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Abstract

We analyze the effect of the introduction of gender quotas in candidate lists on the quality of elected politicians. We consider an Italian law which introduced gender quotas in local elections in 1993, and was abolished in 1995. As not all municipalities went through elections during the period the reform was in force, we can identify two groups of municipalities and use a Difference in Differences estimation to analyze the effect of gender quotas on the quality of elected politicians. We find that gender quotas are associated with a higher average number of years of schooling of elected politicians, with the effect ranging from 0.12 to 0.18 years of education. This effect is due not only to the higher number of elected women, who are on average more educated than their male colleagues, but also to the lower number of low-educated elected men. The positive effect on quality is confirmed also when we measure the latter with alternative indicators of the quality of politicians, it persists in the long run and it is robust to the inclusion of political ideology.

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1 Introduction

Women are under-represented in the majority of political institutions. In 2010 women represented only 19.8% of members of Parliaments in the world. In the European Parliament women represent 35% of the members. When we consider the different European countries, in the Lower (or Single) House around 40% of members are female in Belgium, Denmark, Finland, Norway, Sweden and only 22% in Italy. The figures for the Upper House are not very different. Even in local governments, which are typically considered a first step for politicians' career, and possibly easier to access for women, in many countries the female representation is much lower than their share in the population would predict. In Italy, for instance, women represent 11% of mayors, 20% of members of the municipal councils and 21% of the members of executive committees.

There are many arguments in favor of increasing female representation in politics. First, given that women represent half of the population, equal participation in political decision-making contributes to legitimizing the democratic body (Stevens, 2007). Second, as women's needs may be different from the men's ones, a certain number of female policy-makers may be necessary to propose an adequate set of policies that men are usually less likely to put in place, and thus, a larger female representation may be justified as a way to redirect policy implementation and public spending towards specific areas (Funk and Gathmann, 2008; Rehavi, 2007). Additionally, female political leadership may also be beneficial in itself, if women have different behavior and practices which have a positive impact on the quality of institutions or organizations: for instance, women tend to be less adversarial and confrontational, as well as more consensual and constructive than men (Epstein et al., 2005).

These arguments have induced some countries to introduce gender quotas in public elections in order to reach a more gender-balanced representation in political institutions. Affirmative action measures, such as all-women short-lists, gender quotas or list-proportional representation systems have been motivated by the intention to increase the number of women in political bodies. The success of these policies depends on the combination of several factors, as explained by Dahlerup and Freidenvall (2008): the level of enforcement, the type of electoral system and the real will of parties to move towards more equal representation.

There are, however, also several arguments against the introduction of affirmative action measures to increase female representation. Some of them are not specific to

politics but also apply to business. One of the main counterarguments is that female under-representation is just the result of individual choices, especially those related to fertility and motherhood. Thus, by equalizing outcomes rather than opportunities, affirmative action policies risk to promote less qualified individuals who will very likely perform poorly. In other words, if women who benefit from affirmative actions are not qualified to successfully perform the tasks they are appointed to (because there are no women with the qualifications required, or because they do not want to enter the competition) gender quotas may generate an efficiency loss. They may increase equity, but at the expense of efficiency (Holzer and Neumark, 2000). More specifically, as gender quotas do not necessarily obey to meritocracy, the average quality of those responsible for decision-making may decrease. Since the quality of politicians is a crucial way to have good governments and consequently to enhance performance, this argument may be used against the introduction of gender quotas in politics.

In this paper we reverse the argument that gender quotas may have an adverse effect on the quality of selected representatives. On the contrary, focusing on politics, and measuring the quality of politicians by their years of schooling, we show that gender quotas may indeed increase the quality of elected politicians.

To analyze the effects of gender quotas in politics on the quality of politicians we perform an empirical analysis focused on the temporary adoption of gender quotas in candidate lists in Italy. Gender quotas were introduced in Italy in 1993 by the Law No. 81, and were abolished in 1995 by the Constitutional Court. The law imposed that in electoral lists neither sex could represent more than 2/3 of the total candidates. Given that not all municipalities voted during the years 1993-1995, we can identify two groups of municipalities, one affected by the quotas and another never affected by the policy. This allows us to apply a Difference-in-Differences approach to investigate the effect of gender quotas on the quality of politicians. Given the reasonable assumption that there is a positive relationship between educational attainment and private sector's success and between market and political skills (Galasso and Nannicini, 2011), we measure the quality of politicians in terms of human capital (see also Kotakorpi and Poutvaara, 2011). We thus compare the change in the average education of politicians across the two groups of municipalities before and after the policy is enforced, and in this way we disentangle the effect of the quotas on politicians' quality from the temporal trend, which we assume to be common to the two groups. We find that, after the introduction of the reform, the average number of years of education of elected politicians increased

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significantly more in municipalities affected by the policy than in municipalities that were not affected. Namely, the average number of years the municipal councilors spent at school increased by around 2 months more in the first group than in the second one. The effect is driven not only by the increase in the number of elected women, who are on average more educated than their male colleagues, but also by the reduction in the number of low-educated elected men. Other robustness checks we perform confirm our results. In particular, when we measure the quality of politicians by the skill content of their previous occupation, we find that gender quotas have a positive impact also on this measure of quality. Quality should therefore be an argument in favor rather than against the introduction of gender quotas.

The rest of the paper is organized as follows. Section 2 discusses the related literature. Section 3 describes the Italian institutional framework and the data collection. Section 4 presents the estimation strategy and Section 5 presents the empirical results. Section 6 contains some robustness checks. Finally, Section 7 concludes.

2   Related literature

Our paper crosses and combines two strands of the literature: the one on gender quotas and the one on the selection of politicians.

Starting from the first one, although there is a huge literature on different ways of implementing quota systems and there are many descriptive studies of the electoral success of women in legislative bodies (see Krook, 2009), analytical studies on the impact of gender quotas in politics are still very few. Among the effects of the adoption of gender quotas, several papers have focused on the reduction of gender stereotypes. Beaman et al. (2009) exploit random assignment of head position for women across village councils in West Bengal, India, to show that prior exposure to a female leader affects electoral outcomes, the perception of female leadership and gender stereotypes. A recent contribution in this direction is also De Paola et al. (2010). Our paper is tightly linked to this one, as the gender quota reform analyzed is the same, i.e. the introduction of gender quotas in local elections in Italy in the period 1993-1995. De Paola et al. (2010) however are mainly interested in the impact of this policy on female representation rather than on the quality of politicians. They show that the introduction of the gender quota directly increases female representation. They also suggest that the additional exposure voters have with female leadership can break down negative stereotypes. As

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a consequence, a higher percentage of women is elected, even after termination of the affirmative action policy.

Recent attention has been devoted also to the study of the introduction of legislated candidate gender quotas in Spanish elections and its effects on the election of female politicians. Using a Regression Discontinuity Design, Campa (2011) finds that gender quotas increase the percentage of female candidates and, to a lower extent, the percentage of female councilors. Casas-Arce and Saiz (2011) develop a model to explain women under-representation in positions of power. Their empirical findings are consistent with the existence of entrenched male-dominated elites which are able to gain substantial influence within the parties.

