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## Women at work: Gender quotas, municipality elections and local spending

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# Women at work:

## Gender quotas, municipal elections and local spending\*

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### Abstract

Gender quotas should foster women’s presence in politics, which in turn may affect local policymaking. This paper investigates this mechanism, making use of indicators of municipality spending in Italy as relevant policy outcomes. For identification, we rely on the time and geographic variation in the introduction of a gender quota reform (by Law 251/2012), affecting gender composition of candidates in Italian municipal council elections. The gender quota reform increased by 13.8 percentage points the share of female councilors and by 7.4 percentage points the share of women in municipality executives. Using the reform as an instrument, we estimate that a one percentage point increase in female participation in councils rises expenditure in local security by about 1% and reduces administration costs by a comparable amount, whereas evidence on the impact on other local expenditures items is mixed. These effects are mainly driven by the rise of educated, employed women in councils and are robust to endogeneity issues, to relevant sample selections and to potential confounding policies.

**JEL classification:** D72, J16.

**Keywords:** Gender bias, municipal budget, local policy, municipal council, Italy, Law 251/2012.

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# 1. Introduction

Gender inequality in politics is a well-documented phenomenon around the globe. The average share of women across parliaments worldwide is approximately 24.5%, and it is far below 50% in the majority of parliaments (Inter-Parliamentary Union Data 2019). Similar figures are observed across Europe (28.5% on average), where gender balance is virtually reached only on a limited group of countries (e.g., France 49%, Sweden 48.2%, Spain 45.4%) (CEPR Report Women in Politics 2019).

Female under-representation in political bodies is a relevant issue for at least two reasons. First, it portrays a clear violation of descriptive representation of relevant population types (i.e., the female citizens) in public institutions involved in policymaking. Second, an issue of substantive representation also arises if gender composition of political bodies influences policy implementation and public spending. There is, in fact, evidence that female politicians implement more often than their male counterparts policies in those areas of intervention that are traditionally seen as being women' issues, such as childcare, health, environment and social services, and, when they do it, they resort on larger budgets (Clots-Figueras 2011; Funk and Gathmann 2015).

Women's presence affects policies and economic outcomes at every level of government. Chattopadhyay and Duflo (2004) show that Indian villages where the head of council is a woman invest more in those public goods which are more relevant for local females. Clots-Figueras (2011, 2012), instead, shows that the presence of female legislators in India has effects on education, and it increases expenditure on health and early education, and the presence of redistributive policies. Brollo and Troiano (2016) analyze the case of Brazilian municipalities and show that female mayors engage less in corruption. Svaleryd (2009) shows that in Swedish local councils the gender composition of the council influences the spending pattern, whereas Ferreira and Gyourko (2014) do not find any effect of female mayors on policy in U.S. cities. Contributions close to our investigate the effect of rising the share of female mayors and female councillors in Spanish municipalities, finding that the gender of the mayor and the gender composition of the council influence municipal expenditure (Cabaleiro and Buch 2018, 2020; Hernández-Nicolás et al. 2018).

In this paper, we investigate and quantify the extent at which municipality-level policies are affected by the gender composition of elected municipal bodies. We make use of official municipality spending records to measure the extent of relevant policies by mean of six spending indicators. Considering the municipal level is interesting for at least two reasons. First, at the municipal level there is a closer relation between citizens and elected politicians, which implies both that prejudices should have a lower bite on elections, and that elected women should help the electorate familiarize with the presence of female politicians. Second, political experience at the municipal level may be a first step toward a political career at the national level (Cella and Manzoni 2020).

Our identification strategy rests on the quasi-experimental nature of the change in institutional setting which produces effects on the gender composition of municipalities councils and executive boards in Italy. Our focus is on the gender quota reform introduced by the Law 526/2012, which reformed elections of municipal councils. The gender reform introduced specific election rules that were enforced exclusively in municipalities of size larger than 5,000 residents, thus identifying control and treatment municipalities accordingly to the demographic size. We rely on an instrumental variable approach, which exploits the exogenous geographic variability in the implementation of the gender quota reform (by municipality size) and the timing of introduction of the reform (affecting only municipal elections taking place after 2012) as an instrument to evaluate the effect that an exogenous increase of the share of female councillors has on aggregate and disaggregate municipality spending.

In the first stage of our estimation, we look at the effect of quotas on the composition of councils. We find that the reform increased the percentage of women in municipality councils by 13.74 percentage points in our preferred specification. This figure is stable across specifications of the underlying model, and robust with respect to the selection of the sample. We also find heterogeneous effects of the reform across female elected characteristics in terms of education and employment. In the second stage of the empirical analysis, we find robust evidence that an exogenous variation in gender composition of municipality councils induced by the gender quota introduction has a significant and robust effect on municipality spending in security ranging from 0.7% to 1% across specifications and it reduces administration costs by a comparable amount. These effects are mainly driven by the rise of educated, employed women in councils and are robust to endogeneity issues, to relevant sample selections and to potential

confounding policies. Impacts on other expenditure items are either insignificant (for education and social services expenditures) or not robust across specifications (for environmental and productive services expenditures).

This paper contributes both to the international literature investigating the consequences of the presence of females in elected bodies on local policymaking, as well as to the literature focussing on the effect of gender quotas on the Italian constituencies. Gender quotas in municipal elections in Italy were first enforced in 1993, when it was introduced the requirement of a minimum proportion of candidates of each gender in the ballot. This aspect of the 1993 electoral reform was then abrogated by the Constitutional Court in 1995, so that gender quotas were in place exclusively for three subsequent years. Most of the papers on gender quotas in Italy consider the 1993 reform, focusing on the impact of female politicians on public spending (Rigon and Tanzi 2012), on the ability to complete the electoral mandate (Gagliarducci and Paserman 2016), on the efficiency of politicians (Baltrunaite et. al. 2014) and on electoral turnout (De Benedetto et. al. 2014). The gender quota reform has been shown to carry long-term effects of gender composition in municipality councils (De Paola et al. 2010).

