations do not systematically differ at the cutoff (Cattaneo et al., 2018).

5 Results

5.1 Baseline Results

We rely on RD design to draw causal inference about the female mayor on bond outcome. The outcome variable is defined as pooling all bond pricing outcomes for each mayoral term of the focal election. For example, if city A issues 2 bonds each year in the 4-year mayoral term, then 8 bond outcome observations are regressed on the female win margin which is constant for that election-year combination. Table 3 reports the results from baseline regression.

Panel A presents results using yield spread and Panel B reports the results using tax-adjusted spread. In column (1), we did not control for any polynomial order in the assignment variable and thus estimate the difference in means of the outcome variable between female and male governed cities using the global sample. The results show that unadjusted (adjusted) yield spreads of cities with female mayors is 6 (19) basis points lower than that with male mayors, and this difference is significant at 1 percent level. In column (2), we consider a cubic function of the assignment variable based on the global sample. The unadjusted (adjusted) yield spreads of cities with female mayors are 35 (32) basis points lower than that with male mayors. Columns (3) and (4) report the RD treatment effect. As for tax-unadjusted spreads shown in Panel A, the negative gender effect is around 37 to 38 basis points. As shown in Panel B, the gender effect on tax-adjusted yield spread is around 32 to 33 basis points. Considering the average tax-adjusted yield spread of 2.64% as reported in Table 1, this implies a 12% decrease of bond yield spreads relative to the mean. Given that the average bond value issued during four-year mayoral term is around $677 million[9], it means that female-governed cities pay less interest payment of $2.23 million than male-governed cities during the first mayoral term. This gender effect on borrowing cost is substantial.

We further examine other bond outcomes. In Panel C, we find the average amount of bond issued by cities with female mayors are significantly lower than that in cities with male mayors. This finding is consistent with the conjecture that female mayors choose a more conservative financing policy by reducing bond issuance. In unreported regressions, we take a look at the gross spread (*i.e.*, underwriting fee) and bond ratings. We find no evidence of gender effects on these variables. As a robustness check, we include yearly fixed effect and obtain similar results as our baseline model.

In the top panel of Figure 4, we plot the prediction line of yield spreads based on RD model with cubic polynomial and covariates. The spikes depict 95% confidence interval. These figures confirm the discontinuity around the cut-off point.

5.2 Mechanism

One possible explanation for the negative treatment effect of female mayors on the yield spread of municipal bonds is that investors expect that female mayors will choose conservative financing policies and reduce financial distress risk. Consequently, investors require lower risk premium for bonds issued by cities with female mayors. However, there are two possible scenarios. First, female mayors indeed curb government debt and improve municipal finance status, and markets rationally expect this. Alternatively, female mayors did not change municipal finance status but markets over-predict the gender effect. To examine this potential explanation and disentangle the above two scenarios, we conduct a few tests.

[9]As shown in Table 1, the average bond issues during the four-year mayoral term is 16.69, and the average par value per bond issue is $40.55 million. Hence, the total par value of bonds issued during the four-year mayoral term is $677 million.

Pre-election Heterogeneity. We study the effects of female mayors on bond pricing outcomes for different sub-samples regarding fiscal condition. In particular, we split the sample into subsamples based on the fiscal status in election year. We then compare the gender effect on bond outcomes after elections for the two subsamples. If the reduced yield spread reflects investor expectations on reduced financial risk due to female mayors, we expect the gender effect to be more pronounced in cities with higher debt levels. We use two variables to proxy the degree of pre-election financial distress risk. The first is debt per capita ratio, which is defined as total debt outstanding divided by population size, and the second is debt to revenue ratio, which is defined as total debt outstanding divided by total revenue. The results of this test are reported in Table 4. For the subsample including cities with debt per capita below the median, electing female mayors reduce tax-adjusted bond spreads by 27 basis points compared with electing male mayors. In contrast, for the subsample including cities with debt per capita above the median, this effect translates into 73 basis points. The result using debt-to-revenue ratio is consistent as well. Therefore, this test confirms our conjecture that the gender effect is more pronounced in cities with high municipal default risk.

One concern is that cities with poor financial status are more likely to elect a female mayor because voters expect female mayor to reduce government debt. We address this validity concern by running another covariate balance test for municipal debt per capital and debt to revenue ratio in pre-election years. We find no discontinuity in these variables at the cutoff.[10]

Post-election Fiscal Status. The market response to female mayors is not necessary rationale. It could be driven by investors' mis-perception that female mayors are more risk averse than male mayors. Do female mayor indeed reduce debt and enhance financial status? To answer this question, we study fiscal debt outcomes after elections. We compare the debt per capita, debt to revenue ratio in the first mayoral term between female- and male- governed cities . Table 5 presents the results. We find that cities with female mayors on average are associated with lower debt per capita and debt to revenue than cities governed by male mayors. The RD effect of female mayors on log(debt per capita) is -0.539 and -0.614 in regression with and without covariates. In the bottom panel of Figure 4, we plot the RD effect for debt per capital and debt to revenue ratio.

Post-election Fiscal Status: Dynamic Effect. We further consider the dynamic effect following the election. Specifically, We follow Cellini et al. (2010) to test how women political leaders affect municipal debt outcomes over time. The dynamic causal effects of women political leaders on fiscal status is estimated as

[10]This test is not reported in this paper, but available upon request.

follows:

$$Fiscal_{ct\tau} = \theta_{\tau}^{ITT} FemaleWin_{ct} + P(\beta_{\tau}, WinMargin_{ct}) + \alpha_{\tau} + \kappa_t + \lambda_{ct} + \epsilon_{ct\tau}. \tag{2}$$

here τ is the index of year related to the election, ranging from -2 to 4. We are pooling data such that for each election-city combination (c, t) we include observations in periods $t-2$ to $t+4$. θ_{τ}^{ITT} estimates the causal effect of electing a women mayor on municipal fiscal condition at year $t+\tau$. The parameters $\alpha_{\tau}, \kappa_t, \lambda_{ct}$ are fixed effects for years relative to the election, year fixed effects and election fixed effects. $FemaleWin_{ct}$ is a dummy variable with value one indicating whether the woman candidate won the mayoral election in city c and zero if the woman candidate lost the mayor's race. The assignment variable $WinMargin_{ct}$ is the vote margin of the woman candidate defined as the vote percentage obtained by the woman candidate minus the vote percentage obtained by her strongest male opponent. P stands for an nth-order polynomial in the vote share to control for different functional forms (linear, quadratic and cubic). ϵ_c is an idiosyncratic error term. Both the θ_{τ}^{ITT} and β_{τ} coefficients are allowed to vary freely with $\tau > 0$ but are constrained to zero for $\tau <= 0$. We are interested at the coefficients θ_{t+1}^{ITT} to θ_{t+4}^{ITT}, which reflect the yearly change of debt outcome during the four-year mayoral term.

