Gender Interactions within Hierarchies: Evidence from the Political Arena[*]

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September 2011

Abstract

This paper studies gender interactions within hierarchical organizations using a large data set on the duration of Italian municipal governments elected between 1993 and 2003. A municipal government can be viewed as a hierarchy, whose stability over time depends on the degree of cooperation between and within ranks.

We find that in municipalities headed by female mayors, the probability of early termination of the legislature is higher. This result persists and becomes stronger when we control for municipality fixed effects as well as for non-random sorting of women into municipalities using regression discontinuity in gender-mixed electoral races decided by a narrow margin. The likelihood that a female mayor survives until the end of her term is lowest when the council is entirely male, and in regions with less favorable attitudes towards working women. This evidence is suggestive that group dynamics are an important factor in driving the gender difference. Other interpretations receive less support in the data. Our results may provide an alternative explanation for the underrepresentation of women in leadership positions.

JEL Classification: D74, J16, H70, M54.
Keywords: Gender, discrimination, hierarchies, government stability, municipal government.

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1 Introduction

Despite the substantial increase in female labor force participation over the past 40 years, and the narrowing of the gender gap in wages, women are still underrepresented in leadership positions, in the corporate world, in academia, in government and in other prestigious professions.[1] Most of the existing research has focused on trying to explain the reasons for this phenomenon. However, relatively little is known about how women actually fare once they have reached the top of an organization. In this paper, we attempt to fill this gap by investigating the performance of one particular type of leaders, elected politicians in municipal governments. Specifically, we use a unique and very rich data set on the universe of Italian municipal governments elected between 1993 and 2003, and we ask whether the probability that the elected administration survives until the end of its mandate depends on the gender of the chief of the executive.

The Italian municipality is a parliamentary system, with the government organized as a hierarchy. The mayor, who is directly elected, is appointed to run the executive, and members of the assembly endorse or oppose the proposed policies. A mayor who cannot muster a majority of assembly members in support of his or her policies can be forced out of office by a simple no-confidence vote in the council. This leads to the immediate termination of the mandate and to new elections. Hence, the chief of the executive's survival in office depends on the ability to forge and maintain stable majorities that will endorse the proposed policies. Our research question, then, is about the relative ability of male and female mayors to foster cooperation among the assembly members.

Our main finding is that, after controlling for a large number of observable characteristics of the mayor and the council, the probability of early termination of the legislature is between 3 and 5 percentage points higher when the mayor is a woman. For comparison, the average probability of early termination of municipal councils headed by male mayors is about 10

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[1]Bertrand and Hallock (2001) document that between 1992 and 1997 women represented only 2.5% of the top paid executives in U.S. corporate firms.

percent. We find an even larger effect when controlling for non-random sorting of women across municipalities using a regression discontinuity design in gender-mixed electoral races decided by a narrow margin. [2]

There are a number of possible explanations for these findings. For example, it could be that female mayors are more likely to resign of their own initiative, because of family responsibilities, because in general women have higher turnover rates, or because women are more inclined to avoid conflictual situations. This would imply that the higher early termination rate of women is driven mostly by spontaneous resignations, as opposed to no-confidence votes or resignation of the city council. This hypothesis is not supported by the data: female mayors are significantly more likely to be ousted from office by resignation of the city council, but are no more likely to resign spontaneously.

We also find no evidence that female mayors are more likely to resign early because of differences in performance while in office. There are in fact no differences between male and female mayors in various measures of government efficiency. Also, by looking at the size and the composition of the municipal budget, we find no major differences in the types of policies enacted, suggesting that the differences in the probability of early termination are not driven by preference heterogeneity between the female mayor and the municipal council.

Instead, a number of pieces of evidence support the notion that it is group dynamics within the municipal council that lead to higher probability of early termination for female mayors. Specifically, we find that the likelihood that a female mayor survives until the end of her term is lowest when the mayor interacts with an entirely male council; in regions where unfavorable attitudes towards working women prevail, as measured by surveys about women's role and the female labor force participation rate; and in municipalities where no woman had ever served as mayor in the past.

Our study makes a number of important contributions. First, it provides one of the first estimates of the performance of women in leadership positions. Among the advantages of

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[2]We defer to later a discussion of the interpretation of the RD coefficient in a setting in which candidates may be selected based on observed and unobserved characteristics.

our approach is that we are able to observe a large sample of women in leadership positions, and that we have, in government stability, a good observable measure of the performance of politicians. It is well recognized that government stability is a relevant determinant of economic growth, as the uncertainty associated with an unstable political environment reduces investment and the speed of economic development (Barro, 1991; Alesina et al., 1996).[3] Thus, our empirical analysis has the advantage of bringing the study of governments to a micro level, and allows us to better understand the complex dynamics of government stability. Second, our analysis presents a unique opportunity to analyze the interaction between the gender of team members and the team leader in an important real world setting, where one can credibly measure performance. With respect to laboratory settings, this has the advantage of capturing any possible heterogeneity in gender dynamics in a more geographically and demographically diverse sample.

The rest of the paper is organized as follows. In Section 2, we review the related literature. In Section 3, we describe the Italian institutional framework and the data. In Section 4, we describe the econometric framework and discuss the conditions under which this design identifies a parameter of interest. In Section 5 we present the main results on the relationship between the mayor's gender and the probability of early termination, using both linear regression and regression discontinuity methods. In Section 6 we discuss the possible interpretations of our findings. We conclude with Section 7.

2   Related Literature

This paper is related to several different strands of research. First, it is connected to the literature on the gender gap in wages and the underrepresentation of women in leadership roles at the very top of the occupational distribution. Black et al. (2008) and Bertrand et al. (2010) argue that a substantial fraction of the gender gap for highly educated women

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[3]This is true also in our data, where early termination of a legislature is associated with lower investments and higher budget deficits in subsequent terms.

can be explained by differences in choice of college major, in labor force attachment and in weekly work hours. Others have hypothesized that the underrepresentation of women in high-powered jobs may be due to gender differences in competitive environments. Men are more likely to select into more competitive compensation schemes (Dohmen and Falk, 2011; Niederle and Vesterlund, 2007; Niederle and Yestrumskas, 2008; Booth and Nolen, 2009), they tend to raise their performance in competitive settings (Gneezy, Niederle and Rustichini, 2003) and are better able to maintain high levels of performance in high pressure situations (Lavy, 2008a; Örs, Palomino and Peyrache, 2008).[4]

This paper is also related to the large and expanding literature on the choices and performance of female politicians. A series of recent articles has highlighted important gender differences in preferences for policies. Female leaders invest more in public goods more closely linked to women's concerns, like water provision (Chattopadhyay and Duflo, 2004), education (Clots-Figueras, 2009 and 2010), health (Rehavi, 2007), and environmental protection (Funk and Gathman, 2008). On the other hand, Ferreira and Gyourko (2010), using data from U.S. municipalities, find that the gender of the mayor is unrelated to the size of the local government or the composition of municipal spending. A rich literature in political science has also investigated gender differences in legislators' voting behavior, using mostly data from the U.S. Congress. Studies have found that women tend to be more liberal than men (Welch, 1985; Norton, 1995), and more likely to support and promote women's issues (Swers, 1998, Vega and Firestone, 1995), while Edlund and Pande (2002) and Box-Steffensmeier et al. (2004) investigate the emergence of the political gender gap over the past few decades. [5]

With respect to the existing literature, the contribution of our paper is twofold. First, it

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[4]On the other hand, Lavy (2008b) finds no gender differences in performance in a tournament in which contestants have more time to prepare and plan their strategies, and Manning and Saidi (2010) argue that gender differences in the incidence of pay-for-performance schemes can account for only a small fraction of the gender gap in the United Kingdom. Paserman (2010) finds that professional tennis players of both genders substantially reduce their performance in high-pressure situations.

[5]Washington (2008) addresses some of the potential endogeneity issues with these previous studies by examining the effect of the gender of legislators' *children* on their voting behavior: she finds that, conditional on the total number of children, each additional daughter raises the propensity of members of Congress to vote liberally.

sheds new light on gender interactions within hierarchical environments. To the best of our knowledge, this aspect has been almost neglected in previous economic research, probably because of the absence of field data that allows the analysis of gender interactions in relatively small teams. The limited literature in corporate finance has been able to look at the effects of the share of women directors on firm performance, but the scarcity of female CEOs prevents it from analyzing the effects of having a woman at the top of the hierarchy. Second, we analyze an additional dimension of politicians' effectiveness, which had not received much attention previously.

3   Institutional Framework and Data

3.1   The Italian Institutional Framework

The Italian municipal administration (*Comune*) is headed by a Mayor (*Sindaco*), who appoints the Executive Committee (*Giunta*), and a Council (*Consiglio Comunale*). The Council endorses the policies proposed by the mayor with majority rule. The functions of a municipal administration include the provision of public transportation, some welfare (like assistance to elderly people, nursery schools, and public housing), contracting for public works and managing public utilities.

In 1993 the mayoral electoral system was changed from a party-ballot to an individual-ballot election of the mayor, with some differences depending on the size of the city. In cities with population less than 15,000, elections are held with a single ballot and plurality rule, and the winning candidate is awarded a majority premium of at least two-thirds of the seats in the council. In municipalities with population above 15,000, elections are held with a double ballot (one for the mayor, and one for the party list), and a runoff election is held only if none of the candidates in the first round obtained an absolute majority of the votes. In large municipalities, the winning candidate is awarded a majority premium of at least 60% of

the seats.[6] Candidates are typically nominated by parties, although sometimes a candidate, especially in small municipalities, may run as an independent, or set up an independent list that includes also representatives from other parties.[7] Councillors are elected with an open list system. Voters have one vote for one council candidate in *the* party list of the mayoral candidate they voted for (for small municipalities), or in one of the party lists linked to the mayoral candidates (for large municipalities). The seats won by the mayoral candidate are assigned to the council candidates according to the preferences they received.

In 2000, the statutory duration of the legislature was extended from four to five years. Mayors are subject to a two-term limit, unless one of the two terms lasted for less than two years. They can also keep their previous job, with the only restriction that their salary as mayor is cut by half unless they take a leave of absence from their private employer.[8]

While most of the above institutional features are not specific to Italy (for example, Brazilian mayors are also subject to term limits, and individual ballot elections are held both in the US and UK), what makes the Italian municipal government peculiar is that it has some features of both the parliamentary and the presidential systems coexisting together. In fact, in the case of early resignation of the mayor *or* of at least 50 percent of the councillors, anticipated elections are called without the possibility of forming a new governing coalition. The incumbent mayor can run for reelection unless the term limit applies.

The mayor has a number of tools at his/her disposal in order to shape the governing coalition and ensure stability. Besides targeting spending towards particular groups, the mayor can also force any member of the Executive Committee to resign and appoint a new member, with the replacement being subject to approval by the Council. We later

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[6]Some institutional features differ in the regions with special autonomy (*Regioni Autonome a Statuto Speciale*). We include these regions in our analysis, as the differences in institutional features are not directly relevant for our identification strategy.

[7]Dal Bó et al. (2009) show that political dynasties play an important role in the choice of candidates in the U.S. Congress, and that many female legislators "inherit" their seat from husbands, fathers and siblings. Unfortunately, we cannot say whether this is the case in our data, as we do not observe family links.

[8]In recent work on the pay of Italian mayors, Gagliarducci and Nannicini (2010) conducted a phone interview survey of mayors in towns with a population between 4,900 to 5,100 inhabitants, and found that the fraction of full-time mayors was 47%, and the weekly working hours 38 (compared to 28 for part-time mayors).

examine whether there is any evidence that male and female mayors behave differently in their handling of conflict within the coalition.