The closest contribution to our paper is Braga and Scervini (2017), which exploits the 1993 gender quota reform to identify the effect of rising the share of female councillors on the efficacy of local policies targeted to women and children (proxied by fertility rate) and the efficiency of the municipal administration (proxied by the size of the municipal executive). We extend Braga and Scervini (2017) in two directions: first, by evaluating the consequences of the latest available gender quota reform in Italy, introduced in 2012; second, by using spending items drawn from municipal balance sheets data as monetary outcomes related to relevant local policymaking.

Baltrunaite et. al. (2019) use a regression discontinuity design to investigate whether the 2012 reform did increase the share of female councilors, and whether this is driven by the presence of quotas or by the presence of the double preferences system. Their results support the interpretation that the 18% increase in female councilors induced by the reform is mostly driven by an increase in the preference votes received by female candidates.<sup>1</sup> Building on the same

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<sup>1</sup> Baltrunaite et. al. (2019) exploit a discontinuity in the electoral rule assignment, varying as a function of the municipality size, and estimating variations in the elected fraction of women only in municipalities located around the demographic threshold. Our identification strategy relies instead on information about the entire group of municipalities subject to the gender quota enforcement.

identification strategy that they use, but we exploit geographic variability in a difference-in-differences setting to recover additional evidence supporting their findings. We further contribute by investigating more carefully the policy consequences of the rise in female representativeness produced by the 2012 gender quota reform.

The paper is structured as follows. Section 2 introduces the institutional characteristics of Italian municipal elections and of the reform (2.1) and the types of municipal expenditure we consider (2.2). Section 3 describes the data (3.1) and the identification strategy (3.2). Section 4 presents the results, and Section 5 concludes.

## **2. Gender quotas in the Italian municipal electoral system: Reforms and hypotheses**

This paper focuses on Italian municipalities, whose functions and competences are defined by ordinary national and regional laws (Braga and Scervini, 2017). The jurisdiction of municipalities covers different areas, most of which are typical local services, such as urban planning, economic development, waste collection, and childcare services. Municipalities are endowed with an annual financial budget that is managed within the limits fixed by the Constitution. Although local autonomy has increased in the last decades, municipalities are still subject to some important constraints; among others, municipalities can voluntarily choose neither the tax base nor the tax rate of local taxation system.

Municipal administration is composed by three main bodies: the mayor, the municipal council and the municipal executive board. The head of the municipality, who is responsible of all its administrative and financial functions, is the mayor (*sindaco*), who is democratically elected and remains in power for a period of five years. The mayor shares the executive power of the municipality with the municipal executive board (*giunta comunale*), a collegial body composed of a variable number of members (*assessori comunali*) appointed by himself/herself. The municipal council (*consiglio comunale*) is the elected body representing all the political forces of the territory. Among its functions, the municipal council approves the budget, the decisions and the decrees concerning municipal policies. This body remains in charge for five years and it also has the power to end the term of office of the mayor's mandate at any time. The size of the

municipal council is established by the national law and varies depending on size of the municipal area.

## **2.1 Electoral rules for Italian municipal councils and the 2012 reform**

Electoral rules in Italy change according to the size of the municipality. Due to the specificities of our identification structure, in the paper we only focus on municipalities with less than 15,000 residents. In these municipalities, the mayor is elected with a majoritarian system. Each candidate is supported by one list only, the candidate with the relative majority of votes is elected, and his/her list gets  $2/3$  of the council seats. The remaining seats are assigned in a proportional way to the other lists.

Our interest is on the gender quota reform introduced by Law n. 215/2012. This law establishes measures aiming at increasing female presence on municipal offices. Importantly, these measures apply only to municipalities with more than 5,000 residents. The law intervenes in a twofold manner in the electoral process. First, it establishes that neither gender can be represented by more than  $2/3$  of the total number of candidates on party lists. Non-compliance is punished by removing the names of candidates of the most represented gender, typically males, exceeding  $2/3$  of the total. Second, this law introduces double preference voting conditioned on gender: each voter is given the option of expressing his/her preference to two candidates, instead of only one, provided that they are of different genders. If the two names indicate candidates of the same gender, non-compliance is punished with the elimination of the second name.

## **2.2 Gendered policy preferences and municipal spending**

This paper investigates whether an increase in the share of female councilors affects the policy implementation process at municipality level. As an objective indicator of local policies, we consider information on local spending, collected from municipal current accounts (bilanci consuntivi), which provides the cleanest measure of short-term consequences of local policymaking. We classify current municipal spending in six categories: education (includes spending in child-care, preschool services, local spending related to primary and secondary

education, school meals and educational programs), security (local and municipal police services and programs in support administration of the territory), administration (spending for local administration services, including tax revenues collections), environment (including urban planning, management of green areas and urban cleaning services, management of municipality public housing), social services (culture, sport, tourism and social assistance), and productive services (including road lights, waste disposal, public waters management, and spending towards local development initiatives). Each category includes information on personnel costs, infrastructure use or location costs and interest and financial costs which are instrumental to the provision of the corresponding services.