This test provides the RD treatment effect for each year during the four-year mayoral term following the election. In Figure 5, we depict the dynamic effect for municipal debt. We find a clear downward time trend. These findings suggest that female mayors gradually reduce the municipal debt level over the four-year term. This dynamic effect estimation echoes our previous static analysis in Panel C of Table 3 showing that female mayors issue a lower amount of debt than male mayors.

5.3 Pre- versus Post-election Fiscal Status

The previous empirical models exploited only cross-sectional variation by contrasting post-election bond outcome in cities that elected a female mayor to post-election bond outcomes for male-governed cities. To provide additional evidence on the channel that the treatment effect of female political leadership is indeed "sharp" right at the election date, we also exploit the time-series variation by comparing pre- versus post-fiscal status in cities where female candidates barely won with cities where female candidates narrowly lost. We set up an expanded panel that centers the outcome variable between t-2 and t+4 around each election. That allows us to introduce a dummy variable *Post* and interact it with the treatment dummy $FemaleWin$:

$$
\begin{aligned}
Fiscal_{ct\tau} = \alpha &+ \beta_1 FemaleWin_{ct} + \beta_2 WinMargin_{ct} + \beta_3 FemaleWin_{ct} * WinMargin_{ct} \\
&+ \beta_4 FemaleWin_{ct} * Post_{ct\tau} + \beta_5 WinMargin_{ct} * Post_{ct\tau} \\
&+ \beta_6 FemaleWin_{ct} * WinMargin_{ec} * Post_{ct\tau} + \beta_7 Post_{ct\tau} + \gamma_{ct} + \epsilon_{ct\tau}.
\end{aligned} \tag{3}
$$

We regress the fiscal outcome variable of city c that varies at a yearly frequency τ between 2 years before and 4 years after election in year t on a dummy variable that indicates whether the female candidate won or lost, the female win margin and interaction variables. The post-dummy $Post_{ct\tau}$ is equal to one during the first mayoral term and zero in the two pre-election years. We also include election fixed-effects γ_{ct}. We run the regression based the local sample identified by the optimal bandwidth from the baseline regression. The estimated coefficient of β_4 reflects the "pre-post" change in fiscal outcomes in cities where a female candidate won relative to "pre-post" changes in fiscal outcomes where female candidates lost. We report the estimation results in Table 6. We find that the gender effect is indeed appear only during the post-election period. This finding suggests that our baseline results of gender affecting municipal financing cost also holds in the time-series dimension and are not driven by heterogeneous city characteristics. Female mayors have causal effect on the fiscal status.

5.4 Robustness

Party Affiliation. Since female politicians tend to self-select themselves more into the Democratic party, our baseline effects could be driven by party affiliation. To address this concern, we re-run our specifications on two sub-samples: (1) elections where female and male candidates share the same party affiliation versus (2) elections where candidates have an opposite party affiliation. If party affiliation of the politician drives our effects, then our negative RD treatment effect should not hold in the "same-party" sub-sample. We present the estimation results in Table 7. Interestingly, we find that the RD treatment of female mayor is more pronounced in elections where female and male candidates share the sample party affiliation. Hence, we conclude that our baseline results are not driven by a partisan effect.

Excluding Re-elected Mayors. So far, our election sample contains also elections where the incumbent wins for the second time against opposite gender competitors, and these elections are treated as separate elections. In the following sub-sample we exclude all mayors that got re-elected. As shown in Table 8, the RD effect is very similar to that in our baseline model. For instance, the RD effect on tax-adjusted yield spread is 33.8 basis points in column (4) using sample excluding re-elected mayors whereas this effect is 33.2 basis points in our baseline regression.

Incumbent Win Re-election. The next sub-sample considers only elections between female and male incumbent re-election winners and pools the outcome variable for the first and second term. Hence, the effect here are based on bond outcome during two-term (*i.e.* 8 years) mayors. If there is a gender effect on municipal financial status, this effect should be stronger for mayors with longer terms. As expected, the RD effect using this two-mayor-terms sub-sample is stronger than our baseline model. For instance, the RD effect on tax-adjusted yield spread is 48.5 basis points compared with 33.2 basis points in baseline model.[11]

Pivotality. The next sub-sample considers only elections between female and male mayoral candidates if the gender of the current mayor changed compared to the previous mayor. Here, we compare the bond outcomes in cities where female mayors replace male predecessors and cities where male mayors replace female predecessors. Our baseline model shows that mayor gender has causal impact on bond outcome. This effect should be even stronger when there are gender change of mayors. Table 9 confirms this conjecture. The RD effect (column(4)) is significantly larger than that in our baseline model. In particular, the effect on yield spread is 53 basis points in the pivotal sample whereas it is 38 basis points in baseline model. The effect on tax-adjusted yield is 70 basis points, which is twice of the effect of 33 basis points in baseline model.

Additional Validity Test: Pre-election Outcomes. The validity test considers the effect of barely electing a female mayor on pre-election outcomes for one-term mayors. Intuitively, a close victory of a female candidate should have no effect on bond outcomes prior to the election because the election outcome is not known yet. Following Cellini et al. (2010) we examine the impact of electing female mayors on bonds issued before focal elections. The results are present in Table 10. We find no impact on pre-election bond outcomes. This test further ensures the validity of our research design.

Bandwidth Sensitivity. Our preferred specification of the baseline scenario computes the optimal bandwidth via the mean-squared-error (MSE) bandwidth selector by Calonico et al. (2014) and assumes a linear functional form of the assignment variable. In order to check whether our results are driven by the bandwidth choice or the polynomial order of the assignment variable, we perform a sensitivity analysis in Figure 6. Each dot corresponds to the RD treatment effect of female mayors on the tax adjusted spread based on different bandwidths and polynomial orders. Since all estimated coefficients are negative and statistically significantly different from zero, we conclude that the choice of both the bandwidth and the

[11] This result is not tabulated and available upon request

polynomial order of the assignment variable does not seem to change our overall finding.

6 Conclusion

This paper investigates the impact of gender on debt financing cost of local government in cities and towns across the United States. Using a regression discontinuity design, we compare yield spreads of municipal bonds issued by cities where a female mayor won a close election against a male candidate with yield spreads of municipal bonds issued by cities where a female candidate lost a close election to her male competitor. This setting allows us to estimate the causal effect of female mayors on the pricing of municipal bonds.