Gender quotas may also have an impact on local policies. Women as voters have different preferences than men and these differences may remain when they act as policy-makers, with relevant consequences on the policies implemented and thus, on the overall economy and society. In general, female voters prefer a larger public spending than male voters (Edlund and Pande, 2002) and this is also why the enfranchisement of women has been associated with a larger welfare state (Bertocchi, 2011, Lott and Kenny, 1999, Aidt et al. 2006). As policy-makers, women seem to prefer a different allocation of public funds, favoring projects that support female needs (Chattopadhyay and Duflo 2004, Clots-Figueras 2011, Rehavi 2007, Funk and Gathmann 2008). Campa (2011) however finds no effects of gender quotas in Spanish elections on public finance decisions in municipalities. Duflo and Topalova (2004) compare the performance of male and female council leaders in Indian villages, and how their performance was perceived by the villagers. They find that villages with woman-reserved council head positions had more public goods, and the measured quality of these goods was at least as high as in non-reserved villages. In addition, the inhabitants of these villages are less likely to pay bribes. However, female villagers are less satisfied with the public goods they receive. Interestingly, in a recent paper focused on US mayoral elections in the period 1950-2005, Ferreira and Gyourko (2011) find that female mayors have higher political skills than male, and thus have an advantage as incumbents over comparable male candidates.

Other motivations for the introduction of gender quotas in politics have been proposed. Maniquet et al. (2008) show that in single-member district incumbent politicians may have an advantage from introducing gender quotas, since a gender quota increases the probability for the incumbent of running against a woman and thus, given voters'

bias in favor of men candidates, of being reelected[1]. Finally, to explain the increase of female representation in Norway between 1973 and 1989, Matland and Studlar (1996) introduce the concept of a "contagion theory": competitors are induced to undertake the same successful electoral strategy of opponent parties under the fear of losing votes.

Our paper is also related to the growing literature on the selection and quality of politicians. Several papers have emphasized that the association between political competition and politicians' quality is a crucial determinant of the quality of a government. Besley and Preston (2007) show how the electoral contestability of a district, in terms of electoral bias in favor of one party, affects policy choices. Galasso and Nannicini (2011) verify the effect of political competition on the quality of government by using an individual- level dataset on the Members of the Italian Parliament. They find that politicians with higher ex-ante quality are more likely to run in contestable districts and their performance is better. Quality is measured by years of schooling, previous market income, and local government experience. Using data on Finnish politicians Kotakorpi and Poutvaara (2011) find that higher salary attracts better quality female candidates, while no effect is detected for males. Quality is measured by education and occupational qualifications.

Other works show that education is positively correlated with the quality of government and discuss the impact of the latter in promoting economic development (Djankov et al. 2003, Glaeser et al. 2004, Fortunato and Panizza, 2011). Recent studies also show that the identity of leaders matters and education is an individual characteristic which plays a crucial role: Jones and Olken (2005) find a positive relation between the education of leaders and the rate of growth and Besley et al. (2011) find that more educated politicians generate higher growth. Gagliarducci and Nannicini (2012) investigate the relationship between wage and the performance of elected officials. They find that better paid politicians are more skilled individuals and that they size down government expenditure. Lastly, Merlo et al. (2009) underline the major differences between the First and the Second Republic in the career profiles of Italian politicians. They assess their career paths prior to election to Parliament, their parliamentary careers, and their post-Parliament employment and show that there is a negative association over time between the parliament salary and politicians' quality.

To the best of our knowledge, the relationship between gender quotas and the quality

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[1]Bagues and Esteve-Volart (2012) however provide evidence that challenges this view of the voters' bias in favor of men candidates.

of politicians has not been tested by previous empirical analyses. There are however influential theoretical studies. Caselli and Morelli (2004) find that gender quotas in politics induce women with lower opportunity cost on the private labor market to become candidates and this reduces the average quality of candidates. This lower quality may even hurt women themselves, by increasing their exposure to failures. However, Julio and Tavares (2010) show that this reduction of quality as a consequence of gender quotas is only a short-term effect, that dominates when the rewards from public office are low, or when they are high but women are significantly more discriminated against in the political market than in the labor market. Otherwise, quotas may even increase the average quality, a result which they show to appear in many cases.

Although not with reference to politicians, the relationship between gender quotas and the quality/performance of selected women has been analyzed by a growing experimental literature, which shows that affirmative actions, especially gender quotas, increase participation of high performance women and thus raise female participation without efficiency losses (Niederle et al., 2008). As men are typically more overconfident than women and women tend to shy away from competition, gender quotas could be beneficial, as they change not only the probability to win for men and women, but also the decision to compete. If women know that their chances of winning are larger, they are more likely to enter the competition. Having an enlarged pool of candidates is positive for the quality of selected individuals (see the review by Croson and Gneezy, 2009).

3   The institutional framework and the data

3.1   Italian municipalities and the Law 81/1993

There are approximately 8,100 municipalities in Italy. They vary significantly in terms of geographic, demographic and economic indicators. The municipal administration manages the registry of births and deaths, the registry of deeds, contracting for local roads and public works and, most importantly, social services. It is 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*).

In 1993 a law concerning the electoral system for municipalities and provinces was approved. According to the Law 81/1993, neither sex can represent more than 2/3

of the total candidates in electoral lists for municipal council[2]. The quota system was introduced to balance the gender composition in representative institutions at local level. Namely, since usually the majority of the candidates are male, the law established that at least one third of the positions in electoral lists had to be reserved for women.

The Law 81/1993 includes other provisions besides gender quotas. Namely, it establishes that mayors are directly elected by their own constituents, whereas previously they were appointed by the politicians elected to municipal council. It also prescribes that in municipalities with less than 15,000 inhabitants mayors are elected according to a single ballot rule, whereas a dual ballot is mandatory in municipalities with more than 15,000 inhabitants.[3] The Law also substantially increases mayors' powers, as it allows them to nominate their own executives from outside the elected council members, while before their choice was constrained by the pool of the elected politicians.[4]

In 1995 the provision regarding gender quotas was abolished by the Constitutional Court. The Judgment 422/1995 claimed that this provision was unconstitutional because in violation of the principle of equality between sexes. All the other reforms included in the Law were not modified.

As a result of the ruling, the provision on gender quotas was in place for a short period between April 1993 and September 1995. Local elections take place strictly every five years[5] and municipal governments cannot affect their schedule. Given this fixed term feature, not all the Italian municipalities were affected by the reform: some of the municipalities voted with gender quotas, and others never did so, as if the law had

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[2]The Law 81(1) of March 27, 1993 modified this provision by stipulating that in municipalities with less than 15,000 residents neither sex could represent more than 3/4 of the total candidates.

[3]In single-ballot municipalities, the candidate who would get the relative majority in the single election is appointed to be the mayor. Under this scheme, each candidate for the mayor position could be backed by one list only, with a substantial victory bonus: the list supporting the winner gets two-thirds of the seats in the council, while the rest of the seats are assigned to the remaining lists according to a proportionality criterion. In dual-ballot localities instead each candidate could be backed by a number of lists and not just one, i.e. there is no direct link between lists and mayoral candidates. If a candidate obtains an absolute majority (i.e. more than 50% of the votes cast) he or she becomes the mayor; if no candidate wins an absolute majority, then those ranked first and second go to a second round, in which they can seek the support of lists whose candidates have been eliminated. After having appointed the mayor, the council is formed. If the lists supporting the winning candidate receives over 50% but less than 60% of the votes, then they obtain 60% of the seats in the Council; otherwise, seats are assigned according to a proportionality rule.

[4]Other changes involve the reduction in the maximum number of seats in municipal councils which are determined according to the size of the resident population and the change in the format of the electoral ballot.