Among the policy indicators that we consider, spending in social services is the most correlated with the female composition of the municipality council. Some contributions find evidence that female councillors (as opposed to male counterparts) lean toward policies that benefit women or children, and towards expanding access to social welfare (Chattopadhyay and Duflo 2004; Clots-Figueras 2011; Funk and Gathmann 2015; Svaleryd 2009), whereas other contributions do not detect significant correlations in these dimensions (see for example Ferreira and Gyourko 2014; Cabaleiro and Buch 2020). Therefore, we may expect social expenditure to increase, if any, with the share of female councillors. It has to be noted, however, that policies that benefit women and children at a local level may enter different spending categories than social services. There is growing evidence that an increase in the female presence at a local level translates in increasing non-social spending driven by expenditure for basic welfare-increasing spending, such as street cleaning (Cabaleiro and Buch 2020), as well as increasing spending in services related to local security, which in our categorization are included in the security item (Hernández-Nicolás et al. 2018). Given that our focus is on municipalities, we expect to find similar effects on spending. Finally, there is evidence that a larger presence of female politicians decreases administration spending, which may suggest an increase in the efficiency of administration (Braga and Scervini 2017; Cabaleiro and Buch 2018, 2020).<sup>2</sup>

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<sup>2</sup> It is common interpretation that lowering spending on administration increases administration efficiency. We note that this is one of the possible interpretations, as we only observe the level of spending, and not the level of services provided. However, services provided under the “administration” spending category are mostly compulsory services at municipal level (such as tax revenues collection).



### 3. Empirical strategy

#### 3.1 Data on municipal councils and spending

We collect data on municipal council composition from administrative registries provided by the Italian Ministry of the Interiors. The “Registry for local and regional administrators” (AARL), reports digitalized records of the members of municipality councils and of the mayors of every Italian municipality on a yearly basis since 1985. Records include demographic characteristics of elected candidates such as gender, place and date of birth, education, self-declared profession. Responses have been extensively reclassified into macro categories to gain consistency in classification across years. Information about political parties and local political list affiliations of the council members, the date of beginning and end of the mandate and the role in the administration (mayor) are also reported. We use individual data on council members and mayors to generate aggregate statistics at the municipality-year level. In election years, when municipalities display two or more councils operating within the same calendar year, we consider only information about the newly elected council and we assign this information to the specific municipality-year cell. We also drop from the sample those observations corresponding to the years in which a given municipality was placed under outside management (commissariamento). Our largest sample includes information about the universe of Italian municipalities (about 8000) over the period 2002-2018, for a total of 134,265 observations with valid information on the municipality council and the gender composition. Relevant sample cuts will be highlighted in the next section. A detailed description of the administrative datasets that we use in this paper as well as the harmonization procedure that we adopt is reported in the appendix, Table A.1.

**(Table 1 about here)**

Table 1 reports the descriptive statistics of the variables we consider based on the largest sample. Over the period 2002-2018, the average size of an Italian municipality council is of 18.67 members, 21.76% of which are woman. This figure varies largely across municipalities. Albeit 95% of municipality councils can count on at least one elected female candidate, the median share of women in Italian municipalities over the period considered is just about 20%. Only 11.1% of mayors across all municipalities and years are women. Elected female candidates are younger (42 years) than male candidates (47 years), and have lower chances of holding a position as entrepreneur or employed/self-employed worker (2.2% and 70%, respectively) with

respect to male counterparts (4.9% and 75%, respectively). Nonetheless, elected women are, on average, more educated than elected men: the proportion of women in councils that have at least a secondary education diploma is 75.2%, while only 67.6% of the male candidates holds a similar degree. Gendered differences in political affiliation to major national parties is of lesser importance in municipality elections, where 85.9% of elected candidates are issued from local mixed civic lists (*liste civiche*), whose political orientation cannot be clearly defined.

Municipality-level data about demographics and human capital composition are from the Italian Statistical Institute (ISTAT). Relevant demographic information includes population size, density and age structure in each municipality over the period 2002-2018, see Table 1 for details. The online census data tracker from ISTAT provides the municipality-level composition of the population in terms of education and labor status (employed, unemployed, housekeeper, retired) of the residents of each Italian municipality in 2011, the last available census year. Finally, we use synthetic measures of tax declarations at municipality level (average taxes paid, quartiles for declared revenues) collected in fiscal years 2008-2013 by the Ministry of Economy and Finance, which we use to proxy the potential fiscal revenues of the municipality. We match yearly data from ISTAT and AARL using the common municipality identifier. We exclude from this matching those municipalities that change province belonging or name over the period considered. Most of the changes occur in year 2009 and concern a marginal number of municipalities.

Lastly, we make use of administrative data on municipal balance sheets (*Bilanci Consuntivi*) from the Ministry of Interior, Department for Internal and Territorial Affairs, to construct indicators of yearly spending that are specific to each municipality. Municipal balance sheets report information on the aggregate municipality spending during the budget year over a large array of policy items, and are elaborated by each municipality. Balance sheets are available from the Ministry of Interiors since 1998, but their reporting format has been largely revised in 2007 and later in 2016, making it difficult to compare aggregate expenditure items reported before 2007 or after 2016. We have hence limited the time frame for our estimates to municipality balance sheets recorded after 2007. For identification reasons discussed in Section 3.2 below, we also limit the time frame to records in and before 2013.

**(Table 2 about here)**

**(Figure 1 about here)**

As discussed in Section 2.2, we categorize these expenditure items at municipality level into six spending categories: education, security, administration, environment, social services and productive services. On average, education has the highest share of spending (28%), followed by environmental, social and productive services (between 15% to 20%), security (9%) and administration (3%).<sup>3</sup> Table 2 reports the descriptive statistics of municipality expenditures, and shows the presence of substantial heterogeneity in spending across municipalities. Figure 1 shows that the expenditure shares have been relatively stable over the period, albeit average aggregate spending has been growing by about 15% over the period 2007-2013.