3.2 Data

We use an administrative data set containing all the Italian mayoral terms elected from 1993 to 2003.[9] The data set contains information on gender, age, highest educational attainment, political affiliation, and previous job of the elected mayor, of all the losing mayoral candidates, of the members of the executive committee, and of the members of the council (divided into those belonging to the mayor's coalition, and those who do not). It also contains information on the exact duration and the reasons of early termination of the legislature, and the electoral results for the first and the second ballot. For each municipality, we also have detailed yearly data on population; on total revenues and expenditure (both in total and by components); and on the percent of revenues actually collected and the percent of expenses actually paid, which we will later use as indicators of government efficiency. Finally we have a number of demographic and economic indicators as of 2005: disposable income after taxes per capita, the labor force participation rate, the number of productive units per capita and the old-age index.[10]

3.3 Descriptive Statistics

We have data on more than 8,000 municipalities and 18,000 mayoral terms, 6.7 percent of which were headed by a female mayor.[11] We restrict the sample only to those mayoral terms for which we have electoral and budget information, and for which we can know with certainty whether the legislature was terminated before completing its full term. Table 1

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[9]The data set was constructed from the Census of Local and Regional Administrators (*Anagrafe Amministratori Locali e Regionali*) available from the Italian Ministry of the Interior.

[10]The labor force participation rate is the ratio of active population (15-64) over the whole population. The old-age index is defined as the ratio of population above age 65 over population below age 14. All the data were provided by the Statistical Office of the Italian Ministry of Interiors.

[11]A detailed description of mayors' and cities' characteristics can be found in Appendix Tables 1 and 2.

documents that female mayors are substantially younger and less experienced (either as mayors or in other positions in municipal government), and more likely to have been not employed previously. On the other hand, they are markedly more educated than their male counterparts. Municipalities with female mayors are less likely to be in the South, have a higher labor force participation rate, more economic activity, and are richer, but they are no different in size relative to municipalities with male mayors. Female mayors tend to serve in councils with a slightly higher female representation, and there are also more females in the mayor's coalition. This also means that councillors and coalition members are less experienced when the mayor is female. There are no differences, however, in the average educational attainment of the city councillors.[12]

Our main outcome of interest is a dummy variable indicating whether the municipal legislature failed to complete its term for one of the following reasons: a) the resignation of the mayor (27.56 percent of the cases);[13] or b) the resignation of the majority of the council or a no-confidence vote in the council (56.41 percent). Other technical reasons for early termination include, among other, the death of the mayor (8.54 percent), or the mayor being charged for a crime (0.92 percent). Since these latter events are not related to the ability of a mayor to forge and maintain a political coalition, but rather idiosyncratic events, we code them as zeros.

One potential concern with our dependent variable is that it may not be necessarily informative about the ability of the mayor to forge and maintain coalitions. Rather, a mayor may choose strategically to resign early and run for re-election, in order to obtain a larger (and more manageable) majority in the subsequent election. We do not view this scenario as

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[12]One possible concern when using a non-random subsample of the population, such as mayors, is that the process of selection into politics might be different between men and women, compromising the external validity of our results. However, comparing the elected mayors in our sample with a random sample of the Italian population (obtained from the Bank of Italy's Survey on Household Income and Wealth) reveals that there are only small differences in key observable characteristics (age, education, and employment status). Moreover, there does not seem to be any differential pattern of selection by gender. See Figure A1 in the Appendix for more details.

[13]In 0.05 percent of these cases, the mayor was then elected in the national parliament; in 5.5 percent in the regional government; and in 0.7 percent in the provincial government.

particularly likely. First, the two-term limit, the cost of campaigning, and the possibility to lose the mayoral monthly salary (which in 2000 was between 1,291 and 7,798 euros depending on population size) act to reduce the incentives of mayors to resign voluntarily. Second, in the case of early termination (and no binding term limit), the percentage of mayors who will then run for re-election is only 40 percent; and, while about 55 percent succeed in being reelected, there is no evidence that they are able to increase the size of their majority, or to change the equilibrium within their coalition (the fraction of seats in the mayor's party decreases from 37 to 33 percent, but the difference is not statistically significant). Finally, government instability is quite clearly perceived in Italy as an undesirable outcome: the term itself used to describe it ("government crisis") has an unambiguous negative connotation. Moreover, our data shows that the early termination of a legislature is associated with lower investments and higher budget deficits in subsequent terms.

Table 2 presents the mean of the dependent variable, separately by gender and by a number of important covariates. First, we note that experience matters a great deal in securing a complete mandate. Mayors in their first term or with less than 5 years in municipal politics are about 60 percent more likely to not reach the end of their mandate. There are also important differences by region and by type of municipality: the probability of early termination is much higher in the South and in large municipalities, and is smaller in municipalities with per capita income above the median (this last variable in part captures the large regional differences in per capita income). Large municipalities are probably more difficult to manage, as are municipalities in the relatively impoverished Italian South. The probability of early termination increases monotonically as the number of parties represented in the council rises: governments are less stable when there are a large number of conflicting interests. Finally, it appears that the probability of early termination is highest for mayors affiliated with right and center-right parties.

Strikingly, in almost all of the above subcategories we find that women are more likely to resign early than men. Overall, six out of twenty-seven differences are also statistically

significant (in the south, when income is below the median, when there are zero women in the council or more than 30%, when the mayor belongs to a center-left party, and in the entire sample). The last grouping of variables is especially informative: the probability of early termination decreases monotonically with the proportion of women in the council, regardless of the gender of the mayor. Remarkably, the gap between male and female mayors becomes dramatically large when there are no female councillors at all. These results suggest that the gender of the mayor and the councillors plays an important role in determining the probability of early termination of the legislature. We next move to regression analysis to study whether these differences are robust to the inclusion of other mayor and municipality characteristics.

4 Econometric Framework

4.1 Cross-sectional analysis

Let Y_{jt} be a dummy variable equal to 1 if legislature t in municipality j terminates before the statutory end of the term. The notation clarifies that the unit of observation is the municipality-legislature cell. The probability of early termination depends on the characteristics of the municipality and legislature, (demographic and economic characteristics of the municipality, as well as variables describing the composition of the municipal council), which we denote by b_{jt}; and on the characteristics (education, experience, etc.) of the mayor serving in legislature jt, denoted by a_{jt}.

$$P\left(Y_{jt}=1\right)=f\left(a_{jt},b_{jt}\right).$$

Rewrite mayor and municipality characteristics as linear functions of observed and un-

observed variables:

$$a_{jt} = \beta Female_{jt} + \gamma_1 X_{jt} + \mu^a_{jt},$$

$$b_{jt} = \gamma_2 Z_{jt} + \eta_j + \delta_t + \mu^b_{jt},$$

where $Female_{jt}$ is equal to 1 if the mayor was a woman and 0 otherwise, X_{jt} is a vector of observed mayor characteristics, Z_{jt} is a vector of observed municipality and legislature characteristics, δ_t is a time effect, η_j is a municipality fixed effect, and μ^a_{jt} and μ^b_{jt} are, respectively, mayor and municipality transitory unobservable terms. Then, assuming a linear probability model, we obtain the estimating equation:

$$Y_{jt} = \beta Female_{jt} + \gamma_1 X_{jt} + \gamma_2 Z_{jt} + \delta_t + \eta_j + \epsilon_{jt}, \qquad (1)$$

where $\epsilon_{jt} = \mu^a_{jt} + \mu^b_{jt}$ is a composite error term. With data on multiple elections per municipality, one can also control for municipality fixed effects, and obtain identification from variation in the gender of the mayor within municipalities over time. In this setup, the coefficient of interest β can be given a causal interpretation (i.e., the effect of an average woman, everything else equal, on the probability of early termination) if the gender of the mayor is not correlated with any unobserved mayor or municipality characteristics.

4.2   Regression Discontinuity

Basic setup. If there are time-varying unobservable characteristics (of either the mayor or the municipality) that are correlated with the gender of the mayor, the OLS estimate described above (with or without municipality fixed effects) can be biased either upwards or downwards. The bias would be positive if women are more likely to be appointed in municipalities which are particularly unstable, perhaps because voters believe they are better at reconciling differences between fractious council members. It would be negative if instead

women are less likely to be elected in cities with an unstable political environment, because voters do not trust their capacity to conciliate a riotous municipal government.

To address these potential biases, we implement a Regression Discontinuity Design (RDD) by focusing on mixed-gender electoral races decided by a narrow margin. Formally, let MV_{jt} be the margin of victory in municipality j at time t, defined as the difference between the vote share of the female and the male candidate. The probability of having a female mayor has a sharp discontinuity equal to 1 at the threshold $MV_{jt} = 0$. Assuming that at this threshold the gender of a winning candidate is uncorrelated with any observed (Z_{jt} and $X_{jt)}$) or unobserved (η_j and ϵ_{jt}) characteristics at the city and mayoral level, the RDD estimand of the effect of the mayor's gender on the probability of early termination is simply the difference in the probability of early termination Y_{jt} between women and men who had won by a small margin.[14]

Identification. In close mixed-gender electoral races in which the outcome of the election is uncertain, the winner is typically determined by elements which are beyond the candidates' control (e.g., weather on election day, breaking news), and the gender of the elected mayor is therefore exogenous with respect to cities' unobservable characteristics η_j and μ_{jt}^b.

Even though many events that can affect the outcome of an uncertain election are likely to be randomly distributed across cities over time, it could still be that candidates are sorted into races decided by a narrow margin according to their gender and ability, as voters anticipate differences in the probability of early termination. This can violate the orthogonality assumption between $Female_{jt}$ and μ_{jt}^a in tight electoral races. Specifically, assume that the margin of victory can be written as

$$MV_{jt} = f\left(\hat{Y}_{jt}; W_{jt}\right)$$

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[14]See Imbens and Lemieux (2008) and Van der Klaauw (2008) for a survey on RDD. See also Lee, Moretti and Butler (2004) and Lee (2008) for empirical studies that have exploited the assignment mechanism generated by the margin of victory in single-member plurality elections. Closer to our spirit, Rehavi (2007) and Clots-Figueras (2010) use the share of districts won by a female candidate in a close election against a male politician, to identify the effect of female representatives on educational and other policies, respectively in the U.S. and in India.

where $\hat{Y}_{jt}$ is expected government stability and W_{jt} is a vector of other variables (e.g., campaigning ability, charisma, the candidate's stand on policy issues, etc.) that determine electoral success. W_{jt} may contain elements of X_{jt} and Z_{jt}, but we will assume throughout that it does not contain gender. That is, voters do not discriminate either in favor or against candidates just because of their gender.[15] Assume that the unobserved term ϵ_{jt} in equation (1) can be decomposed as $\epsilon_{jt} = \tilde{\mu}_{jt}^a + \tilde{\mu}_{jt}^b + \nu_{jt}$, where the first two terms represent mayor and municipality characteristics that are unobserved to the econometrician but observed by voters, and ν_{jt} is an idiosyncratic shock that is unobserved by either the econometrician or the voters. Then, expected government stability is:

$$\begin{aligned} \hat{Y}_{jt} &= \beta Female_{jt} + \gamma_1 X_{jt} + \gamma_2 Z_{jt} + \tilde{\mu}_{jt}^a + \tilde{\mu}_{jt}^b \\ &\equiv \tilde{Y}_{jt} + \beta Female_{jt} + \tilde{\mu}_{jt}^a. \end{aligned}$$

Expected government stability is the sum of three components: a part that depends on gender, a part that depends on all other mayor and municipality characteristics that affect stability ($\tilde{Y}_{jt}$), and a part that depends on unobservable candidate characteristics. Hence:

$$MV_{jt} = f\left(\tilde{Y}_{jt} + \beta Female_{jt} + \tilde{\mu}_{jt}^a, W_{jt}\right).$$

If $f(\cdot; W_{jt})$ is continuous in its first argument (and hence invertible), it follows that

$$E\left(\tilde{\mu}_{jt}^a | MV_{jt} = 0, Female_{jt} = 1\right) = f^{-1}(0; W_{jt}) - \tilde{Y}_{jt} - \beta; \tag{2}$$

and

$$E\left(\tilde{\mu}_{jt}^a | MV_{jt} = 0, Female_{jt} = 0\right) = f^{-1}(0; W_{jt}) - \tilde{Y}_{jt}. \tag{3}$$

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[15]Sanbonmatsu (2002) suggests that many voters have an underlying preference to be represented by a woman or a man which is determined, in part, by gender stereotypes. However, whether they have a positive or negative influence on thinking about women candidates is debated, with some studies finding that they work against women candidates (Lawless, 2004), while others the opposite (McDermott, 1998).