[5]With the exception of the period 1993-1999, when the mandate was shortened to four years.

never been enacted. Thereby, we identify the former as the treatment group (where *treatment* is defined as being exposed to gender quotas) and the latter as the control group[6]. The first group is composed of 7,667 municipalities, which voted at least once during the period when the law was active; the second group consists of the rest of the municipalities, in line with the strategy used by De Paola et al. (2010).

3.2 The data and descriptive analysis

In our analysis we use administrative data provided by the Italian Ministry of the Interior on gender, age, education level and previous jobs of all politicians elected in the Italian municipalities from 1985 to 2009. In addition, data regarding the size of the resident population over age 15 and the share of the employed population[7] are calculated from the 1991 and 2001 Italian Census of Population. Over the period of interest, the average population (over age 15) size of municipalities was 5930 inhabitants and the share of the employed in the population was 41%[8].

In the following tables, we present descriptive statistics on the average education level of the elected councilors in the Italian municipalities. Table 1 shows the average number of years of education of municipal councilors in the two groups of municipalities for the time period used in our main analysis. Namely, the averages are calculated using the data on the politicians elected during the last election before the adoption of the law (*Before*) and the first election immediately after it (*After*). In Table 2 and Table 3 we distinguish between female and male politicians.

[Table 1, Table 2 and Table 3 here]

The statistics show that the education level of the elected councilors is on average higher in the control group, both in the *Before* and *After* periods. The temporal change is positive for both groups of municipalities, and it seems to be larger for the treatment

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[6]We are aware of the potential mixing between the two groups, which would happen in cases where the electoral campaign is run right before the adoption or right before the abolition of gender quotas. In other words, there could be some municipalities assigned to the treatment group that ran the campaign without quotas. Similarly, there could be some control group municipalities that actually had their electoral lists prepared and promoted during the period when gender quotas were in place, but voted in their absence. Notice however that, taking into account that electoral campaigns officially last for 30 days, we have no such mixing in our sample since no municipalities voted during the 30 days after March 25, 1993 and in the 30 days after September 12, 1995.

[7]At the denominator we have the share of the resident population over age 15.

[8]These numbers are calculated using the data from the 1991 Census for all municipalities.

group. All differences are statistically significant to conventional levels, as indicated by t-statistics shown in the tables. A similar pattern occurs when looking at the years of education of the elected male politicians. Interestingly, the elected female councilors on average have completed roughly two years of schooling more that the male ones for all the groups considered. Finally, there is little evidence that the temporal change in the years of education of the elected females was positive[9].

Finally, we look at how female representation evolved in the two groups of municipalities before and after the adoption of gender quotas. Table 4 shows the percentage of women in local governments. The data reveal that in the post-reform period female representation in municipal councils increased in both groups of municipalities; the increase in municipalities that voted with gender quotas is more pronounced than in municipalities that did not. Since women have on average more years of education than men, this finding indicates one potential channel through which gender quotas may have affected the quality of the elected politicians[10].

[Table 4 here]

4   Empirical Strategy

The goal of our analysis is to measure the impact of the gender quotas introduced with the Law 81/1993 on the quality of the elected politicians. Given that gender quotas were imposed on electoral lists for municipal councils, we primarily focus on the outcomes of the elected municipal councilors. The reform resulted in several important changes in the electoral system for local governments as discussed in Section 3.1. We can, however, exploit the fact that an early abolition of the gender quotas' provision exogenously divided Italian municipalities into a treatment and a control group. Therefore, we can net out the effects of the reform common to both groups by Difference-in-Differences estimation. In this quasi-experimental set up, there are no reasons to suspect that the

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[9]The t-statistic in a test for the difference in means in Before and After elections for the control group is below conventional levels.

[10]Effects of gender quotas on female representation are documented in detail by De Paola et al. (2010). We have checked the impact of gender quotas on female representation using our empirical strategy and we also find the positive effects reported in De Paola et al. (2010). The results are available upon request.

1993 reform had a differential impact on the two groups of municipalities other than the gender quotas' provision.

We use a Difference-in-Differences estimation to examine the effect of gender quotas on politicians' quality as defined by years of education. We identify municipalities which were exposed to gender quotas as the treatment group and municipalities which never voted with gender quotas as the control group. We run a number of municipality-level regressions and compare the change in the average education level of municipal councilors across the two groups of municipalities in elections right before and right after the introduction of the reform.

Since being exposed or not to gender quotas was induced by an exogenous change in the institutional setting, we consider the treatment or the control group status to be as good as randomly assigned. Moreover, in our setting selection into treatment or control groups is especially unlikely, because the timing of voting cannot be manipulated by the municipality itself due to the fixed term of local governments. The key identifying assumption in our analysis is the existence of parallel trends prior to the reform between the two groups of municipalities.

Assumption 1. In the absence of the reform the difference in the outcome between the treatment and the control group would have remained the same.

$$E[\varepsilon_{it}|Treatment_i, After_t, X_{it}] = 0 \tag{1}$$

where $Treatment_i$ is a dummy variable for municipalities affected by gender quotas; $After_t$ is a dummy equal to one for elections taking place after the introduction of the reform; X_{it} is a vector of municipal characteristics and ε_{it} is an error term.

To verify this assumption we need *at least* two time observations for each locality before the introduction of gender quotas. Our data start in 1985. Since the mandate of local governments is five years and the reform took place in 1993, we do not have enough data points for all municipalities to verify if the trends in the outcome variable are parallel in the two groups prior to the assignment of the treatment. Figure 1 shows that the number of municipalities voting in each calendar year both in the treatment and in the control municipalities is not constant. Therefore, looking at the treatment and control group in each calendar year is not an appropriate strategy to verify the presence of a parallel trend, since subsamples of the treatment and control groups observed in each calendar year are not representative of the original composition in the two groups.

Moreover, we note that the timing of the elections in both groups of municipalities

differs by construction. Figure 1 shows that the fixed term feature induces a cyclical pattern in the data, with dis-proportionally many elections in some years, and very few in others. We argue that this is not a specific feature of elections around the time of the adoption of the reform, because such pattern is already visible as early as in the mid-Eighties. The difference in the timing of elections across municipalities can be explained by the fact that some local governments terminated before the end of the mandate in the past. These observations support our claim that the timing of the elections around the gender quotas' adoption is not due to local politicians manipulating the date of elections with the specific goal to hold elections with or without gender quotas.

Notice also that, due to staggered election dates, in our analysis we will almost never compare voting outcomes for the treatment and the control groups in the same year. Roughly, "after reform elections" for the treatment group municipalities happen in the period March 1993- September 1995, while "after reform elections" for the control group happen during the period October 1995 - July 1999. Hence, in our analysis we also implicitly assume that, in the absence of the reform, the treatment group would have had the same change in outcome as the control group during different time periods, as formally stated in the following.

Assumption 2.

$$\Delta_t E\left(Y_{0i}|T_i=1, t=\tau_i^{Before}-\tau_i^{After}\right) = \Delta_t E\left(Y_{0j}|T_j=0, t=\tau_j^{Before}-\tau_j^{After}\right) \quad (2)$$

where T stands for the variable $Treatment$ as defined before; i and j are indeces for treatment and control group municipalities; τ_i and τ_j are the dates in which, respectively, treatment and control group municipalities vote.

In other words, we assume that the change in the (untreated) outcome in the control group, for instance, from year 1992 to year 1997 can be used as a proxy for the change in the untreated outcome in the treatment group, for instance, from year 1989 to year 1994.