### **3.2 Identification strategy**

The goal of this paper is to assess the effect of an exogenous variation in the percentage of women in the council on local policies, measured by municipality spending in aggregate terms, as well as disaggregate across expenditure items. To do so, we exploit the features of the gender quota reform introduced by Law 215/2012 to divide municipalities into a treatment and a control group according to their demographic size at the moment of the introduction of gender quotas. We assign value one to all municipalities with population size larger than 5,000 residents (the treatment group), and zero otherwise (the control group). Large municipalities (above 15,000 individuals), which are already subject to gender representation rules when the Law 215/2012 is enforced, as well as municipalities in autonomous regions (Valle d'Aosta, Province Autonome di Trento e Bolzano, Friuli-Venezia Giulia, Sicilia, Sardegna) have been dropped from the analysis, reducing the sample to 107,403 municipality-year observations. The share of treated municipalities (with more than 5000 residents) within the using sample (municipalities with less than 15000 residents) is 0.218 (treatment T1), whereas the proportion of all observations corresponding to municipalities holding local council elections in or after 2013 is 0.25 (see Table

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<sup>3</sup> Budget data are incomplete for many municipalities of small size, the problem being more relevant for what concerns administration expenditure item. Besides, some municipalities cannot be correctly identified across merged datasets. As a result, the sample size vary systematically across expenditure items and shrinks in size for administration expenditure items.

1). We combine the geographic and temporal variation in the likelihood that an election takes place in a treatment municipality to identify the effect of interest.

**(Figure 2 about here)**

As reported in Figure 2, our data display large geographic heterogeneity across the country both in terms of changes in gender composition of municipality councils around the period of implementation of the reform. We exploit this heterogeneity as a source of identification.

**(Figure 3 about here)**

Our empirical analysis is composed of two steps. First, we make use of the largest sample covering 2002-2018 to identify the consequences of gender quotas on municipality council gender composition over the long-run. In the baseline setting, treatment municipalities (defined by T1 indicator in Table 1) have a population between 5,000 and 15,000 residents and are not located in autonomous regions (which enjoy some degrees of freedom in selecting local election criteria). Figure 3 shows the distribution of municipality council elections taking place over 2002-2018, alongside the average share of women that are in the municipality council (thick lines) or in the municipality board (thin lines) in any given year in both the treatment (solid lines) and control (dashed lines) groups of municipalities. Identification of the effects of gender quotas rests on a parallel trend assumption, implying that in the absence of the gender reform, the gender composition in municipalities larger than 5,000 residents would have followed the same trend observed in the control group. As Figure 3 shows, the gender composition in treatment municipalities has sharply increased in 2013, the first election year after Law 215/2012 enforcement. The effect has persisted over the following five years. Gender imbalance has also decreased in control municipalities after 2013, albeit at a slower pace. This change may be the consequence of responses of political platforms to the policy (with parties strategically proposing a more gender representative group of candidates) as well as to a genuine change in preferences of local electorate. Both these effects may be the outcomes of external effects generated by the introduction of the gender quota in treatment municipalities on the gendered preferences of candidates and electorate on the control municipalities.

We quantify the effect of interest through a “staggered” difference-in-differences design of the underlying estimating equation, which allows to include time-varying municipality controls as well as municipalities fixed effects:

$$W_{it} = \alpha_0 + \alpha_1 T_i + \alpha_2 P_t + \alpha_3 T_i * P_t + \alpha_4 X_{it} + \theta_i + \theta_t + \phi_i t + \varepsilon_{it}, \quad (1)$$

where  $W_{it}$  is the gender composition (the percentage of elected females on municipal council  $i$  in year  $t$  in the baseline specification),  $T_i$  identifies municipalities in the treatment group (we consider T1 as the baseline indicator, alternative treatments are used in robustness checks),  $P_t$  is an indicator of whether elections in municipality  $i$  took place after December 31, 2012, so that  $T_i * P_t$  indicates those observations corresponding to municipalities which held elections after the introduction of the gender quota reform, that is in or after 2013. Conversely,  $T_i * P_t = 0$  for those municipalities in the control group as well as for those observations corresponding to municipalities in the treatment group observed in year  $t \geq 2013$  which held the first election under the rules of Law 251/2012 only after year  $t$  (that is, in or after 2014). Additionally, equation (1) includes controls for relevant covariates related to voting pattern in municipality elections (year of elections fixed effects, indicators for party affiliation of elected council), as well as characteristics of the electorate (such as municipality and year specific employment rate, average education level, age structure, population size and density). The model includes municipality fixed effects, year fixed effects and province-specific trends (i.e.,  $\phi_i$  is assumed constant across all municipalities located within each of the 107 provinces). The effect of interest,  $\alpha_3$ , measures the causal effect of gender quotas on the outcome of interest. Baseline estimates are obtained from the 2002-2018 sample of municipality of size smaller than 15,000 residents. Additional checks for the implications of the reform by characteristics of the elected women, as well as robustness checks involving the inclusion of Special Statute regions or relevant cuts in the sample size along the lines of municipality size and years, are discussed in the next section.

The second empirical contribution of the paper concerns the extent to which rising the share of women in municipal councils affects the pattern of municipality spending. To do so, we further restrict the baseline sample to years 2007-2013 in order to cope with the confounding effects of a reform of municipality spending regulation (mandated by Law 138/2011 and approved at the end of 2011), which extended the Italian Domestic Stability Pact, DSP, to municipalities of size

smaller than 5,000 residents and above 1,000 residents. The DSP has been introduced in response to the European Stability and Growth Path in 1999, to constrain municipal fiscal and spending policies. Its objective is to set fiscal rules that limit the fiscal gap of municipalities, by introducing a formal target balance requirement, thus introducing limits to municipal spending capacities based on criteria of financial virtuosity. In the period covered by our analysis, i.e., after 2007, the DSP requirements were imposed to municipalities of size larger than 5,000 residents. Starting with reporting year 2013, these requirements have been extended to municipalities of smaller size, while municipalities with less than 1,000 residents have not been affected by the policy. Available literature suggests that the effect of the reform was limited in budget year 2013 by the effects of the Budget Law 2012, which relaxed the definition of spending targets for the budget year 2013 for the municipalities affected by the Law 138/2011 (Corte dei Conti 2014, Aassve et al 2019). Cutting the sample of municipalities observed after 2013 limits the confounding effect of DSP implementation on the control group.

