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Abstract

We study the effectiveness of a novel measure to reduce gender gaps in political empowerment: double preference voting conditioned on gender, coupled with gender quotas on candidate lists. This policy was introduced in 2013 in Italian local elections. Using a regression discontinuity design, we find that the share of female councilors rises by 18 percentage points. The result is mainly driven by an increase in preference votes cast for female candidates. We also find evidence of changes in the expenditure allocation in municipalities subject to the policy.

JEL-codes: D720, J450.

Keywords: gender quotas, preference votes, municipal elections, regression discontinuity, local public expenditure.

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1 Introduction

Gender gaps dominate the political arena. According to the Global Gender Gap Index (World Economic Forum, 2016), the world has closed only 23% of the gender gap in politics. In Europe, women represent 28% of politicians in legislative bodies and 27% in government cabinets (European Commission, 2016). In Italy, women represent approximately 30% of members of Parliament.

How to promote female political empowerment? What are the economic consequences of achieving a stronger gender balance in politics? This paper examines a new policy, which in Italian municipal elections introduces double preference voting conditioned on gender, whereby voters can express two preferences, instead of one, if they vote for candidates of different gender. In addition, the policy foresees gender quotas on candidate lists to guarantee a substantial presence of female candidates. The law targets all Italian municipalities with more than 5,000 residents, allowing us to implement a regression discontinuity design around this threshold. We first estimate that the policy leads to a 18 percentage point increase in the share of elected female politicians. To investigate the working of the policy, we hand-collect new data on candidate lists and preference votes, and find that the latter play an important role in promoting female political empowerment. We present a simple theoretical model which illustrates how double preference voting can achieve this result. We last study how higher female presence affects public expenditure at local level. The results show that the gender composition of policy makers does not change total spending, whereas we find mild evidence that municipalities with a larger share of female councilors caused by the policy invest more in education and environment.

Female under-representation in politics may result from various obstacles in a multi-step ladder process of political recruitment (Norris and Lovenduski, 1995). First, women may not be willing to or may not be interested in competing for political seats, for instance due to time constraints associated with child care duties (e.g., Schlozman et al., 1994). Alternatively, lack of self-confidence or external encouragement (Fox and Lawless, 2004) or lower returns on the political market for women (Júlio and Tavares, 2017) may motivate their absence from politics. Second, parties, in their role as gatekeepers, may not put women forward as candidates (e.g., Kunovich and Paxton, 2005). Third, voters may be biased against female candidates and not cast votes for them (e.g., Schwindt-Bayer et al., 2010; Black and Erickson, 2004).

The promotion of female participation in politics is justified on the grounds of equity considerations (Stevens, 2007), since women represent 50% of the overall voting population. Moreover, female politicians appear less corrupt and show higher cooperation and team working skills (Epstein et al., 2005; Brollo and Troiano, 2016).

Female participation in politics may also create role models for other women, who may decide to pursue a political career (Gilardi, 2015). In addition, a gender-balanced political body may have an impact on the implemented policies and the allocation of resources across different programs. To appropriately test this hypothesis requires an institutional setting in which the gender balance among politicians is exogenously determined. For this reason, several contributions have exploited the random allocation of women-reserved seats in Indian villages (Chattopadhyay and Duflo, 2004; Duflo and Topalova, 2004; Beaman et al., 2010). These papers, however, consider a specific institutional set-up in which women politicians face weak political competition to get appointed. Other papers exploit closed mixed gender races to assess the impact of female representation on policies. In India, Clots-Figueras (2011) shows that gender has no direct impact on policies. Gagliarducci and Paserman (2012) and Ferreira and Gyourko (2014) show that having a female mayor does not change municipal outcomes in Italy and in the United States, respectively. Bagues and Campa (2017) find no effect of the gender quotas on candidates lists on the size and composition of public spending in Spanish municipalities. Similarly, Rehavi (2007) only finds marginal effects of female political leadership on policy in the United States. Yet, indirect evidence on the role of female politicians on public policies comes from the context of direct democracy in Switzerland. Funk and Gathmann (2015) show that in Swiss referendum women support the allocation of larger expenditures on health and environmental protection.

In this paper we study the introduction of double preference voting, coupled with gender quotas, as a new tool to increase female presence in political institutions. The novelty of this policy measure is that it concentrates on voters' preferences, in addition to the more common gender quotas on candidate lists. Preference votes allow voters to select one candidate (or more) on the list in proportional representation systems and they were introduced in a number of countries[1] in past decades. Preference votes are argued to create a direct link between voters and candidates and raise accountability, due to a "threat" that politicians in top list positions are surpassed by candidates below them. In addition, parties may use preference votes cast for candidates in open list systems to test the popularity of politicians and then promote them to more powerful positions (Folke et al., 2016). However, preference votes appear to be highly ineffective, as voters continue to cast their preferences for the candidates at the top of the list (Farrell, 2001; Gallagher and Mitchell, 2005). There is evidence of general

[1]Austria, Belgium, the Czech Republic, Denmark, Estonia, Lithuania, Norway, the Netherlands, Slovakia, and Sweden. Since 2013, in French subnational elections voters can elect two members of the opposite sex on a "binôme"or tandem ballot, whose names are arranged in alphabetical order. This new system of nomination of both female and male candidates ("binôme") guarantees the achievement of parity in departmental councils.

voters' predisposition to vote for male over female candidates or viceversa, which is often context-specific (Sanbonmatsu, 2002; Black and Erickson, 2003; Schwindt-Bayer et al., 2010).[2] Up to date, there is no causal evidence on the effectiveness of policies targeting voters' preferences in achieving stronger female political empowerment.[3]

Gender quotas are the most common policy for tackling gender imbalance and are in place in a few countries, either at the national or the subnational level (Krook, 2009). They are often accompanied by additional measures to further support female political representation, such as zipping, i.e. a man and a women alternate in the list of candidates, placement mandates (Schmidt, 2009; Schwindt-Bayer, 2009) or list-proportional representation systems (Tripp and Kang, 2008). However, their effectiveness is under scrutiny (see Dahlerup and Freidenvall, 2008 for a discussion). De Paola et al. (2010 and 2014) show that gender quotas on candidate lists increased the share of female politicians elected to Italian municipal councils and voters' turnout. However, Bagues and Esteve-Volart (2012) study the case of the Spanish senate and find that women remain "pawns" in the political game. In fact, Bagues and Campa (2017) and Casas-Arce and Saiz (2015) show that female access to political institutions can be challenged by the strategic positioning of female candidates on male-dominated party lists. Baltrunaite et al. (2014) show that gender quotas on candidate lists not only increase female presence, but they also improve the quality of Italian local politicians. A similar effect is documented by Besley et al. (2017) for Sweden, who show that quotas do not stand at odds with meritocracy, as they raise male politicians' competence precisely where effects on female representation are the largest.

Our paper contributes to the existing literature and to the policy debate on how to promote the presence of women in politics. Against the background of mixed evidence on the effectiveness of gender quotas, our results suggest that paying attention to voters, and not only to parties, may have immediate and sizable effects on female political empowerment. In local councils elected in municipalities with double preference voting conditioned on gender, the women to men ratio rises to 40/60, as compared to a ratio below 30/70 in municipalities not subject to the policy. Our results suggest that a simple change in the rules of the voting game may affect voters' behavior in the direction of more gender balanced political representation. The effectiveness of the policy

[2]The fact that women do not necessarily vote for other women is line with evidence from other contexts outside politics. For example, in academics, Bagues et al. (2017) find that the presence of women in selection committees does not lead to more female professors being promoted.

[3]In terms of descriptive analysis, Kunovich (2012) shows that in the Polish open-list system preference votes cast by the electorate shift females higher up in the ranking, compared with the original one proposed by the party, and that these shifts result in a higher number of elected women. Shair-Rosenfield and Hinojosa (2014) show evidence from Chile which is consistent with a negative gender (female) bias among parties, but not among voters.

is consistent with the idea that the underrepresentation of women in politics is not an artifact of intrinsic gender biases of voters, but it is at least in part institution-driven, and thus modifiable.

The paper is organized as follows: Section 2 presents the institutional setting and the details of Law 215/2012, Section 3 studies the impact of the policy on female politicians and Section 4 analyzes the working of the policy. Section 5 investigates the impact of the policy on local public spending. Section 6 concludes.

2 The institutional framework and data

2.1 Law 215/2012

There are approximately 8,100 municipalities in Italy. They vary in terms of geographic, demographic and economic indicators. The municipal administration manages the registry of births and deaths, the registry of deeds, and decides over the level and allocation of local expenditure to different goals, such as administration, education and social services. Expenditure is financed via own taxes and tariffs and via transfers from the central government. Municipalities are headed by a mayor, who is assisted by a legislative body, the municipal council (*Consiglio Comunale*), and an executive body, the executive committee (*Giunta Comunale*). Local elections take place every five years and municipal governments cannot affect their schedule.

The electoral rules of local Italian governments change at the 15,000 resident threshold. In order to keep the electoral institutions constant, we focus on municipalities with less than 15,000 residents. In these municipalities, a mayor is elected according to a single-ballot system.[4] The mayoral candidate who gets the relative majority is appointed. Under this scheme, each candidate for the mayor position can be backed by one list only, with a substantial victory bonus: the list supporting the winner gets 2/3 of the seats in the municipal council, while the rest of the seats is assigned to the remaining lists according to a proportionality criterion. Candidate lists are formed by the local organization of a given party or by independently organized groups of citizens. The electoral system prescribes semi-open lists, whereby voters vote for a party and can also cast a preference vote for an individual candidate from their preferred list, by writing down a candidate name on the ballot. After the election, for each party, candidates are re-ranked according to the number of preference votes they receive. The number of seats each party wins determines the number of candidates who get elected according to this ranking. The list consists of at most as many candidates

[4]In municipalities above the 15,000 resident threshold the mayor is elected according to the run-off system.

as the number of seats in the council and at least as many candidates as 3/4 of the number of seats. The number of seats in municipal councils varies between 6 and 16, depending on the size of the resident population.

Italian Law 215 was passed in 2012 with the aim of increasing female presence on municipal councils. The measures introduced by the law apply to municipalities with more than 5,000 residents. The law introduces double preference voting conditioned on gender: voters are given the option of expressing their preference in favor of two candidates, instead of one, provided that they are of different gender. In other words, the ballot displays two empty lines, rather than one, to write down up to two candidates' names, provided they are of different gender.[5] To ensure the presence of candidates of both sexes, the law also establishes that neither gender can represent more than 2/3 of the total number of candidates on party lists for municipal councils. In practice, parties have to reserve at least 1/3 of the total number of positions for female candidates. In municipalities with resident population between 5,000 and 15,000, non-compliance is punished by removing the names of male candidates exceeding 2/3 of the total. The law was in force for the first time in the municipal elections in 2013.

2.2 Data

We collect three sets of data: on elected politicians, on candidate lists, and on local public expenditure. First, we collect data on elected politicians in the 4,599 Italian municipalities with less than 15,000 residents, which voted in 2013, 2014 and 2015.[6] Table 1, Panel A describes the distribution of municipalities between treatment and control group, and across different geographical areas. For each municipality, we collect the publicly available data on the electoral results of the 2013, 2014 and 2015 elections,[7] and the corresponding previous elections. We have information on the total number and identity of elected councilors, the number of female elected councilors, and the political orientation of the majority party. Table 1, Panel B shows the share of elected female councilors in treated and control municipalities, and provides descriptive evidence on the higher presence of female councilors in municipalities subject to

[5]There is no prompting at the voting stage of how to cast a valid double preference vote. If two names of candidates of the same gender are written, the second one is considered null when votes are counted.