We analyze the impact of the reform on the average education level of the elected politicians. We focus on the short term effects of the policy, namely, we only look at the voting outcomes of elections held right before and right after the adoption of the reform[11]. This makes us more confident in claiming that nothing else happened in the treatment group versus the control group, after having controlled for province fixed

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[11]To put it differently, we have two observations for each locality. However, 86 municipalities voted twice during the period when the reform was in place. For them, we keep both observations after the introduction of quotas in order to take into consideration all the elections where gender quotas were

effects, time trend and certain municipality characteristics. It is more likely that within a short time period there were no other sharp changes in the institutional environment other than the reform which could have differentially affected the quality of elected politicians. Hence, by closing the time window with the first election after September 1995 for the control group, we reduce the risk of incorporating confounding factors in the estimation.[12]

We examine if the politicians' education level increased by more in the municipalities affected by the reform than in the municipalities were the law had no effect, given that descriptive analysis reveals that there was an overall positive trend in the average years of education. Furthermore, we investigate the effect on the education level of the elected female and male politicians separately. The baseline Difference-in-Differences estimator is of the form:

$$Y_{it} = \alpha + \gamma Treatment_i + \varphi After_t + \beta TreatAfter_{it} + X_{it}\delta + \varepsilon_{it} \tag{3}$$

where Y_{it} is the outcome of interest and measures the average years of schooling of politicians elected in locality i in the year t; $Treatment_i$ and $After_t$ are, respectively, dummy variables for municipalities affected by gender quotas and for elections taking place after the introduction of the reform (from March 1993 to July 1999 in our sample[13]), as already described. The variable $Treatment$ allows us to control for the unobserved time-invariant characteristics that may differ across municipalities in the two groups, while the variable $After$ captures the temporal trend common to both groups. More precisely, the variable $After$ does also account for the impact of other provisions of the 1993 reform that affected all Italian municipalities. $TreatAfter_{it}$ is the interaction term between the two dummies and measures the treatment effect of our interest; X_{it} is a vector of municipal characteristics including the population size and the share of employed resident population as described before; ε_{it} is an error term.

In further specifications we also include dummies for each province to account for the characteristics that are common to municipalities in the same province and are constant over time. We hence estimate the following equation:

$$Y_{ist} = \alpha + \gamma Treatment_{is} + \varphi After_t + \beta TreatAfter_{ist} + X_{ist}\delta + \mu_s + \varepsilon_{ist} \tag{4}$$

applicable. Our results are broadly robust to the exclusion of these elections and can be made available upon request.

[12]On the other hand, focusing on a short time window, we do not exploit all the available information. In the robustness analysis we will show results for a long run analysis.

[13]Our sample also includes 12 municipalities that vote later, i.e., between April 2000 and June 2004.

where all the variables are defined in the same way as before and μ_s is a province s dummy. Finally, we add province-specific time trends to equation 4. This specification guarantees that time-varying unobserved characteristics common to municipalities within the same province do not drive our results, because we can isolate these characteristics by explicitly estimating province-time-period dummies. Put it differently, in this specification we allow for province-specific shocks in the education of politicians and make sure that these do not contribute to the identification of our parameter of interest.

5   Results

In our main specification, we measure the quality of all members of the municipal councils by using the average number of years of schooling. We estimate equation 3 without controls in column 1 and with controls in column 2. Equation 4 without and with controls is used in column 3 and in column 4, respectively. Finally, equation 4 with province-period dummies is estimated in column 5. In further specifications, we distinguish between female and male politicians and replicate the same set of regressions to investigate the existence of differential effects according to the gender of the elected politicians.

The first set of regressions is presented in Table 5. Standard errors are clustered at the municipality level[14].

[Table 5 here]

The coefficient on the *Treatment* variable is statistically significant and negative in columns 1 and 2: this indicates that the members of the municipal councils have on average more years of education in non-gender-quota municipalities. However, the coefficient becomes virtually zero if we include province dummies. In other words, once we account for province-specific time-invariant characteristics, there seems to be no evidence of systematic differences between the average education of elected politicians in treatment and control municipalities.

Second, we observe the positive time trend in the level of education of the elected politicians. The *After* coefficient is statistically significant and positive in columns 1

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[14]The results are broadly robust to clustering the standard errors at the province level and can be made available upon request.

to 4, indicating an improvement of the quality of elected politicians in the *After* with respect to the *Before* elections[15].

Most importantly, the coefficient on the interaction term $TreatAfter$ is statistically significant and positive in all columns. The estimates suggest that the reform improved the average level of education of the elected municipal councilors. Namely, after the introduction of the reform the average education of municipal councilors in the treatment group municipalities increased by 0.12 to 0.18 years more than in the control group. This corresponds to approximately 2 additional months of education on average.

The size of the municipality population over age 15 and its square and the share of employed population are used as additional control variables. While we abstain from the causal interpretation of the coefficients of these controls, we note that the relation with the population size is positive and concave.

In further analysis, we divide the sample according to the gender of the elected councilors. The dependent variable in Table 6 is the average number of years the elected female politicians spent at school.

[Table 6 here]

The estimates reveal that the reform had no effect on the average level of education of elected female politicians. Nearly all coefficients are imprecise to the conventional confidence levels. First of all, this indicates the absence of a positive time trend in the quality of the elected women. Second, we cannot claim that in the treatment municipalities the education level of the elected women did evolve differently after the reform compared to the control group.

The regressions on the education level of the elected male in Table 7 show that the quality of male politicians increased more in the municipalities affected by the reform than in the control group. The results indicate that the education level of elected municipal councilors rose by 0.12-0.19 years more in the treatment group than in the control group. Therefore, our estimates in the baseline specification are mainly driven by the improvement in the years of education of the elected men rather than of the elected women.

[Table 7 here]

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[15]We also note that this overall positive trend is driven by some particular Italian provinces, as indicated by the change in the sign of the coefficient in column 5, where we explicitly account for time-varying province-specific shocks in politicians' education.

Finally, we shed some light on the effects of the introduction of gender quotas on the distribution of the years of education across municipal councilors. We compute the variance of the years of education of municipal councilors and use it as a dependent variable in our regressions. Table 8 shows that in the treatment group municipalities the variance increased less than in the control group municipalities. Given that the average level of education increases and the variance goes down, gender quotas guarantee a higher number of educated councilors.

[Table 8 here]

Overall, Tables 5-7 show that the introduction of gender quotas increased the average education level[16] of individuals who became politicians in the municipalities affected by the policy: the quality of the overall political body increased by more in the treatment group municipalities than in the control. This result is driven by the fact that fewer male politicians with a low level of education were elected. The lower presence of low-educated men among elected politicians may have occurred through different channels. First, parties constrained by the gender quotas rule may have chosen to include more highly-educated male candidates in the electoral list, replacing less educated men. In this case, more educated politicians were elected even absent a change in voters' preferences for the politicians' years of education. Second, voters' preferences may have shifted from low-educated candidates to high-educated female or high-educated male politicians. Given that we only have data on elected politicians and not on all the candidates on the electoral lists of the 8100 Italian municipalities, we cannot disentangle the two arguments. They are both consistent with our results.

6 Robustness analysis

In this section we introduce three robustness checks of our main analysis. First, we consider a different measure of the quality of politicians, based on the type (skill-intensive or not) of their previous occupation. Second, we analyze the long-run effects of the

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[16]We also implemented the analysis using the share of politicians that have acquired at least a high school diploma as the dependent variable. The results point to the same conclusion as the one we reach when the average years of education are used as a measure of quality and they are available upon request.

introduction of the gender quotas and check whether the positive effects on the quality of politicians that we have found in the main analysis are persistent over time. Finally, we control for the political ideology of the majority in the municipal council. We show that our results are robust to these changes.