We obtain consistent evidence that cities with female mayors are associated with lower yield spreads of municipal bonds and lower amount of bond issuance than cities with male mayors. This gender effect is stronger for cities with high-level debt prior to election years. Moreover, after the election, cities with female winners are accompanied with lower debt level and improved fiscal status. These findings are consistent with the notion that female are in general more risk aversion and prefer conservative financing policies.

Another possible explanation for the negative relation between female mayors and government debt is that due to voter bias against female leaders, only really talented female politician would won elections or get chance to attend election races. For example, Anzia and Berry (2011) shows that conditional on winning, female political leader perform better than their male leaders. Therefore, female mayors on average have better skills and capabilities than their male counterparts and consequently, are more capable to enhance the fiscal status and reduce the financing cost of government debt. Our RD design partially addresses this endogeneity concern because the chance whether female or male candidate won in a close election is arguably random. However, we admit that we cannot fully rule out this alternative explanation if selection bias cause on average women politicians have better ability than their male counterparts. Although our test cannot disentangle whether the gender effect is driven by gender difference of risk attitude or stronger ability of female mayors due to selection, we provide the novel evidence that female political leaders indeed help reduce government debt problem.

Another issue is whether reducing government debt is optimal. prior research on female business leaders show that firms with women executives take low risk corporate policies but these policies may hurt long-run firm value. Therefore, female mayors' cutting government debt may cause unintended negative impact. Our paper aims to demonstrate the difference between female and male leaders on government financing policy. The impact of gender difference on overall welfare is beyond the scope of this paper but deserve study in future research.

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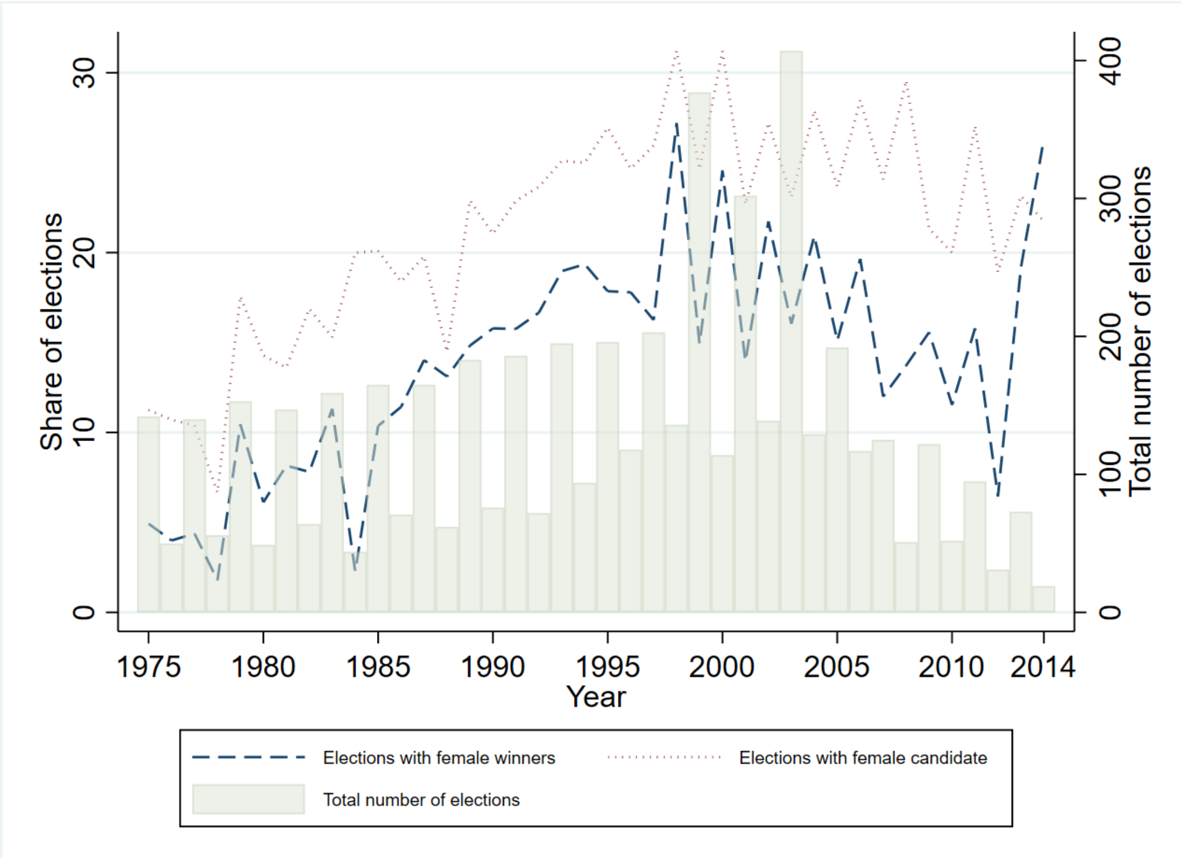
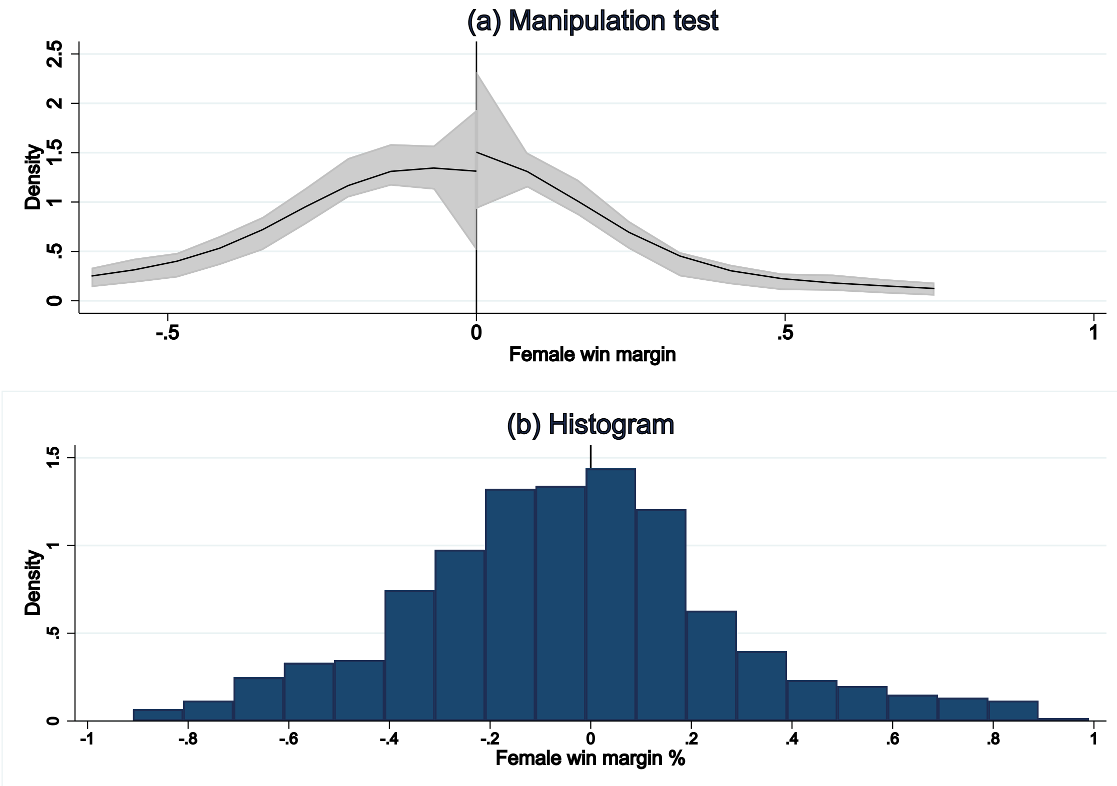
Figure 1: Female political participation.