The baseline model assumes that the share of women in municipality councils is exogenous conditional on covariates as well as time invariant factors. The relevant estimating equation is as follows:

$$Y_{it} = \beta_0 + \beta_3 W_{it} + \alpha_4 X_{it} + \delta_i + \delta_t + \gamma_i t + \varepsilon_{it}, \quad (2)$$

where  $Y_{it}$  is a municipality-year level realization of one of the six spending items (in log aggregate or per-capita terms, as well as in shares relatives to total expenditure) for municipality  $i$  in budget reporting year  $t$  and  $W_{it}$  is the percentage of women in the council of municipality  $i$  in the same year. As argued above, the exogeneity assumption is a strong one. The effect of interest,  $\beta_3$ , is likely estimated with bias if the share of women in the council is related to unobservable drivers of spending that are not captured by municipality-specific observables and that are not time-invariant (such as political preferences) or by simultaneity in the choice of the candidates in elections and the local budget spending.

**(Figure 4 about here)**

In order to recover causal estimates of the effect of interest, we rely on an instrumental variable strategy which exploits the geographic and temporal variation in the introduction of gender quotas in municipality council elections. Our instrument is an indicator  $T_i * P_i$  for

municipalities which are in the treatment group (i.e., municipalities with 5,001-15,000 residents) and hold elections after the introduction of Law 215/2012. A 21.5% of municipalities in the using sample is in the treatment group, whereas 1% (751 municipalities) hold elections in 2013 (see Table 2). Figure 3 shows the relevance of such an instrument for the gender composition of elected councils. The exogeneity of the instrument rests on the assumption that unobservable drivers of municipality spending are uncorrelated with the municipality size, which defines the assignment to the gender quotas rules introduced by Law 215/2012. Furthermore, the introduction of the reform did not disrupt the scheduling of elections, decided on the basis of an administrative design enforced before 2012. Figure 4 shows evidence of the reduced form unconditional effect of gender quotas on the aggregate municipality spending. Patterns of spending in treatment and control municipalities virtually coincide before the introduction of the gender quotas in treatment municipalities, while reduced form estimates show that expenditure grows by an additional 5% in post-reform treatment municipalities compared to control municipalities.

We quantify the contribution of rising female participation in councils on local spending through the following regression model, which also controls for observables and for municipality and year specific effects and trends:

$$Y_{it} = \beta_0 + \beta_1 T_i + \beta_2 P_t + \beta_3^{IV} \widehat{W}_{it} + \beta_4 X_{it} + \delta_i + \delta_t + \gamma_i t + \varepsilon_{it}. \quad (3)$$

The main treatment variable in model (3),  $\widehat{W}_{it}$ , is the share of women in elected councils that is predicted by estimating model (1) (first stage) on the dataset spanning years 2007-2013. The predicted percentage of women in municipality councils is then plugged in the main regression (3) (second stage). The effect of interest,  $\beta_3^{IV}$ , measures the growth rate of expenditures which follows from a one percentage point increase in share of women in the elected council. To cope with the high dimensionality of the estimating model (including about 7000 coefficients for municipality and year fixed effect and provincial trends), standard errors of the relevant coefficients are bootstrapped 500 times.<sup>4</sup>

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<sup>4</sup> Estimation of high-dimensional fixed effects models rises substantially the computational burden of traditional 2SLS standard errors. A similar problem arises in the estimation of structural quantile treatment effects models with instrumental variables. Following this literature (see Andreoli, Casalone and Sonedda 2018 and Brunello, Fort and Weber 2009), we resort on resampling methods to estimate standard errors. Alternatively, the alternating

The exclusion restriction is satisfied if there is no confounding time-varying treatment which affects municipalities in the treatment group in 2013 and that is related to the spending performances of the council. There are three potential threats to identification. First, the wage of the mayor sharply increases in municipalities of size larger than 5,000 residents, thus rising the expected quality and the spending pattern of these municipal executive boards. This effect is, however, not time-varying and is captured by municipality fixed effects. Second, the central government transfer cuts and the implementation of the DSP in control municipality may also affect budget spending patterns (Marattin et al. 2019). As already argued, the sample we are using (limited to 2007-2013) has been selected to deal with these confounding factors. In Section 4.2, as a robustness check, we consider dropping municipalities of size 1,001 to 5,000 residents from the control group, providing additional support to the exclusion restriction condition we are using. In the next section, we additionally check the robustness of our estimates to reduction in the size of the pre-treatment group (by focusing on years 2010-2013) and the introduction of additional municipality controls that limit heavily the sample size. Placebo tests based on manipulations of the policy timing and the treatment group definition provide further support for the exclusion restriction.

The third thread to identification is due to the confounding effect of time-varying unobservables which may be related to the size of the municipality and to local expenditure patterns. Examples could be changes in local fiscality, in governmental transfer to municipalities, in access to EU- or regionally-funded local development projects, or in the characteristics of the taxpayers. As a consequence, the effect of the treatment, assigned only to municipalities holding elections after the introduction of Law 251/2012, may be confounded with that of eligibility to the gender quota reform, concerning the broader set of municipalities of size larger than 5,000 which would have been subject to the gender quota reform if they had elections in 2013 (but they are not, since in these municipalities new elections take place only after 2013). To separate the effects, we expand model (3) by considering a specific intercept effect for municipalities of size larger than 5,000 whose expenditures are observed in year 2013 or later. Owing to the overlapping between eligibility and treatment groups, we can interpret the coefficient of  $T_i * P_i$

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projections method (Correia 2016) provides computationally feasible approximations of the standard errors. Estimates based on this method largely coincide with bootstrapped standard errors (tables not provided).



in the first stage as a triple-differences estimator, where the DiD effect of eligibility status is netted out of the DiD effect of the actual treatment.<sup>5</sup>

We also investigate potential mechanisms by focusing on different margins of the main treatment, such as by educational and employment characteristics of the elected women as well as gender composition in the executive board of the municipality.