6.1   Previous occupation

We here examine the effects of gender quotas on an alternative measure of the elected politicians' quality.[17] In our data we have information on the previous occupation of the elected politicians and we can use it to build a measure of politicians' quality. More precisely, we consider all politicians who were engaged in entrepreneurial, professional or other skill-intensive activities[18] before obtaining a seat in municipal council. Such choice of the dependent variable is motivated by the potential correlation of labor market ability and skills in the political arena (Galasso and Nannicini, 2011).[19] In this case, a higher proportion of politicians whose previous occupation is skill-intensive would be interpreted as an indicator of a higher quality of the political body considered.

First, we implement the same regression specifications as in our main analysis for all members of municipal councils. The results in Table 9 show that the change in politicians' quality was larger for the treatment group municipalities compared to the control group. The coefficient on *TreatAfter* is positive and significant; the effect of gender quotas amount to an additional 1-3 percentage point increase in the share of high-skill politicians elected in the councils of treated municipalities.

[Table 9 here]

We also distinguish between male and female politicians to investigate heterogeneous effects according to gender. The coefficients in Table 10 and 11 suggest an increase of both male and female politicians' quality. Notice that we did not find an effect on the quality of female politicians when the latter is measured by the years of education. We

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[17]Some studies suggest that the time in office could also be a good measure of the quality of politicians (see Gagliarducci and Paserman, 2012). However, in our set-up duration in office is affected by the law that shortened the mandate for municipal councilors (see Section 3.1) during the *After* period. Given the presence of this confounder, we do not consider the duration in office as an appropriate outcome variable in our analysis.

[18]The full list of occupations included in this category can be found in the Appendix, Table A.7.

[19]The importance of the professional background on politicians' quality and their performance is confirmed by Dreher et al. (2009), who show that the professional background of a head of government matters for the implementation of market-liberalizing reforms.

however observe a higher presence of females with skill-intensive jobs. This different result is consistent with the fact that in Italy gender differences in the labor market are much larger than the ones observed in education. Women with high education indeed are not perfectly matched into high-skilled jobs. Thus, measuring the quality of female politicians by years of schooling or by type of occupation may deliver different results.

[Table 10 here]
[Table 11 here]

All in all, the results in the main analysis are robust to a change in the indicator used to capture the quality of politicians.

6.2 Long-term effects

So far in our analysis we have not yet fully exploited the longitudinal dimension of our data, since we are using, for most municipalities, only two time observations. De Paola et al. (2010) argue that gender quotas had a persistent impact on the share of the elected female politicians despite the fact that gender quotas were active only for a limited period of time. We are therefore interested in analysing whether the positive impact on quality identified in the short run persists over a longer time horizon. In this section we run regressions using all the available data at hand and implement the same regression specifications as in our main analysis.

[Table 12 here]

Evidence in Table 12 shows that the gender quotas' effect persisted over a longer time period. In line with the results in Section 5, the coefficient of interest in regressions for all members of councils[20] is positive and statistically significant.

We also adopt an alternative strategy to estimate the long-term effects of the quotas. Since the temporal trend over a longer period may not be constant and linear, we control for this by including five-year period dummies. This choice is motivated by the fact that local elections take place every five years in Italy and over this time period most municipalities vote, normally, once. We estimate the model in equation 3 with five-year trends and province fixed effects and we also control for province-specific five-year

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[20]The results for female and male politicians are shown, respectively, in Tables A.1 and A.2 in the Appendix.

trends to capture potentially different patterns across Italian provinces. In such a way, we separately control for all shocks common to municipalities in a given province during each five year period. The results are very similar to the findings discussed above and can be found in the Appendix, Table A.3.

Summarizing, even though the gender quotas' provision was in place for a relatively short period of time, our results suggest that it had a persistent effect on the elected politicians' quality. Using the data covering a longer time period, municipalities which were once exposed to more gender-balanced electoral lists exhibit a sharper increase in the quality of elected politicians than municipalities which never did so.

6.3   Political ideology

One may argue that given the staggered timing of municipal elections in the treatment and control group it is possible that the effects on the politicians' quality are mainly driven by changes in the winning parties' ideology. In this section we explicitly control for the political ideology of the majority in municipal councils. Namely, the vector of municipality-level controls is augmented with dummies for the political leaning of the majority in the council. The variable $majL$ is a dummy for a left-party majority; the variable $majCR$ is a dummy for the center-right party majority; the variable $majlist$ is a dummy for councils where the majority of members are politicians elected through civic lists and the variable $majmix$ is a dummy for councils where seats are shared equally by two or more parties having different ideology. The distribution of councils according to this definition of majority can be found in the Appendix, Table A.6.

[Table 13 here]

Table 13 shows that our results are robust to controlling for the political ideology of the majority. The coefficient of interest *TreatAfter* on the average years of schooling of all members[21] of municipal council remains positive and statistically significant. The point estimates change their magnitude only slightly when compared to the corresponding columns in Table 5. This piece of evidence suggests that the results are not driven by differences in the winning parties' composition across elections taking place on different dates.

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[21]The results for female and male politicians separately are shown, respectively, in Tables A.4 and A.5 in the Appendix.

7 Concluding remarks

We investigate the effect of gender quotas on politicians' quality. We analyze the temporary adoption of gender quotas in candidate lists in Italian municipalities and we try to disentangle the causal effect of affirmative action policies from other factors. We show that the introduction of gender quotas in candidate lists increased the average education level of elected politicians, primarily by increasing the number of elected women and reducing the number of low-educated elected men. The positive effect on quality is confirmed also when we measure the latter with alternative indicators, it is robust to the inclusion of political ideology and it persists in the long run.

There are still some open questions on the mechanisms through which the introduction of gender quotas results in an increase in the quality of elected politicians. Namely, is the change in the quality of the candidates selected by parties in electoral lists that guarantees a higher quality of the electoral body? Or have voters changed their preferences? Our paper does not provide an answer to these issues as we do not have data on candidates in all the elections and municipalities considered but only on elected politicians. Our results however suggest that gender quotas are not per se detrimental to quality, rather the opposite.

As women have caught up and often overtaken men in some areas of educational participation and performance, the existence of gender gaps in politics may represent a considerable loss for society since there is an unexploited female potential. Furthermore, even when the re-balancing of gender representation delivered by the introduction of quotas is limited, gender quotas' may represent an effective mechanism to have more educated individuals elected in political bodies. Thus, as long as we expect more educated individuals to perform better as politicians, gender quotas may be beneficial for the entire society.