In other words, the fact that voters care about government stability and they are aware that there are gender differences in the probability of early termination, implies that if the electoral race is tight the female candidate must be different from the male candidate in some unobservable determinants of government stability.

The above discussion highlights an important result: for the orthogonality assumption to be satisfied, the vote share of each candidate *must not depend directly on gender*. Under which conditions would this be satisfied? There are at least two interesting special cases: (a) voters don't care about government stability, implying that MV_{jt} does not depend at all on $\hat{Y}_{jt}$; and (b) voters are either uninformed about the effect of gender on government stability, or they care about the candidates' expected government stability, but only about the part that is uncorrelated with gender, implying that $\hat{Y}_{jt}$ does not depend on gender. While these assumptions are obviously quite strong, there are also reasons to believe that they may not be too far from the truth. For example, there are typically many dimensions over which voters compare candidates (e.g., the proposed policies, campaigning ability) and the predicted probability of early termination may be of second order importance. Moreover, it is difficult to formulate an accurate expectation of government stability, and it is possible that voters don't take the candidates' gender into account.

If these conditions do not hold, it may still be possible to say something about the bias in the RDD estimate. If voters care about stability and are aware that women have a higher probability of early termination, then a female candidate that receives the same vote share as her rival must be superior in other characteristics. Therefore, the RDD estimate will be a lower bound on the true difference in the probability of early termination due to gender alone. Similarly, the RDD estimate will be a lower bound even if voters are uninformed or indifferent about government stability, but discriminate negatively against female candidates. A positive bias would arise only if voters discriminate positively in favor of female candidates, although we view this as fairly unlikely.[16]

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[16]For example, Beaman et al. (2009) find a negative bias in how female leaders' effectiveness is perceived among male villagers in India.

External Validity. Finally, by its nature the RDD methodology is able to capture the average gender difference in the probability of early termination *in closely contested races* (under the caveats discussed above). It is not clear, though, whether this parameter is informative about the average gender difference in the population. Plausibly, there might be selection in the type of races entered by candidates with different abilities, both observed (experience, age, education) and unobserved (charisma, personality, ability to foster cooperation). If high ability candidates of both genders are more likely to enter closely-contested races, then the RDD estimate will capture the difference in the probability of survival between high ability men and high ability women. The relationship between this parameter and the average gender difference will depend on what one assumes about the effect of "ability" on the probability of survival for the two genders. If ability matters more for women than for men (e.g., it requires women with a "tough skin" to survive in a male-dominated environment), then the RDD estimate will be an *underestimate* of the average gender difference in the probability of survival. Similarly, if the pattern of selection by ability in close races differs by gender, with women running in close races being more selected in terms of ability, the RDD estimate would also be an *underestimate* of the average gender difference.

5 Results

5.1 Results: OLS and fixed effects

In the first row of Table 3 we present the result of our basic regression analysis. Column (1) shows the raw difference in the probability of early termination between male and female mayors, while column (2) presents estimates with controls for mayor, municipality, election and council characteristics, and year effects. We include in the sample all observations with non-missing data on the gender, age and experience of the mayor.[17] Standard errors are

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[17]To maximize sample size, we keep observations with missing values on the educational level, occupation and place of birth of the mayor, and include a dummy variable indicating missing status for these variables. Similarly, we assign the sample mean to other variables with missing data (municipality characteristics,

made robust to heteroskedasticity and are clustered at the municipality level.

Female mayors are between 1.7 and 2.9 percentage points more likely to resign before the end of the term, depending on whether one controls for mayor and municipality characteristics. The latter coefficient is statistically significant at the 1% level. The estimate is obtained by holding constant many individual characteristics (age, political experience, education, previous employment) that also differ by gender, meaning that the differences are not driven by, say, differences in political experience, or in labor market experience of any kind, that enables individuals to deal better with conflictual situations. We can also exploit the multiple elections per municipality over time to include a full set of municipality fixed effects (second row of Table 3).[18] The fixed effects estimate indicates that females are between 5.2 and 5.7 percentage points more likely to resign early. The increase in the coefficient relative to the specification without fixed effects is consistent with the hypothesis that women dislike competition, and are more likely to enter electoral races in relatively stable municipalities where their probability of completing the term is relatively high. Taken together, these results show that female mayors have a probability of early resignation that is between 17 percent and 54 percent higher relative to men.[19]

5.2   Regression Discontinuity Results

The sample of mixed-gender electoral races is made of 2,313 electoral terms, 1,184 of which elected with a margin of victory smaller than 10 percentage points, 638 smaller than 5, and 137 smaller than 1. The sample is similar to the sample of all races in terms of municipality size, geographic location, income per capita, and the probability of early termination, which stands at about 10%.

fraction of seats in the mayor's coalition, and female share of voters), and include a dummy for missing status for these variables. These procedures increase our sample size by about 15 percent and allow us to obtain more precise estimates. All the results are qualitatively and quantitatively robust to the exclusion of all observations with any missing data.

[18]There are 790 municipalities in which there has been a change in the gender of the mayor throughout the sample period.

[19]See Appendix Table 3 for a complete description of these OLS and FE estimates.

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Figure 1 reports the running-mean smoothing (separately on either side of the threshold) of the probability of early termination. To account for the presence of other rivals in the electoral race, MV is divided by the sum of the share of the first two candidates in the decisive ballot.[20] For values of MV smaller than zero, the elected mayor is male, while for values above zero, the elected mayor is female. The jump in the estimated probability of early termination is clearly visible and positive, meaning that in the neighborhood of the threshold municipalities with a female mayor are more unstable. Note also that the higher the distance from the threshold, the lower the probability of early termination, which shows that a significant majority of seats in the city council is likely to guarantee a more stable government.

Formal RDD estimates on the probability of early termination are reported in the bottom panel of Table 3. To begin with, the first row presents OLS estimates of the probability of early termination on the sample of mixed-gender races. Compared to the sample of all races, mixed-gender races do not deliver substantially different regression results, the effect of a female mayor on the probability of early termination being positive, statistically significant, and of roughly the same magnitude as that estimated in the full sample (between 0.034 and 0.043, depending on whether we include the full set of controls).

When using a local linear regression (separate linear regression functions on either side of the threshold) on the whole sample of mixed-gender races, the effect of having a female mayor on the probability of early termination is 0.073, which rises to 0.090 when the electoral race includes two candidates only. When using instead a local linear regression specification with an optimal bandwidth of 25 percentage points, the coefficient for a female mayor is 0.070, while with a second order polynomial approximation it is 0.071.[21] The remaining rows in the table show that results are qualitatively similar when using higher order polynomials. They are also not sensitive to the choice of the bandwidth (the local linear regression estimate with

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[20]Over the sample of contested mixed-gender electoral races, 48.5% had two candidates only, 29.4 had three (the first two being a man and a woman), 12.2 had four, and 9.9% more than four. In case the election is decided at the second ballot, the number of candidates is by definition equal to two.

[21]See the Appendix for a formalization of these estimation methods.

half optimal bandwidth is 0.073), to the inclusion of any pre-treatment covariate, as well as to the use of mixed-gender races with two candidates only (and an optimal bandwidth of 29 percentage points).[22],[23]

Taken together, these results show that municipalities headed by female mayors have a probability of early resignation that is between 60 percent and 80 percent higher relative to men. These numbers are significantly higher than the regression results over the entire sample in the top panel of Table 3. In particular, they are higher than the regression results over the sample of mixed-gender races, which may be interpreted as evidence that either female candidates sort into electoral races that are not closely contested (i.e., more stable), or that they face more difficulties at governing when there is a narrow majority.

One important validity test for regression discontinuity estimates is to check whether the density of the running variable is continuous at the threshold (Imbens and Lemieux, 2008). Figure 2 shows that even though male candidates seem to have an electoral advantage when running against a woman, the density of MV at the discontinuity point is smooth and well behaved (up to some small sample noise) around the threshold, with male and female candidates sharing the same probability of winning when the electoral race is tight. Therefore, there is no evidence of *complete* manipulation of the running variable. A formal density test (McCrary, 2008) further rejects the presence of a statistically significant jump in the running variable at the discontinuity point (the estimated log-difference is -0.090, with a standard error of 0.090).

In Table 4 we analyze the behavior of the available pre-treatment covariates in the neighborhood of the threshold. As we can see, all the municipality characteristics are well balanced, as well as the political environment characteristics (mayor's party, gender of the voters). As a matter of fact, Figures 3 and 4 show that as the electoral race becomes tight

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[22]To exclude the case of non-professional politicians working in small cities, we run the same estimates on cities with more than 15,000 inhabitants (we do not have enough observations for cities with more than 50,000 inhabitants), and obtain almost identical results on the gender dummy.

[23]We also find very similar results when we restrict the analysis to mayors with previous political experience, above 40 years of age, or who were previously employed.

the observable characteristics of municipalities where men and women are elected tend to equalize, which is not the case for less contested races.[24] This is compelling evidence in support of the randomization induced by tight electoral competitions.

We find instead some differences between male and female winning candidates: women elected in close races are younger, more educated, less experienced and more likely to be not employed than their male counterparts.[25] This is in part due to large differences in these variables in the entire pool of potential mayoral candidates. We are somewhat encouraged by the fact that there is no evidence of divergence in candidates' observable characteristics as the race becomes close (see Figure 5): instead, women elected with a small margin tend to be more similar to male candidates: they are older, less likely to be not employed, and less likely to be born in a different province than their average.

To further assess whether male and female candidates are perceived differently by the voters, we also construct two additional variables. First, we compute an index of "perceived instability" by predicting the ex-post survival probability using all the observable characteristics available to the voters before the election. Second, we construct a measure of "charisma," defined as the difference between the actual and the expected percentage votes (using all the pre-determined characteristics) for the female candidate in our sample of mixed races. Candidates that obtain a substantially larger vote share than what was predicted based on their observables are likely to be perceived by voters as particularly able in other, unobserved dimensions (i.e., they are "charismatic"). Interestingly, we do not find any difference in these indexes around the threshold: although elected women and men are not observationally equivalent, voters do not perceive them as different in terms of either *ex-post* stability or charisma.

On the whole, we interpret this evidence as supportive of the robustness of the identi-

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[24]We also collected additional information about other pre-determined city characteristics (namely, the geographical extension of the city administrative territory, the city's altitude above sea-level, and whether the city is on the coast), and did not find any discontinuity in any of these variables either.

[25]The comparison here is between winning male and winning female candidates in close (but obviously different) elections. We find very similar figures when comparing losing and winning candidates in a same election.

fication strategy. Observable differences around the threshold can be a cause of concern if they are likely to signal the presence of additional, unobserved, differences between male and female candidates. But the evidence above suggests that male and female winners of close races are not different in terms of unobservables. Furthermore, the fact that the RDD point estimates in Table 3 are invariant to the inclusion of all covariates (including mayors' characteristics) is further evidence of the robustness of the estimation strategy.[26]

6 Interpretation of the Results

The analysis up to this point has shown fairly robust evidence that female mayors are more likely to be forced into early resignation. We now consider a number of possible explanations for this result. For simplicity, we conduct all our analysis using OLS regressions, plus an OLS version of regression discontinuity, where we restrict the sample to mixed-gender races, and include as additional regressors the margin of victory and its interaction with the female dummy (analogous to the fourth row of Table 3).[27]

6.1 Group dynamics and discrimination

A natural hypothesis is that female mayors face more difficulties in keeping their coalition together, because of resistance on the part of male councillors, who dislike being led by a woman. This is consistent with the notion of employee discrimination à la Becker (1971).