[6]Regions with special autonomy (*Regioni a Statuto Speciale*), with the exception of Sardinia, do not apply Law 215/2012. Therefore, we exclude municipalities in these regions (i.e., Sicily, Valle d'Aosta, Friuli-Venezia-Giulia and Trentino-Alto Adige) from our sample.

[7]Municipal elections take place every five years. However, as a municipal council may terminate its mandate earlier due to factors such as the unexpected death of the mayor or the resignation of the majority of the councilors, there are municipalities that voted more than once in the period under analysis.

the policy: in these municipalities, municipal councils are more gender balanced, with women representing around 40% of the total number of councilors, against an average of 28% in municipalities which were not subject to the law.

Second, in order to better understand how the policy works, we collect data on candidate lists. These data are difficult to obtain, as they are only gathered by local electoral offices and they are not published by the Ministry of Interior or made available on the Internet. We restrict our attention to municipalities which voted in 2013, and we contact all electoral offices of the municipalities in our sample in order to request candidate lists presented by every party with the original (party-composed) candidate ordering and the number of preference votes each candidate on the lists obtained.[8] Table 2 summarizes the sample coverage in terms of number of municipalities and party lists in the 2013, and in the previous election.

Third, we collect data on local public expenditure from AIDA PA database (see Section A.1 in the Appendix for a detailed definition of the variables). We focus on spending commitments in the current and capital account in years 2014 and 2015 for municipalities which voted in 2013, and in year 2015 for municipalities which voted in 2014. This timing allows approximately a one-year lag between the election and the decision on commitments and guarantees that our analysis only includes decisions on local expenditure taken by the municipal council elected under the policy.[9] Descriptive statistics shown in Table 3 indicate that commitments in the current account are larger than those in the capital account, and that, on average, the largest expenditure item in the current account is administration, while in the capital account is environment.

[Tables 1, 2 and 3 here]

3 The impact of the policy on female politicians

In this section we investigate the effects of double preference voting conditioned on gender and gender quotas on the election of women to municipal councils.

[8] If there was no response, we searched for candidate lists published in local newspapers, or directly contacted members of the municipal council or local politicians. On several occasions, the lists could only be obtained by watching parties' electoral campaign video material. We have verified that there are no substantial differences in the observable characteristics between municipalities for which we were able to obtain candidate lists and those for which lists were not found.

[9] Since data on spending commitments for 2016 are not yet available, we cannot include in the analysis on spending behavior municipalities that held elections in 2015.

3.1 Empirical strategy

We adopt a sharp regression discontinuity design in order to estimate the effect of Law 215/2012 on female presence in local politics. We exploit the fact that the measures included in the law, gender quotas and double preference voting conditioned on gender, only apply to municipalities with more than 5,000 residents. This results in a discontinuous variation in the institutional framework for municipalities of different size along a smoothly increasing forcing variable, namely, municipal population size. Our main regression equation is:

$$\begin{aligned} y_i = \alpha + \gamma_{01}\widetilde{x_i} + \gamma_{02}\widetilde{x_i}^2 + \cdots + \gamma_{0p}\widetilde{x_i}^p + \psi Treatment_i + \\ \gamma_{11}\widetilde{x_i} * Treatment_i + \gamma_{12}\widetilde{x_i}^2 * Treatment_i + \cdots + \\ \gamma_{1p}\widetilde{x_i}^p * Treatment_i + \varepsilon_i \end{aligned} \tag{1}$$

where y_i is the outcome variable of interest, e.g., the share of elected female councilors in municipality i;[10] $\widetilde{x_i}$ is the resident population size in municipality i, centered at the 5,000 resident threshold; p is the order of the control polynomial function, with $p = 1, 2, 3, 4$; and $Treatment_i$ is an indicator for municipalities with more than 5,000 residents ("treated municipalities"). The coefficients on the polynomial terms γ are also indexed by 0 and 1 because we allow for different polynomial coefficients on the two sides of the cut-off. The main coefficient of interest is ψ, which estimates the local average treatment effect of the reform.

We rely on three sets of results:

1. We graphically investigate the existence of the discontinuity around the 5,000 resident cut-off. For this purpose, we plot local sample means of the dependent variable in small equidistant non-overlapping bins over the support of the resident population size $\widetilde{x_i}$, together with the quadratic polynomial fit for municipalities below and above the threshold, and the 95 per cent confidence interval.

2. We estimate Equation (1) using polynomials of different orders, ranging from 1 to 4, for the entire sample of municipalities (*parametric approach*).

3. We implement local linear regressions using the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) (*non-parametric approach*).[11]

[10] We define our dependent variable in terms of shares instead of absolute numbers of councilors in municipality level analysis to take into account the possible differences in the size of the municipal council.

[11] All the results of the paper are robust to the adoption of the alternative bandwidth selector proposed by Calonico et al., (2014), Imbens and Kalyanaraman (2012) and Ludwig and Miller (2007).

While these different specifications serve the purpose of transparently showing the robustness of the results, we will focus on the estimates from local linear regressions when commenting on the magnitudes of the effects.

For the validity of the regression discontinuity, we first verify that there are no discontinuities at the 5,000 resident threshold in the distribution of demographic, occupational, and educational characteristics in the main sample of municipalities. The data are taken from the 2011 Italian Census data. The results of the graphical analysis are shown in Figures 1 and 2. The results of the local linear regressions in Table 4 show that municipal characteristics vary continuously with municipal population size.[12]

We then test the potential presence of sorting, i.e. the tendency of municipalities to strategically manipulate their population to fall on the preferred side of the cut-off. We implement a McCrary test (McCrary, 2008) and find no evidence of manipulation of the population size in the sample of Italian municipalities which voted in the period 2013-2015, as shown in Figure 3.

[Figures 1, 2, 3 and Table 4 here]

3.2 Results

We examine the share of elected female councilors (i.e. the number of elected female councilors over the total number of councilors) around the 5,000 resident threshold. Figure 4 shows a discontinuous jump in the share of elected female councilors in the municipalities above the cut-off, which were subject to the policy.[13]

[Figure 4 here]

We next estimate the magnitude of the change in the share of female councilors using the control polynomial (parametric) approach. Specifically, we use observations both close to and far from the cut-off point and estimate equation (1) with polynomials of orders 1 to 4 in the four columns of Table 5, Panel A. Polynomials are allowed to differ on the two sides of the cut-off. The results show that the estimated coefficient on the indicator *Treatment* is positive and remains statistically significant in all columns.

[Table 5 here]

[12]We also check that there is no discontinuity in the political orientation of the majority party at the 5,000 resident threshold. We find that in most municipalities that held elections in the period 2013-2015 (4,195 out of 4,599) civic lists obtained the majority of seats and the shares of municipalities with a civic list, left-wing, center-left and right-wing majority are smooth around the 5,000 resident threshold. The results are available upon request.

[13]The discontinuity in the share of female councilors is robust and evident in analogous figures with polynomial fits of orders 1, 3 and 4.

To test the existence of the discontinuity in the share of elected female councilors non-parametrically, we implement local linear regressions using a triangular kernel density estimator. In Table 5 Panel B, conventional estimates with conventional standard errors are presented in row 1. The results are consistent with the coefficients presented in Panel A. Moreover, the point estimate increases as we concentrate on observations closer to the 5,000 resident threshold. We also show biased-corrected estimates with conventional standard errors, and biased-corrected estimates with robust standard errors in rows 2 and 3 in Table 5, Panel B. The point estimate of the coefficient on the variable *Treatment* is 0.18 in these last specifications and implies that municipalities that voted under the provisions of Law 215/2012 elected municipal councils with 18 percentage points more women. This corresponds to two more women in municipal councils, which is a rather sizable effect.[14]

3.3 Robustness checks

As a placebo exercise, we assess whether there are pre-existing differences in the share of female politicians that could confound our estimates of the policy effect. We thus examine the potential discontinuity in the share of female councilors in the previous election. Table 6 and Figure 5 show that the share of female elected politicians does not exhibit any discontinuity at the cut-off in the previous election.

[Table 6 and Figure 5 here]

We also deal with the threats to the interpretation of regression discontinuity design results, coming from "confounding policies" (Eggers et al., 2017). The possible confounding policy is the legislation which imposes a variation in the salary of the mayor at the same cut-off of 5,000 residents. However, we point out that our analysis focuses on municipal councilors, and not mayors, and compensation of municipal councilors is not regulated by the Italian law. Furthermore, the change in the mayor's salary at the 5,000 resident cut-off precedes the introduction of Law 215/2012 and it was already present in the elections before 2013-2015. As argued above, there are no discontinuities in the share of female councilors (or of female candidates, as will be shown in Section 4.1.) in these elections, confirming that the observed effects are not driven by differences in the mayor's salary. Finally, we also show that the result on elected female politicians are robust to adopting a difference-in-discontinuities design.

[14]The increase in female elected politicians is confirmed when we conduct the analysis separately in the subsample of municipalities in the North, Centre and South of Italy, which are characterized by a marked divide in female empowerment. The results are shown in Table A.1 in the Appendix.

Following the specification adopted by Grembi et al. (2016), we estimate a linear model:

$$y_{it} = \delta_0 + \delta_1 \widetilde{x_i} + Treatment_i(\gamma_0 + \gamma_1 \widetilde{x_i}) + After_t[\alpha_0 + \alpha_1 \widetilde{x_i} + Treatment_i(\beta_0 + \beta \widetilde{x_i})] + \epsilon_{it} \tag{2}$$

where y_i is the outcome variable of interest, namely the share of elected female councilors in municipality i, $\widetilde{x_i}$ is the resident population size in municipality i, centered on the 5,000 resident threshold, $Treatment_i$ is an indicator for municipalities with more than 5,000 residents ("treated municipalities") and $After_t$ is an indicator equal to 1 for the election with the policy (i.e., in the 2013-2015 period) and 0 for the previous election. The main coefficient of interest is β_0, which estimates the local average treatment effect of the reform. Positive, large and significant estimates in Table 7 show that the effect of the reform on women's empowerment holds true even when controlling for the discontinuity in the mayor's salary.

[Table 7 here]

4 The working of the policy

In this section we investigate the role of parties and the way they select candidates, as well as the role of voters and their preferences in determining the effectiveness of the policy shown above. We first provide evidence that voters are key in guaranteeing the success of the policy. We then introduce a simple illustrative model suggesting a possible voting behavior behind this result.

4.1 Parties or voters?

We restrict our attention to the 2013 election. Our purpose is to shed some light on how the expanded set of voters' choices interacts with party selection of candidates in fostering female presence in local politics. To this end, we use data on the gender composition of candidate lists, which are formed by parties, and we examine data on preference votes received by female candidates. Since for municipalities with more than 5,000 residents the law requires that at least 1/3 of the candidates on each list are female, we investigate the presence of a discontinuity at this threshold in the share of women in candidate lists and in the share of preference votes for female candidates.

We run party-level regressions as in (1), where the subscript i is replaced by is and all variables are defined for party list s in municipality i.[15] We start from investigating

[15] Civic lists can also run for seats. They are also considered under the wording "party lists".

the behavior of the share of female candidates on party list s in municipality i around the 5,000 threshold.