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Tables and figures
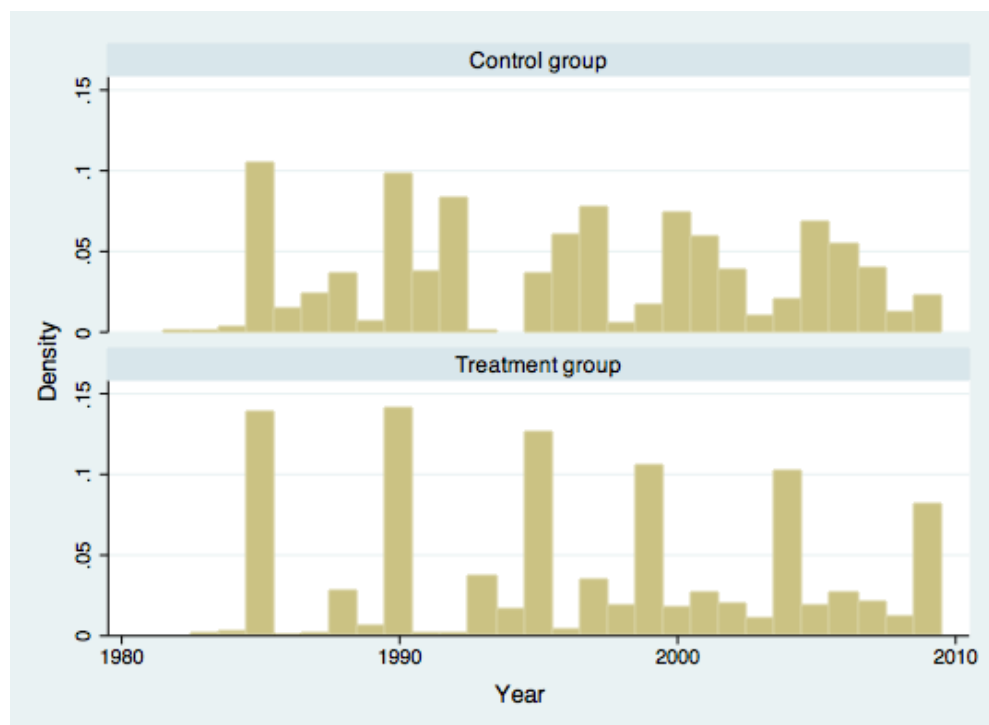
Figure 1: Elections in control and treatment municipalities

Table 1: Average years of education of politicians in municipal councils

	Before	After	t-stat
Treatment group	11.06694	11.6555	-21.2287
se	(1.788334)	(1.649478)	
N	7667	7729	
Control group	11.40616	11.8739	-3.9899
se	(1.799145)	(1.619822)	
N	427	426	
t-stat	3.8136	2.6630	
Total N	8094	8155	

Table 2: Average years of education of politicians in municipal councils: females

	Before	After	t-stat
Treatment group	12.56251	12.65095	-1.9861
se	(2.76941)	(2.292189)	
N	5675	7255	
Control group	13.03318	13.20246	-0.8028
se	(2.712303)	(2.562399)	
N	278	353	
t-stat	2.7694	4.3892	
Total N	5953	7608	

Table 3: Average years of education of politicians in municipal councils: males

	Before	After	t-stat
Treatment group	10.93304	11.41226	-16.3285
se	(1.846121)	(1.794592)	
N	7667	7723	
Control group	11.30068	11.6555	-2.8641
se	(1.854147)	(1.762799)	
N	427	426	
t-stat	4.0041	2.7259	
Total N	8094	8149	

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Table 4: Share of female politicians in municipal councils

	Before	After	t-stat
Treatment group	0.0893073	0.1987404	-74.6669
se	(0.0772919)	(0.1027676)	
N	7667	7753	
Control group	0.0736064	0.1407669	-10.4116
se	(0.0759523)	(0.1095376)	
N	427	427	
t-stat	-4.0891	-11.3087	
Total N	8094	8180	

Table 5: All politicians

	Average years of education of council members				
VARIABLES	(1)	(2)	(3)	(4)	(5)
treatment	-0.339***	-0.287***	-0.0662	-0.0695	-0.0606
	(0.0893)	(0.0845)	(0.0808)	(0.0760)	(0.0770)
after	0.468***	0.468***	0.463***	0.412***	-0.715*
	(0.0653)	(0.0664)	(0.0664)	(0.0678)	(0.407)
treatafter	0.121*	0.121*	0.133*	0.180***	0.160**
	(0.0670)	(0.0681)	(0.0680)	(0.0694)	(0.0706)
emprate		-1.205***		5.474***	5.461***
		(0.191)		(0.345)	(0.346)
popover15		0.0267***		0.0206***	0.0206***
		(0.00451)		(0.00342)	(0.00343)
popover15sq		-1.17e-05***		-8.92e-06***	-8.91e-06***
		(2.24e-06)		(1.67e-06)	(1.67e-06)
Observations	16,249	15,952	16,249	15,952	15,952
R-squared	0.029	0.109	0.249	0.308	0.314
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** p<0.01, ** p<0.05, * p<0.1

Standard errors clustered at municipal level

Table 6: Female politicians

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Average years of education of council members				
treatment	-0.471***	-0.335**	-0.231	-0.220	-0.163
	(0.167)	(0.164)	(0.160)	(0.159)	(0.162)
after	0.169	0.165	0.113	0.0905	0.308
	(0.180)	(0.181)	(0.179)	(0.180)	(1.042)
treatafter	-0.0808	-0.125	-0.0811	-0.0596	-0.149
	(0.185)	(0.185)	(0.183)	(0.183)	(0.188)
emprate		-2.984***		4.320***	4.256***
		(0.286)		(0.543)	(0.546)
popover15		0.0171***		0.0130***	0.0129***
		(0.00300)		(0.00215)	(0.00215)
popover15sq		-7.39e-06***		-5.52e-06***	-5.50e-06***
		(1.48e-06)		(1.05e-06)	(1.05e-06)
Observations	13,561	13,289	13,561	13,289	13,289
R-squared	0.002	0.030	0.093	0.103	0.112
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** p<0.01, ** p<0.05, * p<0.1

Standard errors clustered at municipal level

Table 7: Male politicians

VARIABLES	(1)	(2)	(3)	(4)	(5)
		Average years of education of council members			
treatment	-0.368***	-0.315***	-0.0725	-0.0769	-0.0691
	(0.0921)	(0.0870)	(0.0834)	(0.0785)	(0.0794)
after	0.355***	0.355***	0.346***	0.293***	-0.807
	(0.0705)	(0.0717)	(0.0717)	(0.0734)	(0.586)
treatafter	0.124*	0.125*	0.138*	0.187**	0.169**
	(0.0723)	(0.0736)	(0.0734)	(0.0750)	(0.0767)
emprate		-1.243***		5.629***	5.615***
		(0.201)		(0.362)	(0.363)
popover15		0.0283***		0.0219***	0.0219***
		(0.00477)		(0.00365)	(0.00366)
popover15sq		-1.24e-05***		-9.51e-06***	-9.50e-06***
		(2.37e-06)		(1.78e-06)	(1.79e-06)
Observations	16,243	15,946	16,243	15,946	15,946
R-squared	0.018	0.098	0.237	0.297	0.302
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** p<0.01, ** p<0.05, * p<0.1

Standard errors clustered at municipal level

Table 8: All politicians

VARIABLES	Variance of years of education of council members				
	(1)	(2)	(3)	(4)	(5)
treatment	0.0263**	0.0285***	0.0149	0.0157*	0.0249***
	(0.0102)	(0.00952)	(0.00998)	(0.00950)	(0.00941)
after	0.0553***	0.0561***	0.0540***	0.0573***	0.0807*
	(0.0157)	(0.0161)	(0.0161)	(0.0164)	(0.0455)
treatafter	-0.0391**	-0.0387**	-0.0375**	-0.0391**	-0.0563***
	(0.0160)	(0.0164)	(0.0163)	(0.0166)	(0.0172)
emprate		-0.0937***		-0.375***	-0.378***
		(0.0238)		(0.0467)	(0.0468)
popover15		-0.00382***		-0.00327***	-0.00327***
		(0.000608)		(0.000534)	(0.000537)
popover15sq		1.64e-06***		1.40e-06***	1.40e-06***
		(3.01e-07)		(2.60e-07)	(2.61e-07)
Observations	16,216	15,919	16,216	15,919	15,919
R-squared	0.002	0.083	0.096	0.160	0.192
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Standard errors clustered at municipal level