We first investigate whether the gender composition of the council has any effect on the probability of early termination, and how inclusion of this variable affects the coefficient

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[26]We also implemented placebo tests by estimating jumps at points of the running variable where there should be no effect (the median of the two subsamples on either side of the cutoff value), and found that jumps at fake thresholds are never statistically different from zero.

[27]Some of the explanations discussed here are elaborated more formally in an earlier draft of the paper (Gagliarducci and Paserman, 2009). There, we developed a simple theoretical model in which the probability that a legislature survives until the end of its term depends positively on individual councillors' cooperativeness and on the mayor's ability to foster cooperation, and negatively on the distance between the mayor's preferred policy and the councillors' preferred policies. Gender differences in the probability of survival can emerge either because of gender differences in policy preferences, or because of gender differences in the ability to foster cooperation (which can be interpreted as a form of discrimination).

on the mayor's gender. The analysis is carried out in Table 5. In column 1 we estimate a regression analogous to equation (1) with the full set of control variables (see row 1 in Table 3), but we add the proportion of females in the council, as well as the other average characteristics of the city councillors (age, experience, level of education, proportion not employed previously, and proportion local born). The results show quite clearly that a higher proportion of women in the council is associated with a lower probability of early termination. A 10 point increase in the percentage of women in the council (roughly a one standard deviation increase) reduces the probability of early termination by 0.6 percentage points. Importantly, the inclusion of proportion of women in the council has essentially no effect on the coefficient on the female mayor dummy: the coefficient is essentially the same as that estimated in Table 3.[28] Interacting the gender dummy with the margin of victory for a female candidate over the sample of mixed-gender races in column 2 makes the effect of proportion women in the council become insignificant. These results imply that municipalities that are inherently more stable are more likely to have women in the council and in the mayor's coalition.

In columns 3-4 we further separate between the proportion of women in the mayor's coalition and the proportion of women in opposing parties. This allows to investigate whether any effect of the proportion of women in the council is driven by coalition councillors that "stab the mayor in the back" or by opposition councillors that happen to be particularly combative in their efforts to oust the mayor from office. Strikingly, the effect is driven almost entirely by women in the mayor's coalition, while the proportion of women in other lists has no effect on the probability of early termination, although this result is not confirmed by the RDD estimates.[29]

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[28]The sample sizes are somewhat smaller, since we only keep observations for which we observe demographic characteristics for all city councillors (columns 1-2), or for which we can identify with certainty party affiliation (columns 3-4).

[29]To address the potential endogeneity of the percentage of female councillors, we also ran 2SLS regressions exploiting an institutional feature of the 1993 electoral reform. The 1993 law prescribed that on any electoral list there could be no more than 60% representatives of either gender. In 1995, this provision was unexpectedly deemed unconstitutional, and it was eliminated. We therefore used the presence of the gender quotas as an instrument for the proportion of women in the council. The results show that the gender

We next examine whether our results on the gender dummy can be driven by the unfavorable attitudes of male councillors toward female leaders. First, we ask whether the effect of a female mayor is larger when there is a relatively larger share of men in the council. The results are presented in Table 6.[30] The first column is a simple OLS regression similar to the specification in Table 5, where we add a linear interaction between the mayor gender dummy and the proportion of women in the council.[31] The coefficient on the interaction is negative, consistent with the hypothesis of discrimination on the part of male councillors, but not statistically significant. Compared to the results in Table 3, the coefficient on the main effect of gender rises to 0.047. This is the implied effect of a female mayor at the head of an entirely male council. Evaluated at the mean of the proportion female in the council, the effect of a female mayor on the probability of early termination is 3.1 percentage points, and statistically significant. In column 2 the gender dummy is interacted with the margin of victory for a female candidate over the whole sample of mixed-gender races. The interaction effect becomes larger but not statistically significant, while the main effect and the implied effect at the mean of proportion female in the council rises and remains significant.

In columns 3 and 4 we include the proportion female in the council as a piecewise constant function, and we interact this function with the gender dummy. We find now an even larger effect of a female mayor in an entirely male council, which is statistically significant in the OLS specification. The remaining coefficients are all negative and almost all statistically significant, but do not reveal a clear pattern of the female mayor effect becoming smaller as the proportion of women in the council increases. In columns 5 and 6 we include just a dummy for whether there were any women in the council. The main effect of gender is

quotas significantly raised the number of women both in the mayor's coalition and in the council by about 6-7 percent. However, while all the first stage diagnostics were satisfactory, the estimates were somewhat unconvincingly large.

[30]To make the table more readable, we do not report the coefficient on the proportion of women in the council. This coefficient tends to follow the same pattern observed in Table 5: negative and significant in the OLS regressions, but insignificant in the regression discontinuity specifications.

[31]Table 5 highlighted that it is primarily the proportion of women in the mayor's coalition (and not in other lists) that is correlated with the probability of early termination. To preserve sample size, we look here at the interaction between the proportion of women in the *council* and the mayor's gender. All the results in Table 6 are essentially the same if we use proportion women in the mayor's coalition instead.

essentially the same as in columns 3 and 4: in entirely male councils, female mayors are between 13.2 and 16.9 percentage points more likely to resign early. If there is at least one woman in the coalition, the effect of a female mayor on the probability of early termination drops to between 2.6-5.5 percentage points.

Summing up, a female mayor heading a male-only council has a much lower probability of survival than her male counterpart. This result suggests that male councillors may act less cooperatively when the government is headed by a female, and that this element is enhanced when the council is made up entirely of men. We can view this result as a "political glass ceiling," so to speak: women may struggle to reach the upper echelons of management or the political arena, because they encounter resistance and lack of cooperativeness from the (predominantly male) group that they are supposed to lead.[32] Interestingly, we do not find that any additional increases in the proportion of female councillors (beyond having at least one female councillor) raises the survival probability of female-headed councils. The extent of discrimination does not increase linearly with the fraction of male councillors. Rather, it appears that there may be a latent resistance of men to be led by a woman, which only manifests itself when there is not at least one female councillor that can keep it in check.[33]

To exclude the possibility that it is just diversity per se that leads to instability, rather than discrimination on the part of male councillors, we repeated the same exercise as in Table 6 but replacing the female dummy with a series of other variables that differ by gender. For none of these variables do the results look as robust as they do for gender (see Appendix Table 4). For example, being young (i.e., less than 35 years old) never affects the probability of early termination, no matter whether we interact it with the percentage of young councillors or not.[34] At the same time, the interaction term is negative and statistically significant in

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[32]Gender stigmas, but of the opposite sign, are also documented by Bagues and Esteve-Volart (2010), who find that female candidates to the Corps of the Spanish Judiciary are significantly less likely to be hired when randomly assigned to a committee where the share of female evaluators is relatively large.

[33]In a seminal contribution, Kanter (1977) introduced the concept of "tokenism", i.e., how being a minority in a group can affect one's performance due to enhanced visibility and performance pressure. In particular, she argues that token women in U.S. corporations have a much higher turnover and failure rate.

[34]To avoid empty cells in the RDD estimates, we define councillors as "young "if they are less than 30 years old.

the RDD estimate. We also tried setting the cutoff at a different age (less than 35 years old), as well as other dimensions of heterogeneity (being non local, being inexperienced, being a college graduate), but again we could not find the same patterns as for gender.[35]

Our second test for the presence of discrimination involves comparing the effect of a female mayor across different Italian regions, and exploiting the large geographical differences in attitudes towards women. The first two columns of Table 7 show that the effect of a female mayor is concentrated almost exclusively in the Southern regions, where traditional gender norms prevail, with the interaction coefficient being positive and statistically significant in the OLS specification. At the same time, municipalities in the South may be more difficult to manage for reasons that are unrelated to gender norms (organized crime, low tax revenues, worse infrastructure), and it is possible that women struggle more in these settings. To focus our attention on gender norms, we collected data from the 1999 wave of the European Values Survey (EVS), and constructed for each region a standardized index of favorable attitudes towards working women.[36] Columns 3 and 4 show that the interaction between the female mayor dummy and this index is negative and significant in the OLS specification, and of roughly similar magnitude but statistically not significant in the RDD specification.[37]

In columns 5 and 6 we replace the index with the actual female labor force participation rate in the year the municipal council was elected, computed using the Bank of Italy's Survey on Household Income and Wealth (SHIW). This allows to dispel concerns that the index is

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[35]These results hold even when we restrict attention to races with only male candidates, implying that the results are not confounded by gender dynamics.

[36]The index was constructed by taking the first principal component of male respondents' answers (on a four point scale) to the following six questions: a) A mother who works outside of the home can establish a warm and safe relationship with her children as much as a mother who does not work; b) It's likely that a pre-school child suffers if the mother works outside the home; c) It is OK to work outside the home, but what the majority of women really want is a home and children; d) Being a housewife is as fulfilling for a woman as working for pay; e) Having a job is the best way for a woman to be independent; f) Both the husband and the wife should contribute to family earnings. The index is normalized to have mean 0 and standard deviation 1 in the sample of the 20 Italian regions.

[37]We also tried two alternative measures for cultural environment. The first one is the level of social capital, as measured by blood donations per capita in 1995 at the province level (see Nannicini et al., 2010, and Guiso et al., 2004). The second is the strength of family ties, as measured by three variables of the 1999 European Values Survey (see Alesina and Giuliano, 2010). We find that the negative effect of having a female mayor on the probability of early termination is smaller in regions with higher social capital or weaker family ties, although never statistically significant.

only capturing some regional effects that are constant over time and correlated with the probability of early termination. The interaction of the gender dummy and female labor force participation is negative and marginally statistically significant in column 5 (not in column 6), indicating that even *within* regions a higher proportion of working women makes the effect of a female mayor become smaller. Finally, in the last two columns we interact the gender dummy with an index for whether there had ever been a female mayor in the past, to see whether the gender effect is more pronounced in municipalities that had never been exposed to a female mayor. Our hypothesis is that discrimination against women is more likely to manifest itself in municipalities that never had experience with female leaders.[38] We find that the interaction term is negative and significant in the OLS specification, and of roughly similar magnitude but statistically not significant in the RDD specification. Overall, the evidence in Tables 6 and 7, while not conclusive, does suggest that part of the lower survival probability of female mayors can be attributed to discriminating attitudes on the part of male councillors who resist being led by a woman.

6.2   Voluntary resignation?

An alternative hypothesis holds that municipalities headed by female mayors are more likely to terminate before the end of the statutory term simply because women have a higher propensity to resign voluntarily, regardless of any dynamics within the municipal council. For example, given that the burden of family responsibilities is shared unevenly in Italy, women may be forced to resign more frequently to take care of young children, or sick or elderly dependents. However, when we re-estimate the model excluding all mayors below 40 years of age, results are qualitatively and quantitatively unchanged. This evidence indicates that the results are unlikely to be driven by gender differences in family duties.

Alternatively, it may be that women simply have higher turnover rates in any type of

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[38]See also Beaman et al. (2009), who find that exposure to female leaders weakens stereotypes about gender roles and eliminates the negative bias in how female leaders' effectiveness is perceived among male villagers in India.

occupation;[39] finally, the notion that women dislike competition suggests that they may be more likely to opt out of very competitive settings, and choose to resign early when encountering difficulties in handling a riotous municipal council. Any of these explanations would imply that the *type* of early resignation should be affected by the gender of the mayor. Specifically, female mayors should be more likely to actively resign, while there may be no gender differences in the probability of early termination because of a no-confidence vote or because of resignation of the council. We test this hypothesis in Table 8. In the first two columns the dependent variable is a dummy for whether the mayor actively resigns, and in the next two columns the dependent variable is a dummy for whether early termination of the council was forced by the council's resignation or by a no-confidence vote. The hypothesized gender difference in the propensity to resign spontaneously does not receive any support in the data: we find that female-headed councils are more likely to be terminated because of the council's resignation rather than because of the mayor's resignation. These results are confirmed in the multinomial logit specification of columns 5 and 6. The fact that early termination apparently originates in the council reinforces the idea that group dynamics within the council play an important role.