Non-parametric estimates for the share of female candidates are shown in Table 8 Column 1: there is no significant discontinuity at the threshold, indicating that parties do not set the gender composition of the lists differently across the cut-off.[16]

[Table 8 here]

Although the share of female candidates does not change at the threshold, the likelihood of being elected may depend on the ranking of candidates, as politicians at the top of the list tend to obtain more preference votes and are therefore more likely to be elected (Farrell, 2001). Several studies (Bagues and Esteve-Volart, 2012; Casas-Arce and Saiz, 2015) show that, when constrained by gender quotas, parties manipulate the ranking of the candidates, placing women at the bottom, so that there is little change in the chances of being elected for male candidates, who usually form the existing party élite. On the contrary, Shair-Rosenfield (2012) shows that parties in India often place women on their lists higher than required by the law. Therefore, we investigate whether parties below and above the 5,000 resident threshold rank male and female candidates differently. If this is the case, the discontinuity we observe in the number of elected females at the cut-off may partially result from party decisions regarding the ranking of candidates.[17] We rely on Borda ranking which attributes a decreasing number of points to each candidate on the list, i.e. in a list with five candidates, the first one gets five points, the second one – four points, etc., and the last one – one point. We define a Borda score of female candidates as the sum of Borda points of female candidates over the total number of Borda points of all candidates on a given list. This measure exploits the information on the full ranking of candidates to detect systematic differences in candidates' placement, across lists of different length. The results of the regression analysis in Table 8 Column 2 show that there is no change at the threshold.[18] Overall, parties do not appear to be strategic in deciding the ranking of female candidates under the new constraints imposed by the policy.

We then turn to analyze preference votes to examine the role of double preference voting conditioned on gender in promoting female politicians. The regression results

[16]The results of parametric analysis are in line with the ones shown in Table 8. Figures A.1-A.4 in the Appendix present the graphical analysis for this and the other dependent variables shown in Table 8. Moreover, Table A.2 in the Appendix also shows that the share of female candidates does not exhibit any discontinuity at the cut-off in the previous election.

[17]We point out that 51% of the lists in our sample are ranked alphabetically and, therefore, are not very likely to exhibit a strategic placement of candidates by parties.

[18]We also consider an alternative measure of candidate placement based on the presence of at least one female candidate on the top two positions of the list. Once more, we do not find a discontinuity at the cut-off. The results are available upon request.

in Table 8 Column 3 show that the share of preference votes cast for female candidates on lists presented in municipalities subject to the policy increases by 14 percentage points.

We further investigate how preference votes cast for female candidates affect women's presence on municipal councils. In the Italian semi-open lists system, the original party ranking of candidates is re-ordered according to preference votes cast by the electorate. This post-election ranking determines which candidates are elected and reflects the influence of the voters' decisions on the ultimate electoral outcome. To capture this influence, we calculate the Borda score of female candidates using the post-election ranking of all female candidates (elected and not elected) and use it as a dependent variable in the analysis. Table 8 Column 4 shows that there is a positive discontinuity in this measure at the cut-off. Recalling that parties do not rank female candidates differently across the threshold, this confirms that preference votes elicited by the reform do have an important role in promoting female presence on municipal councils.

To deepen our analysis on the role of voting behavior, we ask whether the reform changes voters' turnout in municipal elections. Table 9, columns 1 and 2 show that there is no discontinuous change in overall voters' turnout and voters' turnout by gender.[19]

Next, we examine the use of preference votes measured as the ratio between the total number of preference votes cast and the number of voters who turn out to vote in a given municipality.[20] In particular, Figure 6 shows that in municipalities below the threshold, roughly 7 out of 10 voters choose to express a preference. Under the assumption that voters' turnout in expressing preference votes does not change due to the reform, the full adoption of the double preference voting policy would imply 14 preference votes every 10 voters, whereas no adoption of the policy would imply no change in the number of preference votes per voter, i.e. 7 preference votes every 10 voters. In municipalities above the threshold, we observe roughly 9 preference votes every 10 voters. This suggests that preference votes are indeed used more actively thanks to the reform, though their potential is not fully exploited. This is confirmed by regression results shown in Table 9, Column 3. In addition, we find that there is no discontinuity at the cut-off in the number of votes cast for male candidates,[21] thus double preference voting does not subtract preference votes from them.

[Figure 6 and Table 9 here]

[19] In addition, we find no evidence that voters are "confused" by this policy: the number of invalid ballots is not significantly different at the cut-off. Results are available upon request.

[20] We rely on this measure because electoral data do not register whether a voter has expressed 0, 1, or 2 preferences.

[21] The results are available upon request.

The increase in preference votes cast for women may come from a change in the selection of politicians, which increases the quality of candidates running for office. We cannot test this effect directly, because data on the personal characteristics of candidates are not collected. Hence, we study the quality of the elected councilors, as measured by the average years of education (Galasso and Nannicini, 2011; Baltrunaite et al., 2014). The following possibilities can arise. If the quality of both male and female candidates increases, the higher number of preferences for female candidates at the threshold cannot be explained by changes in quality. If only the quality of female candidates increases, we should expect that better-quality women obtain more preference votes, independently from the double preference voting mechanism, and are hence elected. However, we do not find any significant discontinuity at the cut-off in the quality of elected female councilors, as shown in Table 9, Column 4.[22] Finally, if only the quality of male candidates increases, we should expect an increase in the number of votes cast for male candidates, which we do not observe, as argued above. Therefore, changes in the selection of politicians do not appear to be consistent with the observed patterns in the data.[23]

In summary, there is evidence that voters do make use of the expanded set of choices guaranteed by double preference voting and that the latter plays an important role in guaranteeing that more women are elected to municipal councils.

4.2 Voting behavior: A simple theoretical example

The evidence reported in the previous sections suggests that changes in voters' behavior are important for the success of the policy, and limits the possible role played by parties and candidates. Thus, in this section we focus on voters to better understand how double preference voting interacts with their behavior to deliver a higher number of female elected politicians. We propose one way of rationalizing voters' behavior which is consistent with our empirical findings.

Suppose there exist J voters indexed by $j = 1.....J$. In a semi-open list system, such as the Italian one for municipal elections, each voter first chooses a party, and then he/she may decide to express a preference for one candidate on the party list (or two candidates of different gender in the case of double preference voting). We

[22]This is also consistent with the findings in Baltrunaite et al. (2014), who do not find any significant effect of binding gender quotas on the quality of elected female politicians, as measured by their education level or previous occupation, but they find such an effect on the quality of male elected politicians.

[23]Rather than changes in the selection of politicians, the increase in preference votes can be linked to a change in the behavior of candidates who, in the presence of the policy, increase their effort in political campaigning. If this were the case, we would expect an increase of turnout and/or turnout by gender, which instead is not confirmed by the data (see Table 9).

concentrate on the decision to cast preferences, and abstain from the analysis of the previous stages of the electoral process (i.e., we keep constant the number of candidates and the number of seats which each party wins).

In a given party, there are N candidates indexed by n. Each candidate n is defined by his/her set of characteristics, which - for convenience, but without loss of generality - we assume to be separable between gender g_n and other characteristics q_n. Both g_n and q_n are used by voters to decide which candidate to express their preference vote for. Let g_n be equal to M for male candidates and to F for female candidates. The sets of male and female candidates are:

$$\begin{aligned} N_M &= \{n \in N \mid g_n = M\} \\ N_F &= \{n \in N \mid g_n = F\} \end{aligned} \tag{3}$$

respectively, with $N_M \cup N_F = N$. The characteristics of each candidate, proxied by q_n, may reflect the candidate's quality (education, experience), his/her policy preferences, or political behavior (including campaigning).

In order to be elected, a candidate needs to collect a threshold number of preference votes. We denote this number by β^v, with $v = spv$ in the case of single preference voting, and $v = dpv$ in the case of double preference voting.[24] In addition, we denote by $I(n)$ an indicator function which is equal to 1 if candidate n receives a preference vote and 0 if not.

Preferences of voter j for candidate n are expressed by the following standard utility function:

$$u_j = u_j(g_n, q_n) \tag{4}$$

Moreover, we assume that each voter j belongs to one of the following groups J_M, J_F and J_T, with $J_M \cup J_F \cup J_T = J$. The group J_M identifies the set of voters j with a gender preference for a male candidate. More precisely, for $j \in J_M : u_j(M, q_n) > u_j(F, q_{n'})$ for any q_n and $q_{n'}$. Thus, a voter with a gender preference for male candidates will always vote for a man rather than for a woman, irrespective of the characteristics of both male and female candidates and, within the group of male candidates, will choose the one who maximizes the voter's utility.[25] The group J_F identifies the set of voters j with a gender preference for a female candidate, i.e. for $j \in J_F : u_j(M, q_n) < u_j(F, q_{n'})$

[24]The number of seats won by the party determines how many candidates are elected, and defines the threshold number of preference votes required for a candidate to become a municipal councilor.

[25]Note that we do not constrain voters to all select the same male (or female) candidate. Though we do not formalize it explicitly, this set-up is consistent with voters differing not only in their gender preference but also in some endowment (e.g. income or education) which affects the utility ranking of the candidate characteristics q_n.

for any q_n and $q_{n'}$. This type of voter will always vote for a woman rather than for a man, irrespective of the characteristics of both male and female candidates and, within the group of female candidates, will choose the one who maximizes the voter's utility. The group J_T identifies the set of voters j who are neutral with respect to gender and evaluate different candidates only according to their characteristics q_n. If a male and a female candidate share the same set of characteristics, a neutral voter will be indifferent between voting for either of them, that is, for $j \in J_T$: $u_j(M, q_n) = u_j(F, q_{n'})$ for $q_n = q_{n'}$. If $q_n \neq q_{n'}$, a gender neutral voter will rank candidates only according to their characteristics. In this case, his/her favourite candidate, i.e. the one who maximizes his/her utility, can either belong to N_M or N_F. We thus have the following three sets of gender neutral voters: J_T^I denotes the set of neutral voters who have two equally preferred candidates, a man and a woman; J_T^M is the set of neutral voters who have a man as their favourite candidate, and J_T^F is the set of neutral voters who have a woman as their favourite candidate.

In the case of single preference voting, voter $j \in J_T^I$ is constrained to choose among the two equally preferred candidates, which we denote by n and n'. We assume that he/she bases the choice on the expectation on the number of votes which each of the two candidates will attract from other voters. If voter $j \in J_T^I$ expects $\sum_{j \in J_M} I(n) + \sum_{j \in J_T^M} I(n) > \beta^{spv}$ for the preferred male candidate n and $\sum_{j \in J_F} I(n') + \sum_{j \in J_T^F} I(n') < \beta^{spv}$ for the preferred female candidate n', he/she will vote for the favourite male candidate. We denote by $J_T^{I,M}$ the set of voters of this type. If, instead, voter $j \in J_T^I$ expects $\sum_{j \in J_M} I(n) + \sum_{j \in J_T^M} I(n) < \beta^{spv}$ for the preferred male candidate n and $\sum_{j \in J_F} I(n') + \sum_{j \in J_T^F} I(n') > \beta^{spv}$ for the preferred female candidate n', he/she will vote for the favourite female candidate.[26] We denote by $J_T^{I,F}$ the set of voters of this type. Figure 7 illustrates the different groups of voters.

