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ABSTRACT

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

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 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. The evidence is suggestive that female mayors are less able at fostering cooperation among men, or alternatively, that men are more reluctant to be headed by women. 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, H72, M54

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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 municipal system 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. As in any organization, the stability and success of the municipal government depends on the degree of cooperation between and within ranks. 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 will depend 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, and especially those in the governing coalition.

Our main finding is that the probability of early termination of the legislature is between 3 and 5 percentage points higher when the mayor is a woman. This is also true after control-

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[1] Bertrand and Halloc (2001) document that women represent only 2.5% of the top paid executives in U.S. corporate firms.

ling for a large number of observable characteristics of the mayor and the council, and for municipality fixed effects. 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 (between 6 and 8 percentage points).

We discuss a number of possible explanations for these findings. Perhaps female leaders are discriminated against by their predominantly male subordinates, who dislike the idea of being led by a woman. This hypothesis receives some support in the data, since the likelihood that a female mayor survives until the end of her term is lowest when the mayor interacts with an entirely male council, and in the Southern regions, where unfavorable attitudes towards working women prevail. Alternative explanations receive less support in the data. For example, if women are less combative, they may choose to resign spontaneously, rather than be forced out of office by a no-confidence vote or by resignation of the city council. However, the opposite holds true: 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 encounter more resistance because they are likely to be perceived as reformers: the gender difference in survival probability is robust to the inclusion of a large number of personal characteristics of the elected mayor (including age and previous experience in municipal government), while there are essentially no differences between male and female mayors in policies enacted.

Our study 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 we can credibly measure performance. The size and the dynamics of a municipal council are similar to those of a company's board of directors: our analysis can therefore shed light on the role of cooperativeness in settings that go beyond the political arena.

The rest of the paper is organized as follows. In Section 2, we review the related literature. In Section 3, we describe the data. In Section 4, we present the results showing the effect of the mayor's gender on the probability of early termination. In Section 5 we discuss the

possible interpretations of our findings. We conclude with Section 6.

2   Related Literature

This paper is related different strands of research. First, it is connected to the recent research aimed at understanding the underrepresentation of women in leadership roles and at the very top of the occupational distribution. Some have hypothesized that this phenomenon may be due to gender differences in competitive environments. Men are more likely to select into more competitive compensation schemes (Dohmen and Falk, 2006; 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; Gneezy and Rustichini, 2004) and are better able to maintain high levels of performance in high pressure situations (Lavy, 2008a; Paserman 2008; Örs, Palomino and Peyrache, 2008).[2]

However, in the setting that we are examining it is actually cooperative attitudes, more than competitive ones, that probably matter most. Popular wisdom has it that women, while perhaps lacking in competitive spirit, are actually better able at fostering cooperation among subordinates and, more generally, at bringing people together to work towards a common goal. The experimental evidence on this issue, however, is mixed: some studies showing that women are more concerned for the outcome of other party (Andreoni and Vesterlund, 2001; Eckel and Grossman, 1996 and 1998; Nowell and Tinkler, 1994), but others finding no effects (Croson and Buchan, 1999), or effects of the opposite sign (Brown-Kruse and Hummels, 1993).[3]

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

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[2]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 (2008) 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.

[3]See Croson and Gneezy (2008) for a survey of the experimental literature on gender differences in competitive and cooperative environments.

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, 2008), health (Rehavi, 2007), and environmental protection (Funk and Gathman, 2008). This evidence is in line with the rich literature in political science that has 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). Another strand of the literature has examined whether female legislators are as effective as their male colleagues in sponsoring bills that are eventually turned into law (Bratton and Haynie, 1999; Jeydel and Taylor, 2003).[4]

With respect to the existing literature, the contribution of our paper is twofold. First, we shed 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. Second, we analyze an additional dimension of politicians' effectiveness, which had not received much attention previously.

3 The Data

We use an administrative data set containing all the Italian mayoral terms elected from 1993 to 2008. 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 legislature, such as the exact duration and the reasons of early termination, and the

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[4]Other aspects of gender differences in politics include studies of gender stereotypes of candidates (Huddie and Terklidsen, 1993; Sanbonmatsu, 2002), and their interplay with campaign strategies (Herrnson, Lay and Stokes-Brown, 2003); gender differences in electoral behavior (Sapiro and Conover, 1997), and the evolution of the political gender gap (Box-Steffensmeier, De Boef and Lin, 2004; Edlund and Pande, 2002).

electoral results for the first and the second ballot, including turnout rates by gender. We also have yearly information at the municipality level on population,.on total revenues and on expenditure (both in total and by components). 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,[5]

3.1   The Italian Institutional Framework

The Italian municipal administration (*Comune*) is headed by a Mayor (*Sindaco*), who supervises the Executive Committee (*Giunta*), and a Council (*Consiglio Comunale*) which 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. If the population size is smaller than 15,000 inhabitants, 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. The winning candidate is awarded a majority premium of at least 60 percent of the seats in the council.[6] Mayors are subject to a two-terms limit, unless one of the two

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[5]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.

[6]Some institutional features differ in the regions with special autonomy (*Regioni Autonome a Statuto Speciale*), namely Sicily, Val D'Aosta and Trentino Alto Adige (but not Friuli-Venezia-Giulia and Sardinia, which followed the national legislation). In Sicily the majority premium is 60 percent and elections are held with double ballot no matter the size of the municipality, although in municipalities with more than 10,000 inhabitants 30 percent of the seats are assigned with party-ballot. In Val D'Aosta the majority premium is 60 percent no matter the size of the municipality. Finally, in Trentino Alto Adige the majority premium is

terms lasted for less than two years. In 2000 the statutory duration of the legislature was extended from four to five years.

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 councilors, anticipated elections are called without the possibility of forming a new governing coalition.

3.2 Descriptive Statistics

3.2.1 Differences by Gender

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.[7] As we can see in Table 1, 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. Unsurprisingly, this also means that councilors and coalition members are less experienced when the mayor is female. There are no differences, however, in the average educational attainment of the city councilors.[8]

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60 percent and municipalities with less than 3,000 inhabitants in the province of Trento (less than 15,000 inhabitants in the province of Bolzano) have a single ballot, while the others have a double ballot.

[7] A detailed description of mayors' and cities' characteristics can be found in Tables A1 and A2.

[8] One possible concern whe 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, and this might prejudice 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 – SHIW) 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.

3.2.2 Defining the Dependent Variable

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); or b) the resignation of the majority of the council or a no-confidence vote in the council (56.41 percent).[9] 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).[10] 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.[11]

The resignation of the mayor is usually anticipated by higher resignation rates among the members of the executive committee (16.7 percent, against 10.3 percent in case of no resignation of the mayor), as well as among the councilors in the mayor's coalition (5.8 percent, against 4.1 percent). However, since withdrawing councilors are replaced with the next candidates in the electoral list, this phenomenon is not important for our analysis unless it concerns at least 50 percent of the council, in which case anticipated elections are called and the dependent variable is coded as 1.

One potential concern with our dependent variable is that it may have little to do with cooperation between the mayor and the city councilors. 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 particularly likely: first, the two-term limit, the cost of campaigning, and the possibility to lose the mayoral monthly salary (which ranges from 1,300 to 8,000 euros according to population size) act to reduce the incentives of mayors to resign voluntarily.[12] Second, in the case of early termination (and

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[9]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 0.6 percent in the provincial government.

[10]The remaining reasons of early termination include the fusion of the municipality with another one, the annulment of the election for administrative reasons, and upcoming incompatibilities.

[11]In doing this we follow Diermeier and Stevenson (1999). The results are not sensitive to excluding all observations in which the legislature terminated early because of one of these reasons.

[12]Mayors can keep their private job while appointed. However, in case the mayor works as an employee,

no binding term limit), the percentage of mayors who will then run for re-election is only 37 percent; and, while about 58 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 36 to 34 percent, but the difference is not statistically significant).

In Table 2, we present the mean of the dependent variable, separately by gender and by a number of important covariates. Even though we have data up to the end of 2008, we restrict the sample only to those mayoral terms appointed between the 1993 electoral reform, for which we have the electoral and budget information, and December 2003, for which we can know with certainty whether the legislature was terminated before completing its full term. 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 be forced into early resignation. 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 and crime-infested 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, and (to a lesser extent) with separatist and regional movements (such as the Northern League).

Strikingly, in almost all of the above subcategories we find that women are more likely to resign early than men. The last grouping of variables is especially informative: the probability of early resignation decreases monotonically with the proportion of women in

the salary is cut by half unless the mayor asks for a leave-of-absence for the duration of the mandate.

the council, regardless of the gender of the mayor. However, the gap between male and female mayors becomes dramatically large when there are no female councilors at all.

Overall, these results suggest that the gender of the mayor and the councilors 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 Empirical Findings

4.1 Basic OLS Results

In Table 3 we present the results of our basic regression analysis. We include in the sample all observations with non- missing data on the gender, age and experience of the mayor. 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, 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.[13] We estimate the following linear model for the probability of early termination:

$$EarlyT_{jt} = \alpha + \beta Female_{jt} + \gamma_1 X_{jt} + \delta_t + \eta_j + \epsilon_{jt}, \tag{1}$$

where $EarlyT_{jt}$ is a dummy variable equal to 1 if the legislature t in municipality j, terminates before the statutory end of the term, $Female_{jt}$ is equal to 1 if the mayor was a woman and 0 otherwise, X_{jt} is a vector of municipality and mayor characteristics, δ_t is a time effect, η_j is a municipality fixed effect, and ϵ_{jt} is an idiosyncratic error term (which may also depend

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[13]All the results are qualitatively and quantitatively robust to the exclusion of all observations with any missing data.

on unobserved caracteristics of the mayor elected in municipality j at time t). The last two terms are all assumed for the moment to be orthogonal to $Female_{jt}$. The parameter β represents the effect of an average elected woman, everything else equal, on the probability of early termination. Being this a linear probability model, standard errors are made robust to heteroskedasticity and are clustered at the municipality level. We concentrate on the coefficient on the female dummy β, and assess how it changes in size and significance as we include additional controls.