Finally, there may be gender differences in some of the specific actions that mayors can undertake to preserve the stability of the government. For example, the mayor can replace some or all the members of the Executive Committee, or target budget policies to specific interest groups within the council that need attention. While we cannot observe the latter, we do have some evidence on the former. Reshuffling of the Executive Committee tends to be a good predictor of future government instability: we find a higher resignation rate among the members of the Executive Committee before a mayor resigns (16.7% instead of 10.3%). However, there are no differences between Executive Committees led by female and male mayors (11.4% and 10.9%, respectively). This evidence reinforces the notion that differences in government stability are not due to differences in specific ways in which male and female

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[39]For example, Del Bono and Vuri (2011) find that female workers in Italy are less likely to change jobs, especially early in their career.

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mayors handle conflict within the coalition.

6.3 Differences in policy preferences and performance

We next investigate whether female mayors are more likely to be forced out of office because of differences in policy preferences. We proxy for policy preferences by looking, as in much of the literature, at the size and composition of the municipal budget. We use information on the percentage budget deficit, revenues and investments per capita, and the share of expenditures on education, welfare and security.[40]

Table 9 looks at differences in the budget deficit, the amount of revenues, and investments. We find that the gender of the mayor has essentially no effect on these budget variables, no matter the specification we use. In Table 10 we analyze the composition of expenditures, and also find that the gender of the mayor has essentially no effect on any of these variables.[41] The similarity in types of policies enacted by male and female mayors also runs counter to the argument that women are more likely to be forced out of office because they are more likely to be reformers, and therefore face more obstacles in trying to implement their reforms. If this were the case, we would have observed larger differences in the types of policies and in the composition of expenditures between male and female mayors.[42]

We next explore whether gender differences in government stability can be attributed to differences in various measures of "performance". We investigate whether the gender of the mayor affects two measures of administrative efficiency, and population growth. The results are presented in Table 11. The percentage of paid expenses (columns 1 and 2 of Table 11)

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[40]The percentage budget deficit is computed as the absolute deficit divided by the total revenues. Welfare expenditure also includes the expenditure for transportation, since until 1999 the two items were classified together. All budget variables are computed as the mean over the term, excluding election years.

[41]This result is opposite to Chattopadhyay and Duflo (2004) and Clots-Figueras (2009) and (2010) for India, Funk and Gathman (2008) for Switzerland, and Rehavi (2007) for the US states, but in line with Ferreira and Gyourko (2010) for US municipalities.

[42]In addition, in all of our regressions we control for an extensive set of background characteristics, including the age and previous experience of the mayor in municipal government. These variables capture to some extent the likelihood that the mayor is a "new face" in municipal politics. The basic result is very robust to the inclusion of all these controls. In fact, when we restrict the sample to only young or inexperienced mayors, we still find a large and significant gender coefficient.

and the percentage of collected revenues (columns 3 and 4) can be thought of as relatively accurate indicators of the efficiency of the municipal administration.[43] Population growth (computed between two consecutive election years), on the other hand, is likely to capture how attractive a city is for individuals and businesses, and is often used as a measure of city success (Glaeser et al., 1995). We find no evidence of any difference in any of these variables between male and female-headed municipalities. Combined, the results in this section show no evidence that differences in the probability of early termination are driven by gender differences in policy preferences or performance.

6.4   Other explanations

Other explanations for the gender differences are more difficult to confute with the data at hand. One possibility is that female mayors are less able at leading a government in general, and not specifically when the coalition is predominantly male. This appears to be inconsistent with the large effect of a female mayor in entirely male coalitions, and with the large effect in regions with more conservative attitudes towards working women. It is true that a female mayor is more likely to resign even if there is at least one woman in the coalition (Table 6, columns 5 and 6), but one should keep in mind that on average less than a fifth of council members are women: in general, female mayors operate in an environment where men represent a substantial majority.

The gender difference in the probability of early termination appears to vanish among more experienced mayors (see Table 2). This result persists even when we control for all the other mayor and municipality characteristics. One possible interpretation for this result is that the key variable necessary for political survival is political experience; hence, women who are sufficiently entrenched in local politics are as likely to survive as men. Alternatively, it is possible that women view their experience in politics as an exploration of a new career path,

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[43]The percentage of collected revenues is the ratio between the collected tax and transfer revenues and the total amount of assessed revenues that the municipality should collect within the budget year. The percentage of paid expenses is the ratio between the outlays actually paid and the outlays committed in the municipality budget within the budget year.

and those who find out that they are a bad match leave early to pursue other aspirations, while those who remain in municipal government are equally effective as men. We view these explanations as complementary to our preferred story based on gender dynamics within the city council. It is possible that inexperienced female leaders are more susceptible to hostility on the part of male councillors, and this leads them to be more likely to resign early. We should also note that, even holding constant previous experience in municipal government, the effect of a female mayor is larger in the South and in municipalities with no female councillors, lending support to a story based on discrimination within the council.

Finally, the female mayor effect may be the result of forward looking behavior by councillors. Coalition members who expect that a woman candidate will be discriminated against in the upcoming elections may operate to remove her from office in order to improve their electoral chances. Alternatively, discriminating councillors may be reluctant to remove a female mayor from office, since it is possible that she will be replaced by another female mayor. We don't view these explanations as very plausible. First, a woman mayor had been elected in the first place, so it is difficult to argue that discrimination will only manifest itself in subsequent elections. In fact, Beaman et al. (2009) argue that exposure to female political leaders *improves* perceptions of female leader effectiveness and weakens stereotypes about gender roles in public and domestic spheres. Second, we have shown that female mayors implement policies that are essentially no different from their male counterparts, so it is unlikely that voters will lobby to remove a female mayor but not a male one. Lastly, we did not find any evidence that female mayors suffer any electoral penalty (relative to men) after having been forced to resign. Relative to male mayors, female mayors are always about 15 percentage points less likely to run again, regardless of whether the legislature ended naturally or before the end of its term. On the other hand, the reelection rate (conditional on recandidacy) is statistically the same for males and females, even though the sample size may be too small to detect meaningful differences (see Appendix Table 5).

7   Conclusion

This paper presents one of the first pieces of evidence on the effect of politicians' gender on government stability. Using a large sample of Italian municipalities, we show that the probability of early termination of a city council increases when the mayor is a woman. The result is robust to the inclusion of a large set of controls and municipality fixed effects. The gender gap in the probability of early termination becomes larger when we perform a regression discontinuity analysis that controls for the potential selection of women candidates into different types of electoral races, suggesting that women are less likely to run for office in municipalities that are relatively difficult to manage. We discuss a number of explanations for these findings. The fact that the effect is more pronounced when the mayor heads an entirely male coalition, and is concentrated in regions with less favorable attitudes towards working women suggests that discriminating attitudes on the part of male councillors who resist being led by a woman may play an impotrtant role. Other explanations receive less support in the data.

These results could be used to understand gender dynamics in other hierarchical environments with which the municipal political arena shares many features. For example, in corporate firms the CEO is elected by shareholders and is appointed to run the company for a limited term together with a board of directors, which resembles a municipal council in both size and dynamics.[44] Of course, our results can also be relevant for understanding gender interactions in political settings in other countries that share a similar cultural environment. Attitudes towards working women are quite similar in France and the United Kingdom to those found in Italy.[45]. We have no reason to believe that the gender interactions we observe in Italy should not be at work in these countries as well.

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[44]The average size of a municipal council in our data is 15, while Yermack (1996) reports that the average size of the board of directors in US firms was 12.25.

[45]France shares with Italy the same percentage of men agreeing that "It is OK to work outside the home, but what the majority of women really want is a home and children "(67%); the UK has a higher percentage of men disagreeing with "Having a job is the best way for a woman to be independent "(37%, against 27% for Italy)

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Figure 1: Early termination by margin of victory, mixed-gender races
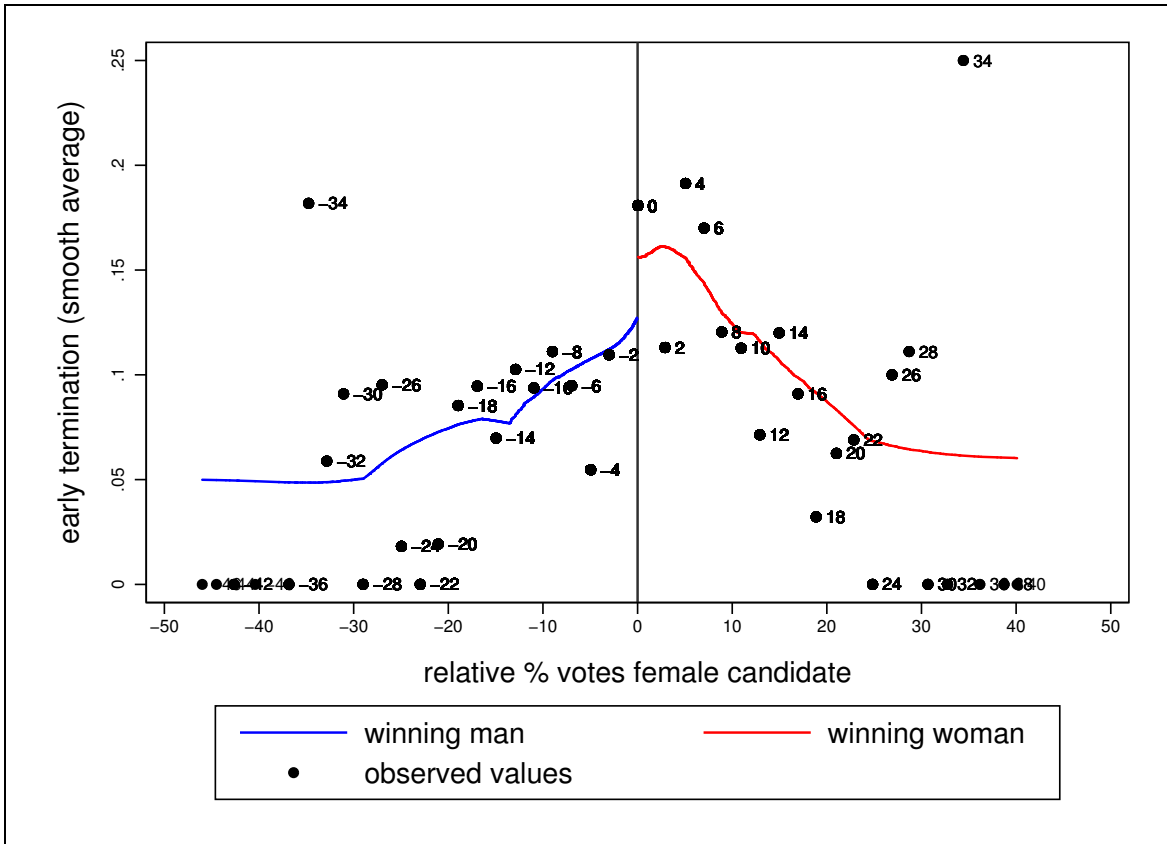
Note: The solid line is a running-mean smoothing (least squares), separate on either side of the threshold.