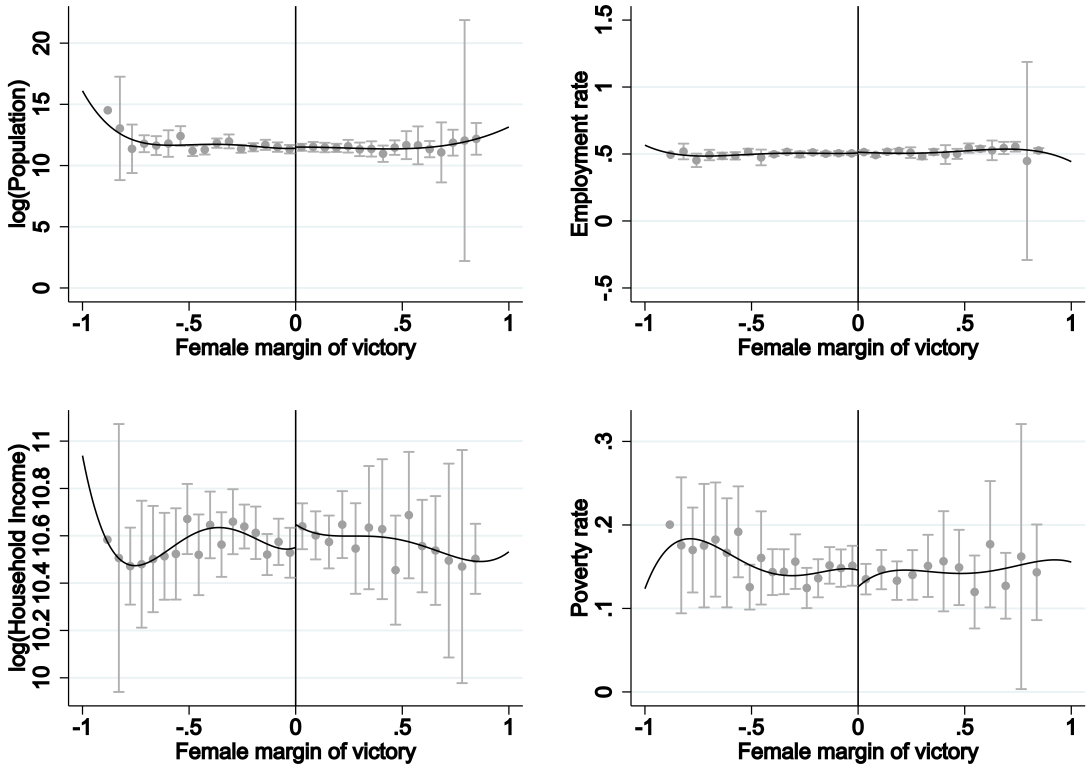
Notes: This figure shows the time-series evolution of elections between 1975 and 2014. The bar chart shows the total number of elections in the dataset with non-missing information on names, vote shares and gender of mayors and runner-up candidates. The dotted line depicts the fraction of elections with female participation. The dashed line represents the ratio of elections with female winners.

Figure 2: Validity Test.



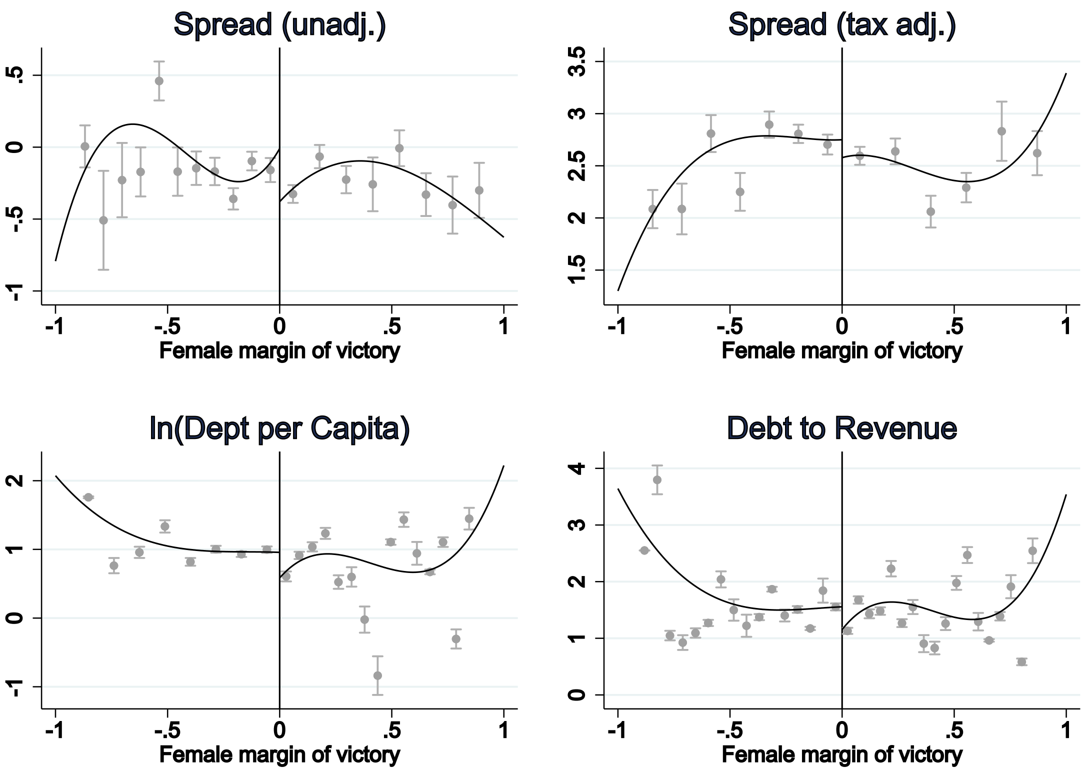
Notes: This graph shows the distribution of the assignment variable for all 604 elections. The assignment variable is the female win margin with the cut-off being at zero. A negative margin indicates that a female candidate lost mayoral elections while positive values represent a victory of elections. Panel (a) reports a local polynomial density plot of the female vote margin with 95% confidence intervals to show whether there is a discontinuity at the winner threshold. Panel (b) displays the histogram of the female win margin. Vertical lines in both subgraphs denote the cut-off at zero.