Table 9: All politicians

VARIABLES	Share of councilors with high-skill previous job				
	(1)	(2)	(3)	(4)	(5)
treatment	-0.0394***	-0.0390***	-0.0190***	-0.0198***	-0.0253***
	(0.00699)	(0.00669)	(0.00643)	(0.00609)	(0.00623)
after	0.00562	0.00486	0.00445	0.000300	-0.0583**
	(0.00658)	(0.00665)	(0.00669)	(0.00677)	(0.0275)
treatafter	0.0109	0.0121*	0.0130*	0.0173**	0.0278***
	(0.00677)	(0.00684)	(0.00686)	(0.00695)	(0.00718)
emprate		-0.0203		0.372***	0.372***
		(0.0142)		(0.0232)	(0.0232)
popover15		0.00202***		0.00169***	0.00169***
		(0.000308)		(0.000257)	(0.000257)
popover15sq		-8.92e-07***		-7.38e-07***	-7.38e-07***
		(1.53e-07)		(1.25e-07)	(1.25e-07)
Observations	16,273	15,976	16,273	15,976	15,976
R-squared	0.007	0.077	0.147	0.215	0.230
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Standard errors clustered at municipal level

Table 10: Female politicians

	Share of councilors with high-skill previous job				
VARIABLES	(1)	(2)	(3)	(4)	(5)
treatment	-0.0624***	-0.0611***	-0.0470**	-0.0499**	-0.0566***
	(0.0204)	(0.0204)	(0.0202)	(0.0201)	(0.0204)
after	-0.0333	-0.0385	-0.0383	-0.0458*	0.105
	(0.0240)	(0.0240)	(0.0240)	(0.0241)	(0.0684)
treatafter	0.0378	0.0433*	0.0401*	0.0497**	0.0606**
	(0.0244)	(0.0244)	(0.0244)	(0.0244)	(0.0248)
emprate		-0.112***		0.349***	0.347***
		(0.0291)		(0.0485)	(0.0487)
popover15		0.00163***		0.00138***	0.00139***
		(0.000268)		(0.000227)	(0.000228)
popover15sq		-7.14e-07***		-5.96e-07***	-5.99e-07***
		(1.32e-07)		(1.10e-07)	(1.11e-07)
Observations	13,748	13,474	13,748	13,474	13,474
R-squared	0.001	0.016	0.038	0.052	0.064
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Standard errors clustered at municipal level

Table 11: Male politicians

			Share of councilors with high-skill previous job		
VARIABLES	(1)	(2)	(3)	(4)	(5)
treatment	-0.0393***	-0.0394***	-0.0186***	-0.0192***	-0.0251***
	(0.00718)	(0.00689)	(0.00667)	(0.00633)	(0.00645)
after	0.00694	0.00661	0.00576	0.00205	-0.0580*
	(0.00697)	(0.00706)	(0.00706)	(0.00716)	(0.0307)
treatafter	0.0123*	0.0131*	0.0142**	0.0180**	0.0293***
	(0.00717)	(0.00726)	(0.00724)	(0.00735)	(0.00757)
emprate		-0.00164		0.382***	0.382***
		(0.0148)		(0.0241)	(0.0242)
popover15		0.00207***		0.00174***	0.00174***
		(0.000314)		(0.000263)	(0.000263)
popover15sq		-9.14e-07***		-7.59e-07***	-7.59e-07***
		(1.55e-07)		(1.27e-07)	(1.28e-07)
Observations	16,273	15,976	16,273	15,976	15,976
R-squared	0.007	0.075	0.143	0.208	0.222
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** p<0.01, ** p<0.05, * p<0.1

Standard errors clustered at municipal level

Table 12: Long run analysis: 1985-2009 sample.

VARIABLES	Average years of education of council members				
	(1)	(2)	(3)	(4)	(5)
treatment	-0.406***	-0.352***	-0.129	-0.126*	-0.0963
	(0.0884)	(0.0838)	(0.0795)	(0.0742)	(0.0752)
after	1.099***	1.084***	1.079***	0.989***	0.575**
	(0.0584)	(0.0594)	(0.0589)	(0.0604)	(0.228)
treatafter	0.182***	0.173***	0.162***	0.167***	0.124**
	(0.0599)	(0.0610)	(0.0603)	(0.0617)	(0.0617)
emprate		-1.199***		5.764***	5.771***
		(0.165)		(0.291)	(0.292)
popover15		0.0255***		0.0198***	0.0198***
		(0.00423)		(0.00326)	(0.00327)
popover15sq		-1.14e-05***		-8.85e-06***	-8.86e-06***
		(2.11e-06)		(1.60e-06)	(1.61e-06)
Observations	45,648	44,647	45,648	44,647	44,647
R-squared	0.110	0.175	0.287	0.340	0.346
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** p<0.01, ** p<0.05, * p<0.1

Standard errors clustered at municipal level

Table 13: Political ideology

VARIABLES	Average years of education of council members				
	(1)	(2)	(3)	(4)	(5)
treatment	-0.339***	-0.303***	-0.0766	-0.0787	-0.0660
	(0.0893)	(0.0836)	(0.0801)	(0.0756)	(0.0765)
after	0.468***	0.565***	0.530***	0.456***	-0.703*
	(0.0653)	(0.0673)	(0.0670)	(0.0680)	(0.410)
treatafter	0.121*	0.109	0.120*	0.173**	0.141**
	(0.0670)	(0.0684)	(0.0680)	(0.0691)	(0.0703)
emprate		-1.028***		5.442***	5.424***
		(0.191)		(0.343)	(0.344)
popover15		0.0262***		0.0204***	0.0204***
		(0.00442)		(0.00339)	(0.00340)
popover15sq		-1.14e-05***		-8.83e-06***	-8.81e-06***
		(2.19e-06)		(1.65e-06)	(1.66e-06)
majL		0.0927***	0.0701**	0.0790***	0.0870***
		(0.0313)	(0.0311)	(0.0292)	(0.0299)
majlist		-0.351***	-0.228***	-0.139***	-0.167***
		(0.0423)	(0.0393)	(0.0383)	(0.0452)
majmix		0.478***	0.373***	0.358***	0.368***
		(0.0894)	(0.0805)	(0.0765)	(0.0770)
Observations	16,249	15,952	16,249	15,952	15,952
R-squared	0.029	0.118	0.252	0.310	0.317
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** p<0.01, ** p<0.05, * p<0.1

Excluded category: center-right

Standard errors clustered at municipal level

Appendix

Table A.1: Long run analysis: 1985-2009 sample

VARIABLES	Average years of education of female council members				
	(1)	(2)	(3)	(4)	(5)
treatment	-0.452***	-0.317**	-0.218	-0.198	-0.101
	(0.150)	(0.148)	(0.142)	(0.140)	(0.141)
after	0.564***	0.567***	0.476***	0.437***	-0.519
	(0.156)	(0.156)	(0.154)	(0.154)	(0.649)
treatafter	0.102	0.0590	0.117	0.0924	-0.0311
	(0.160)	(0.160)	(0.157)	(0.158)	(0.158)
emprate		-2.751***		4.623***	4.514***
		(0.211)		(0.403)	(0.404)
popover15		0.0172***		0.0132***	0.0131***
		(0.00291)		(0.00210)	(0.00209)
popover15sq		-7.58e-06***		-5.72e-06***	-5.69e-06***
		(1.43e-06)		(1.02e-06)	(1.01e-06)
Observations	38,204	37,317	38,204	37,317	37,317
R-squared	0.014	0.038	0.096	0.106	0.115
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** p<0.01, ** p<0.05, * p<0.1