Figure 2: Frequency of margin of victory, mixed-gender races
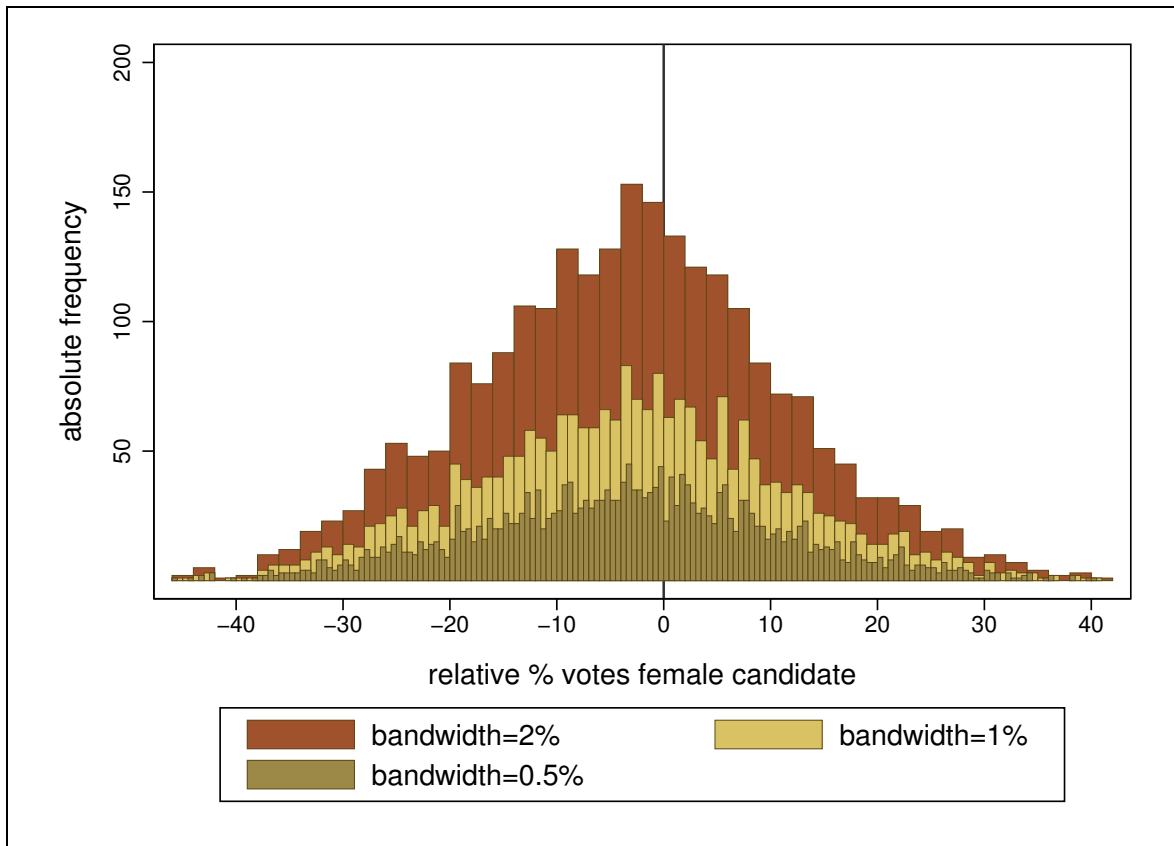
Figure 3: Balance tests, mixed-gender races: city characteristics
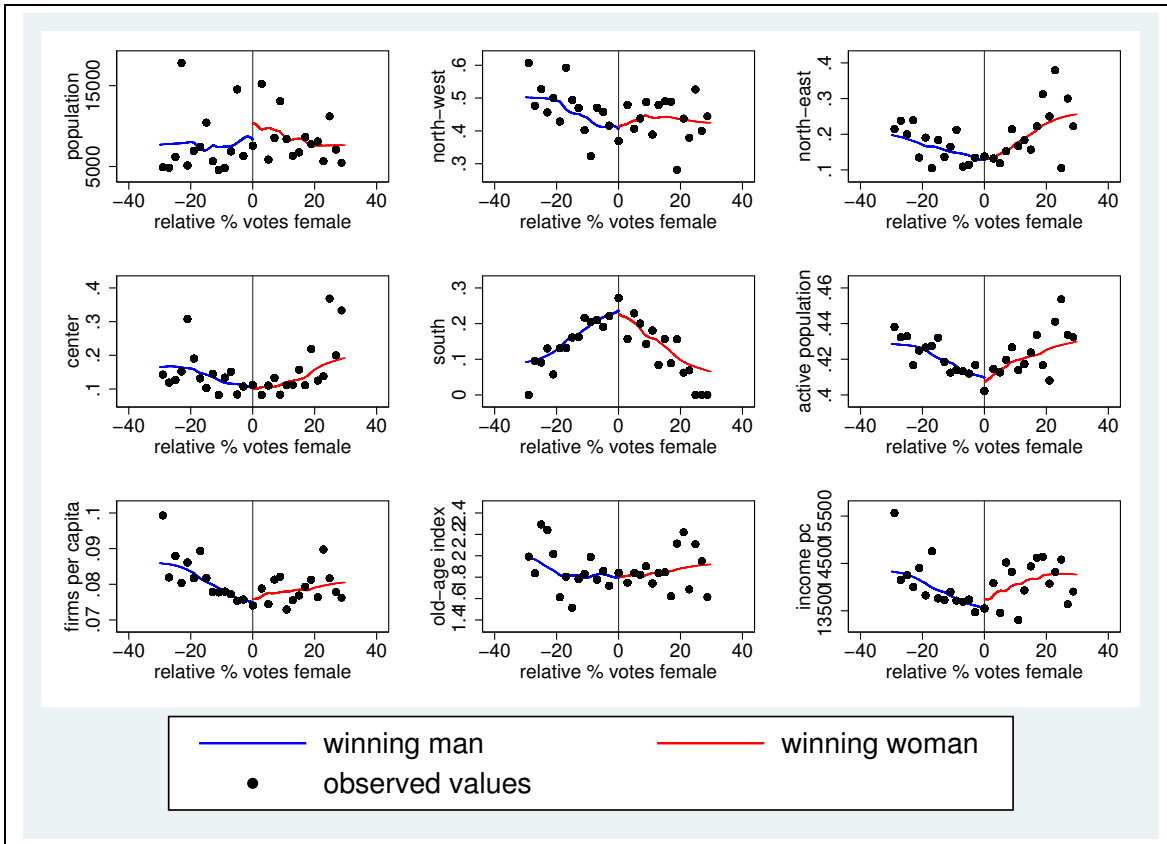
Note: The solid line is a running-mean smoothing (least squares), separate on either side of the threshold. *population* is the resident population at election. *old-age index* defined as 100 times the ratio of population above age 65 over population below age 14, as of 2005. *active population* defined as the ratio of the active population (15-64) over the whole population, as of 2005. *income pc* is the gross per capita income, as of 2005.

Figure 4: Balance tests, mixed-gender races: political environment
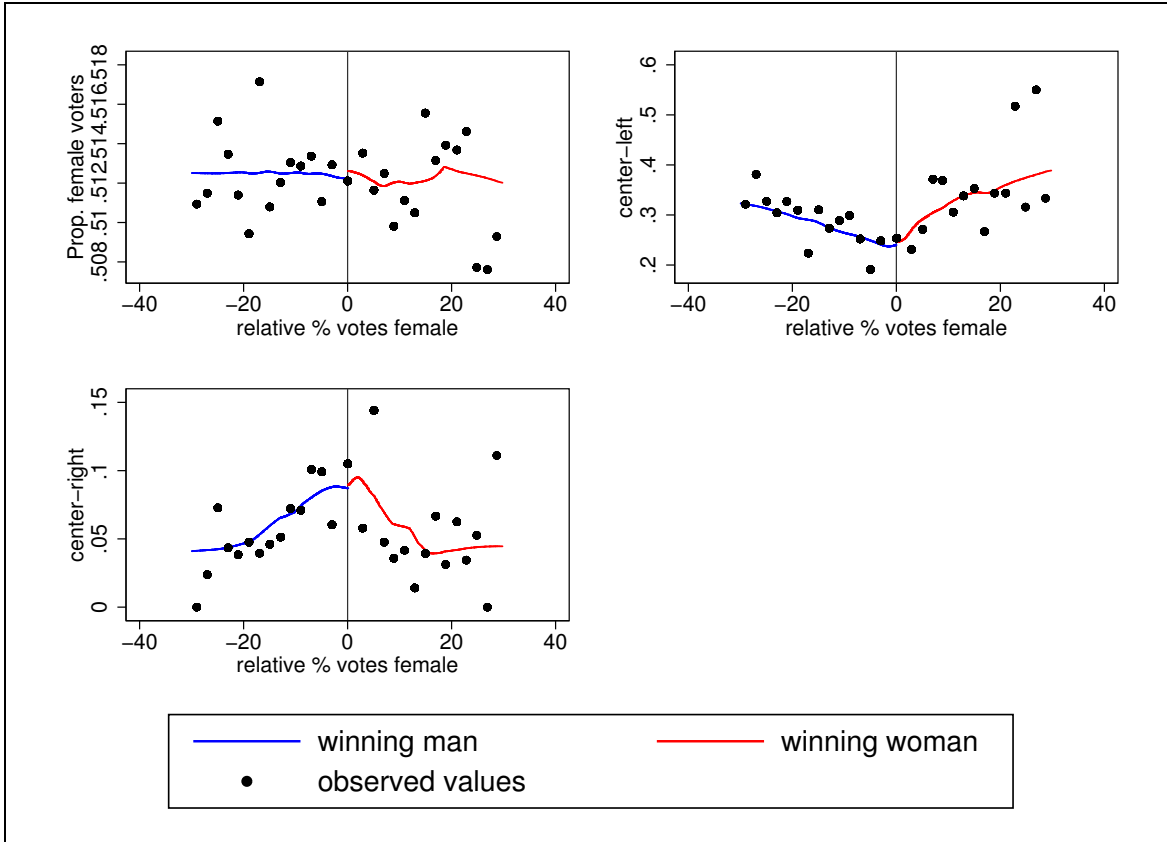
Note: The solid line is a running-mean smoothing (least squares), separate on either side of the threshold. *center-right* and *center-left* is the party to which the mayor belongs.

Figure 5: Balance tests, mixed-gender races: mayor characteristics
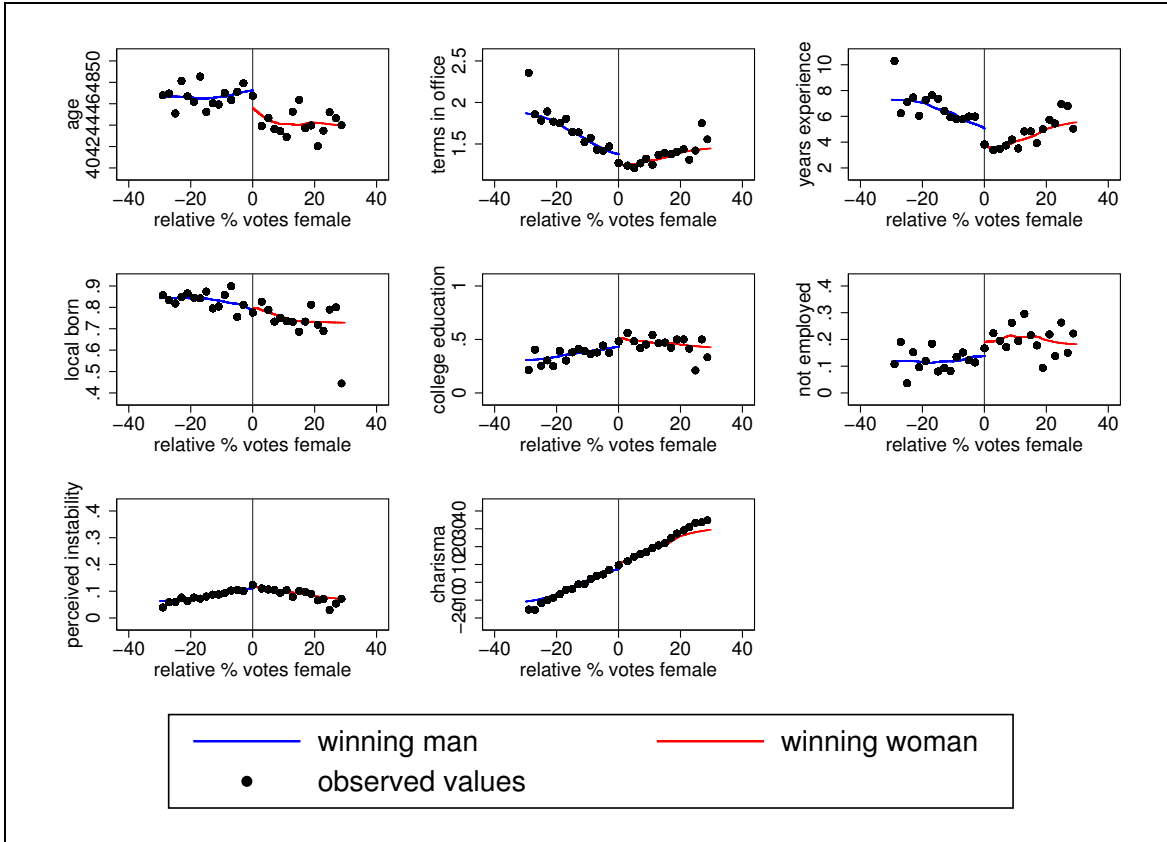
Note: The solid line is a running-mean smoothing (least squares), separate on either side of the threshold. *local born* is 1 if the mayor is born in the same province. *terms in office* as mayor only. *perceived instability* computed predicting the ex-post survival probability using all the observable characteristics available to the voters. *Charisma* computed as the difference between the actual and the expected percentage votes (using all the pre-determined characteristics) for a woman.