The first column of Table 3 presents the coefficient of the simple regression of the probability of early termination on the female dummy. The coefficient indicates that female mayors are 1.7 percentage points more likely resign before the end of the term, and it is marginally statistically significant at the 10 percent level. However, the simple inclusion of regional dummies (column 2) doubles the size of the coefficient, and makes it significant at the 1 percent level. This simply reflects the fact that women are less likely to become mayors in the more unstable municipalities in the Southern regions.

In column 3 we include other mayor characteristics, municipality, election and council characteristics and year effects as additional control variables. Most of the coefficients have the expected sign and are consistent with the patterns observed in the simple bivariate analysis of Table 2. The probability of early resignation increases with age and decreases with experience of the mayor, and is lower for local-born mayors. The education and occupation dummies are each jointly insignificant, and are not reported in the table. City size increases the probability of early termination, while income per capita and the labor force participation rate (indicators of the economic health of the locality) lower it; however, the number of productive units per capita (another indicator of economic activity) is positively correlated with early termination. Predictably, city councils that are larger and have more parties are more difficult to manage, and hence experience more early terminations. Also, if the mayor's party controls a large number of seats in the council, the probability of early termination decreases. This is not surprising: members of the same political party as the mayor are

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probably more closely aligned with the mayor's preferences, and less likely to vote against the mayor's poposed policies. Surprisingly, though, the probability of early termination is not correlated with the size of the mayor's coalition. Finally, the probability of survival is higher for left and center-left mayors, and lower for right and center-right mayors relative to the omitted category of independents.

As we have seen from the previous tables, female mayors tend to be younger and less experienced, and more likely to serve in economically healthy municipalities: hence it is possible that inclusion of these variables will knock off the female coefficient. This is not the case, however: the coefficients drops only very slightly, to 0.028, and remains strongly statistically significant.

We can also exploit the multiple elections per municipality over time to include a full set of municipality fixed effects. It may be the case, in fact, that women are more likely to be appointed in municipalities which are perceived to be structurally unstable, perhaps because parties or voters believe they are better at reconciling differences between fractious council members. Or it may be, instead, that they are more likely to be elected in cities where the political environment is known to be historically untroubled, because voters do not trust their capacity to conciliate a riotous municipal government. In all these situations, the orthogonality assumption between $Female_{jt}$ and η_j would not hold anymore. In column 5 we present the estimates including city fixed effects. Identification is obtained from variation in the gender of the mayor within a municipality across different elections. We now find that the female coefficient is substantially larger: once we control for all fixed municipality characteristics, females are 5.1 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 (and be elected) 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 51 percent higher relative to men.[14]

4.2 Gender Composition of the Council and Mayor's Coalition

The probability that a municipal legislature survives until the end of its term depends on the mayor's ability to foster cooperation, and also on the individual councilors' propensity to cooperate with the mayor. It may therefore be of direct interest to study the effect of the gender composition of the council or of the mayor's coalition on the probability of early termination. Moreover, if female mayors are more likely to be surrounded by a high proportion of female councilors, and there are gender differences in the propensity to act cooperatively, then including the proportion of women in the council may also affect the estimated effect of the mayor's gender on the probability of early termination. It is also worth investigating whether any effect of the proportion of women in the council is driven by coalition councilors that "stab the mayor in the back" (or refrain from doing so), or by opposition councilors that happen to be particularly combative in their efforts to oust the mayor from office.

The analysis is carried out in Table 4. In column 1 we estimate a regression analogous to equation (1) with the full set of control variables (see column 4 in Table 3), but we add the proportion of females in the council, as well as the other average characteristics of the city councilors (age, experience, level of education, proportion not employed previously, and proportion local born). In column 2 we further separate between the proportion of women in the mayor's coalition and the proportion of women in opposing parties. The sample sizes are somewhat smaller, since we only keep observations for which we observe demographic characteristics for all city councilors (column 1), or for which we can identify with certainty party affiliation (column 2).

The results show quite clearly that a higher proportion of women in the council is asso-

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[14]In order to exclude the possibility that some women may have resigned because of maternity leave, we run the same analysis on the sample of mayors who are more than 40 years old. Results were both qualitatively and quantitatively invariant to this sample restriction.

ciated 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 0.7 percentage points, while the coefficient on the female dummy is essentially the same as that estimated in Table 3. 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. However, inclusion of a full set of municipality fixed effects (columns 3 and 4) makes the effect of proportion women in the council or in the mayor's coalition become positive and insignificant. Overall, it appears that municipalities that are inherently more stable are more likely to have women in the council and in the mayor's coalition.[15]

We defer to the next section the analysis of the interaction between the mayor's gender and the gender composition of the council. Before that, though, we use a regression discontinuity design to explore whether the effect of a female mayor is driven by a different selection of male and female candidates into municipalities that are more or less difficult to manage.

4.3   RDD Results

The specification we used in equation (1) ignored that the political environment might vary from one election to another within the same municipality depending on contingent factors, and that this might influence the choice of a female rather than a male candidate. In other words, $Female_{jt}$ might be correlated with the transitory error component ϵ_{jt}. If so, fixed effects estimates at municipality level may not be enough to remove this source of bias, and β will no more identify the effect of an average woman, everything else equal, on the probability of early termination. To this purpose, we implement a Regression Discontinuity

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[15]To address the potential endogeneity of the percentage of female councilors, 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 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.

Design (RDD) by focusing on mixed-gender electoral races decided by a narrow margin.[16] If the outcome of an electoral race between a man and a woman is uncertain, the winner is 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' observable and unobservable characteristics.

It is important to recognize that RDD comes with high internal validity, but low external validity. Without strong assumptions justifying extrapolation to other subpopulations (e.g., homogeneity of the treatment effect), the RDD never allows to estimate the effect of the treatment for values of the running variable that are far from the threshold. We discuss below the conditions under which the RDD estimate can correctly identify the average gender difference in the probability of early termination. We should also mention, however, that in our study local identification may actually be of first-order relevance, as it may be intrinsically important to understand the role of the mayor's characteristics specifically when the majority detained by the mayor in the council is small, and hence cooperation within the council matters the most.

4.3.1 Identification

In the spirit of Rubin (1974), we define $EarlyT_j(1)$ as the potential outcome of municipality j if the mayor is a woman, and $EarlyT_j(0)$ as the potential outcome of the same municipality if the mayor is a man, at a specific point in time t. Our identification strategy relies on the fact that in mixed-gender races there is a man running against a woman, with voters deciding whether a municipality will have a female or a male mayor.[17] Assignment to treatment can

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[16]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 (2008) 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.

[17]For the sake of the simplicity, we assume for the moment that there are no other candidates. We also do not consider the case in which there is more than one gender-mixed race within the same municipality over time t, or with the same mayor i.

then be specified as:

$$Female_j = 1[MV_j \geq 0], \tag{2}$$

where MV_j is the margin of victory and $1[.]$ the indicator function. The margin of victory is defined as the difference between the vote share of the female and the male candidate. This is an example of *sharp* RDD, as the probability of receiving the treatment has a sharp discontinuity equal to 1 at the threshold $MV_j = 0$.

The margin MV_j can be seen as a random variable depending on observable and unobservable city characteristics, as well as on general occurrences on election day. Define U_j as a term representing the municipality unobservable characteristics affecting $EarlyT_j(1)$, $EarlyT_j(0)$, MV_j, and the observed municipality characteristics X_j at the same time, where X_j also includes the policy that will be implemented by the candidate if elected. The relationship between U_j and MV_j is assumed to satisfy the following condition.

Assumption 1 *Define $F(MV_j|U_j = u)$ as the cumulative distribution function of MV_j conditional on U_j and, for each u in the support of U_j, assume that:*

a. $0 < F(0|U_j = u) < 1$;

b. $F(MV_j|U_j = u)$ is continuously differentiable in MV_j at $MV_j = 0$.

Assumption (1) states that even if candidates can *partially* affect the electoral outcome (i.e., there might be some partial manipulation of the running variable), their margin of victory includes some random element, so that the probability of a woman or a man winning the election is never equal to 0 or 1 (condition a). Furthermore, when $MV_j = 0$ voters are indifferent between the two candidates, and each candidate has the same probability of winning or losing by a narrow margin (condition b).