Figure 3: Covariate Balance Test.



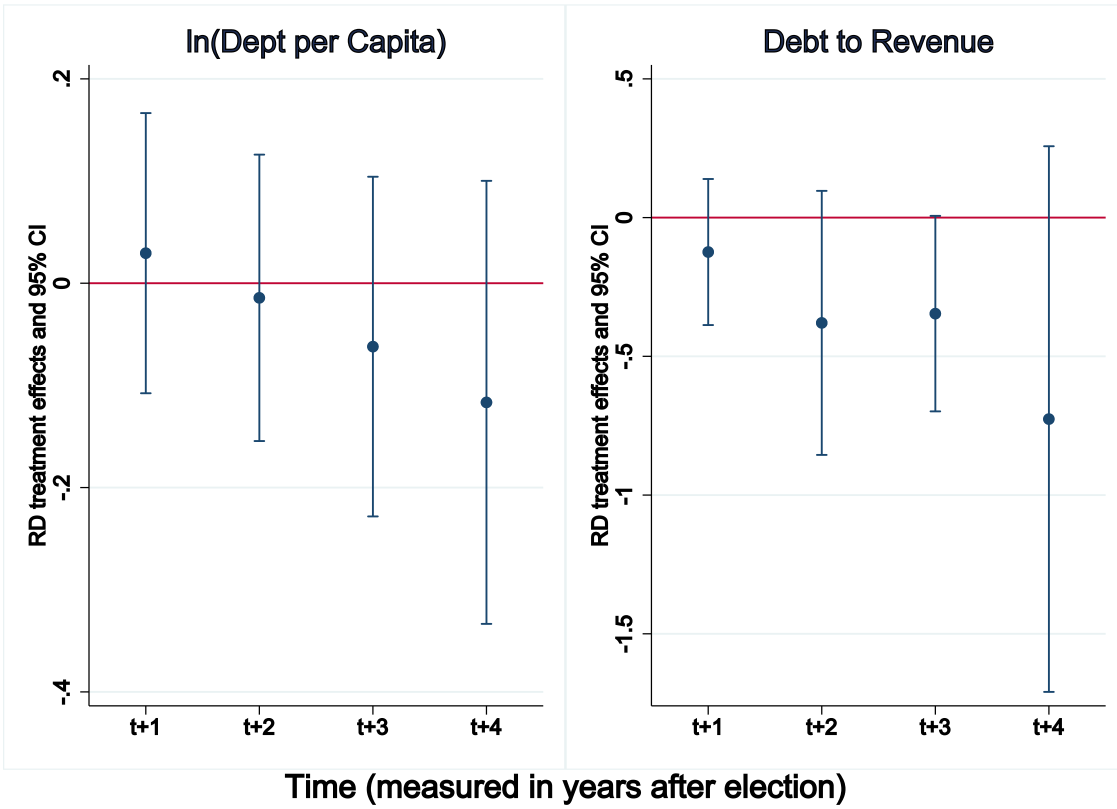
Notes: This graph plots the covariate measures against the female win margin whereby a negative margin indicates an election loss of a female candidate and a positive margin an election victory for the female mayoral candidate. Each of the dots is the average value of the covariate outcome in vote margin bins for the global sample. The number of bins is selected by mimicking variance evenly-spaced algorithm using spacings estimators. The solid black lines are smooth approximations to the unknown regression functions based on a third-order polynomial regression fit of covariate outcome on the vote margin score, fitted separately above and below the cutoff at zero by using the raw data. The spikes represent 95% confidence intervals.

Figure 4: RD plots: Bond and Fiscal Outcomes.



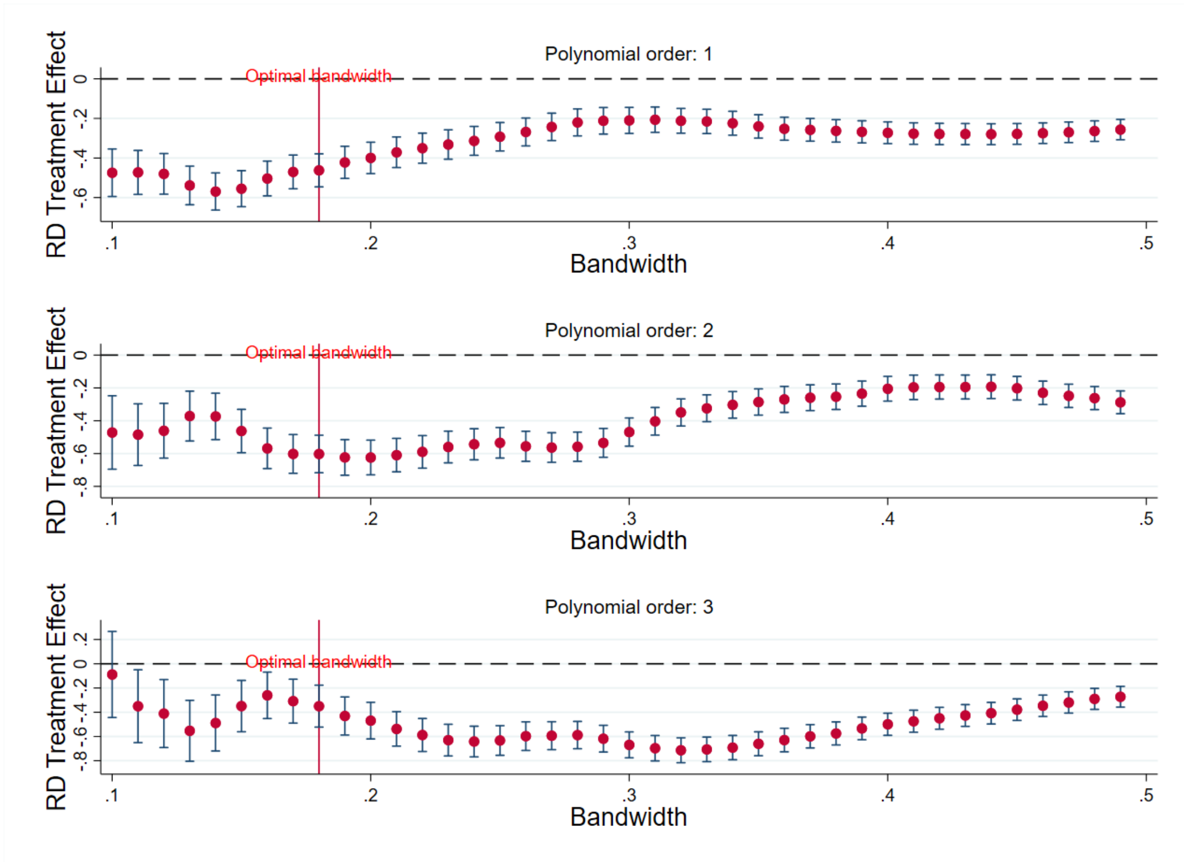
Notes: This graph plots bond and fiscal outcome variables against the female win margin whereby a negative margin indicates an election loss of a female candidate and a positive margin represents an election victory for the female mayoral candidate. Each of the dots is the average value of the outcome in vote margin bins for the global sample. The number of bins is selected by mimicking variance evenly-spaced algorithm using spacings estimators. The solid black lines are smooth approximations to the unknown regression functions based on a third-order polynomial regression fit of covariate outcome on the vote margin score, fitted separately above and below the cutoff at zero by using the raw data. The dots are local means with 95% confidence intervals.