## 4 Results

The empirical analysis is structured as follows: Section 4.1 considers the effects of gender quotas on the composition of municipal councils, while Section 4.2 focuses on the policy implications of an increased female presence in councils.

### 4.1 The effect of quotas on the gender composition of councils

(Table 3 about here)

Baseline estimates of the effects of the gender quota reform on gender composition of municipal councils are reported in Table 3. We first estimate an unconditional model (column 1), whose estimates show that the introduction of gender quotas increases the share of women in councils by 14.38 percentage points (pp in shorthand notation). The effect is remarkably stable after incrementally controlling for municipality and election years fixed effects and trends (column 2), election outcomes (column 3), demographics (column 4) and population human capital (column 5, which corresponds to estimating eq. (1)). Our preferred specification, corresponding to equation (1), reveals that the female presence in municipality boards is 13.74 pp larger in post-reform treated municipalities compared to what this share would be in the absence of the gender quota. The 2012 gender quota reform has a large effect on the “intensive margins”: it rises by 32% the probability that a municipality that at least 20% of women in a newly formed municipality council are women. The gender quota has also implications for the

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<sup>5</sup> This distinction is irrelevant for estimating model (1), since all eligible municipalities hold an election between 2013 and 2018.

gender composition of the municipal executive board, which detains the legislative power and includes the deputies and the mayor.<sup>6</sup> Results are displayed in Table 3, column 7, which shows that Law 215/2012 has increased the female share in the executive by 12.27 pp, an effect comparable, in size, to the one found for councils. The effect of covariates in Table 3 is the expected one. We find that political affiliation of the elected council has a tiny and negative effect on gender balance compared to councils elected from local lists. The party affiliation is irrelevant. Municipalities with larger councils tend to display a larger female share, hinting that the gender divide becomes more relevant when the number of available seats in municipalities councils is rationed. Rising the extensive margins of representation could indeed contribute to close the gender imbalances. More populated cities display a smaller share of female representatives, whereas the relative composition of the population by family formation and by age has a strong positive effect on women participation, capturing specific features of individual sorting. Education and employment characteristics do not affect the gender composition of elected councils, whereas the only significant and negative effect on women share in councils is for female unemployment rate.

**(Table 4 about here)**

We further explore the effects of gender quotas along the line of education and employment status of the elected female candidates. Table 4 reports the results of diff-in-diffs analyses where the dependent variables are the share of highly educated women as a percentage of council members (column 1) and as a percentage of female council members (column 2), the (log of the) age of female councilors (column 3), and the percentage of female councilors who are unemployed (column 5), student (column 6), entrepreneurs (column 7) and employed or self-employed (column 8). Results show that the impact of gender quotas is heterogeneous. Effects estimated in the baseline setting can be explained by the rise in the share of highly educated women (10.84 percentage points increase), even though we do not find evidence that such a change induces compositional changes among elected females in terms of their education level. We expand the analysis by looking at the effect of quotas on the percentage of members of council who are highly educated men (column 3). We find that such percentage decreases by 12.96 pp. The results of columns 1 and 3 together imply that the average educational level of the elected councils does not vary by effect of the gender quota introduction. As a matter of fact, the

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<sup>6</sup> Executive boards have a small size, about 7 members on average, 20% of which are women.

presence of gender quotas on candidates increased not only the presence of females in the council (see Table 3) but also the share of educated female representatives. Yet, this increase in the share of educated female representatives induced by the gender quota replaces an equivalent reduction in the share of educated male representatives, leaving the average education level unchanged. This is in contrast with the findings of Baltrunaite et al. (2014) who find that gender quotas introduced in Italy in 1993 improved the average quality of politicians due also to a reduction in the share of low-education elected men. Moreover, the introduction of gender quotas reduces the average age of elected women by 2%. Finally, the rise in female elected candidates is distributed across occupational characteristics unevenly: the share of employed and self-employed women rises by 8.78pp, whereas the share of women that are unemployed, students or entrepreneur rise by approximately 1 pp. These heterogeneous effects reveal different margins through which the gender quota reform affects the female composition of municipal councils.

**Robustness checks.** As shown in Figure 3, the share of female councilors has increased sharply in treated municipalities in 2013, but it has also increased in the control groups over the same period (albeit at a slower pace). This change may be due to spillover effects of the reform on the preferences of candidates and voters. A way to reduce the influence of spillover effects is to limit the analysis to elections taking place in the first few years of implementation of Law 215/2012, at the cost of neglecting medium-term consequences of the norm. An alternative strategy is to consider both municipalities located around the 5,000 residents threshold as well as smaller municipalities, which are likely less strategic for political parties (on average, 84.6% of elected councilors in small municipalities are affiliated to local civic lists not directly controlled by major national parties), where voters are less exposed to information about consequences of gender biases on local policies and where local councils are less informative about gender imbalances due to small sample size of the municipality council.

To address these concerns, we consider additional treatment specification and test robustness of our results (see Table 1 for summary statistics): Treatment T2 expands the baseline treatment T1 by including large cities among the treated group, while still excluding autonomous regions (117,570 observations); treatment T3 is like T1, albeit the municipalities in the treatment group are limited to those with a population size ranging between 5,000 and 8,000 residents (96,597 observations); treatment T4 and T5 expand T1 and T2 (respectively) by including treatment and control municipalities in autonomous regions (122,723 and 134,265 observations, respectively);

treatment T6 limits the time frame to the period 2010-2018 (56,390 observations) in order to avoid considering the long run implications of gender quota introductions in the 1990s (see Braga and Scervini, 2017). Treatment T7 limits treatment and comparison group assignment to years 2010-2013, thus allowing to focus on the short run effects of the quotas (25,334 observations). Table A.2 in the appendix reports the results of the analysis with our best specification (eq. (1)), performed with these alternative specifications of the treatment. The effect estimated after reducing the group of treated municipalities to those with population 5,000-8,000 (treatment T3) or to those observed after 2010 (treatment T6) or before 2013 (treatment T7) virtually coincides with the effects based on our preferred specification. The effect is slightly smaller, ranging from 10 to 12 pp, when the treatment group is extended to municipalities with more than 15,000 residents, as well as to municipalities located in autonomous regions. These checks confirm the validity of the baseline treatment T1 and the robustness of the implied effects.