Lee (2008) shows that under Assumption (1):

$$\lim_{\epsilon \uparrow 0} E(U_j|MV_j = \epsilon) = \lim_{\epsilon \downarrow 0} E(U_j|MV_j = \epsilon) \tag{3}$$

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$$\lim_{\epsilon \uparrow 0} E(X_j | MV_j = \epsilon) = \lim_{\epsilon \downarrow 0} E(X_j | MV_j = \epsilon). \tag{4}$$

that is, when $MV_j = 0$ cities' observable and the unobservable characteristics are identical, independently on whether the elected candidate is a man or a woman (in the next subsection we discuss how candidates' characteristics behave around the threshold). It follows that:

$$\lim_{\epsilon \uparrow 0} E(EarlyT_j(0) | Female_j = 0, MV_j = \epsilon) = \lim_{\epsilon \uparrow 0} E(EarlyT_j | MV_j = \epsilon) \tag{5}$$

$$\lim_{\epsilon \downarrow 0} E(EarlyT_j(1) | Female_j = 1, MV_j = \epsilon) = \lim_{\epsilon \downarrow 0} E(EarlyT_j | MV_j = \epsilon). \tag{6}$$

Therefore, the quantity $[\lim_{\epsilon \downarrow 0} E(EarlyT_j | MV_j = \epsilon) - \lim_{\epsilon \uparrow 0} E(EarlyT_j | MV_j = \epsilon)]$ has the causal interpretation of the average treatment effect at the threshold:

$$ATE_{rdd} \equiv E(EarlyT_j(1) - EarlyT_j(0) | MV_j = 0). \tag{7}$$

4.3.2 Interpretation

The main reason for implementing a regression discontinuity design is that it allows us to control for any potential correlation between time-varying unobservable characteristics at the municipality level and the gender of the mayor. This is probably the type of selection that is of first-order importance, and the RD design is helpful in taking account of it. However, as is clear from equation (7), the RRD can only identify the *local* treatment effect of the mayor's gender in races decided by a narrow margin. To understand whether this parameter is informative about the average gender difference in the population, we need to consider the underlying voting process that determines whether an electoral race will be closely contested.

In interpreting our results, we build on the model of partisan politicians (Alesina, 1988). In this model, political parties care not only about being elected, but also about the policy they will implement if they win the election. Rational voters anticipate that parties cannot credibly commit to any announced policy other than their preferred one, and will have an incentive to deviate towards their preferred policy after the election. Hence, the only time-

consistent equilibrium is the one in which the two parties follow their most preferred policies, and there is no convergence in policies towards the median voter. We introduce here the possibility that the elected mayor will not be able to implement the desired policy and will be ousted from power before the end of the term.

Consider first as a benchmark the case in which voters care only about the announced policies, but do not care about the probability that the policy will be implemented.[18] The share of votes going to any one party is simply a function of the preferred policies (which are assumed to be exogenous) and of the distribution of preferences in the population.[19] We make the natural assumption that the more closely contested the electoral race, the less likely is the government to survive until the end of the term (because the majority in the council will be narrower). If women are less likely to enter closely contested races, then the OLS estimate over the whole sample of races will underestimate the average gender difference in the probability of survival. However, if the type of race in which women enter is unrelated to the characteristic of the candidate (i.e., high ability women are just as likely to enter closely contested races as non closely contested races), the RDD estimate will provide an unbiased estimate of the average gender difference in the population.

More 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 we are willing to assume about the effect of "ability" on the probability of survival for the two genders. If

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[18]Alternatively, it may be the case that voters have no information about the candidates' ability to realize the policy, and there is no way to credibly signal one's ability.

[19]More recent "citizen-candidate" models (Osborne and Slivinski, 1996; Besley and Coate, 1997; Chattophadyay and Duflo, 2004) endogenize the candidates' policy platforms. These models have the feature that in a two-candidate equilibrium, the two candidates will exactly split the vote. This is unappealing for our analysis, because it implies that all races should be "closely contested," while our focus is precisely on the contrast between closely and non-closely contested races.

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.

Consider now the case where voters care not only about policies, but also about the politicians' ability to successfully implement them. Moreover, voters know that women may be less likely to survive until the end of the term. Then, in close electoral races female candidates must compensate for this disability, i.e., they must be either (a) perceived to be more stable in terms of other observed characteristics (age, experience, etc.) and unobserved characteristics (charisma, personality, etc.); or (b) closer to the "median voter" in terms of their preferred policy than their male opponent.[20] The first case has some testable implications: first, we should observe divergence in candidates' observable characteristics as the race becomes close, with female candidates being superior in terms of characteristics that are positively correlated with stability; second, we should observe *ex-post* no difference in government stability, because voters have compensated the lower perceived stability of the female candidate with other characteristics that make her more stable. If some ex-post difference in government stability is detected, this will be an *underestimate* of the average gender difference in the population.

On the other hand, it is difficult to assess whether female candidates in close races choose policies that are closer to those of the median voter (i.e., they choose policies such that, if there were no differences in perceived stability, they would garner a comfortable majority of the votes). However, if being closer to the median voter has no effect on the ex-post survival probability, the same reasoning used in the case of indifferent or uninformed voters applies also here: what the RDD estimate can capture depends on the selection of women and men

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[20]By "median voter" we refer to the median voter in a race in which the candidates do not differ in terms of perceived stability.

into different types of electoral races. If instead the fact of being closer to the median voter increases government stability, the RDD estimate would be again an *underestimate* of the average gender difference in the population.

To sum up, the RDD delivers an estimate of β which is free of any bias related to both time-varying and time-invariant specificities of the cities in which women are elected. RDD estimates can potentially identify the average gender difference in the population, but this will depend on the assumptions about the selection of candidates by gender into close electoral races, and on the voters' informational set.[21] Under most plausible assumptions about the type of selection of candidates into close races, it is likely that the RDD coefficient represents an *underestimate* of the average gender difference in the population.

4.3.3 Estimation

Various estimation methods have been proposed to implement equation (7), which requires estimating the boundary points of two regression functions. In particular, we apply two methods: the local linear regression (LLR) proposed by Imbens and Lemieux (2008), and the split polynomial approximation used by Lee, Moretti, and Butler (2004) and Lee (2008).

The first method restricts the estimation to a compact support, and fits two separate linear regression functions within a distance h on either side of the threshold. This method is particularly attractive because it is not sensitive to outcome values for observations far away from the threshold. In other words, it restricts the sample to an interval $MV_j \in [-h, +h]$ to estimate the model:

$$EarlyT_j = \alpha + \beta Female_j + \gamma MV_j + \delta Female_j \cdot MV_j + \epsilon_j, \tag{8}$$

using OLS. The bandwidth h can be selected applying the cross-validation method proposed by Imbens and Lemieux (2008).

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[21]The same is true for other empirical designs, like the experimental framework implemented in Chattopadhyay and Duflo (2004), where randomly chosen cities were assigned a female mayor but there was no control over candidates's selection.

The second method uses the whole sample, choosing a flexible specification to fit the relationship between $EarlyT_j$ and MV_j on either side of the threshold:

$$
\begin{aligned}
EarlyT_j \;=\; & \alpha + \beta Female_j + (\gamma_1 MV_j + ... + \gamma_p MV_j^p) + \\
& (\delta_1 Female_j \cdot MV_j + ... + \delta_p Female_j MV_j^p) + \epsilon_j, \tag{9}
\end{aligned}
$$

which is then estimated with OLS. As MV_j is equal to zero at the threshold, the coefficient β identifies the ATE_{rdd}.

4.3.4   Results

The sample of mixed-gender electoral races is made of 2,255 electoral terms, 1,237 of which elected with a margin of victory smaller than 10 percentage points, 665 smaller than 5, and 144 smaller than 1. The sample is similar to the sample of all races in many respects (the average population is 8,369, 22 percent of cities are in the South, and the average income per capita is 13,954), including the average probability of early termination which is 10 percent.[22]

We start with a graphical representation in Figure 1, which 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_j is divided by the sum of the share of the first two candidates in the decisive ballot.[23] Male mayors have values of MV_j below 0, while female mayors above 0. The jump is clearly visible and positive, meaning that in the neighborhood of the threshold municipalities with a female mayor are more unstable. It is also worth noting that the higher the distance from the threshold, the lower the probability of early termination, which is consistent with the idea that a significant majority of seats in the city council guarantees more stable governments.

More formal RDD estimates on the probability of early termination are reported in Table

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[22]We excluded the uncontested races, and the races with the first two candidates of the same gender.

[23]Over the sample of contested mixed-gender electoral races, 48.45 percent had two candidates only, 29.43 had three (the first two being a man and a woman), 12.21 had four, and 9.91 percent more than four. In case the election is decided at the second ballot, the number of candidates is by definition equal to two.

5. 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 (0.036) and statistically significant. Numbers almost double when we run a separate estimation on both sides of the discontinuity point. When using a local linear regression on the whole sample of mixed-gender races, the effect of having a female mayor on the probability of early termination is 0.065, which rises to 0.076 when the electoral race is made of two candidates only. When we use instead a local linear regression specification with an optimal bandwidth of 25 percentage points, the coefficient for a female mayor is 0.061, while with a second order polynomial approximation it is 0.060.[24] Results are not sensitive to the choice of the bandwidth (the local linear regression estimate with half optimal bandwidth is 0.063), as well as to the use of mixed-gender races with two candidates only (and an optimal bandwidth of 29 percentage points).

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 Table 3 and 6. 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.