[Figure 7 here]

What happens when double preference voting conditioned on gender is introduced? We note first that, since the total number of preferences expressed is now larger (or

[26] If voter j expects $\sum_{j \in J_M} I(n) + \sum_{j \in J_T^M} I(n) > \beta^{spv}$ for the preferred male candidate n and $\sum_{j \in J_F} I(n') + \sum_{j \in J_T^F} I(n') > \beta^{spv}$ for the preferred female candidate n' or if he/she expects $\sum_{j \in J_M} I(n) + \sum_{j \in J_T^M} I(n) < \beta^{spv}$ for the preferred male candidate n and $\sum_{j \in J_F} I(n') + \sum_{j \in J_T^F} I(n') < \beta^{spv}$ for the preferred female candidate n', he/she will select at random. To save on notation, we disregard these voters. Note that including them does not affect the main result, which we state in Proposition 2.

equal, in case no voter uses the second preference), $\beta^{dpv} \geqslant \beta^{spv}$, i.e. the number of preference votes required to be elected is larger (or equal) with double rather than single preference voting. With double preference voting, a voter $j \in J^M$ and a voter $j \in J^F$, with a gender preference for a male or female candidate respectively, continue to vote only for the favourite male or female candidate and do not use the option of double preference voting. A gender neutral voter $j \in J_T^I$ casts a vote both for the favourite male and female candidate, since casting a vote for two equally preferred candidates gives a higher utility than casting a vote for only one of them. A gender neutral voter $j \in J_T^M$ or $j \in J_T^F$ uses the second preference (for a female or a male candidate, respectively) only if the candidate each of them ranks second according to the characteristics q is of different gender compared to the candidate each of them ranks first. We assume that a fraction $\varphi \in [0,1]$ of voters $j \in J_T^M$ and a fraction $\psi \in [0,1]$ of voters J_T^F are of this last type.

Proposition 1. With single preference voting, all $n^* \in N_M$ male candidates with $\sum_{j \in J_M} I(n^*) + \sum_{j \in J_T^M} I(n^*) + \sum_{j \in J_T^{I,M}} I(n^*) > \beta^{spv}$ and all $n'^* \in N_F$ female candidates with $\sum_{j \in J_F} I(n'^*) + \sum_{j \in J_T^F} I(n'^*) + \sum_{j \in J_T^{I,F}} I(n'^*) > \beta^{spv}$are elected. With double preference voting, all $n^{**} \in N_M$ male candidates with $\sum_{j \in J_M} I(n^{**}) + \sum_{j \in J_T^M} I(n^{**}) + \sum_{j \in J_T^I} I(n^{**}) + \psi \sum_{j \in J_T^F} I(n^{**}) > \beta^{dpv}$ and all $n'^{**} \in N_F$ female candidates with $\sum_{j \in J_F} I(n'^{**}) + \sum_{j \in J_T^F} I(n'^{**}) + \sum_{j \in J_T^I} I(n'^{**}) + \varphi \sum_{j \in J_T^M} I(n'^{**}) > \beta^{dpv}$are elected.

Proof. Follows straightforwardly from the analysis developed above.

All male and female candidates who receive enough preference votes to pass the threshold β^v will be elected in equilibrium.

Using proposition 1, we now compare the condition for a male or a female candidate to be elected in the case of single and double preference voting. Necessary conditions to have (extra) men $n^{eM} \in N^M$ or (extra) women $n^{eF} \in N^F$ elected under double preference voting are, respectively, the following:[27]

[27]Given that the size of the municipal council is fixed by the number of votes the party collects, double preference voting does not raise the number of candidates who are elected but it can change their identity, and thus the gender composition of the council. When we assess the conditions for observing an extra man or an extra woman elected we are therefore evaluating the conditions subject to which double preference voting, compared to single preference voting, gives more chances to a female or a male candidate to be elected.

$$\sum_{j \in J_T^{I,F}} I(n^{eM}) + \psi \sum_{j \in J_T^F} I(n^{eM}) > \beta^{dpv} - \beta^{spv} \tag{5}$$

$$\sum_{j \in J_T^{I,M}} I(n^{eF}) + \varphi \sum_{j \in J_T^M} I(n^{eF}) > \beta^{dpv} - \beta^{spv} \tag{6}$$

Intuitively, if the number of voters who use the second preference to cast an extra vote for a given male or female candidate is large enough - larger than the difference between the minimum number of preference votes required under the two regimes to be elected - this additional man or woman is elected under the double preference voting system though he/she is not elected under the single preference system.

Proposition 2. Sufficient conditions to have (extra) women elected rather than (extra) men are the following: $J_T^{I,M} > J_T^{I,F}$ and $\varphi \sum_{j \in J_T^M} I(n^{eF}) \geq \psi \sum_{j \in J_T^F} I(n^{eM})$.

Proof. Follows straightforwardly from the analysis developed above.

The first condition $J_T^{I,M} > J_T^{I,F}$ simply means that gender neutral voters who expect their preferred male candidate to be elected (and their preferred female candidate not to be elected) are more numerous than those who expect the opposite. This is a plausible case, given that more male than female candidates act as municipal councilors, and this is observable by all voters. Thus, under these expectations, neutral voters $j \in J_T^{I,M}$ who vote for their (individually) preferred male candidate are more numerous than voters $j \in J_T^{I,F}$ who vote for their (individually) preferred woman.

The second condition $\varphi \sum_{j \in J_T^M} I(n^{eF}) \geq \psi \sum_{j \in J_T^F} I(n^{eM})$ is satisfied when the number of indifferent voters who rank a female candidate n^{eF} second is larger than the number of those who rank a male candidate n^{eM} second. Again, this is quite plausible, given the existing gender gaps in political empowerment. Note that the two conditions do not need to be satisfied together to observe an increase of women elected under the double preference system.

Our empirical result of a significant increase of the number of women elected under the double preference system with respect to single preference is consistent with a significant presence of gender-neutral voters who are indifferent between a male and a female candidate and vote for both when allowed to do so, and of gender neutral voters who place a woman as their second preferred candidate. If the world were only composed of voters of type J^M or J^F, the double preference voting policy would be completely ineffective in raising female presence among elected politicians. This supports the idea that the underrepresentation of women in politics is not an artifact of pure gender biases, but it is determined, at least partially, by voting rules, which constrain voters' choices.

5 The impact of the policy on public spending

We assess the economic consequences of leveraging gender representation in local politics. We study how the 2012 reform, which leads to a higher presence of female politicians in municipal councils, affects decisions on public spending. The analysis focuses on both the overall size and the allocation of spending. We consider the following expenditure categories: administration, justice, education, roads, environment, social services and productive services. These categories span the entire set of expenditures in the municipality budget (for the detailed list of spending categories see the Appendix). For each expenditure item, the municipal budget reports data on current account spending and capital account spending, whose sum, across each spending item, gives the total spending of the municipality. We consider spending in current and capital account separately to distinguish between resources designated for the ongoing municipal activity and for investment.

Spending items refer to commitments or payments, both in current and capital accounts. Commitments indicate amounts which the municipality commits to spend during the fiscal year; payments indicate amounts which have actually been spent in the fiscal year by the municipality. We focus on commitments, since they are voted upon by the municipal council when authorizing the mayor and executive committee to undertake the budgetary policy and, thus, they are under direct influence of municipal councilors.[28] In line with the analysis in Section 3, we investigate the existence of the discontinuity in the outcome variable of interest at the 5,000 resident cut-off.[29]

5.1 Results

We first examine whether municipalities subject to the double preference voting and gender quotas policy change the overall size of municipal spending. As illustrated by Figure 8(a), there is no discontinuity in the total amount of municipal spending at the 5,000 resident threshold. This is confirmed by analytical results, which deliver a bias-correct point estimate of 0.08, with a robust standard error of 0.11.

[28]To promote fiscal discipline and to involve local authorities in the adjustment process of public finances, the Internal Stability pact was introduced in early 2000s. The Pact requires municipalities to achieve a specific budgetary balance calculated on a mixed accrual basis. In 2014 and 2015 the rules of the internal stability pact are identical for municipalities around the 5,000 resident threshold, hence the fiscal constraints imposed by the Pact do not play a role in our framework.

[29]The results are robust to using a fuzzy regression discontinuity design as an alternative identification strategy, in which we exploit the fact that the policy leads to an exogenous change in the gender composition of municipal councils above the 5,000 resident cut-off (see Section 3) and use it as an instrument for the share of female councilors. However, this estimation hinges on the exclusion restriction assumption that the policy affects spending outcomes exclusively through the gender composition of municipal councils.

We next examine separately current account and capital account spending, as a share of total spending, in municipalities subject or not to the double preference voting policy. Table 10 shows the results of the regression discontinuity analysis. When we look at the current account spending (Panel A), we do not find any significant effect of female politicians on spending categories, except for roads (see also Figure 8). When we turn to the capital account spending (Panel B), instead, we find a positive and significant effect of female politicians on the share of spending on education and on environment: municipalities subject to the 2012 policy invest 4 percentage points more both in education and environment (see also Figure 9).[30] However, given that we are testing multiple hypotheses simultaneously, there is a relatively large probability to find differences by chance. When we calculate the significance levels which take into account the presence of multiple-testing (Bonferroni correction), the bias-corrected estimate for capital account spending on education remains significant at 5 percent and for environment at 10 percent.[31] As a placebo exercise, we investigate whether there are pre-existing discontinuities in the same variables before the introduction of the policy: we find none, as shown in Table 11.

[Table 10, Table 11, Figures 8 and 9 here]

The analysis does not reveal gender differences in the size of public spending. However, there is evidence that women devote more resources to public goods with long-term effects, such as education and environment. Interestingly, the effects are significant only for the capital account component of these expenditures, again consistently with a long-term view. The pro-environment female preferences are in line with the results in Funk and Gathmann (2015) in Switzerland and with cross-country evidence (see, among others, Hunter et al., 2004).

Although the reform we study only concerns municipal councilors, the members of the executive committees, who are mainly selected among them, may play a role in the decision making. In fact, gender interactions within hierarchy are shown to be salient in Italian local politics (Gagliarducci and Paserman, 2012). However, our data shows that the number of women on executive committees does not rise at the threshold.[32] This may pose limits to the size of the effects of the reform on public spending decisions.

[30]The absence of significant negative changes in other current and capital account items suggests that women counter-balance a higher capital spending on education and environment with moderate decreases in other categories, without systematically penalizing specific spending items.

[31]The current account spending on roads, however, is no longer significant to conventional levels.

[32]The results are available upon request.

6 Conclusions

This paper shows that the policy which introduces double preference voting conditioned on gender and guarantees a minimum presence of both genders on candidate lists has a large, robust impact on women's political representation in Italian municipalities. Specifically, our causally identified estimates suggest an increase of 18 percentage points in the share of female councilors. We provide evidence that the effect, to a large extent, comes from preference votes in favor of female candidates expressed by electorate in municipalities subject to the policy. In other words, if voters are given the option of casting a preference vote for one candidate of each gender, they do select female candidates more often. We propose that this outcome is consistent with a significant presence of gender-neutral voters. Finally, we show that the reform does not change the size of public spending, but it increases the share of spending on education and on environment.

The design of policies to promote women in politics has so far mostly focused on selection made by parties, prescribing, mainly, gender quotas on candidate lists. However, gender quotas are not always effective, and when they are, the increase in female representation is often of limited size. Our results show that a policy which targets voters, such as double preference voting, leads to stronger effects on female representation and brings the municipal council composition closer to gender equality.

References

[1] Bagues, Manuel, and Pamela Campa. 2017. "Can Gender Quotas in Candidate Lists Empower Women? Evidence from a Regression Discontinuity Design." *Mimeo,* `https://www.dropbox.com/s/pfcb1m97pva9u6n/Gender_quotas_Bagues_Campa.pdf?dl=0`.

[2] Bagues, Manuel, Mauro Sylos-Labini, and Natalia Zinovyeva. 2017. "Does the Gender Composition of Scientific Committees Matter?." *The American Economic Review* 107(4):1207-1238.