## 4.2 Gender composition and municipal spending

Results of Section 4.1 confirm that the introduction of gender quotas in Italy improved gender balance in elected municipality boards. We make use of the exogenous variation in the composition of boards induced by the reform to investigate the causal effect of an increase in the share of women on municipality spending patterns.

**(Table 5 about here)**

Effects of interest are collected in Table 5. Each panel of the table reports OLS as well as IV estimates of coefficients from estimating regressions (2) and (3), for aggregate (panel A) and per capita (panel B) log expenditure, both in total terms and by type of spending, and for each spending category as share of total expenditure (panel C). OLS estimates are never significant in panels A and B. Coefficients are often negative and their magnitude is small, indicating the possibility that a negative selection bias is at stake. IV coefficients in panels A and B are generally larger, albeit not always significant. Specifically, we do not detect a significant effect of female composition on aggregate municipality expenditures using the baseline treatment, which rises only by 0.2%, consistently with existing evidence (Cabaleiro and Buch, 2020). Instead, we find evidence that exogenous changes in the gender composition of the council have

consequences on specific items of the municipality spending, which impact the supply of specific public goods at the municipality level. In particular, results confirm two of the expected effects (see Section 2.2). First, a one pp increment in women share reduces administration costs by 0.95%, thus supporting the hypothesis that female councillors improve municipal efficiency. Second, it rises expenditure in security services by 1.02%, and in productive services by 0.7%, consistently with previous finding in the literature showing that female local politicians target welfare-enhancing policies which may not be related to social spending (Cabaleiro and Buch 2020, Hernández-Nicolás et al. 2018). Expenditure in education, the largest expenditure item, and social expenditure, instead, are not affected on average by the exogenous rise in gender balance in the municipal council. Compositional changes in expenditure (panel C) reflect this pattern, albeit none of the estimated coefficients is significant at conventional levels.

**(Table 6 about here)**

Table 6 investigates whether the effect of interest can be explained by the contextual increase in the share of female elected candidates in municipal executive boards. Differently from councils, the size of the municipality board is decided by the elected parties. Board size represents hence an extensive margin through which a larger percentage of elected women can effectively participate into the decision process that bears consequences for the municipality spending decisions. In panel A of Table 6 we replicate estimates of model (2) in Table 5 (focusing exclusively on per log of per-capita spending) while controlling for the executive board size. OLS estimates virtually coincide with baseline models, and are never significant. In the same panel, we report IV estimates, where the share of women in councils is instrumented by the gender quota reform. Second stage estimates in Table 6 replicate those in Table 5: rising by one pp the share of women in councils rises both expenditure in security (1%) and in productive services (0.6%) and reduces expenditures in administration (-0.6%), although the latter coefficient is not statistically significant. In panel B, we maintain the assumption that the size of the municipality executive board is exogenous with respect to the gender composition of the council and assess the differential effect of rising female presence in councils by size of the board (captured by an indicator for municipalities with a board larger than the average). We instrument both female size and female size interacted with the board size indicator by the reform indicator and its interaction with board size. While OLS results are always insignificant, IV results reveal a larger effect of rising gender parity in council composition on aggregate expenditure (0.8%)

compared to baseline models. Effects are positive on security and negative on administration items, whereas the effects are increasing in magnitude in municipalities with larger executive boards. Rising the share of females in councils has a large, positive effect (4.7%) on productive services expenditures, but the effect is compensated (-3.9%) in large municipalities. On the contrary, expenditures in environmental services are now significantly affected by gender composition of the council, albeit the effect is clustered on municipalities with small boards. Our results provide evidence that gender composition impacts spending differently depending on executive board size: increasing the gender share of councils in municipalities with large executive boards amplifies the effects of expenditure on security and administrative items, whereas it contrasts the effects on productive services and environment.

In panel C of Table 6 we investigate the potential effect of improving gender parity in the composition of municipality executive boards on spending patterns, using the gender quota reform as an instrument. The impact of gender quotas on the share of females among executives is only imperfectly transmitted into municipalities boards (about 7.3 pp increase across first stage regressions) as opposed to councils. Nonetheless, second stage effects are in line with those documented in Table 5: rising female shares of elected executives rises expenditure in security (2%) and in productive services (1.18%), whereas it has an only marginally insignificant effect on administration (-1.18%) and no effect on the rest of the expenditure items.

**Robustness checks.** The first robustness check is carried out by conditioning on the characteristics of the elected female councilors. Table A.3 in the appendix report OLS and IV estimates of the effects of rising by one pp the share of women in councils that are highly educated (panel A) or that are employed (panel B). Results replicate those in Table 5, with coefficients of expenditure on security, administration and productive services are of larger magnitude.

As a second robustness check, we control for the income distribution at the municipality level using information on fiscal revenues (panel C). Estimated coefficients are comparable to the baseline estimates, even though these additional controls reduce sensibly the sample size, rising uncertainty in the estimates.