The validity of our estimation strategy can be assessed with different testing procedures. In Figure 2 we first investigate the validity of assumption 1 about the continuity of the running variable. Even though male candidates seem to have an electoral advantage when running against a woman, a visual inspection of MV_j at the discontinuity point rejects the hypothesis that there might be *complete* manipulation of the running variable. The density is in fact smooth and well behaved (up to some small sample noise) around the

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[24]Results are qualitatively similar when using higher order polynomials.

threshold, with male and female candidates sharing the same probability of winning when the electoral race is tight. 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).[25]

In Table 6 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).[26] As a matter of fact, Figures 3 and 4 show that as the electoral race becomes tight there is equalization between municipalities where men and women are elected, which is not the case for less contested races. This is compelling evidence in support of the randomization induced by tight electoral competitions.[27] 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 counterpart.[28] We also compute an index of "perceived instability" by predicting the ex-post survival probability using all the observable characteristics available to the voters (the same as in Table 6). We do not find any difference in this index around the threshold: although elected women and men are not observationally equivalent, voters do not perceive them as different in terms of *ex-post* stability. It is also worth noting that there is no evidence of divergence in candidates' observable characteristics as far as the race becomes close (see Figure 5): instead, women elected with a small margin are older, less likely to be not employed, and less likely to be born in a different province than their average.

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[25]The optimal bin size and bandwidth for the sample of all the mixed-gender races were 0.583 and 16.043 respectively. Figures are identical for the sample of races with only two candidates.

[26]In principle, the old-age index, the per-capita income and the labor force participation rate refer to 2005, and could not be considered as pre-treatment. However, as far as there is some degree of resilience, they cannot be easily affected by the mayor and we can consider them as a permanent city characteristic.

[27]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. Finally, we run a falsification test by using the pre-treatment outcome of the municipality, i.e., whether the previous legislature terminated early despite it was not headed by a female mayor, and found that in the pre-treatment period the municipalities which will later have a female mayor did not behave differently.

[28]We find very similar figures when comparing losing and winning candidates.

Following the discussion in section 4.3.2, we can interpret this evidence in two ways: either voters do not anticipate that women will be more likely to resign after election; or, alternatively, even if they know a difference exists, this is compensated in other dimensions of candidates' policy platform, rather than of candidates' characteristics. In both cases, the RDD estimate represents at least an *underestimate* of the average gender difference in the population, the true difference being even larger. Furthermore, the fact that the RDD point estimates in Table 5 are invariant to the inclusion of all covariates (including mayors' characteristics) is further evidence of the robustness of the estimation strategy.

5 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 and fixed effects regressions. To gain in sample size, we will also focus on the gender composition of the council rather than the mayor's coalition.[29]

Discrimination by male councilors. A natural hypothesis is that female mayors face more difficulties in keeping their coalition together, because of resistance on the part of male councilors, who dislike being led by a woman. This is consistent with the notion of employee discrimination à la Becker (1971).[30] We conduct two tests to assess to what extent our results can be driven by the unfavorable attitudes of male councilors toward fenale leaders.

First, we look at 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 7. The first column is a simple OLS regression similar to the specification in Table 4, where we add a linear

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[29]All the following results are qualitatively unchanged if we use the proportion of women in the mayor's coalition (see also Table 4).

[30]While employee discrimination features prominently in every textbook discussion of discrimination, there has been surprisingly little empirical research on the subject. Exceptions include Ragan and Tremblay (1988) and Buffum and Whaples, (1995).

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 councilors, but not statistically significant. Compared to the results in Table 4, the coefficient on the main effect of gender rises to 0.048. 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. Column 2 includes a full set of municipality fixed effects. 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 entirely male council, both in the OLS and the fixed effects specification. The remaining coefficients are all negative and almost all statistically significant (except in the specification with fixed effects), 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 essentially the same as in column 3 and 4: in entirely male coalitions, female mayors are between 13.4 and 15.1 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 2.4-5.5 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 councilors 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

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[31]Table 4 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 7 are essentially the same if we use proportion women in the mayor's coalition instead.

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 councilors (beyond having at least one female councilor) raises the survival probability of female-headed councils. The extent of discrimination does not increase linearly with the fraction of male councilors. 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 councilor that can keep it in check.

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 8 show that the effect of a female mayor is concentrated almost exclusively in the Southern regions (as compared to the regions in the Center), where traditional gender norms prevail. 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).

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 an index of favorable attitudes towards working women.[33] The index is normalized to have mean 0 and standard deviation 1 in the sample of the 20 Italian regions. 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 fixed effects specification. In columns 5 and 6 we replace the index with the actual female labor force

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[32]Gender stigmas, but of the opposite sign, are also documented by Bagues and Esteve-Volart (2007), 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]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.

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 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, when we include municipality fixed effects), indicating that even *within* regions a higher proportion of working women makes the effect of a female mayor become smaller.

Overall, while the evidence in Tables 9 and 10 cannot be viewed as conclusive, it does suggest that part of the lower survival probability of female mayors can be attributed to discriminating attitudes on the part of male councilors who resist being led by a woman.

Differences in combativeness. An alternative hypothesis, inspired by the notion that women dislike competition and may choose to opt out of very competitive settings, holds that women may be less combative, and may choose to resign early when encountering difficulties in handling a riotous municipal council. It may also be possible that this effect is more pronounced in councils in which the mayor is the only woman or in regions with more traditional gender roles, consistent with the findings of Tables 9 and 10.

This hypothesis implies that *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 proability of early termination because of a no-confidence vote or because of resignation of the council. We test this hypothesis in Table 9. In the first 2 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 combativeness does not receive any support in the data: both in the whole sample (top panel), and in the South only (bottom panel), 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

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specification of columns 5 and 6. The fact that early termination apparently originates in the council, and that the effect is stronger in Southern regions, reinforces the idea that discrimination plays an important role.

Women as reformers. Perhaps women mayors have more difficulties in surviving until the end of their term not because of gender *per se*, but because women are more likely to be reformers, and face more obstacles in trying to implement their reforms. We do not view this hypothesis as particularly credible. First, 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.

We can also probe further the "women as reformers" hypothesis by directly examining the policies enacted in each municipality. We have information on a limited, but important, set of policy instruments, namely the size of the budget deficit, revenues per capita, and the share of government expenditures on education, welfare and security.[34] Columns 1 to 6 of Table 10 show the results from regressing these policy variables on the female dummy and on the full set of control variables used in our base specification. We find that the gender of the mayor has essentially no effect on either the budget deficit or on log revenue per capita. There is some small positive effect on the expenditure for education in the entire sample (see also Chattopadhyay and Duflo, 2004; Clots-Figueras, 2008a and 2008b; Funk and Gathman, 2008; Rehavi, 2007), but not if we limit attention to Southern regions.

In Table 11 we present the results from the estimation of the basic model with controls for the policy variables. Predictably, given the results in Table 10, the gender dummy coefficient is unaffected by the inclusion of the policy variables. Some of the policy variables

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[34]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 computed as the mean over the term, excluding election years.

are statistically significant and have the expected signs: higher revenues and higher budget deficits lower the probability of early termination, suggesting that the legislature is more stable when there is more money to go around, and when fiscal policy is more lax, suggesting that the mayor can secure the support of council members by spending more profligately. Education expenditure is associated with lower chances of early termination, while police expenditure increases it (perhaps police expenditure serves as a proxy for the incidence of organized crime), but these effects disappear when we include municipality fixed effects. Overall, there does not seem to be much evidence that gender differences in the probability of early termination are due to differences in the policies enacted by male and female mayors.

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 more difficult at fostering cooperation 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 7, 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.

It could also be that female mayors are in fact less effective in running the municipal government, and that this difference in government "productivity" is the reason for the gap in the probability of early termination. While this explanation is at odds with the lack of gender differences in enacted policies, these are clearly imperfect measures of government output. One possible measure of the success of a city is population growth (Glaeser et al., 1995). However, in contrast to the hypothesis of female mayors being less productive, we actually find that population growth is higher in cities headed by a female mayor (2.21 percent overall, 0.76 percent annualized growth rate) rather than a male mayor (1.63 percent overall, 0.43 percent annualized), even though this difference is not statistically significant.

One result that emerged from Table 2 is that the gender difference in the probability of early termination vanishes among more experienced mayors. This result persists even when we control for all the other mayor and municipality characteristics. This can lead one to think that women view their experience in politics as an exploration of a new career path, 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 this explanation 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 councilors, 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 councilors, lending support to a story based on discrimination within the council.

Finally, the female mayor effect may be the result of expected discrimination on the part of voters, rather than something related to the group dynamics within the council. According to this hypothesis, coalition members who expect that a woman candidate will be discriminated against in the upcoming elections operate to remove her from office in order to improve their electoral chances. We don't view this explanation 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. (2008) 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, even though the sample size may be too small to detect meaningful differences.

6 Conclusion

In this paper we present 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, and to a regression discontinuity analysis that controls for the potential selection of women candidates into different types of electoral races. In fact the latter analysis shows that the gender gap in the probability of early termination is even higher in mixed-gender races decided by a narrow margin. This suggests that women are less likely to run for office in municipalities that are relatively difficult to manage.

We discuss a number of potential explanations for these findings. The fact that the "female mayor 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 part of effect can be attributed to discriminating attitudes on the part of male councilors who resist being led by a woman. 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 (more even than the national 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.

Of course, our empirical exercise cannot say anything about whether the gender differences we observe are the result of individual's innate qualities (nature) or of personal experiences (nurture).[35] Still, it raises a challenge for empirical research aimed at assessing the existence of gender differences over a broader array of dimensions.

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[35]See Gneezy, Leonard and List (2008) for an exercise which uses experimental evidence to provide insights about the determinants of the observed gender differences.

References

Alesina, Alberto. 1988. Credibility and Policy Convergence in a Two-Party System with Rational Voters. American Economic Review, 78, 796-806.