[3] Bagues, Manuel, and Berta Esteve-Volart. 2012. "Are Women Pawns in the Political Game? Evidence from Elections to the Spanish Senate." *Journal of Public Economics* 96: 387-399.

[4] Baltrunaite, Audinga, Piera Bello, Alessandra Casarico, and Paola Profeta. 2014. "Gender Quotas and the Quality of Politicians." *Journal of Public Economics* 118: 62-74.

[5] Beaman, Lori, Raghabendra Chattopadhyay, Esther Duflo, Rohini Pande and Petia Topalova. 2009. "Powerful Women: Does Exposure Reduce Bias?," *The Quarterly Journal of Economics* 124(4):1497-1540.

[6] Besley, Timothy, Olle Folke, Torsten Persson, and Johanna Rickne. 2017. "Gender Quotas and the Crisis of the Mediocre Man: Theory and Evidence from Sweden", forthcoming in *American Economic Review.*

[7] Black, Jerome H., and Lynda Erickson. 2003. "Women Candidates and Voter Bias: Do Women Politicians Need to Be Better?" *Electoral Studies* 22(1): 81-100.

[8] Brollo, Fernanda, and Ugo Troiano. 2016. "What Happens When a Woman Wins an Election? Evidence from Close Races in Brazil." *Journal of Development Economics* 122: 28-45.

[9] Calonico, Sebastian, Matias D. Cattaneo, and Rocio Titiunik. 2014. "Robust Data-driven Inference in the Regression-discontinuity Design." *Stata Journal* 14(4): 909-946.

[10] Calonico, Sebastian, Matias D. Cattaneo, Max H. Farrell, and Rocio Titiunik. 2017. "rdrobust: Software for Regression Discontinuity Designs." *Stata Journal,* forthcoming.

[11] Casas-Arce, Pablo, and Albert Saiz. 2015. "Women and Power: Unwilling, Ineffective, or Held Back?" *Journal of Political Economy* 123(3): 641-669.

[12] Chattopadhyay, Raghabendra, and Esther Duflo. 2004. "Women as Policy Makers: Evidence from Randomized Policy Experiment in India." *Econometrica* 72(5): 1409-43.

[13] Clots-Figueras, Irma, 2011. "Women in politics: Evidence from the Indian States." *Journal of Public Economics* 95(7-8): 664-690.

[14] Dahlerup, Drude, and Lenita Freidenvall. 2008. "Electoral Gender Quota Systems and their Implementation in Europe." Strasbourg: European Parliament Committee on Women's Rights and Gender Equality.

[15] Hayes, Danny and Jennifer Lawless. 2016. "Women on the Run: Gender, Media, and Political Campaigns in a Polarized Era." Cambridge University Press.

[16] Dolan, Kathleen. 2008. "Gender differences in support for women candidates." *Women and Politics* 17(2), 27-41.

[17] Duverger, Maurice. 1955. "The Political Role of Women", *Paris, France: Unesco.*

[18] De Paola, Maria, Vincenzo Scoppa, and Rosetta Lombardo. 2010. "Can Gender Quotas Break Down Negative Stereotypes? Evidence from Changes in Electoral Rules." *Journal of Public Economics* 94(5-6): 344-353.

[19] De Paola, Maria, Vincenzo Scoppa and Marco Alberto De Benedetto. 2014. "The Impact of Gender Quotas on Electoral Participation: Evidence from Italian Municipalities." *European Journal of Political Economy* 35: 141-157.

[20] Duflo, Esther, and Petia Topalova. 2004. "Unappreciated Service: Performance, Perceptions, and Women Leaders in India." *Framed Field Experiments 00233, The Field Experiments Website.*

[21] Eggers, Andrew C., Ronny Freier, Veronica Grembi, and Tommaso Nannicini. 2017. "Regression Discontinuity Designs Based on Population Thresholds: Pitfalls and Solutions." *American Journal of Political Science*, forthcoming.

[22] Epstein, Michael J., Richard G. Niemi, and Lynda W. Powell. 2005. "Do Women and Men State Legislators Differ?" in Sue Thomas and Clyde Wilcox "Women and Elective Politics: Past, Present and Future.", Oxford University Press.

[23] European Commission. 2016. "Women and Men in Decision-making." Online access.

[24] Farrell, David M. 2001. "Electoral Systems: A Comparative Introduction." *Palgrave.*

[25] Ferreira, Fernando, and Joseph Gyourko. 2014. "Does Gender Matter for Political Leadership? The Case of U.S. Mayors." *Journal of Public Economics* 112: 24-39.

[26] Folke, Olle, Torsten Persson, and Johanna Rickne. 2016. "The Primary Effect: Preference Votes and Political Promotions." *American Political Science Review*, forthcoming.

[27] Fox, Richard L., and Jennifer L. Lawless. 2004. "Entering the Arena? Gender and the Decision to Run for Office." *American Journal of Political Science* 48(2): 264-280.

[28] Funk, Patricia, and Christina Gathmann. 2015. "Gender Gaps in Policy Making: Evidence from Direct Democracy." *Economic Policy* 30(81): 141-181.

[29] Gallagher, Michael, and Paul Mitchell (eds.). 2005. "The Politics of Electoral Systems." Oxford: Oxford University Press.

[30] Galasso, Vincenzo, and Tommaso Nannicini. 2011. "Competing on good politicians." *American Political Science Review* 105(1): 79-99.

[31] Gilardi, Fabrizio. 2015. "The Temporary Importance of Role Models for Women's Political Representation." *American Journal of Political Science* 59(4): 957-970.

[32] Grembi, Veronica, Tommaso Nannicini, and Ugo Troiano. 2016. "Do Fiscal Rules Matter?" *American Economic Journal: Applied Economics*, forthcoming.

[33] Hunter, Lori M., Alison Hatch, and Aaron Johnson. 2004. "Crossnational gender variation in environmental behaviors." *Social Science Quarterly* 85(3): 677-694.

[34] Imbens, Guido W., and Karthik Kalyanaraman. 2012. "Optimal Bandwidth Choice for the Regression Discontinuity Estimator." *Review of Economic Studies* vol. 79(3): 933-959.

[35] Júlio, Paulo, and José Tavares. 2017. "The Good, the Bad, and the Different: Can Gender Quotas Raise the Quality of Politicians?", *Economica.* doi:10.11111/ecca.12222.

[36] Krook, Mona Lena. 2009. "Quotas for Women in Politics: Gender and Candidate Selection Reform Worldwide". *New York: Oxford University Press.*

[37] Kunovich, Sheri L., and Pamela Paxton. 2005. "Pathways to Power: The Role of Political Parties in Women's National Political Representation." *American Journal of Sociology* 111(2): 505-552.

[38] Kunovich, Sheri L. 2012. "Unexpected Winners: The Significance of an Open-List System on Women's Representation in Poland." *Politics & Gender* 8(02): 153-177.

[39] Ludwig, Jens, and Douglas L. Miller. 2007. "Does Head Start Improve Children's Life Chances? Evidence From a Regression Discontinuity Design." *Quarterly Journal of Economics* 122: 159-208.

[40] McCrary, Justin. 2008. "Manipulation of the Running Variable in the Regression Discontinuity Design: A Density Test." *Journal of Econometrics* 142(2); 698-714.

[41] Norris, Pippa and Joni Lovenduski. 1995. "Political Recruitment: Gender, Race, and Class in the British Parliament." Cambridge University Press.

[42] Rehavi, M. Marit. 2007. "Sex and Politics: Do Female Legislators Affect State Spending?" *Mimeo,* `https://www.researchgate.net/publication/252859373_Sex_and_Politics_Do_Female_Legislators_Affect_State_Spending`.

[43] Sanbonmatsu, Kira. 2002. "Gender Stereotypes and Vote Choice." *American Journal of Political Science,* 20-34.

[44] Shair-Rosenfield, Sarah. 2012. "The Alternative Incumbency Effect: Electing Women Legislators in Indonesia." *Electoral Studies* 31(3): 576-587.

[45] Shair-Rosenfield, Sarah, and Magda Hinojosa. 2014. "Does Female Incumbency Reduce Gender Bias in Elections? Evidence from Chile." *Political Research Quarterly* 67(4): 837-850.

[46] Schlozman, Kay Lehman, Nancy Burns, and Sidney Verba. 1994. "Gender and the Pathways to Participation: The Role of Resources." *The Journal of Politics* 56(04): 963-990.

[47] Schmidt, Gregory D. 2009. "The Election of Women in List PR Systems: Testing the Conventional Wisdom." *Electoral Studies* 28(2): 190-203.

[48] Schwindt-Bayer, Leslie A. 2009. "Making Quotas Work: The Effect of Gender Quota Laws on the Election of Women." *Legislative Studies Quarterly* 34(1):5-28.

[49] Schwindt-Bayer, Leslie A., Michael Malecki, and Brian F. Crisp. 2010. "Candidate Gender and Electoral Success in Single Transferable Vote Systems." *British Journal of Political Science* 40(03):693-709.

[50] Stevens, Anne. 2007. "Women, Power and Politics." *Palgrave Macmillan.*

[51] Tripp, Aili Mari, and Alice Kang. 2008. "The Global Impact of Quotas on the Fast Track to Increased Female Legislative Representation." *Comparative Political Studies* 41(3): 338-361.

[52] World Economic Forum. 2016. Global Gender Gap Report.

Tables and figures

Table 1: Descriptive statistics: municipalities and elected politicians

Panel A: Geographical coverage			
No. of municipalities voting in 2013:	Control	Treated	Total
North	132	65	197
South and islands	153	63	216
Center	34	21	55
Total	319	149	468
No. of municipalities voting in 2014:	Control	Treated	Total
North	2023	493	2,516
South and islands	473	99	572
Center	392	117	509
Total	2,888	709	3,597
No. of municipalities voting in 2015:	Control	Treated	Total
North	94	32	126
South and islands	295	74	369
Center	32	7	39
Total	421	113	534
Panel B: Share of female councilors			
Municipalities voting in 2013:	Control	Treated	Total
	0.22	0.39	0.28
	(0.19)	(0.11)	(0.19)
Municipalities voting in 2014:	Control	Treated	Total
	0.29	0.40	0.31
	(0.14)	(0.10)	(0.14)
Municipalities voting in 2015:	Control	Treated	Total
	0.27	0.42	0.30
	(0.14)	(0.09)	(0.14)

Notes. Panel A reports the number of municipalities which held elections in 2013, 2014 and 2015, distinguishing between treated and control groups, overall and separately for each different geographical areas. Panel B reports the means of the share of elected female councilors (with standard errors in parentheses) in municipalities which held elections in 2013, 2014 and 2015, distinguishing between treated and control groups.

Table 2: Descriptive statistics: candidates

Panel A: 2013 election			
No. of municipalities:	Control	Treated	Total
voted	319	149	468
with all lists available	231	118	349
with preference votes available	231	118	349
with pre-election ranking available	189	108	297
No. of party lists:	592	446	1038
with pre-election ranking available	493	415	908
with non-alphabetical ranking	270	258	528
Panel B: Previous election			
No. of municipalities:	Control	Treated	Total
voted	319	149	468
with all lists available	113	80	193
No. of party lists	274	257	531

Notes. The table reports sample numerosity for the municipal 2013 election and for the previous one, distinguishing between treated and control municipalities. For the municipal 2013 election, Panel A reports the number of municipalities that voted (for which we have data on all elected councilors), the number of municipalities with lists available, with preference votes available, and with ranking available. It also reports the total number of party lists, the number of party lists with ranking available and, among them, those with non-alphabetical ranking. For the previous election, Panel B reports the number of municipalities that voted (for which we have data on all elected councilors), the number of municipalities with lists available, and the number of party lists.