Table 1: Mayor Characteristics by Gender

	Male	Female	Difference	S.e. difference
Individual:				
Age	47.018	44.244	-2.774 ***	0.275
Term limit binding	0.256	0.195	-0.061 ***	0.013
Terms in office	1.618	1.329	-0.289 ***	0.023
Years of experience	6.451	4.391	-2.060 ***	0.141
Local born	0.865	0.786	-0.079 ***	0.010
College education	0.408	0.482	0.073 ***	0.015
Previously not employed	0.117	0.207	0.090 ***	0.010
Municipality:				
Population	7,772	7,847	74	1,344
North-West	0.352	0.445	0.093 ***	0.014
North-East	0.172	0.195	0.024 **	0.011
Center	0.124	0.116	-0.008	0.010
South	0.249	0.142	-0.107 ***	0.012
Islands	0.103	0.102	-0.001	0.009
Prop. population in labor force (in 2005)	0.407	0.419	0.012 ***	0.002
Firms per capita (in 2005)	0.077	0.079	0.002 ***	0.001
Old-age index (in 2005)	1.863	1.902	0.039	0.044
Income per capita (in 2005, euros)	13,387	14,120	709 ***	91
Prop. female voters	0.511	0.512	0.001 *	0.000
Left and center-left party	0.267	0.298	0.030 ***	0.013
Right and center-right party	0.075	0.061	-0.014 *	0.008
Council:				
Total seats in council	15.039	15.007	-0.032	0.144
Average age in council	40.943	41.266	0.323 ***	0.117
Average experience in council	2.588	2.426	-0.161 ***	0.046
Prop. college in council	0.198	0.202	0.004	0.004
Prop. female in council	0.177	0.188	0.011 ***	0.003
Mayor's coalition:				
Prop. seats in mayor's coalition	0.697	0.690	-0.007 ***	0.003
Average age in mayor's coalition	40.516	40.628	0.112	0.128
Average experience in mayor's coalition	2.419	2.228	-0.191 ***	0.052
Prop. college in mayor's coalition	0.180	0.185	0.005	0.005
Prop. female in mayor's coalition	0.192	0.203	0.011 ***	0.004
Observations	17,624	1,259		

Note: *Population* is the resident population at election. *Old-age index* is the ratio of population above 65 over population below 14. *Prop. population in labor force* is the ratio of active population (15-64) over the whole population. *Income per capita* is the disposable income after taxes. *Terms in office* as mayor, including the current one. *Years of experience* in any municipal elective office. *Local born* is 1 if the mayor is born in the same province. *Party* is the party to which the mayor belongs.

Table 2: Mean of Dependent Variable: 1 if Early Termination

	Male	Female	All
Incumbency status			
First term	0.119	0.137	0.120
Second term or more	0.074	0.060	0.074
Term limit binding	0.086	0.071	0.086
Experience			
Less than 5 years	0.121	0.135	0.123
More than 5 years	0.076	0.072	0.076
Region			
North-West	0.050	0.061	0.051
North-East	0.070	0.084	0.071
Center	0.089	0.106	0.090
South	0.190	0.327	0.196
Islands	0.127	0.155	0.129
Population			
Less than 5,000	0.069	0.080	0.069
More than 5,000	0.178	0.192	0.179
Income per capita			
Below median	0.130	0.174	0.132
Above median	0.069	0.081	0.070
Number of parties in council			
One	0.076	0.091	0.077
Two	0.078	0.091	0.079
Three	0.091	0.112	0.093
Four	0.095	0.088	0.094
Five or more	0.188	0.232	0.190
Political affiliation			
Left and center-left	0.096	0.129	0.098
Right and center-right	0.203	0.212	0.203
Prop. female in council			
0%	0.169	0.275	0.174
0-10 %	0.141	0.153	0.142
10-20%	0.100	0.122	0.101
20-30%	0.070	0.063	0.069
> 30%	0.054	0.085	0.056
All	0.100	0.117	0.101
Observations	17,624	1,259	

Note: *Population* is the resident population at election. *Experience* in a municipal elective office. *Local born* is 1 if the mayor is born in the same province. *Income per capita* is the disposable income after taxes, as of 2005. *Political affiliation* is the party to which the mayor belongs.

Table 3: The Effect of Mayor Gender on the Probability of Early Termination

	Coefficient on Female		Observations
	(1)	(2)	
	Unadjusted	Adjusted	
Mean of the dep. var.		*0.102*	
Full sample			
Linear regression (whole sample)	0.017*	0.029***	18,117
	[0.010]	[0.009]	
Linear regression with municipality fixed effects (whole sample)	0.057***	0.052***	18,117
	[0.019]	[0.018]	
Mixed-Gender Races Only			
Linear regression (regression discontinuity sample)	0.043***	0.034**	2,313
	[0.014]	[0.014]	
Linear regression on both sides of discontinuity	0.073***	0.072***	2,313
	[0.024]	[0.023]	
Two candidates, linear regression on both sides of discontinuity	0.090***	0.075**	1,119
	[0.034]	[0.033]	
Optimal bandwidth, linear regression on both sides of discontinuity	0.070***	0.070***	2,085
	[0.027]	[0.025]	
Two candidates, optimal bandwidth, linear regression on both sides of discontinuity	0.086**	0.070**	1,061
	[0.035]	[0.034]	
Half optimal bandwidth, linear regression on both sides of discontinuity	0.073**	0.064*	1,446
	[0.036]	[0.034]	
Second order polynomial on both sides of the discontinuity point	0.071**	0.072**	2,313
	[0.033]	[0.032]	
Two candidates, second order polynomial on both sides of discontinuity	0.098**	0.084*	1,119
	[0.046]	[0.043]	

Note: All adjusted estimates include pre-determined mayor demographic characteristics (age, education dummies, years of experience in any elective municipal office, number of terms as mayor, occupation dummies), municipality characteristics (macro-region dummies, log population at election, log disposable income per capita, old-age index, labor force participation rate, firms per capita, all as of 2005), female share of voters, year dummies, and political party dummies. The optimally chosen bandwidth is 0.25 (0.29 when only two candidates). The first two estimates also include a dummy for term limit, election and council characteristics (number of seats in the council, proportion seats in the mayor's party, proportion seats in the mayor's coalition, number of parties in the mayor's coalition, female share of voters), and average demographic characteristics of councilors in mayor's coalition and other lists (age, education dummies, number of previous years in office, proportion not-employed). R-squared omitted for space constraint. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 4: Balancing Tests, Mixed-Gender Races

	Coefficient on Female at the discontinuity point	
	(1)	(2)
Dependent variable:	Optimal bandwidth	Two candidates optimal bandwidth
Municipality Characteristics		
Population	2,633	400
	[1,995]	[378]
North-West	0.033	0.032
	[0.040]	[0.055]
North-East	-0.008	0.011
	[0.028]	[0.035]
Center	-0.020	-0.030
	[0.024]	[0.033]
South	-0.023	-0.010
	[0.032]	[0.045]
Islands	0.019	-0.003
	[0.023]	[0.036]
Prop. population in labor force (in 2005)	0.001	-0.006
	[0.005]	[0.006]
Firms per capita (in 2005)	0.001	0.001
	[0.002]	[0.003]
Old-age index (in 2005)	-0.003	0.016
	[0.097]	[0.165]
Income per capita (in 2005, euros)	283	542
	[255]	[358]
Political environment		
Prop. female voters	-0.001	-0.001
	[0.001]	[0.002]
Left and center-left party	0.041	0.006
	[0.036]	[0.047]
Right and center-right party	-0.022	-0.024
	[0.022]	[0.025]
Mayor's observable characteristics		
Age	-3.562***	-3.143***
	[0.730]	[1.024]
Terms in office	-0.126***	-0.226***
	[0.049]	[0.076]
Years of experience	-2.040***	-2.635***
	[0.359]	[0.489]
Local born	-0.033	-0.119**
	[0.034]	[0.047]
College education	0.091**	0.099*
	[0.040]	[0.055]
Previously not employed	0.085***	0.082*
	[0.029]	[0.043]
Constructed Variables		
Perceived Instability	0.004	0.014
	[0.007]	[0.008]
Charisma	0.639*	0.523
	[0.367]	[0.479]
Observations	2,085	1,061

Note: Linear regression on both sides of discontinuity point. The optimally chosen bandwidth is 0.25. *Population* is the resident population at election. *Old-age index* is the ratio of population above 65 over population below 14. *Prop. population in labor force* is the ratio of the active population (15-64) over the whole population. *Terms in office* as mayor, including the current one. *Local born* is 1 if the mayor is born in the same province. *Party* is the party to which the mayor belongs. *Perceived Instability* computed predicting the ex-post survival probability using all the observable characteristics available to the voters. *Charisma* computed as the difference between the actual and the expected percentage votes (using all the pre-determined characteristics) for a woman. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 5: Mayor's Gender, City Councilors' Gender, and Early Termination

	OLS	RD	OLS	RD
	(1)	(2)	(3)	(4)
Female	0.031***	0.060**	0.031***	0.069**
	[0.010]	[0.025]	[0.011]	[0.028]
Prop. female in council	-0.062***	-0.021		
	[0.022]	[0.065]		
Prop. female in mayor's coalition			-0.047**	-0.045
			[0.019]	[0.051]
Prop. female in other lists			0.003	0.049
			[0.015]	[0.038]
Margin of victory		✓		✓
Observations	16,560	2,222	12,960	1,851
N. municipalities	7,986	1,829	7,367	1,575
R-squared	0.095	0.527	0.094	0.605

Note: All estimates also include pre-determined mayor demographic characteristics (age, education dummies, years of experience in any elective municipal office, number of terms as mayor, occupation dummies), municipality characteristics (macro-region dummies, log population at election, log disposable income per capita, old-age index, labor force participation rate, firms per capita, all as of 2005), female share of voters, year dummies, and political party dummies, a dummy for term limit, election and council characteristics (number of seats in the council, proportion seats in the mayor's party, proportion seats in the mayor's coalition, number of parties in the mayor's coalition, female share of voters), and average demographic characteristics of councilors in mayor's coalition and other lists (age, education dummies, number of previous years in office, proportion not-employed). In columns (2) and (4) *Female* is interacted with the margin of victory of a female mayor in mixed-gender races.Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 6: Interactions between Mayor's and City Councilors' Gender, and Early Termination