Andreoni, James and Vesterlund, Lise. 2001. Which is the Fair Sex? Gender Differences in Altruism. Quarterly Journal of Economics, 116, 293-312.

Bagues, Manuel and Esteve-Volart, Berta. 2007. Can Gender Parity Break the Glass Ceiling? Evidence from a Repeated Randomized Experiment. FEDEA Working Paper 2007/15.

Beaman, Lori, Chattopadhyay, Raghabendra, Duflo, Esther, Pande, Rohini and Topalova, Petia. 2008. Powerful Women: Does Exposure Reduce Prejudice? Quarterly Journal of Economics, forthcoming.

Becker, Gary S. 1971. The Economics of Discrimination, 2nd ed., Chicago: University of Chicago Press.

Bertrand, Marianne and Hallock, Kevin F.. 2001. The Gender Gap in Top Corporate Jobs. Industrial and Labor Relations Review, 5, 3-21.

Besley, Timothy, and Coate, Stephen. 1997. An Economic Model of Representative Democracy. Quarterly Journal of Economics, 112, 85-114.

Booth, Alison L. and Nolen, Patrick J.. 2009. Choosing to Compete: How Different Are Girls and Boys? IZA Discussion Paper 4027.

Box-Steffensmeier, Janet M., De-Boef, Suzanna and Lin, Tse-Min. 2004. The Dynamics of the Partisan Gender Gap. American Political Science Review, 98, 515-528.

Bratton, Kathleen A. and Haynie, Kerry L. 1999. Agenda Setting and Legislative Success in State Legislatures: The Effects of Gender and Race. Journal of Politics, 61, 658-679.

Brown-Kruse, Jamie and Hummels, David. 1993. Gender Effects in Laboratory Public Goods Contribution: Do Individuals Put Their Money Where Their Mouth Is? Journal of Economic Behavior and Organization. 22, 255-267.

Buffum, David and Whaples, Robert. 1995. Fear and Lathing in the Michigan Furniture Industry: Employee-Based Discrimination a Century Ago. Economic Inquiry, 33 234-252.

Chattopadhyay, Raghabendra and Duflo, Esther. 2004. Women as Policy Makers: Evidence from a Randomized Policy Experiment in India. Econometrica, 72, 1409-1443.

Clots-Figueras, Irma. 2008. Are Female Leaders Good for Education? Evidence from India. Mimeo, Universidad Carlos III de Madrid.

Croson, Rachel and Buchan, Nancy. 1999. Gender and Culture: International Experimental Evidence from Trust Games. American Economic Review, 89, 386-391.

Croson, Rachel and Gneezy, Uri. 2008. Gender Differences in Preferences. Journal of Economic Literature, forthcoming.

Diermeier, Daniel and Stevenson, Randolph T.. 1999. Cabinet Survival and Competing Risks. American Journal of Political Science, 43, 1051-1068.

Dohmen, Thomas and Falk, Armin. 2006. Performance Pay and Multi-dimensional Sorting: Productivity, Preferences and Gender. IZA Discussion Paper 2001.

Eckel, Catherine and Grossman, Philip J.. 1996. The Relative Price of Fairness: Gender Differences in a Punishment Game. Journal of Economic Behavior and Organization, 30, 143-58.

Eckel, Catherine and Grossman, Philip J.. 1998. Are Women Less Selfish than Men? Evidence from Dictator Games. Economic Journal, 108, 726-735.

Edlund, Lena and Pande, Rohini. 2002. Why Have Women Become Left-Wing? The Political Gender Gap and the Decline in Marriage. Quarterly Journal of Economics, 117, 917-961.

Funk, Patricia and Gathmann, Christina. 2008. Gender Gaps in Policy Making: Evidence from Direct Democracy in Switzerland. Mimeo, Stanford University.

Glaeser, Edward L., Scheinkman, Jos A. and Shleifer, Andrei. 1995. Economic Growth in a Cross Section of Cities. Journal of Monetary Economics, 36(1), August 1995, pp. 117-143.

Gneezy, Uri, Leonard, Kenneth L. and List, John A.. 2008. Gender Differences in Competition: Evidence from a Matrilineal and a Patriarchal Society. Econometrica, forthcoming.

Gneezy, Uri, Niederle, Muriel and Rustichini, Aldo. 2003. Performance in Competitive Environments: Gender Differences. Quarterly Journal of Economics, 118, 1049-1074.

Gneezy, Uri and Rustichini, Aldo. 2004. Gender and Competition at a Young Age. American Economic Review, 94, 377-381.

Herrnson, Paul S. , Lay, J. Celeste and Stokes-Brown, Atiya Kai. 2003. Women Running as Women: Candidate Gender, Campaign Issues and Voter Targeting Strategies. Journal of Politics, 65, 244-25.

Imbens, Guido and Lemieux, Tomas. 2008. Regression Discontinuity Designs: A Guide to Practice. Journal of Econometrics, 142, 615-635.

Jeydel, Alana and Taylor, Andrew J. 2003. Are Women Legislators Less Effective? Evidence from the U.S. House in the 103rd-105th Congress. Journal of Politics, 56, 19-27.

Lavy, Victor. 2008a. Do Gender Stereotypes Reduce Girls' or Boys' Human Capital Outcomes? Evidence from a Natural Experiment. Journal of Public Economics, forthcoming.

Lavy, Victor. 2008b. Gender Differences in Competitiveness in a Real Workplace: Evidence from Performance-Based Pay Tournaments among Teachers. Mimeo, Hebrew University.

Lee, David S., Moretti, Enrico and Butler, Matthew J.. 2004. Do Voters Affect or Elect Policies? Evidence from the U.S. House. Quarterly Journal of Economics, 119, 807-859.

Lee, David S.. 2008. Randomized Experiments from Non-random Selection in the U.S. House Elections. Journal of Econometrics, 142, 675-697.

Manning, Alan and Saidi, Farzad. 2008. Understanding the Gender Pay Gap. What's Competition Got to Do with It? CEP Discussion Paper 0898.

McCrary, Justin. 2008. Manipulation of the Running Variable in the Regression Discontinuity Design: A Density Test. Journal of Econometrics, 142, 698-714.

Niederle, Muriel and Vesterlund, Lise. 2007. Do Women Shy Away from Competition? Do Men Compete too Much? Quarterly Journal of Economics, 122, 1067-1101.

Niederle, Muriel and Yestrumskas, Alexandra H.. 2008. Gender Differences in Seeking Challenges: The Role of Institutions. NBER Working Paper 13922.

Norton, Noelle H.. 1995. Uncovering the Dimensionality of Gender Voting in Congress. Legislative Studies Quarterly, 24, 65-86.

Nowell, Clifford, and Tinkler, Sarah. 1994. The Influence of Gender in the Provision of a Public Good. Journal of Economic Behavior and Organization, 25, 25-36.

Osborne, Martin J., and Slivinski, Al. 1996. A Model of Political Competition with Citizen-Candidates. Quarterly Journal of Economics, 111, 65-96.

Ors, Evren, Palomino, Frederic and Peyrache, Eloic. 2008. Performance Gender Gap: Does Competition Matter? CEPR Discussion Paper 6891.

Paserman, Daniele. 2008. Gender Differences in Performance in Competitive Environments: Evidence from Professional Tennis Players. Mimeo, Boston University.

Ragan, James F., Jr. and Tremblay, Carol Horton. 1988. Testing for Employee Discrimination by Race and Sex. Journal of Human Resources, 23(1), 123-37.

Rehavi, M. Marit. 2007. Sex and Politics: Do Female Legislators Affect State Spending? Mimeo, University of California, Berkeley.

Rubin, Donald. 1974. Estimating Causal Effects of Treatments in Randomized and Non-Randomized Studies. Journal of Educational Psychology, 66, 688-701.

Sanbonmatsu, Kira. 2002. Gender Stereotypes and Vote Choice. American Journal of Political Science, 46, 20-34.

Sapiro, Virginia and Conover, Pamela Johnston. 1997. The Variable Gender Basis of Electoral Politics: Gender and Context in the 1992 US Election. British Journal of Political Science, 27(4), 497-523.

Swers, Michele L.. 1998. Are Women More Likely to Vote for Women's Issue Bills Than Their Male Colleagues? Legislative Studies Quarterly, 23, 435-448.

Van der Klaauw, Wilbert. 2008. Regression-Discontinuity Analysis: A Survey of Recent Developments in Economics. Labour, 22, 219-245.

Vega, Arturo and Firestone, Juanita M.. 1995. The Effects of Gender on Congressional Behavior and the Substantive Representation of Women. Legislative Studies Quarterly, 20, 213-222.

Welch, Susan. 1985. Are Women More Liberal than Men in the U.S. Congress? Legislative Studies Quarterly, 10, 125-134.