Table 3: Descriptive statistics: shares of municipal spending

	Current account	Capital account
Administration	0.30	0.03
	(0.11)	(0.06)
Justice	0.03	0.00
	(0.02)	(0.01)
Education	0.10	0.06
	(0.05)	(0.08)
Roads	0.09	0.06
	(0.04)	(0.09)
Environment	0.16	0.07
	(0.07)	(0.11)
Social services	0.08	0.01
	(0.07)	(0.03)
Productive services	0.01	0.01
	(0.04)	(0.04)
Observations	3,965	3,965

Notes. The sample includes municipalities that held elections in 2013 and 2014.

Table 4: Demographic and socio-economic characteristics

Panel A: Demographic characteristics				
	Females	Males	Children	Elderly
Treatment	0.026	−0.007	0.018	−0.029
	(0.023)	(0.026)	(0.015)	(0.038)
Bias-corrected	0.032	0.001	0.020	−0.037
	(0.023)	(0.026)	(0.015)	(0.038)
Robust SE	0.032	0.001	0.020	−0.037
	(0.026)	(0.029)	(0.018)	(0.043)
Bandwidth	1,433	1,170	1,191	1,039
Observations on the left	472	365	373	313
Observations on the right	267	226	229	210
Panel B: Educational status				
	Females w/upper secondary or more	Males w/upper secondary or more		
Treatment	−0.002	0.013		
	(0.026)	(0.025)		
Bias-corrected	−0.004	0.011		
	(0.026)	(0.025)		
Robust SE	−0.004	0.011		
	(0.030)	(0.029)		
Bandwidth	1,171	1,140		
Observations on the left	365	358		
Observations on the right	226	222		
Panel C: Occupational status				
	Employed females	Employed males		
Treatment	−0.051	−0.038		
	(0.037)	(0.033)		
Bias-corrected	−0.050	−0.037		
	(0.037)	(0.033)		
Robust SE	−0.050	−0.037		
	(0.042)	(0.038)		
Bandwidth	1,316	1,257		
Observations on the left	423	401		
Observations on the right	247	243		

Notes. The table shows the results of non-parametric estimation (local linear regressions) on municipal demographic, educational and occupational characteristics. The sample includes municipalities with less than 15,000 residents that held elections in the period 2013-2015, within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017). Conventional RD estimates with a conventional variance estimator, bias-corrected RD estimates with a conventional variance estimator, and bias-corrected RD estimates with a robust variance estimator are reported. * p<0.1, ** p<0.05, *** p<0.01.

Table 5: Female presence on municipal councils

	Panel A: Parametric Approach			
Dependent variable:	Share of female councilors			
	(1)	(2)	(3)	(4)
Treatment	0.135***	0.130***	0.151***	0.162***
	(0.009)	(0.014)	(0.018)	(0.023)
Polynomial order	1	2	3	4
Observations	4,599	4,599	4,599	4,599
R-Squared	0.122	0.122	0.123	0.124
	Panel B: Non-parametric Approach			
Dependent variable:	Share of female councilors			
	(1)			
Treatment	0.174***			
	(0.021)			
Bias-corrected	0.183***			
	(0.021)			
Treatment (bias-corrected, robust SE)	0.183***			
	(0.024)			
Bandwidth	1,132			
Observations on the left	353			
Observations on the right	219			

Notes. The table shows the results of parametric and non-parametric estimation. The dependent variable is the share of female councilors over the total number of councilors. In Panel A, the sample includes all municipalities with less than 15,000 residents that held elections in the period 2013-2015. Columns 1-4 include polynomials of orders 1-4, respectively, in the resident population, centered on the 5,000 resident threshold. Polynomials are allowed to differ on the two sides of the cut-off. Only the coefficient of interest *Treatment* is reported. In Panel B, conventional RD estimates with a conventional variance estimator, bias-corrected RD estimates with a conventional variance estimator, and bias-corrected RD estimates with a robust variance estimator are reported. The sample includes municipalities voting in the period 2013-2015 within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 5,000 residents. * p<0.1, ** p<0.05, *** p<0.01.

Table 6: Female presence on municipal councils before the reform

	Panel A: Parametric Approach			
Dependent variable:	Share of female councilors			
	(1)	(2)	(3)	(4)
Treatment	0.007	−0.010	0.002	−0.002
	(0.008)	(0.012)	(0.017)	(0.021)
Polynomial order	1	2	3	4
Observations	4,599	4,599	4,599	4,599
R-Squared	0.013	0.014	0.015	0.015
	Panel B: Non-parametric Approach			
Dependent variable:	Share of female councilors			
	(1)			
Treatment	−0.013			
	(0.016)			
Bias-corrected	−0.016			
	(0.016)			
Treatment (bias-corrected, robust SE)	−0.016			
	(0.019)			
Bandwidth	1,965			
Observations on the left	700			
Observations on the right	358			

Notes. The table shows the results of parametric and non-parametric estimation. The dependent variable is the share of female councilors over the total number of councilors in the election prior to 2013 (2014/2015) for municipalities voting in 2013 (2014/2015). In Panel A, the sample includes all municipalities with less than 15,000 residents that held elections in the period 2013-2015. Columns 1-4 include polynomials of orders 1-4, respectively, in the resident population, centered on the 5,000 resident threshold. Polynomials are allowed to differ on the two sides of the cut-off. Only the coefficient of interest *Treatment* is reported. In Panel B, conventional RD estimates with a conventional variance estimator, bias-corrected RD estimates with a conventional variance estimator, and bias-corrected RD estimates with a robust variance estimator are reported. The sample includes municipalities voting in the period 2013-2015 within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 5,000 residents. * p<0.1, ** p<0.05, *** p<0.01.

Table 7: Difference in discontinuities

Dependent variable:	Share of female councilors	
	(1)	(2)
Treatment × After	0.128***	0.190***
	(0.010)	(0.028)
Local		X
Observations	9,198	890
R-Squared	0.164	0.314

Notes. The table shows the results of difference-in-discontinuities estimation (Grembi et al., 2016). The dependent variable is the share of female councilors over the total number of councilors. The sample includes municipal elections in the period 2013-2015 and previous municipal elections. The results are computed for the entire sample in column 1, and for the sample of municipalities within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 5,000 residents in column 2. Standard errors clustered at municipal level in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Table 8: Working of the policy

	Non-parametric Approach			
Dependent variable:	Female candidates	Borda score	Preference votes	Post-election Borda score
	(1)	(2)	(3)	(4)
Treatment	0.019	−0.027	0.146**	0.126**
	(0.054)	(0.092)	(0.059)	(0.064)
Bias-corrected	0.007	−0.033	0.140**	0.132**
	(0.054)	(0.092)	(0.059)	(0.064)
Treatment (bias-corrected, robust SE)	0.007	−0.033	0.140*	0.132*
	(0.067)	(0.111)	(0.073)	(0.078)
Bandwidth	1,342	1,336	1,310	1,400
Observations on the left	71	52	69	60
Observations on the right	93	78	93	80

Notes. The dependent variable is the share of female candidates over the total number of candidates on list s in municipality i in column 1; the Borda score of female candidates on list s in municipality i - in column 2; the share of preference votes cast for female candidates on list s in municipality i - in column 3; the post-election Borda score of female candidates on list s in municipality i - in column 4. Conventional RD estimates with a conventional variance estimator, bias-corrected RD estimates with a conventional variance estimator, and bias-corrected RD estimates with a robust variance estimator are reported. The sample includes all lists presented in municipalities with less than 15,000 residents that held elections in 2013 within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 5,000 residents. * p<0.1, ** p<0.05, *** p<0.01.

Table 9: Voting behavior

	Non-parametric Approach			
Dependent variable:	Voters	Female voters	Use of preferences	Female education
	(1)	(2)	(3)	(4)
Treatment	197.589	86.169	0.818***	0.091
	(200.662)	(93.135)	(0.199)	(1.506)
Bias-corrected	268.306	114.827	0.892***	0.271
	(200.662)	(93.135)	(0.199)	(1.506)
Treatment (bias-corrected, robust SE)	268.306	114.827	0.892***	0.271
	(239.496)	(112.299)	(0.232)	(1.840)
Bandwidth	1,860	2,067	1,220	1,793
Observations on the left	62	68	22	42
Observations on the right	57	64	28	53

Notes. The dependent variable is the number of voters in municipality i in column 1; the number of female voters in municipality i in column 2; the number of preference votes over the total number of votes in municipality i in column 3; the average number of years of education of elected female councilors in municipality i in column 4. The sample includes municipalities with less than 15,000 residents that held elections in 2013. Conventional RD estimates with a conventional variance estimator, bias-corrected RD estimates with a conventional variance estimator, and bias-corrected RD estimates with a robust variance estimator are reported. The sample includes municipalities voting in 2013 within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 5,000 residents. * p<0.1, ** p<0.05, *** p<0.01.

Table 10: Shares of spending

	Panel A: Current account						
	Administration	Justice	Education	Roads	Environment	Social	Productive services
Treat.	−0.023	−0.001	−0.020*	−0.010*	−0.015	0.009	0.001
	(0.017)	(0.003)	(0.011)	(0.006)	(0.014)	(0.012)	(0.005)
Bias-corrected	−0.026	−0.002	−0.018	−0.012**	−0.018	0.010	0.002
	(0.017)	(0.003)	(0.011)	(0.006)	(0.014)	(0.012)	(0.005)
Robust SE	−0.026	−0.002	−0.018	−0.012*	−0.018	0.010	0.002
	(0.020)	(0.004)	(0.014)	(0.006)	(0.017)	(0.015)	(0.006)
Observations on the left	428	341	417	400	574	540	430
Observations on the right	239	204	236	226	297	282	241
	Panel B: Capital account						
	Administration	Justice	Education	Roads	Environment	Social	Productive services
Treat.	−0.005	0.001	0.036**	−0.008	0.035***	0.001	0.001
	(0.010)	(0.001)	(0.015)	(0.010)	(0.013)	(0.003)	(0.005)
Bias-corrected	−0.007	0.001*	0.041***	−0.011	0.038***	0.000	0.001
	(0.010)	(0.001)	(0.015)	(0.010)	(0.013)	(0.003)	(0.005)
Robust SE	−0.007	0.001	0.041**	−0.011	0.038**	0.000	0.001
	(0.013)	(0.001)	(0.018)	(0.012)	(0.016)	(0.003)	(0.006)
Observations on the left	406	181	420	341	720	562	451
Observations on the right	228	119	237	204	349	290	252

Notes. The table shows the results of non-parametric estimation (local linear regressions), within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017). The sample includes all municipalities with less than 15,000 residents that held elections in 2013 and 2014. The dependent variable in Panel A (Panel B) is the share of current account (capital account) spending in a given category over the total spending in a given municipality. For municipalities which voted in 2013, the share is computed as the average share over the period 2014 and 2015 and for municipalities which voted in 2014 as the share of spending in 2015. Only the coefficient of interest *Treatment* is reported. Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Table 11: Shares of spending before the reform

	Panel A: Current account						
	Administration	Justice	Education	Roads	Environment	Social	Productive services
Treat.	0.026*	0.004	−0.009	−0.004	0.004	0.016	0.004
	(0.015)	(0.003)	(0.009)	(0.005)	(0.013)	(0.013)	(0.005)
Bias-corrected	0.028*	0.004	−0.008	−0.005	0.005	0.018	0.005
	(0.015)	(0.003)	(0.009)	(0.005)	(0.013)	(0.013)	(0.005)
Robust SE	0.028	0.004	−0.008	−0.005	0.005	0.018	0.005
	(0.018)	(0.004)	(0.011)	(0.006)	(0.016)	(0.016)	(0.006)
Observations on the left	414	511	415	369	613	444	393
Observations on the right	234	270	237	215	315	249	222
	Panel B: Capital account						
	Administration	Justice	Education	Roads	Environment	Social	Productive services
Treat.	−0.017	0.000	−0.014	−0.016	0.011	0.003	−0.000
	(0.011)	(0.001)	(0.011)	(0.010)	(0.012)	(0.007)	(0.007)
Bias-corrected	−0.019*	0.000	−0.013	−0.019*	0.011	0.002	0.001
	(0.011)	(0.001)	(0.011)	(0.010)	(0.012)	(0.007)	(0.007)
Robust SE	−0.019	0.000	−0.013	−0.019	0.011	0.002	0.001
	(0.013)	(0.001)	(0.013)	(0.012)	(0.014)	(0.008)	(0.008)
Observations on the left	425	241	570	659	412	354	847
Observations on the right	240	154	297	332	232	208	383

Notes. The table shows the results of non-parametric estimation (local linear regressions), within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017). The sample includes all municipalities with less than 15,000 residents that held elections in 2013 and 2014. The dependent variable in Panel A (Panel B) is the share of current account (capital account) spending in a given category over the total spending in a given municipality and is computed for the previous election analogously to the main analysis of spending items in Table 10. Only the coefficient of interest *Treatment* is reported. Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Figure 1: Demographic characteristics

Notes. The figure plots the binned averages of demographic municipal characteristics (share of women, men, elderly and children over the municipal population) against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals. The sample includes Italian municipalities with population below 15,000 residents that held elections in the period 2013-2015.