Figure 5: Dynamic RD plot.



Notes: This figure plots post-election dynamic RD treatment effects for all post-election years on fiscal status of the city by adopting the dynamic regression discontinuity design methodology of Cellini et al. (2010). The dots are local means with 90% confidence intervals. We center observations around each election in year t-2 through t+4 which uniquely identify observations by city, c, the date of the focal election, t, and the number of years passed by between the election year and the time the outcome variable was measured, τ. The fiscal outcome variables are regressed on the leads and lags of the female win dummy variable and linear assignment variable and further include election fixed effects and year fixed effects.

Figure 6: Bandwidth Sensitivity.



Notes: This figure plots RD treatment effects for different bandwidths and polynomial orders of the assignment variable. Each dot is the coefficient of the RD treatment effect with 95% confidence intervals of regressing the tax-adjusted spread on the female mayor indicator and the assignment variable following the specification in column (3) of Table 3.

Table 1: Summary Statistics

	Obs.	Mean	Std.Dev.	Med.	P1	P5	P95	P99
(A) Bond data								
Spread (unadj.)	6,697	-0.17	1.04	-0.27	-2.56	-1.65	1.64	3.26
Spread (tax adj.)	6,654	2.64	1.58	2.34	-0.22	0.72	5.86	8.72
Bond amount (mil)	6,694	40.55	78.40	13.24	0.27	1.05	170.00	430.85
Log(Bond amount)	6,694	2.61	1.54	2.58	-1.31	0.05	5.14	6.07
(B) City level data								
Female win margin	604	-0.05	0.32	-0.05	-0.79	-0.57	0.54	0.82
log(Population)	560	11.55	1.11	11.40	9.40	10.15	13.46	14.53
log(Persons employed)	560	10.87	1.11	10.72	8.64	9.43	12.86	13.86
Poverty rate	560	0.14	0.07	0.15	0.02	0.03	0.27	0.31
Debt per capita	522	2.42	2.23	1.80	0.10	0.37	6.25	11.53
ln(Debt per Capita)	520	0.52	0.92	0.59	-1.99	-0.92	1.83	2.44
Debt to revenue ratio	522	1.28	0.80	1.16	0.10	0.30	2.80	4.21
Nr of issued bonds in term	604	16.69	28.33	6.00	1.00	1.00	84.00	147.00

Note: Panel A presents the summary statistics of the bond data. Each observation corresponds to any municipal bond issued in the first term of the mayor in the respective city where the focal election took place. The spreads (unadjusted and adjusted) are calculated as described in section 3.2. Bond amount is defined as the par amount of a bond issue in million dollars.Panel B presents the summary statistics of the city level data. Female win margin is defined as the difference in the vote share of the female candidate and the vote share of the male competitor. A negative margin indicates an electoral defeat of the female candidate and a positive margin indicates an election victory of the female mayoral candiate. The poverty rate is defined as persons below poverty level over total persons. Debt per capita is defined as total debt outstanding divided by total population. The debt to revenue ratio is calculated as total debt outstanding over total revenue.

Table 2: Bond Characteristics

	Mayor type			Difference
	All	Female	Male	(2)-(3)
	(1)	(2)	(3)	(4)
Maturity	15.979	16.325	15.509	0.816**
	(12.948)	(13.133)	(12.678)	(0.277)
GO bond	0.535	0.522	0.553	-0.031**
	(0.499)	(0.500)	(0.497)	(0.010)
Public off.	0.476	0.480	0.471	0.009
	(0.499)	(0.500)	(0.499)	(0.010)
Limited off.	0.101	0.098	0.105	-0.007
	(0.301)	(0.297)	(0.306)	(0.006)
Competitive off.	0.384	0.377	0.394	-0.017
	(0.486)	(0.485)	(0.489)	(0.010)
Bond insurance	0.695	0.697	0.693	0.005
	(0.460)	(0.460)	(0.462)	(0.015)
Letter of credit	0.125	0.126	0.124	0.003
	(0.331)	(0.332)	(0.329)	(0.011)

Note: This table presents characteristics of issued bonds that are used in the baseline sample for all cities (column 1), female governed cities (column 2) and cities with male mayors. Column 4 depicts the difference in mean bond characteristics between female and male mayor cities. Maturity is measured in years. GO bond indicates the percentage of general obligation bonds issued in total. Public off. bonds are issued via a negotiated public method of sale. Limited off. bonds are issued via a negotiated limited method of sale. Competitive off. bonds are issued via a competitive method of sale. Bond insurance indicates the share of bonds issued with bond insurance. Letter of credit refers to the ratio of issued bonds that are credit enhanced by a domestic bank.