Figure 1: Early termination by margin of victory
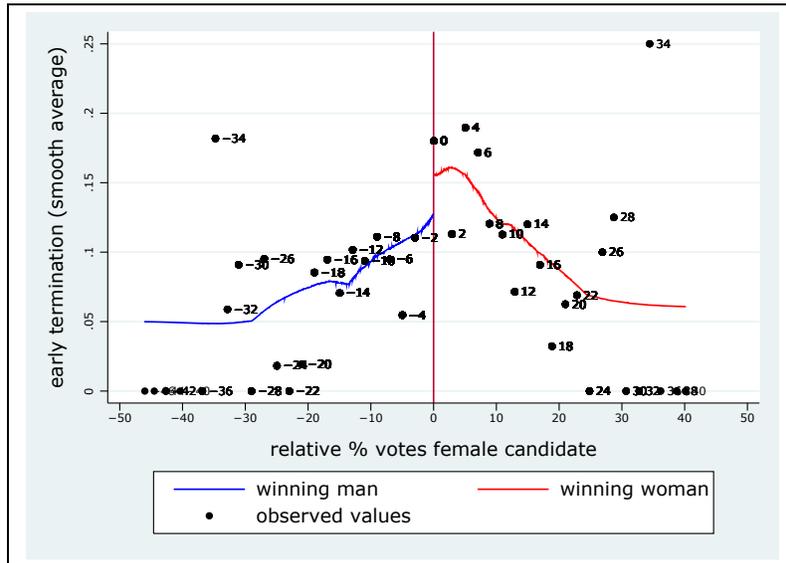
Figure 2: Frequency of margin of victory, mixed-gender races

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Figure 3: Balance tests, 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, 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.

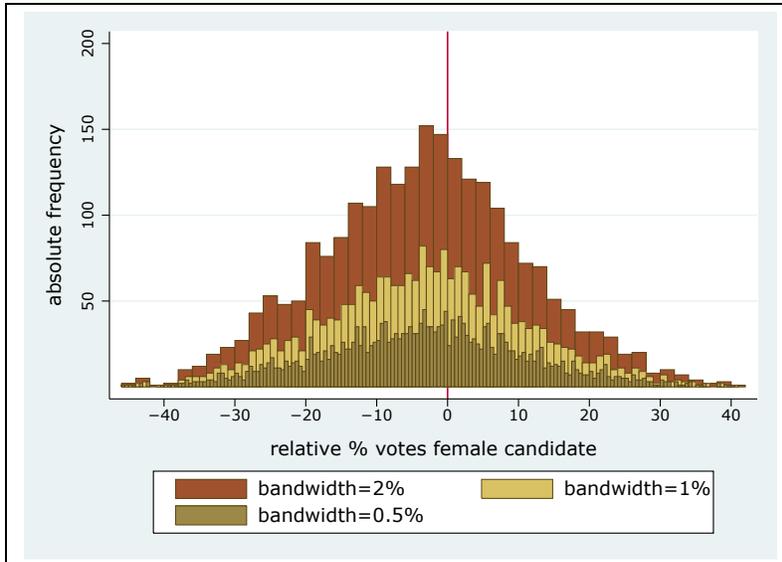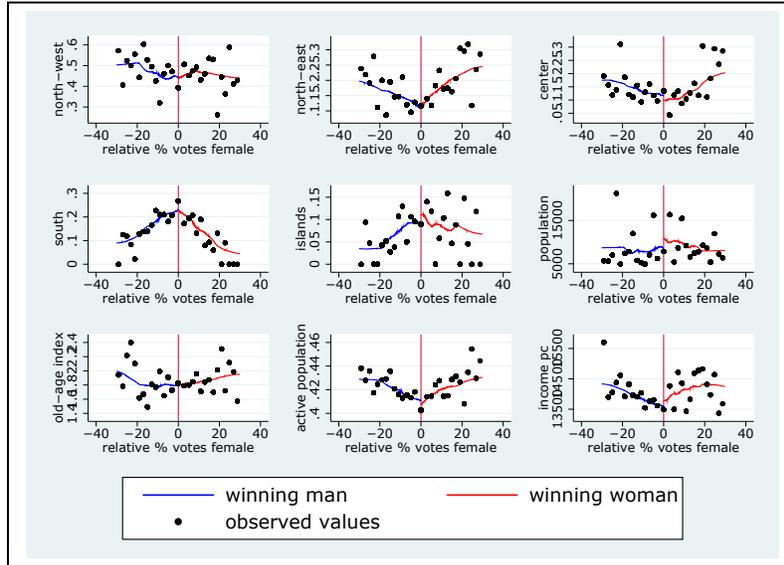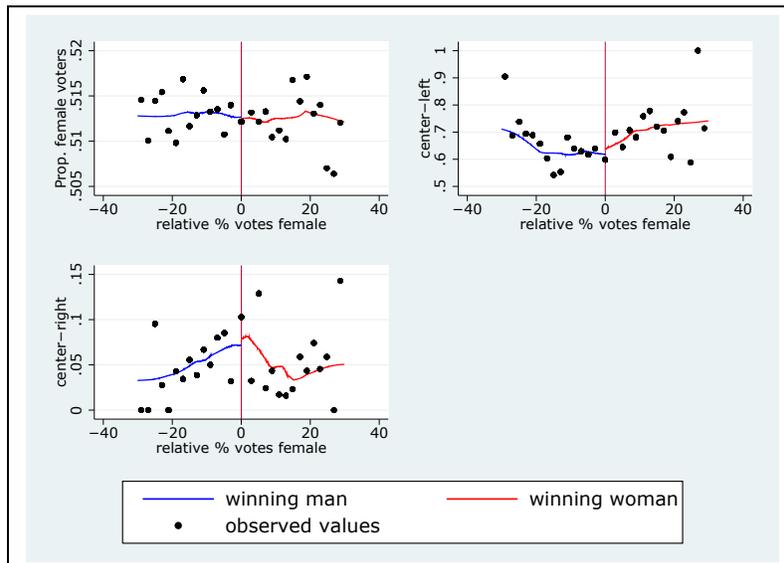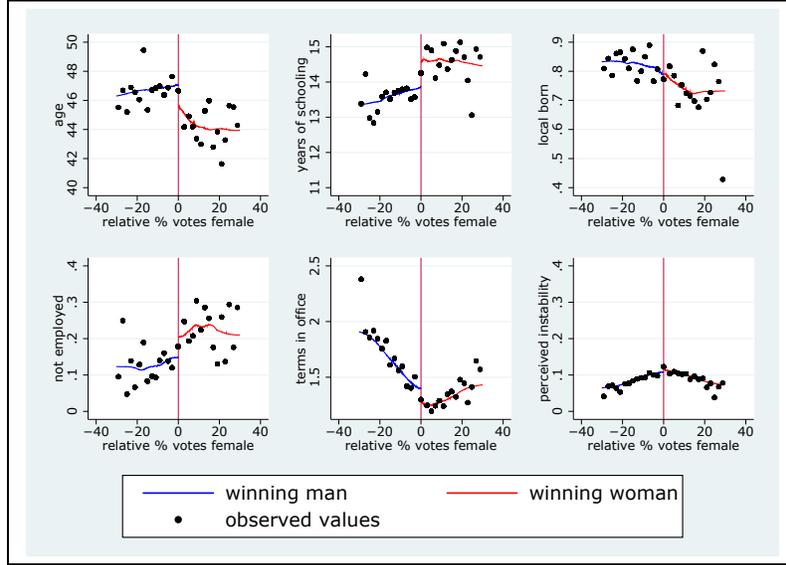Figure 5: Balance tests, mayor characteristics

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.

Table 1: Mayor Characteristics by Gender

	Male	Female	Difference	Std. error of difference
Individual:				
Age	47.019	44.256	-2.763 ***	0.275
Term limit binding	0.256	0.195	-0.061 ***	0.013
Terms in office	1.618	1.330	-0.288 ***	0.023
Years of experience	6.451	4.398	-2.053 ***	0.141
Local born	0.865	0.785	-0.079 ***	0.010
Education: primary	0.033	0.014	-0.018 ***	0.005
Education: lower secondary	0.123	0.081	-0.041 ***	0.010
Education: upper secondary	0.437	0.424	-0.013	0.015
Education: college	0.408	0.481	0.073 ***	0.015
Previous occup.: not employed	0.117	0.207	0.090 ***	0.010
Municipality:				
Population	7,771	7,866	95	1,346
South	0.249	0.143	-0.106 ***	0.012
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)	1.864	1.901	0.038	0.045
Income per capita (in 2005, euros)	13,388	14,122	709 ***	91.738
Prop. female voters	0.511	0.512	0.001 **	0.000
Right and center-right party	0.075	0.062	-0.013 *	0.008
Left and center-left party	0.651	0.715	0.064 ***	0.014
Council:				
Total seats in council	15.039	15.014	-0.025	0.144
Average age in council	40.944	41.258	0.314 ***	0.117
Average experience in council	2.588	2.422	-0.167 ***	0.046
Prop. college in council	0.198	0.203	0.005	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	0.113	0.129
Average experience in mayor's coalition	2.420	2.224	-0.196 ***	0.052
Prop. college in mayor's coalition	0.180	0.186	0.006	0.005
Prop. female in mayor's coalition	0.192	0.203	0.011 ***	0.004
Observations	17,626	1,256		

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 a 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	0.138	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	0.136	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	0.191	0.327	0.196
Islands	0.127	0.157	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	0.175	0.132
Above median	0.070	0.081	0.070
Number of parties in council			
One	0.076	0.091	0.077
Two	0.078	0.092	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			
Right and center-right	0.100	0.117	0.101
Separatists and regionals	0.166	0.429	0.181
Center	0.085	0.094	0.086
Left and center-left	0.085	0.105	0.086
Others	0.123	0.133	0.123
Prop. female in council			
0%	0.169	0.275	0.174
0-10 %	0.141	0.155	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	17,626	1,256	

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: Effect of Individual and Municipality Characteristics on Early Termination