Figure 2: Socio-economic characteristics

Notes. The figure plots the binned averages of educational and occupation municipal characteristics (share of females and males with upper secondary or higher degree, female and male employment rate) against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals. The sample includes Italian municipalities with population below 15,000 residents that held elections in the period 2013-2015.

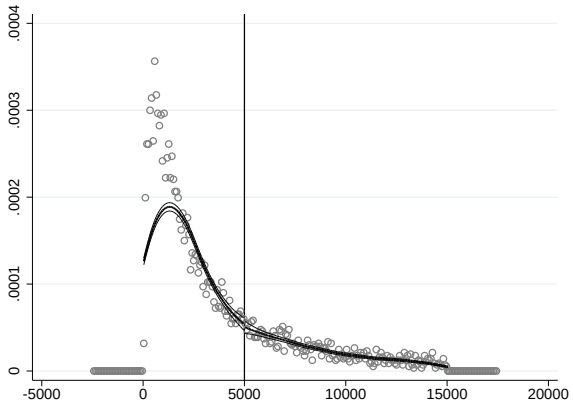


Figure 3: McCrary test

Notes. The figure plots the density of the municipal population. The sample includes Italian municipalities with population below 15,000 residents that held elections in the period 2013-2015.

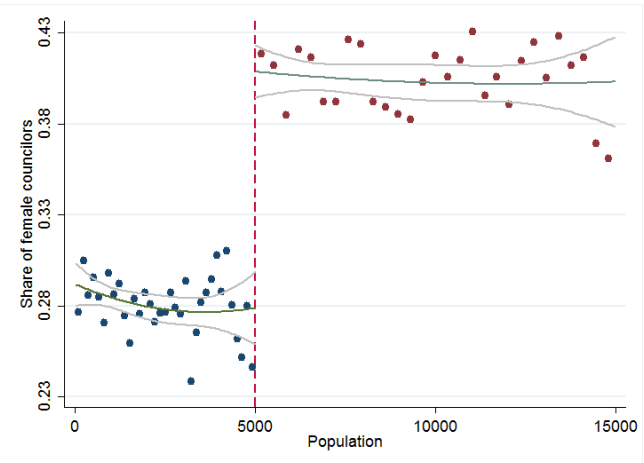


Figure 4: Female councilors

Notes. The figure plots the binned averages of the share of female councilors against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals. The sample includes Italian municipalities with population below 15,000 residents that held elections in the period 2013-2015.

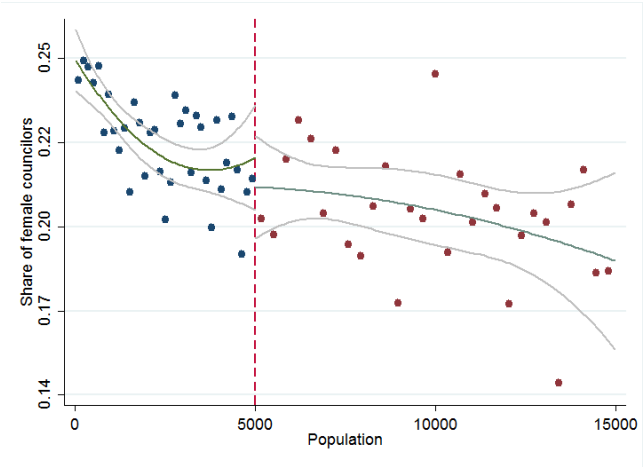


Figure 5: Female councilors before the reform

Notes. The figure plots the binned averages of the share of female councilors in the previous mandate against the municipal population, for Italian municipalities with population below 15,000 residents that held elections in the period 2013-2015, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals.

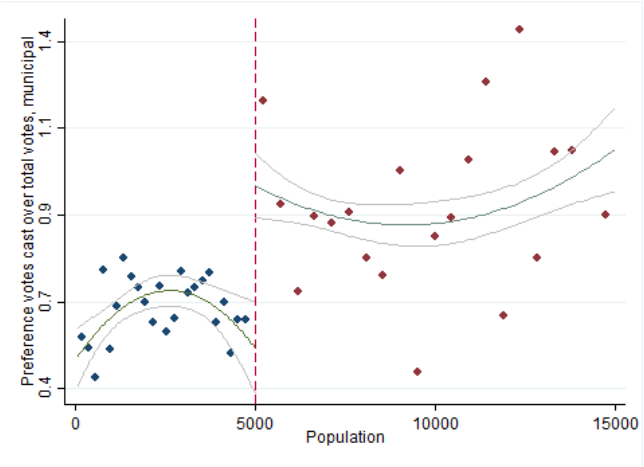


Figure 6: Use of preference votes

Notes. The figure plots the binned averages of the share of preference votes over the number of voters who turn out to vote in a given municipality against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals.

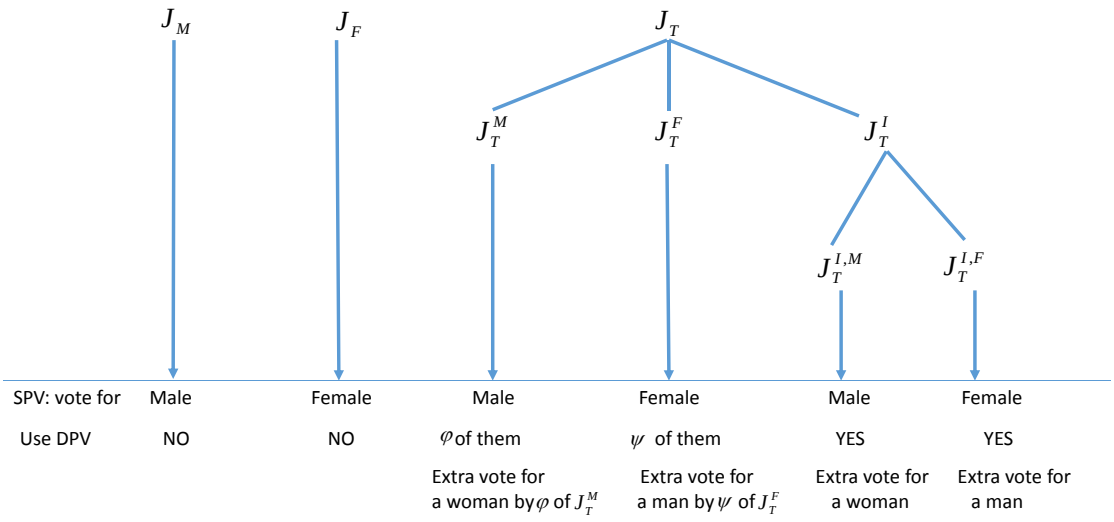
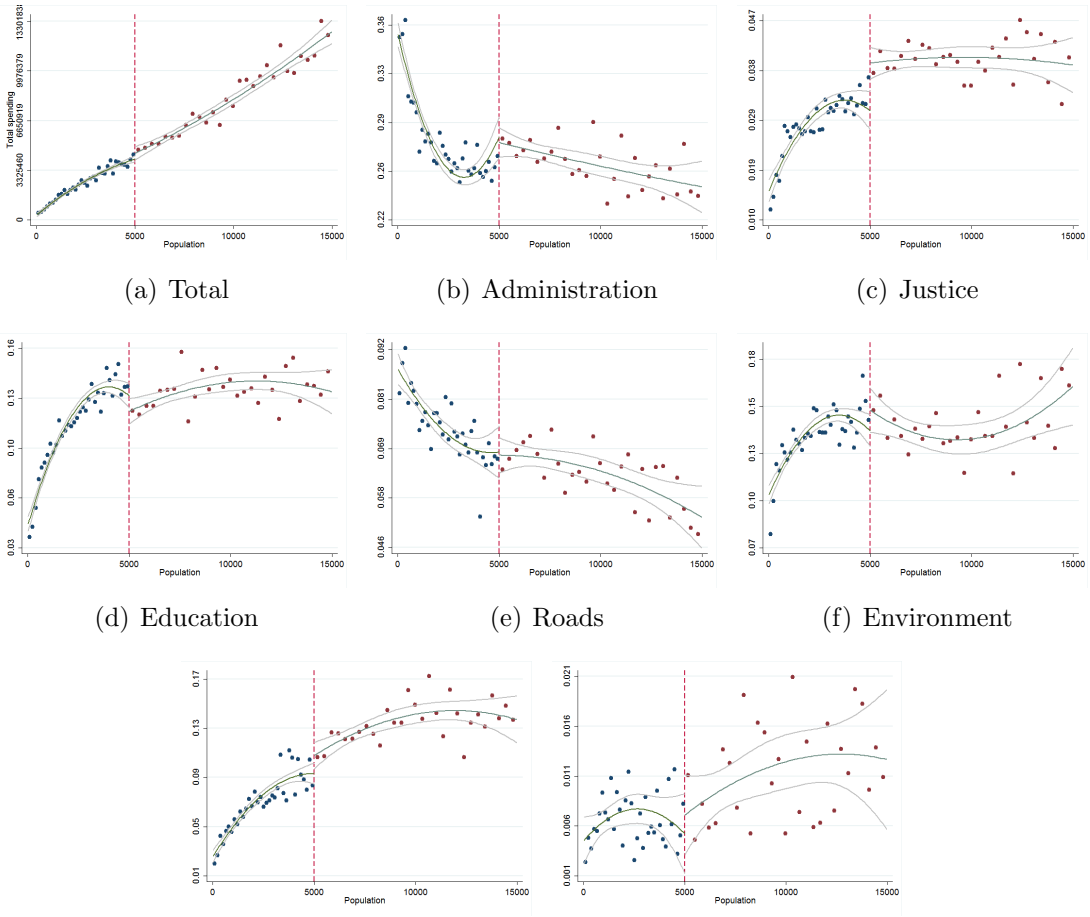