Table 3: Baseline - Bond Outcomes

Control Function	None	Cubic	Linear	Linear
Bandwidth	Global	Global	h^*	h^*
Covariates	No	No	No	Yes
	(1)	(2)	(3)	(4)
		Panel A: Spread (unadj.)		
Female win	-0.060***	-0.352***	-0.370***	-0.385***
	(0.01)	(0.02)	(0.03)	(0.03)
Obs	6,697	6,697	2,752	2,752
Bandwidth	1.00	1.00	0.19	0.19
# Elections	604	604	259	259
		Panel B: Spread (tax adj.)		
Female win	-0.190***	-0.319***	-0.324***	-0.330***
	(0.01)	(0.03)	(0.03)	(0.03)
Obs	6,654	6,654	3,522	3,522
Bandwidth	1.00	1.00	0.28	0.28
# Elections	599	599	340	340
		Panel C: Log(Bond amount)		
Female win	-0.033***	-0.055**	-0.362***	-0.213***
	(0.01)	(0.02)	(0.02)	(0.03)
Obs	8,962	8,962	3,165	3,165
Bandwidth	1.00	1.00	0.15	0.15
# Elections	617	617	221	221

Note: This table presents regression discontinuity treatment effects based on polynomial regressions using the rdrobust command in Stata. The assignment variable is the female vote margin defined as the difference in the vote share of the female candidate and the vote share of the male competitor. The optimal bandwidth is calculated by the mean-squared-error (MSE) bandwidth selector Calonico et al. (2014). The polynomial order describes the functional form of the assignment variable. The dependent variables are bond spreads, unadjusted and adjusted for taxes, constructed as pooling all municipal bonds that are issued within the first mayoral term. Standard errors in parentheses are robust according to robust nearest neighbor variance estimator and clustered at the city level. The covariates are all measured in the election-year and consist of: log(population), log(persons employed), log(median household income), and poverty rate. ***p $<$ .01, **p $<$ .05, *p $<$ .1

Table 4: Pre-election Heterogeneity

	ln(Debt per Capita)		Debt to Revenue	
	Low	High	Low	High
	Spread (tax adj.)	Spread (tax adj.)	Spread (tax adj.)	Spread (tax adj.)
Female win	-0.267*	-0.759***	-0.190***	-0.249***
	(0.16)	(0.06)	(0.07)	(0.03)
Obs.	1,687	3,995	1,588	4,094
Eff. Obs	718	1,911	880	1,776
Bandwidth	0.15	0.20	0.20	0.18
Covariates	Yes	Yes	Yes	Yes
# Elections	97	142	111	144

Note: This table presents regression discontinuity treatment effects based on polynomial regressions using the rdrobust command in Stata. The assignment variable is the female vote margin defined as the difference in the vote share of the female candidate and the vote share of the male competitor. The optimal bandwidth is calculated by the mean-squared-error (MSE) bandwidth selector Calonico et al. (2014). The polynomial order describes the functional form of the assignment variable. The dependent variable is the tax-adjusted bond spread defined in section **??**yieldsec:data_yield. Bond pricing outcomes are defined as pooling all municipal bonds that are issued within the first mayoral term. Each column-pair represents two sub-samples based on below (low) and above (high) median values of predetermined variables measuring the fiscal stance. Standard errors in parentheses are robust according to robust nearest neighbor variance estimator and clustered at the city level. The covariates are all measured in the election-year and consist of: log(population), log(persons employed), log(median household income), and poverty rate. ***p $<$ .01, **p $<$ .05, *p $<$ .1

Table 5: Gender Effects on Post-election Fiscal Condition

	ln(Debt per Capita)		Debt to Revenue	
Female win	-0.539***	-0.614***	-0.485***	-0.508***
	(0.05)	(0.04)	(0.02)	(0.02)
Obs.	2,238	7,558	2,918	7,561
Eff. Obs	2,238	2,238	2,918	2,918
Bandwidth	0.12	0.12	0.15	0.15
Covariates	No	Yes	No	Yes
# Elections	159	159	197	197

Note: This table presents regression discontinuity treatment effects based on polynomial regressions using the rdrobust command in Stata. The assignment variable is the female vote margin defined as the difference in the vote share of the female candidate and the vote share of the male competitor. The optimal bandwidth is calculated by the mean-squared-error (MSE) bandwidth selector Calonico et al. (2014). The polynomial order describes the functional form of the assignment variable. The dependent variable is defined as average debt per capita and debt to revenue during the first mayoral term. Standard errors in parentheses are robust according to robust nearest neighbor variance estimator and clustered at the city level. The covariates are all measured in the election-year and consist of: log(population), log(persons employed), log(median household income), and poverty rate. ***p $<$ .01, **p $<$ .05, *p $<$ .1

Table 6: Pre/Post RD Analysis - Fiscal Outcomes

	ln(Dept per Capita)	Debt to Revenue
Post	0.091***	0.059
	(0.02)	(0.08)
FemaleWin*Post	-0.058**	-0.246**
	(0.02)	(0.11)
WinMargin*Post	-0.274	-0.855
	(0.22)	(0.91)
FemaleWin*Post*WinMargin	2.607***	1.485
	(0.35)	(1.34)
Obs	3,964	5,109

Note: This table presents panel-level regression discontinuity treatment effects augmented by an indicator that exploits time series variation of two years pre- and 4 years post election. The assignment variable is the female vote margin defined as the difference in the vote share of the female candidate and the vote share of the male competitor. The post dummy variable is zero for 2 years before the election and 1 for all the years in the first term of the mayor. The regression is conducted for the local sample defined as the assignment variable being within the optimal bandwidth Calonico et al. (2014). The polynomial order of the assignment variable is linear. The dependent variables are the log of debt per capita and debt to revenue. We further include election fixed effects. Standard errors are in parentheses. ***$p < .01$, **$p < .05$, *$p < .1$

Table 7: Robustness: Party Affiliation

	Same Party		Dem. vs. Rep.	
	Spread (tax adj.)	Spread (tax adj.)	Spread (tax adj.)	Spread (tax adj.)
Female win	-0.861***	-0.749***	-0.270***	-0.212***
	(0.11)	(0.11)	(0.07)	(0.04)
Obs	2,080	2,080	1,044	1,044
Bandwidth	0.26	0.26	0.17	0.17
Polynomial order	1	1	1	1
Covariates	No	Yes	No	Yes
# Elections	245	245	107	107

Note: This table presents regression discontinuity treatment effects based on polynomial regressions using the rdrobust command in Stata. The assignment variable is the female vote margin defined as the difference in the vote share of the female candidate and the vote share of the male competitor. The optimal bandwidth is calculated by the mean-squared-error (MSE) bandwidth selector Calonico et al. (2014). The polynomial order describes the functional form of the assignment variable. The dependent variables are bond spreads adjusted for taxes. Bond pricing outcomes are defined as pooling all municipal bonds that are issued within the first mayoral term. Standard errors are in parentheses. "Robust" is the robust nearest neighbor variance estimator clustered at the city level. The covariates are all measured in the election-year and consist of: log(population), log(persons employed), log(median household income), and poverty rate. ***p < .01, **p < .05, *p < .1