	(1)	(2)	(3)	(4)
Female	0.017*	0.032***	0.028***	0.051***
	[0.010]	[0.010]	[0.009]	[0.018]
Selected mayor characteristics				
Age			0.002***	0.002***
			[0.000]	[0.001]
Local born			-0.017***	-0.009
			[0.006]	[0.012]
Term limit binding			-0.001	0.038***
			[0.007]	[0.013]
Terms in office			-0.001	-0.013
			[0.004]	[0.008]
Years of experience			-0.004***	-0.003***
			[0.001]	[0.001]
Selected municipality characteristics				
Log population			0.019***	0.035
			[0.003]	[0.027]
Log income per capita (in 2005, euros)			-0.097***	
			[0.017]	
Old-age index (in 2005)			-0.006***	
			[0.001]	
Prop. population in labor force (in 2005)			-0.381***	
			[0.060]	
Firms per capita (in 2005)			0.304***	
			[0.110]	
Selected election and council characteristics				
Total seats in council			0.005***	-0.017*
			[0.001]	[0.010]
Prop. seats in mayor's party			0.017	0.047
			[0.022]	[0.032]
Prop. seats in mayor's coalition			-0.011	0.000
			[0.007]	[0.010]
Number parties in mayor's coalition			0.013***	0.010*
			[0.004]	[0.006]
Prop. female voters			-0.079	0.750**
			[0.126]	[0.373]
Political affiliation (omitted category: no political affiliation)				
Right and center-right			0.029**	0.011
			[0.012]	[0.017]
Separatists and regionals			0.077***	0.055
			[0.025]	[0.035]
Center			-0.008	-0.013
			[0.009]	[0.014]
Left and center-left			-0.017**	-0.023**
			[0.007]	[0.011]
Macro-region dummies (4)		✓	✓	✓
Year of election dummies (10)			✓	✓
Education dummies (3)			✓	✓
Previous occupation dummies (4)			✓	✓
Municipality fixed effects				✓
Observations	18,120	18,120	18,120	18,120
N. municipalities	8,078	8,078	8,078	8,078
R-squared	0.000	0.037	0.092	0.061

Note: *Population* is the resident population at election. *Old-age index* is 100 times 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. *Income per capita* is disposable income after taxes. *Terms in office* as mayor, including the current one. *Years of experience* in a municipal elective office. *Local born* is 1 if the mayor is born in the same province. *Political affiliation* is the party to which the mayor belongs. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 4: Mayor's Gender, City Councillors' Gender, and Early Termination

	(1)	(2)	(3)	(4)
Female	0.030***	0.029***	0.064***	0.077***
	[0.010]	[0.011]	[0.019]	[0.023]
Prop. female in council	-0.067***		0.029	
	[0.022]		[0.037]	
Prop. female in mayor's coalition		-0.051***		0.019
		[0.019]		[0.035]
Prop. female in other lists		0.003		0.039
		[0.015]		[0.025]
Municipality fixed effects			✓	✓
Observations	16,563	12,959	16,563	12,959
N. municipalities	7,988	7,369	7,988	7,369
R-squared	0.094	0.093	0.070	0.080

Note: All regressions include mayor demographic characteristics (age, education dummies, years of experience in an elective municipal office, dummy for term limit, number of terms as mayor, previous 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), 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), year dummies, political party dummies, 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). Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 5: Regression Discontinuity Results, Mixed-Gender Races

| | Dependent variable: 1 if early termination | | | |
	Coefficient on Female at the discontinuity point	Controls	Observations	R-squared
Mean of the dep. var.	0.102			
Linear regression	0.036** [0.014]	✓	2,255	0.109
Linear regression on both sides of discontinuity	0.065*** [0.025]		2,255	0.015
Linear regression on both sides of discontinuity	0.071*** [0.023]	✓	2,255	0.112
Two candidates, linear regression on both sides of discontinuity	0.076** [0.034]		1,084	0.013
Two candidates, linear regression on both sides of discontinuity	0.066** [0.033]	✓	1,084	0.130
Optimal bandwidth, linear regression on both sides of discontinuity	0.061** [0.027]		2,037	0.017
Optimal bandwidth, linear regression on both sides of discontinuity	0.069*** [0.026]	✓	2,037	0.114
Two candidates, optimal bandwidth, linear regression on both sides of discontinuity	0.070** [0.035]		1,028	0.020
Two candidates, optimal bandwidth, linear regression on both sides of discontinuity	0.062* [0.034]	✓	1,028	0.134
Half optimal bandwidth, linear regression on both sides of discontinuity	0.063* [0.036]		1,412	0.008
Half optimal bandwidth, linear regression on both sides of discontinuity	0.064* [0.034]	✓	1,412	0.115
Second order polynomial on both sides of the discontinuity point	0.060* [0.034]		2,255	0.017
Second order polynomial on both sides of discontinuity	0.070** [0.032]	✓	2,255	0.112
Two candidates, second order polynomial on both sides of discontinuity	0.080* [0.046]		1,084	0.018
Two candidates, second order polynomial on both sides of discontinuity	0.068 [0.043]	✓	1,084	0.132

Note: All regressions include mayor demographic characteristics (age, years of schooling, number of terms as mayor, previously not employed), 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, and political party dummies. The optimally chosen bandwidth is 0.25 (0.29 when only two candidates). Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 6: LLR Balance Tests, Mixed-Gender Races

| Dependent variable: | Coefficient on Female at the discontinuity point | |
	Optimal bandwidth	Two candidates, optimal bandwidth
North-West	0.035	0.027
North-East	-0.001	0.018
Center	-0.022	-0.019
South	-0.022	-0.006
Islands	0.010	-0.021
Population	2,500	366
Old-age index (in 2005)	0.003	0.046
Prop. population in labor force (in 2005)	0.001	-0.007
Income per capita (in 2005, euros)	320	631
Prop. female voters	-0.001	-0.001
Left and center-left party	0.078	0.052
Right and center-right party	-0.023	-0.010
Age	-3.443***	-3.124***
Years of education	0.831***	1.147***
Previously not employed	0.086***	0.090**
Local born	-0.037	-0.124**
Terms in office	-0.125**	-0.218***
Perceived Instability	0.003	0.011
Observations	2,037	1,028

Note: Linear regression on both sides of discontinuity point. The optimally chosen bandwidth is 0.25 (0.29 when only two candidates). *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. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 7: Interactions between Mayor's Gender and Gender Composition of Council

	Dependent variable: 1 if early termination					
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.048** [0.024]	0.092*** [0.035]	0.134** [0.058]	0.154** [0.071]	0.134** [0.058]	0.151** [0.071]
Female * Prop. female in council	-0.094 [0.102]	-0.159 [0.138]				
Implied effect of a female mayor at the mean of Prop. female in council	*0.031*** [0.010]*	*0.064*** [0.019]*				
Female * (Prop. female in council > 0)					-0.110* [0.059]	-0.096 [0.072]
Implied effect of a female mayor when Prop. female in council > 0					*0.024** [0.010]*	*0.055*** [0.019]*
Female * (Prop. female > 0 and ≤ 0.1)			-0.114* [0.063]	-0.085 [0.079]		
Female * (Prop. female > 0.1 and ≤ 0.2)			-0.092 [0.060]	-0.076 [0.074]		
Female * (Prop. female > 0.2 and ≤ 0.3)			-0.140** [0.060]	-0.148** [0.075]		
Female * (Prop. female > 0.3)			-0.103* [0.062]	-0.100 [0.076]		
Municipality fixed effects		✓		✓		✓
Observations	16,563	16,563	16,563	16,563	16,563	16,563
N. municipalities	7,988	7,988	7,988	7,988	7,988	7,988
R-squared	0.094	0.071	0.095	0.072	0.095	0.071

Note: All regressions include also the main effects of the variables that are interacted with the gender of the mayor. Other controls: mayor demographic characteristics (age, education dummies, years of experience in an elective municipal office, dummy for term limit, number of terms as mayor, previous 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), election and council characteristics (number of seats in the council, percentage seats in the mayor's party, percentage seats in the mayor's coalition, number of parties in the mayor's coalition, female share of voters), year dummies, political party dummies, and average demographic characteristics of the councilors (age, education dummies, number of previous years in office, proportion not-employed). Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 8: Differences by Region and by Attitudes towards Working Women

	(1)	(2)	(3)	(4)	(5)	(6)
			Dependent variable: 1 if early termination			
Mean of the dep. var.	*0.100*	*0.100*	*0.100*	*0.100*	*0.100*	*0.100*
Female	0.025	0.047	0.030***	0.062***	0.035***	0.065***
	[0.026]	[0.048]	[0.010]	[0.019]	[0.011]	[0.019]
Female * South	0.114**	0.161**				
	[0.047]	[0.073]				
Female * Islands	0.011	-0.025				
	[0.045]	[0.073]				
Female * North-West	-0.013	-0.015				
	[0.031]	[0.062]				
Female * North-East	-0.021	-0.021				
	[0.028]	[0.054]				
Female * index of positive attitudes towards working women			-0.033***	-0.023		
			[0.013]	[0.026]		
Female * female labor force participation (demeaned)					-0.225*	-0.233
					[0.124]	[0.188]
Municipality fixed effects		✓		✓		✓
Region fixed effects					✓	✓
Observations	16,563	16,563	16,563	16,563	16,491	16,491
N. municipalities	7,988	7,988	7,988	7,988	7,985	7,985
R-squared	0.095	0.073	0.095	0.071	0.101	0.074