	OLS (1)	RD (2)	OLS (3)	RD (4)	OLS (5)	RD (6)
Female	0.047** [0.023]	0.090** [0.040]	0.132** [0.058]	0.169 [0.151]	0.132** [0.058]	0.171 [0.151]
Female * Prop. female in council	-0.087 [0.102]	-0.149 [0.137]				
Implied effect of a female mayor at the mean of Prop. female in council	*0.031*** [0.010]*	*0.089** [0.040]*				
Female * (Prop. female in council > 0)					-0.107* [0.059]	-0.117 [0.150]
Implied effect of a female mayor when Prop. female in council > 0					*0.026** [0.010]*	*0.055** [0.024]*
Female * (Prop. female > 0 and≤ 0.1)			-0.112* [0.063]	-0.113 [0.156]		
Female * (Prop. female > 0.1 and≤ 0.2)			-0.088 [0.060]	-0.116 [0.152]		
Female * (Prop. female > 0.2 and≤ 0.3)			-0.138** [0.060]	-0.105 [0.151]		
Female * (Prop. female > 0.3)			-0.099 [0.062]	-0.128 [0.152]		
Margin of victory		✓		✓		✓
Observations	16,560	2,222	16,560	2,222	16,560	2,222
N. municipalities	7,986	1,829	7,986	1,829	7,986	1,829
R-squared	0.095	0.141	0.096	0.146	0.095	0.144

Note: All estimates also include pre-determined mayor demographic characteristics (age, education dummies, years of experience in any elective municipal office, number of terms as mayor, occupation dummies), municipality characteristics (macro-region dummies, log population at election, log disposable income per capita, old-age index, labor force participation rate, firms per capita, all as of 2005), female share of voters, year dummies, and political party dummies, a dummy for term limit, election and council characteristics (number of seats in the council, proportion seats in the mayor's party, proportion seats in the mayor's coalition, number of parties in the mayor's coalition, female share of voters), and average demographic characteristics of councilors in mayor's coalition and other lists (age, education dummies, number of previous years in office, proportion not-employed). In columns (2), (4) and (6) *Female* is interacted with the margin of victory of a female mayor in mixed-gender races. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 7: Differences by Region and by Attitudes towards Working Women, and Early Termination

	OLS	RD	OLS	RD	OLS	RD	OLS	RD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mean of the dep. var.	*0.100*	*0.105*	*0.100*	*0.105*	*0.100*	*0.105*	*0.121*	*0.125*
Female	0.010	0.049*	0.031***	0.059**	0.037***	0.057**	0.052***	0.081***
	[0.009]	[0.025]	[0.010]	[0.024]	[0.011]	[0.024]	[0.013]	[0.031]
Prop. female in council	-0.063***	-0.022	-0.061***	-0.020	-0.056**	-0.036	-0.101***	-0.017
	[0.022]	[0.065]	[0.022]	[0.065]	[0.022]	[0.066]	[0.032]	[0.089]
Female * South	0.090***	0.034						
	[0.030]	[0.040]						
Female * index of positive attitudes towards working			-0.034***	-0.015				
			[0.013]	[0.020]				
Female * female labor force participation (demeaned)					-0.234*	-0.019		
					[0.124]	[0.172]		
Female * ever a female mayor before							-0.063**	-0.049
							[0.031]	[0.047]
Region fixed effects					✓	✓		
Margin of victory		✓		✓		✓		✓
Observations	16,560	2,222	16,560	2,222	16,488	2,222	9,378	1,405
N. municipalities	7,986	1,829	7,986	1,829	7,986	1,829	6,479	1,282
R-squared	0.096	0.141	0.095	0.141	0.102	0.155	0.102	0.170

Note: All estimates also include pre-determined mayor demographic characteristics (age, education dummies, years of experience in any elective municipal office, number of terms as mayor, occupation dummies), municipality characteristics (macro-region dummies, log population at election, log disposable income per capita, old-age index, labor force participation rate, firms per capita, all as of 2005), female share of voters, year dummies, and political party dummies, a dummy for term limit, election and council characteristics (number of seats in the council, proportion seats in the mayor's party, proportion seats in the mayor's coalition, number of parties in the mayor's coalition, female share of voters), and average demographic characteristics of councilors in mayor's coalition and other lists (age, education dummies, number of previous years in office, proportion not-employed). The macro-region of comparison is the Center. In columns (2), (4), (6) and (8) *Female* is interacted with the margin of victory of a female mayor in mixed-gender races. In columns (7) and (8) we only include first-term mayors. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 8: Gender Differences by Type of Early Termination

	Dependent variable							
	Linear Probability Models				Multinomial logit (m.e. in curly brackets)			
	OLS	RD	OLS	RD	OLS	OLS	RD	RD
	(1)	(2)	(3)	(4)	(5)		(6)	
Dep. Variable	Mayor resignation	Mayor resignation	Council resignation	Council resignation	Mayor resignation	Council resignation	Mayor resignation	Council resignation
Mean of the dep. var.	*0.032*	*0.028*	*0.067*	*0.077*	*0.032*	*0.067*	*0.028*	*0.077*
Female	-0.003	0.002	0.034***	0.058***	-0.060	0.538***	0.316	0.616*
	[0.005]	[0.013]	[0.009]	[0.022]	[0.201]	[0.122]	[0.479]	[0.324]
					{-0.002}	{0.026}	{0.001}	{0.024}
Prop. female in council	-0.009	0.010	-0.054***	-0.031	-0.483	-1.090***	0.696	-0.616
	[0.014]	[0.040]	[0.018]	[0.055]	[0.534]	[0.385]	[1.668]	[1.065]
					{-0.011}	{-0.042}	{0.003}	{-0.023}
Margin of Victory		✓		✓			✓	✓
Observations	16,560	2,222	16,560	2,222	16,560		2,222	
N. municipalities	7,986	1,829	7,986	1,829	7,986		7,986	
R-squared	0.024	0.038	0.087	0.135	Pseudo R2 : 0.129		Pseudo R2 : 0.207	

Note: All estimates also include pre-determined mayor demographic characteristics (age, education dummies, years of experience in any elective municipal office, number of terms as mayor, occupation dummies), municipality characteristics (macro-region dummies, log population at election, log disposable income per capita, old-age index, labor force participation rate, firms per capita, all as of 2005), female share of voters, year dummies, and political party dummies, a dummy for term limit, election and council characteristics (number of seats in the council, proportion seats in the mayor's party, proportion seats in the mayor's coalition, number of parties in the mayor's coalition, female share of voters), and average demographic characteristics of councilors in mayor's coalition and other lists (age, education dummies, number of previous years in office, proportion not-employed). In columns (2), (4) and (6) *Female* is interacted with the margin of victory of a female mayor in mixed-gender races. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 9: Mayor's Gender and Budget Summary

	Dependent variable					
	OLS	RD	OLS	RD	OLS	RD
	(1)	(2)	(3)	(4)	(5)	(6)
	% budget deficit	% budget deficit	Log (revenue per capita)	Log (revenue per capita)	Log (investments per capita)	Log (investments per capita)
Mean of the dep. var.	*1.564*	*1.889*	*7.048*	*6.998*	*5.812*	*5.718*
Female	-0.065	0.230	0.005	0.010	-0.001	0.023
	[0.180]	[0.367]	[0.015]	[0.029]	[0.025]	[0.054]
Prop. female in council	-0.110	0.668	-0.026	0.015	-0.009	0.135
	[0.450]	[1.044]	[0.036]	[0.092]	[0.068]	[0.173]
Margin of Victory		✓		✓		✓
Observations	15,364	2,046	15,364	2,046	15,364	2,046
N. municipalities	7,594	1,689	7,594	1,689	7,594	1,689
R-squared	0.043	0.065	0.421	0.382	0.310	0.293

Note: All estimates also include pre-determined mayor demographic characteristics (age, education dummies, years of experience in any elective municipal office, number of terms as mayor, occupation dummies), municipality characteristics (macro-region dummies, log population at election, log disposable income per capita, old-age index, labor force participation rate, firms per capita, all as of 2005), female share of voters, year dummies, and political party dummies, a dummy for term limit, election and council characteristics (number of seats in the council, proportion seats in the mayor's party, proportion seats in the mayor's coalition, number of parties in the mayor's coalition, female share of voters), and average demographic characteristics of councilors in mayor's coalition and other lists (age, education dummies, number of previous years in office, proportion not-employed). In columns (2), (4) and (6) Female is interacted with the margin of victory of a female mayor in mixed-gender races. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 10: Mayor's Gender and Budget Preferences

	Dependent variable					
	OLS	RD	OLS	RD	OLS	RD
	(1)	(2)	(3)	(4)	(5)	(6)
	% expenditure education	% expenditure education	% expenditure welfare	% expenditure welfare	% expenditure police	% expenditure police
Mean of the dep. var.	*8.378*	*8.863*	*33.518*	*33.506*	*2.396*	*2.293*
Female	0.346**	-0.259	0.047	-0.207	-0.045	0.047
	[0.161]	[0.355]	[0.409]	[0.925]	[0.052]	[0.110]
Prop. female in council	0.595	0.575	-0.548	2.810	-0.027	0.357
	[0.395]	[1.055]	[1.116]	[2.857]	[0.150]	[0.346]
Margin of Victory		✓		✓		✓
Observations	15,364	2,046	15,364	2,046	15,364	2,046
N. municipalities	7,594	1,689	7,594	1,689	7,594	1,689
R-squared	0.209	0.229	0.060	0.101	0.195	0.201

Note: All estimates also include pre-determined mayor demographic characteristics (age, education dummies, years of experience in any elective municipal office, number of terms as mayor, occupation dummies), municipality characteristics (macro-region dummies, log population at election, log disposable income per capita, old-age index, labor force participation rate, firms per capita, all as of 2005), female share of voters, year dummies, and political party dummies, a dummy for term limit, election and council characteristics (number of seats in the council, proportion seats in the mayor's party, proportion seats in the mayor's coalition, number of parties in the mayor's coalition, female share of voters), and average demographic characteristics of councilors in mayor's coalition and other lists (age, education dummies, number of previous years in office, proportion not-employed). *% expenditure welfare* also includes expenditure for local transports. All budget variables computed as the mean within the term, excluding election years. In columns (2), (4) and (6) *Female* is interacted with the margin of victory of a female mayor in mixed-gender races. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 11: Mayor's Gender and Productivity

	Dependent variable					
	OLS	RD	OLS	RD	OLS	RD
	(1)	(2)	(3)	(4)	(5)	(6)
	% paid expenses	% paid expenses	% collected revenues	% collected revenues	% population growth	% population growth
Mean of the dep. var.	*79.418*	*79.281*	*65.695*	*66.004*	*0.823*	*1.262*
Female	0.009	0.174	0.203	-0.554	0.531	0.738
	[0.212]	[0.474]	[0.353]	[0.793]	[0.809]	[1.596]
Prop. female in council	-0.329	-3.005**	3.341***	2.034	-0.855	-5.601*
	[0.602]	[1.449]	[0.930]	[2.367]	[0.959]	[3.330]
Margin of Victory		✓		✓		✓
Observations	15,364	2,046	15,364	2,046	15,364	2,046
N. municipalities	7,594	1,689	7,594	1,689	7,594	1,689
R-squared	0.113	0.121	0.313	0.325	0.065	0.098

Note: All estimates also include pre-determined mayor demographic characteristics (age, education dummies, years of experience in any elective municipal office, number of terms as mayor, occupation dummies), municipality characteristics (macro-region dummies, log population at election, log disposable income per capita, old-age index, labor force participation rate, firms per capita, all as of 2005), female share of voters, year dummies, and political party dummies, a dummy for term limit, election and council characteristics (number of seats in the council, proportion seats in the mayor's party, proportion seats in the mayor's coalition, number of parties in the mayor's coalition, female share of voters), and average demographic characteristics of councilors in mayor's coalition and other lists (age, education dummies, number of previous years in office, proportion not-employed).

% collected revenues is the ratio between the collected tax and transfer revenues and the total amount of assessed revenues that the municipality should collect within the budget year. *% paid expenses* is the ratio between the outlays actually paid and the outlays committed in the municipality budget within the budget year. Both variables computed as the mean over the term, excluding election years. *% population growth* computed between two consecutive election years. In columns (2), (4) and (6) *Female* is interacted with the margin of victory of a female mayor in mixed-gender races. Robust standard errors, adjusted for clustering at the municipality level, in brackets.