Standard errors clustered at municipal level

Table A.2: Long run analysis: 1985-2009 sample

VARIABLES	Average years of education of male council members				
	(1)	(2)	(3)	(4)	(5)
treatment	-0.441***	-0.384***	-0.138*	-0.136*	-0.115
	(0.0904)	(0.0854)	(0.0813)	(0.0758)	(0.0767)
after	1.001***	0.989***	0.977***	0.883***	-0.499
	(0.0604)	(0.0615)	(0.0610)	(0.0625)	(0.308)
treatafter	0.163***	0.154**	0.142**	0.150**	0.118*
	(0.0621)	(0.0631)	(0.0624)	(0.0638)	(0.0639)
emprate		-1.321***		5.918***	5.928***
		(0.173)		(0.302)	(0.304)
popover15		0.0270***		0.0211***	0.0211***
		(0.00449)		(0.00349)	(0.00350)
popover15sq		-1.21e-05***		-9.44e-06***	-9.45e-06***
		(2.24e-06)		(1.72e-06)	(1.72e-06)
Observations	45,633	44,632	45,633	44,632	44,632
R-squared	0.084	0.153	0.264	0.319	0.325
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** p<0.01, ** p<0.05, * p<0.1

Standard errors clustered at municipal level

Table A.3: Long run analysis: 1985-2009 sample, five year trends

VARIABLES	Average years of education of council members				
	(1)	(2)	(3)	(4)	(5)
treatment	-0.406***	-0.352***	-0.299***	-0.0732	-0.0411
	(0.0884)	(0.0838)	(0.0839)	(0.0744)	(0.0750)
after	1.099***	1.084***	0.631***	0.377***	0.401***
	(0.0584)	(0.0594)	(0.0693)	(0.0674)	(0.0680)
treatafter	0.182***	0.173***	0.220***	0.216***	0.159***
	(0.0599)	(0.0610)	(0.0612)	(0.0619)	(0.0616)
emprate		-1.199***	-1.352***	5.335***	5.371***
		(0.165)	(0.167)	(0.293)	(0.297)
popover15		0.0255***	0.0253***	0.0198***	0.0198***
		(0.00423)	(0.00423)	(0.00326)	(0.00328)
popover15sq		-1.14e-05***	-1.14e-05***	-8.81e-06***	-8.82e-06***
		(2.11e-06)	(2.11e-06)	(1.61e-06)	(1.61e-06)
Observations	45,648	44,647	44,647	44,647	44,647
R-squared	0.110	0.175	0.205	0.368	0.380
5y trend	NO	NO	YES	YES	YES
prov FE	NO	NO	NO	YES	YES
5y*prov	NO	NO	NO	NO	YES

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Standard errors clustered at municipal level

Table A.4: Political ideology

	Average years of education of female council members				
VARIABLES	(1)	(2)	(3)	(4)	(5)
treatment	-0.471***	-0.344**	-0.231	-0.220	-0.163
	(0.167)	(0.164)	(0.160)	(0.159)	(0.162)
after	0.169	0.238	0.161	0.118	0.322
	(0.180)	(0.182)	(0.180)	(0.180)	(1.043)
treatafter	-0.0808	-0.140	-0.0948	-0.0672	-0.166
	(0.185)	(0.186)	(0.183)	(0.183)	(0.188)
emprate		-2.834***		4.298***	4.223***
		(0.288)		(0.542)	(0.545)
popover15		0.0168***		0.0129***	0.0128***
		(0.00294)		(0.00214)	(0.00213)
popover15sq		-7.25e-06***		-5.48e-06***	-5.43e-06***
		(1.45e-06)		(1.04e-06)	(1.04e-06)
majL		0.105**	-0.00683	-4.66e-05	0.00951
		(0.0506)	(0.0529)	(0.0523)	(0.0533)
majlist		-0.209***	-0.144**	-0.0794	-0.153*
		(0.0665)	(0.0703)	(0.0704)	(0.0793)
majmix		0.536***	0.354**	0.361**	0.362**
		(0.159)	(0.151)	(0.150)	(0.149)
Observations	13,561	13,289	13,561	13,289	13,289
R-squared	0.002	0.033	0.094	0.103	0.112
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** p<0.01, ** p<0.05, * p<0.1

Excluded category: center-right

Standard errors clustered at municipal level

Table A.5: Political ideology

	Average years of education of male council members				
VARIABLES	(1)	(2)	(3)	(4)	(5)
treatment	-0.368***	-0.330***	-0.0825	-0.0856	-0.0747
	(0.0921)	(0.0861)	(0.0827)	(0.0781)	(0.0788)
after	0.355***	0.456***	0.414***	0.336***	-0.801
	(0.0705)	(0.0724)	(0.0721)	(0.0735)	(0.578)
treatafter	0.124*	0.112	0.125*	0.180**	0.150**
	(0.0723)	(0.0736)	(0.0732)	(0.0747)	(0.0763)
emprate		-1.069***		5.598***	5.577***
		(0.202)		(0.360)	(0.361)
popover15		0.0278***		0.0217***	0.0217***
		(0.00468)		(0.00363)	(0.00363)
popover15sq		-1.21e-05***		-9.43e-06***	-9.40e-06***
		(2.32e-06)		(1.77e-06)	(1.77e-06)
majL		0.0554*	0.0549*	0.0649**	0.0698**
		(0.0331)	(0.0329)	(0.0309)	(0.0316)
majlist		-0.373***	-0.238***	-0.144***	-0.182***
		(0.0451)	(0.0420)	(0.0410)	(0.0486)
majmix		0.451***	0.352***	0.335***	0.341***
		(0.0962)	(0.0872)	(0.0832)	(0.0836)
Observations	16,243	15,946	16,243	15,946	15,946
R-squared	0.018	0.106	0.240	0.298	0.304
province FE	NO	NO	YES	YES	YES
province*after	NO	NO	NO	NO	YES

*** p<0.01, ** p<0.05, * p<0.1
Excluded category: center-right
Standard errors clustered at municipal level

Table A.6: Political ideology of councils

Majority	Freq	Percent	Cum
center-right	5,745	35,30	35,30
left	7,275	44,70	80,00
civic list	2,911	17,89	97,89
mixed	343	2,11	100,00
Total	16,274	100	

Table A.7: Skill-intensive occupations

Code	Description
111	full and associate professors
112	high school teachers
113	secondary school teachers
115	headmasters
121	writers, reporters, publicists
122	painters, sculptors
124	musicians, orchestral players, opera artists, actors
141	surgeons (general)
142	surgeons (specialized)
143	dentists
144	pharmacists
151	magistrates
152	lawyers and solicitors
153	notaries
162	vets
163	biologists, animal scientists, naturalists
171	physicists, astronomers, geologists
172	chemists
173	construction engineers
174	engineers
175	architects
181	mathematicians, statisticians, economists and sociologists
182	chartered accountants
211	entrepreneurs and chief executive officers (transport, credit, service and industry sector)
212	entrepreneurs and chief executive officers (business)
213	entrepreneurs and chief executive officers (public services)
214	directors (transport, credit, service and industry sector)
215	managers
216	directors (public services)
217	directors (public administration)

Source: Italian Ministry of the Interior, Department for Territorial and Internal Affairs