Figure 7: Theoretical example: voting behavior



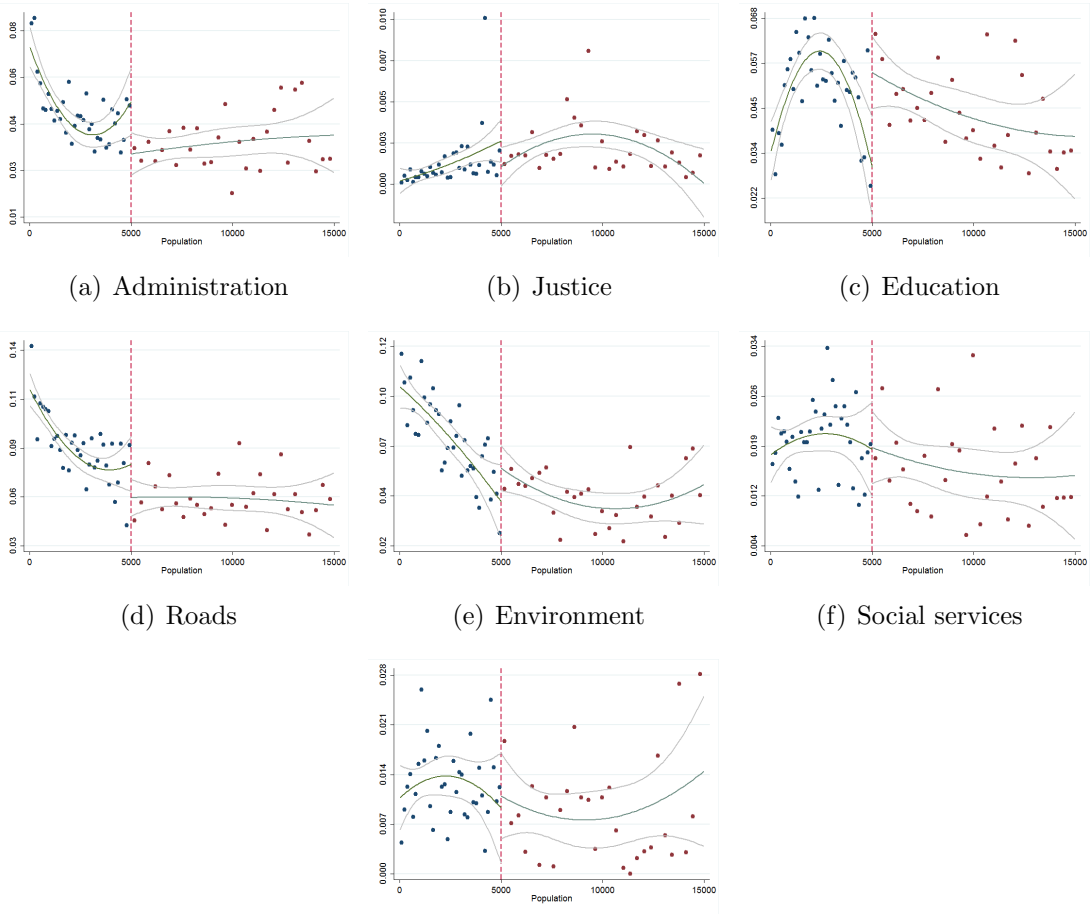
(a) Total (b) Administration (c) Justice

(d) Education (e) Roads (f) Environment

(g) Social services (h) Productive services

Figure 8: Local spending

Notes. The sample includes municipalities voting in 2013 and 2014. The figure plots the binned averages of the total spending and the shares of current account spending in a given category in 2014 and 2015 against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals.



(a) Administration (b) Justice (c) Education

(d) Roads (e) Environment (f) Social services

(g) Productive services

Figure 9: Local spending (2)

Notes. The sample includes municipalities voting in 2013 and 2014. The figure plots the binned averages of the shares of capital account spending in a given category in 2014 and 2015 against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals.

Appendix

For Online Publication

A.1 Description of the variables

The AIDA PA database contains information on balance sheets of all Italian municipalities for the period 2000-2015, with detailed information on the sources of revenue and expenditure items. AIDA PA collects information on both capital and current account expenditures, which we aggregate into the following categories:

- Administration (e.g., spending on administrative bodies, personnel, registry office, statistical and electoral services).
- Justice (e.g., spending on judicial offices, prisons, local police).
- Education (e.g., spending on kindergartens, public schooling, culture, sports and tourism).
- Roads (e.g., spending on traffic circulation and connected services, public lighting and public transports).
- Environment (e.g., spending on urban planning, social housing, water supply, waste disposal, environment protection).
- Social services (e.g., childcare, services for the elderly and social assistance).
- Productive services (e.g., spending on gas and electricity distribution, heating, economic development, etc).

A.2 Additional results

Table A.1: Female presence on municipal councils: geographical areas

	Non-parametric Approach		
Dependent variable:	Share of female councilors		
	(1)	(2)	(3)
Treatment	0.137***	0.159***	0.215***
	(0.028)	(0.060)	(0.028)
Bias-corrected	0.147***	0.160***	0.211***
	(0.028)	(0.060)	(0.028)
Treatment (bias-corrected, robust SE)	0.147***	0.160**	0.211***
	(0.032)	(0.077)	(0.034)
Area	North	Center	South
Bandwidth	986	2,061	1,886
Observations on the left	187	110	152
Observations on the right	118	46	94

Notes. The dependent variable is the share of female councilors over the total number of councilors. Columns 1, 2 and 3 show the results for municipalities in the North, Center and South, respectively. Conventional RD estimates with a conventional variance estimator, bias-corrected RD estimates with a conventional variance estimator, and bias-corrected RD estimates with a robust variance estimator are reported. The sample includes municipalities voting in the period 2013-2015 within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 5,000 residents. *p<0.1, ** p<0.05, *** p<0.01.

Table A.2: Female presence on candidate lists before the reform

	Non-parametric Approach
Dependent variable:	Share of female candidates
	(1)
Treatment	−0.038
	(0.053)
Bias-corrected	−0.035
	(0.053)
Treatment (bias-corrected, robust SE)	−0.035
	(0.065)
Bandwidth	1,236
Observations on the left	43
Observations on the right	52

Notes. The table shows the results of non-parametric estimation. The dependent variable is the share of female candidates over the total number of candidates on party lists presented in the election prior to 2013. Conventional RD estimates with a conventional variance estimator, bias-corrected RD estimates with a conventional variance estimator, and bias-corrected RD estimates with a robust variance estimator are reported. The sample includes municipalities voting in 2013 within the optimal bandwidth selected by one common MSE-optimal bandwidth selector (Calonico et al., 2017) around the cut-off of 5,000 residents. * p<0.1, ** p<0.05, *** p<0.01.

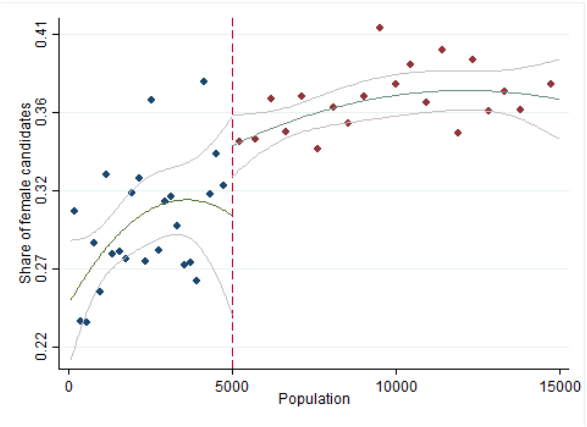


Figure A.1: Female candidates

Notes. The figure plots the binned averages of the share of female candidates against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals.

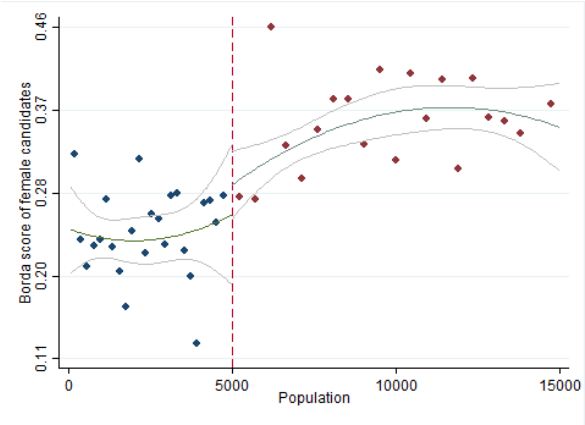


Figure A.2: Placement of female candidates

Notes. The figure plots the binned averages of the Borda score of female candidates on party lists against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals.

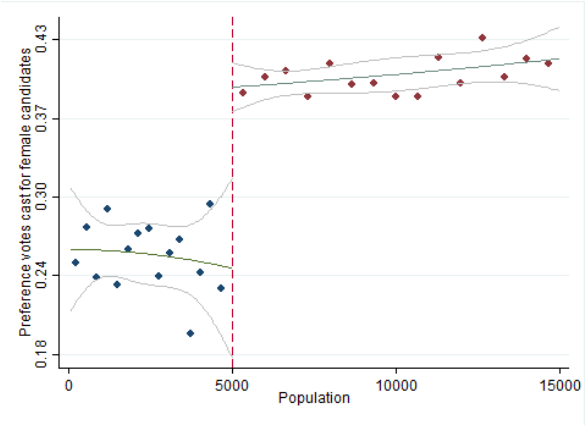


Figure A.3: Preference votes cast for female candidates

Notes. The figure plots the binned averages of the share of preference votes cast for female candidates over the number of preference votes for all candidates on a given list against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals.

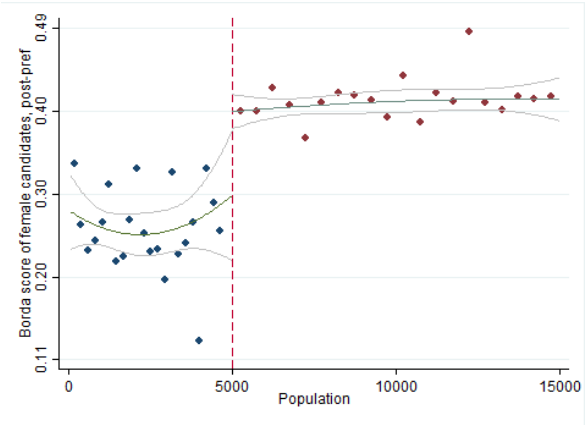


Figure A.4: Post-election placement of female candidates

Notes. The figure plots the binned averages of the Borda score according to the post-election ranking, based on preference votes, of female candidates against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals.

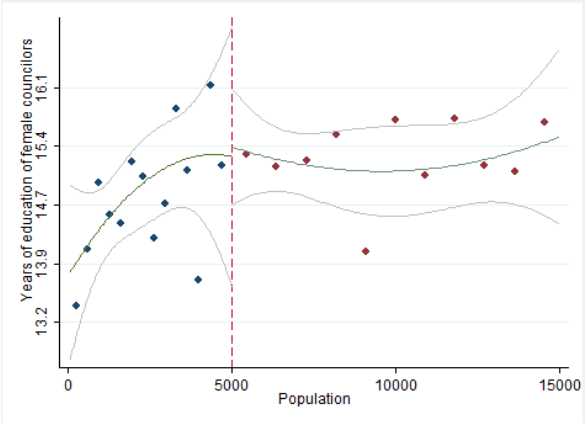


Figure A.5: Education of female councilors

Notes. The figure plots the binned averages of the years of education of elected female councilors against the municipal population, together with the quadratic polynomial fit on both sides of the 5,000 resident cut-off and the 95% confidence intervals.