Table 8: One Term mayors Analysis - Bond Outcomes

Control Function	None	Cubic	Linear	Linear
Bandwidth	Global	Global	h^*	h^*
Covariates	No	No	No	Yes
	(1)	(2)	(3)	(4)
		Panel A: Spread (unadj.)		
Female win	-0.058***	-0.215***	-0.393***	-0.339***
	(0.02)	(0.03)	(0.04)	(0.04)
Obs	3,796	3,796	1,824	1,824
Bandwidth	1.00	1.00	0.16	0.16
# Elections	361	361	167	167
		Panel B: Spread (tax adj.)		
Female win	-0.080***	-0.441***	-0.438***	-0.338***
	(0.02)	(0.05)	(0.06)	(0.06)
Obs	3,768	3,768	2,223	2,223
Bandwidth	1.00	1.00	0.21	0.21
# Elections	357	357	205	205
		Panel C: Log(Bond amount)		
Female win	0.038***	-0.277***	-0.174***	-0.143***
	(0.01)	(0.02)	(0.02)	(0.04)
Obs	4,970	4,970	1,979	1,979
Bandwidth	1.00	1.00	0.14	0.14
# Elections	372	372	152	152

Note: This table presents regression discontinuity treatment effects based on polynomial regressions using the rdrobust command in Stata. The assignment variable is the female vote margin defined as the difference in the vote share of the female candidate and the vote share of the male competitor. The bandwidth is calculated by the mean-squared-error (MSE) bandwidth selector. The polynomial order describes the functional form of the assignment variable. The dependent variables are bond spreads unadjusted and adjusted for taxes,and bond amount constructed as pooling all municipal bonds that are issued within the first mayoral term. Standard errors in parentheses are robust according to robust nearest neighbor variance estimator and clustered at the city level. The covariates are all measured in the election-year and consist of: log(population), log(persons employed) and poverty rate. ***p < .01, **p < .05, *p < .1

Table 9: Pivotality Analysis - Bond Outcomes

Control Function	None	Cubic	Linear	Linear
Bandwidth	Global	Global	h^*	h^*
Covariates	No	No	No	Yes
	(1)	(2)	(3)	(4)
		Panel A: Spread (unadj.)		
Female win	0.058**	-0.210***	-0.610***	-0.533***
	(0.02)	(0.04)	(0.06)	(0.05)
Obs	2,225	2,225	1,099	1,099
Bandwidth	1.00	1.00	0.16	0.16
# Elections	188	188	90	90
		Panel B: Spread (tax adj.)		
Female win	-0.318***	-0.739***	-0.843***	-0.704***
	(0.04)	(0.08)	(0.17)	(0.16)
Obs	2,203	2,203	923	923
Bandwidth	1.00	1.00	0.12	0.12
# Elections	185	185	78	78
		Panel C: Log(Bond amount)		
Female win	0.155***	-0.287***	-0.585***	-0.293***
	(0.02)	(0.02)	(0.03)	(0.04)
Obs	2,922	2,922	1,246	1,246
Bandwidth	1.00	1.00	0.12	0.12
# Elections	194	194	81	81

Note: This table presents regression discontinuity treatment effects based on polynomial regressions using the rdrobust command in Stata. The assignment variable is the female vote margin defined as the difference in the vote share of the female candidate and the vote share of the male competitor. The bandwidth is calculated by the mean-squared-error (MSE) bandwidth selector. The polynomial order describes the functional form of the assignment variable. The dependent variables are bond spreads unadjusted and adjusted for taxes and bond amount, constructed as pooling all municipal bonds that are issued within the first mayoral term. Standard errors in parentheses are robust according to robust nearest neighbor variance estimator and clustered at the city level. The covariates are all measured in the election-year and consist of: log(population), log(persons employed) and poverty rate. ***p < .01, **p < .05, *p < .1

Table 10: Placebo Test - Bond Outcomes

Control Function	None	Cubic	Linear	Linear
Bandwidth	Global	Global	h^*	h^*
Covariates	No	No	No	Yes
	(1)	(2)	(3)	(4)
	Panel A: Spread (unadj.)			
Female win (future)	-0.054	-0.147	-0.037	-0.003
	(0.08)	(0.16)	(0.18)	(0.18)
Obs	980	980	494	494
Bandwidth	1.00	1.00	0.16	0.16
# Elections	275	275	131	131
	Panel B: Spread (tax adj.)			
Female win (future)	0.190	-0.401*	-0.529**	-0.164
	(0.13)	(0.23)	(0.26)	(0.26)
Obs	975	975	515	515
Bandwidth	1.00	1.00	0.18	0.18
# Elections	272	272	141	141
	Panel C: Log(Bond amount)			
Female win (future)	0.087	-0.077	-0.379	-0.101
	(0.11)	(0.21)	(0.25)	(0.24)
Obs	1,322	1,322	798	798
Bandwidth	1.00	1.00	0.20	0.20
# Elections	303	303	171	171

Note: This table presents regression discontinuity treatment effects based on polynomial regressions using the rdrobust command in Stata. The assignment variable is the female vote margin defined as the difference in the vote share of the female candidate and the vote share of the male competitor. The bandwidth is calculated by the mean-squared-error (MSE) bandwidth selector. The polynomial order describes the functional form of the assignment variable. The dependent variables are bond spreads unadjusted and adjusted for taxes, and bond amount constructed as pooling all municipal bonds that are issued within the first mayoral term. Standard errors in parentheses are robust according to robust nearest neighbor variance estimator and clustered at the city level. The covariates are all measured in the election-year and consist of: log(population), log(persons employed) and poverty rate. ***p < .01, **p < .05, *p < .1

Table 11: Variable descriptions

Variable	Description	Source	Label
	Bond-level variables		
Outcome variables			
Bond spreads	Difference between offering yield of municipal bond and yield-to-maturity of the synthetic risk-free bond (Longstaff et al., 2005; Gurkaynak et al., 2007).	SDC	Spread (unadj.)
Bond spreads (tax adjusted)	Bond spreads are adjusted by taking top income tax rates by state and year from the NBER TAXSIM.	SDC	Spread (adj.)
	City level variables		
Covariates			
Population	The total population count in a given census tract based on decennial census data and interpolated between census years.	IPUMS	log(Population)
Family income	Decennial median family income in a given census tract is interpolated between census years.	IPUMS	log(Median family income)
Population 65+	The share of population with median age over 65 in a given census tract.	IPUMS	Share population age 65+
Minority population	The share of minority population to total population in a given census tract. Minority population is defined as Hispanic, African-American, American Indian, Eskimo, Aleut, Asian or Pacific Islander and Other.	IPUMS	Share minority population
Vote margin	The assignment variable or vote margin is defined as the difference between the vote share of the female candidate and the vote share of the strongest mal candidate.	Own data	Female win margin
Election winner	The treatment indicator or black win dummy is defined as one for female mayors and zero for male mayors.	Own data	Female win