Note: All regressions include mayor demographic characteristics (age, education dummies, years of experience in an elective municipal office, dummy for term limit, number of terms as mayor, previous 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), election and council characteristics (number of seats in the council, proportion seats in the mayor's coalition, number of parties in the mayor's coalition, proportion of councillors in the mayor's party, female share of voters), year dummies, political party dummies, proportion of female councilors, and average demographic characteristics of the councilors (age, education dummies, number of previous years in office, proportion not-employed). The macro-region of comparison is the Center. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 9: Gender Differences by Type of Early Termination

	(1)	(2)	(3)	(4)	(5)	
			Dependent variable			
	Mayor resignation	Mayor resignation	Council resignation	Council resignation	Mayor resignation	Council resignation
	OLS	OLS	OLS	OLS	Multinomial logit	
A: Whole Sample						
Mean of the dep. var.	*0.032*	*0.032*	*0.067*	*0.067*	*0.032*	*0.067*
Female	-0.003	0.006	0.033***	0.058***	-0.065	0.524***
	[0.005]	[0.011]	[0.009]	[0.017]	[0.201]	[0.122]
					{-0.002}	{0.026}
Prop. female in council	-0.009	0.016	-0.058***	0.013	-0.487	-1.130***
	[0.014]	[0.023]	[0.018]	[0.030]	[0.533]	[0.386]
					{-0.011}	{-0.044}
Municipality fixed effects		✓		✓		
Observations	16,563	16,563	16,563	16,563	16,563	
N. municipalities	7,988	7,988	7,988	7,988	7988	
R-squared	0.024	0.027	0.085	0.054	Pseudo R^2: 0.128	
B: South Only						
Mean of the dep. var.	*0.048*	*0.048*	*0.142*	*0.142*	*0.048*	*0.142*
Female	-0.009	-0.008	0.128***	0.199***	0.103	0.869***
	[0.018]	[0.034]	[0.039]	[0.052]	[0.415]	[0.234]
					{-0.001}	{0.108}
Prop. female in council	0.008	0.018	-0.112**	-0.009	-0.050	-1.341***
	[0.035]	[0.055]	[0.055]	[0.090]	[0.930]	[0.619]
					{0.007}	{-0.123}
Municipality fixed effects		✓		✓		
Observations	3,972	3,972	3,972	3,972	3,972	
N. municipalities	1,774	1,774	1,774	1,774	1774	
R-squared	0.033	0.041	0.106	0.103	Pseudo R^2: 0.123	

Note: All regressions include mayor demographic characteristics (age, education dummies, years of experience in an elective municipal office, dummy for term limit, number of terms as mayor, previous occupation dummies) municipality characteristics (log population at election, log disposable income per capita, old-age index, labor force participation rate, firms per capita, all as of 2005), election and council characteristics (number of seats in the council, percentage seats in the mayor's coalition, number of parties in the mayor's coalition, percentage of councillors in the mayor's party, female share of voters), year dummies, political party dummies, and average demographic characteristics of the councilors (age, education dummies, number of previous years in office, proportion not-employed). Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 10: Mayor's Gender and Budget Variables

	Dependent Variable				
	(1)	(2)	(3)	(4)	(5)
	% budget deficit	Log (revenue per capita)	% expenditure education	% expenditure welfare	% expenditure police
A: Whole Sample					
Mean of the dep. var.	*1.558*	*7.048*	*7.905*	*31.221*	*2.232*
Female	-0.019	0.004	0.363**	-0.065	-0.043
	[0.179]	[0.014]	[0.153]	[0.379]	[0.049]
Prop. female in council	-0.105	-0.021	0.547	-0.446	-0.050
	[0.444]	[0.035]	[0.374]	[1.038]	[0.136]
Observations	15,641	15,641	15,641	15,641	15,641
N. municipalities	7,627	7,627	7,627	7,627	7,627
R-squared	0.043	0.422	0.288	0.196	0.220
B: South Only					
Mean of the dep. var.	*0.788*	*6.978*	*7.453*	*29.600*	*2.982*
Female	-0.333	0.026	0.408	0.405	-0.027
	[0.310]	[0.041]	[0.391]	[0.907]	[0.137]
Prop. female in council	-0.549	0.014	-1.140	-1.263	-0.133
	[1.255]	[0.079]	[0.707]	[2.174]	[0.316]
Observations	3,918	3,918	3,918	3,918	3,918
N. municipalities	1,756	1,756	1,756	1,756	1,756
R-squared	0.043	0.340	0.331	0.220	0.198

Note: All regressions include mayor demographic characteristics (age, education dummies, years of experience in an elective municipal office, dummy for term limit, number of terms as mayor, previous 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), election and council characteristics (number of seats in the council, proportion seats in the mayor's coalition, number of parties in the mayor's coalition, proportion of councillors in the mayor's party, female share of voters), year dummies, political party dummies, and average demographic characteristics of the councilors (age, education dummies, number of previous years in office, proportion not-employed). *% Budget deficit* computed as the absolute budget deficit divided by the total revenues. *% expenditure welfare* also includes expenditure for local transports. All budget variables computed as the mean within the term, excluding election years. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table 11: Effect of Budget and Mayor's Gender on Early Termination

	(1)	(2)	(3)	(4)
	Whole Sample	Whole Sample	South Only	South Only
Mean of the dep. var.	*0.096*	*0.096*	*0.184*	*0.184*
Female	0.032***	0.061***	0.102**	0.141**
	[0.010]	[0.021]	[0.040]	[0.061]
Prop. female in council	-0.059**	-0.023	-0.112*	-0.017
	[0.023]	[0.040]	[0.063]	[0.101]
% Budget deficit	-0.131***	-0.261***	-0.067	-0.247**
	[0.046]	[0.065]	[0.091]	[0.115]
Log (revenue per capita)	-0.011*	-0.058***	-0.013	-0.083***
	[0.007]	[0.014]	[0.017]	[0.031]
% Expenditure for education (÷ 100)	-0.099*	0.001	-0.096	-0.102
	[0.051]	[0.087]	[0.174]	[0.255]
% Expenditure for welfare (÷ 100)	-0.012	-0.036	-0.096*	-0.081
	[0.019]	[0.030]	[0.049]	[0.067]
% Expenditure for police (÷ 100)	0.418**	-0.336	1.133***	0.577
	[0.162]	[0.331]	[0.430]	[0.811]
Municipality fixed effects		✓		✓
Observations	15,641	15,641	3,918	3,918
N. municipalities		7,627		1,756
R-squared	0.094	0.075	0.124	0.105

Note: All regressions include mayor demographic characteristics (age, education dummies, years of experience in an elective municipal office, dummy for term limit, number of terms as mayor, previous 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), election and council characteristics (number of seats in the council, proportion seats in the mayor's coalition, number of parties in the mayor's coalition, proportion of councillors in the mayor's party, female share of voters), year dummies, political party dummies, proportion of female councilors, and average demographic characteristics of the councilors (age, education dummies, number of previous years in office, proportion not-employed). *% Budget deficit* computed as the absolute budget deficit divided by the total revenues. *% expenditure welfare* also includes expenditure for local transports. All budget variables computed as the mean within the term, excluding election years. Robust standard errors, adjusted for clustering at the municipality level, in brackets.

Table A1: Municipalities - Summary Statistics

	Observations	Mean	Std. Dev.	Min	Max
"Fixed" municipality characteristics					
Population	8,080	7,021	42,140	31	2,733,908
North-West	8,080	0.379	0.485	0	1
North-East	8,080	0.183	0.387	0	1
Center	8,080	0.124	0.330	0	1
South	8,080	0.221	0.415	0	1
Islands	8,080	0.093	0.290	0	1
Prop. population in labor force (in 2005)	7,959	0.410	0.058	0.16	0.609
Firms per capita (in 2005)	7,959	0.078	0.028	0.018	0.418
Old-age index (in 2005)	7,959	1.889	1.545	0	35
Income per capita (in 2005, euros)	7,959	13,547	3,048	5,013	44,949
Mayoral term characteristics					
Number of seats in council	18,881	15.038	4.921	9	60
Prop. women in council	18,649	0.177	0.109	0	1
Number of parties in council	18,882	2.916	2.402	1	18
Prop. seats in mayor's coalition	17,117	0.697	0.097	0.446	1

Note: *Population* is the resident population as of 1993. *Prop. population in labor force* is the ratio of active population (15-64) over the whole population. *Old-age index* is the ratio of population above 65 over population below 14. *Income per capita* is the disposable income after taxes.

	Observations	Mean	Std. Dev.	Min	Max
Female	18,882	0.067	0.249	0	1
Age	18,882	46.836	9.456	21	84
Term limit binding	18,882	0.252	0.434	0	1
Terms in office	18,882	1.599	0.799	1	5
Years of experience	18,882	6.314	4.844	0	18.047
Local born	18,565	0.859	0.348	0	1
Education					
Primary	18,515	0.031	0.174	0	1
Lower secondary	18,515	0.120	0.325	0	1
Upper secondary	18,515	0.436	0.496	0	1
College	18,515	0.413	0.492	0	1
Previous occupation					
Not employed	18,416	0.123	0.328	0	1
Professional	18,416	0.419	0.493	0	1
Entrepreneur	18,416	0.330	0.470	0	1
White-Collar	18,416	0.043	0.202	0	1
Others	18,416	0.085	0.279	0	1

Note: *Terms in office* as mayor, including the current one. *Years of experience* in a municipal elective office. *Local born* is 1 if the mayor is born in the same province.