Lastly, we check robustness of the effects vis-à-vis the definition of the treated/control municipalities (panels D and E). Estimates in panel D are obtained by dropping municipalities

of size ranging from 1,000 and 4,999 residents from the using sample, which is thus reduced in size by about one half. As in the baseline setting, OLS coefficients are small and not significant, except for expenditures in education. IV estimates follow the baseline pattern. We find that broadening female participation in municipality councils rises expenditure in the security item by 2.2% and expenditure in productive services by 0.5%, even though the latter effect is not significant. We are not able to replicate in this setting the estimated reduction in administration spending, which is no longer significant. Panel E reports estimated coefficients based on treatment T7, obtained by focusing on variations in gender composition around the period of implementation of the reform (years 2010-2013). This empirical choice restricts the sample to about 25,000 observations. In line with previous results, OLS estimates of model (2) are never significant. Even with a smaller sample, we are able to replicate the effect of rising by one pp the female composition of municipality councils on reducing administration costs (which is reduced by about -0.89%) and rising expenditure in productive services (0.5%) and security services (0.5%), the latter effect being however not statistically significant.

We perform placebo tests to assess the relevance of the gender quota instrument on the expenditure items. Results are in Table A.4 of the appendix. First, we simulate situations in which the gender quota introduction is arbitrarily anticipated to 2012 (panel A) or in 2010 (panel B) in the same municipalities in the treatment groups that voted in 2013. These simulated scenarios never yield significant effects of rising women share on municipality spending, irrespectively of the expenditure item. Second, we simulate a policy experiment extending T1 to all eligible municipalities in 2010 that voted in the period 2010-2013 (panel C), second stage effects became significant but with unrealistic signs and magnitudes, which substantially differ from those estimated by the baseline model. The timing of the gender reform is hence relevant to replicate the baseline results. One last experiment (panel D) aims at extending the treatment status in 2013 to all municipalities eligible to Law 251/2012 (with more than 5,000 residents) irrespectively of the timing of latest elections. Estimates of this model replicate patterns of the baseline effects, albeit the magnitude of the effects is magnified on a threefold basis, indicating the existence of potential confounders related to the eligibility status.

Lastly, we address the role of confounders by expanding model (3) with an eligibility\*post indicator, identifying an intercept effect capturing differences across municipalities by eligibility status. In Table A.5 in the appendix we report second stage estimates of this intercept effect

alongside the second stage effect of the % of women in council predictions, instrumented by the  $T1*post$  indicator (for all models, OLS estimates are never significant, whereas first stage estimates coincide with those in Table 5). The  $eligibility*post$  indicator always yields significant and large (relative to baseline) effects on expenditure except for social services expenditure, highlighting the contribution of potential confounders. While this adjustment has no impact on the first stage ( $T_i * P_i$  is always rises the share of female councilors by about 14 percentage points), it has consequences on the second stage estimates of model (3). Focusing on aggregate expenditure, a one percentage point increase in the share of female councilors rises expenditure in security by about 0.7% and contextually lowers expenditure in administration by the same amount (panel A). We do not detect effects on education expenditure and on expenditure on social services. While this evidence is in line with baseline estimates in Table 5, effects on environmental and productive services expenditure are significant and negative, yielding a small yet significant negative effect on aggregate expenditure. Evidence on these expenditure items suggest that rising female participation in municipality councils counterbalances the effects of potential confounders related to demographic size of municipalities, which have a positive and (economic and statistically) significant effect on spending in environment and productive services. Patterns of the effects are robust across alternative sample cuts controlling for confounders in the control group (panel B) and for the length of the time frame considered (panel C). Reduced form estimates (panel D, obtained by OLS regression where the percentage of women in council is replaced by the  $treat*post$  indicator) reproduce the same pattern of effects.

## 5 Conclusions

Female under-representation in politics rises representation concerns. In this paper, we contribute to the debate by exploring the short-term effects of an exogenous increase in gender balance in Italian municipal councils on the level and type of municipal spending.

We have constructed a large dataset combining different administrative records about the composition of Italian municipality councils and executive boards by gender, education and occupation, the demographics and human capital distribution at municipality level and the local patterns of expenditures in education, security, administration, environment, social services and productive services. Our dataset allows us to exploit both geographic and temporal variation in



gender composition and expenditure of Italian municipalities holding local elections both before and after the implementation year of Law 215/2012, while distinguishing those that are treated by the reform (with size larger than 5,000 residents) and those that are not. The introduction of gender quotas has a significant effect on the gender composition of municipality councils and executives: on average, it rises by 13.7 percentage points the share of female elected politicians, a result that is robust across specifications. We explore the consequences of the gender quotas introduced by Law 215/2012 to identify the effect of an exogenous increase in the share of female members of municipality councils and executives on the municipality expenditures.

We find that increasing the share of female councilors by one percentage point increases expenditure in security of a magnitude ranging from 0.7% to 1% and, even though less robust, we find a similar effect on expenditure in productive services. These findings support the intuition that female-oriented policies at a local level may not be classified as social spending. Examples of these policies include expenditure in street lights, which belongs to the productive services category and which increases safety in the streets particularly for women, together with expenditure in local security issues. Moreover, we show that a one percentage point increase in the share of female councilors contextually reduces expenditure in administrative services by about 1%. Our results therefore provide additional support to the literature that suggests that women in politics increase the efficiency of local bodies without expanding aggregate budgets (Braga and Scervini 2017, Cabaleiro and Buch 2020). Evidence survives under a variety of specifications and robustness tests. If any, rising the share of female councilors reduces aggregate expenditure, while it does not affect expenditure in educational and social services. The effect of rising gender balance in municipalities councils on environmental services expenditure is ambiguous, reflecting the implications of potential confounders that drive the results. Overall, our results are consistent with available evidence in the literature that welfare enhancing policies at the local level may not necessarily be included in social expenditure, as they may be related with items such as local policing, security and administration of local events (Cabaleiro and Buch 2020, Hernández-Nicolás et al. 2018).

Findings are robust to a variety of specifications of the baseline estimating equation. We provide evidence that the effects on municipality expenditures is enhanced by the rise in the share of women in the municipality board, implying that the change in local expenditure policies are likely promoted by increased active female participation in local administrations.

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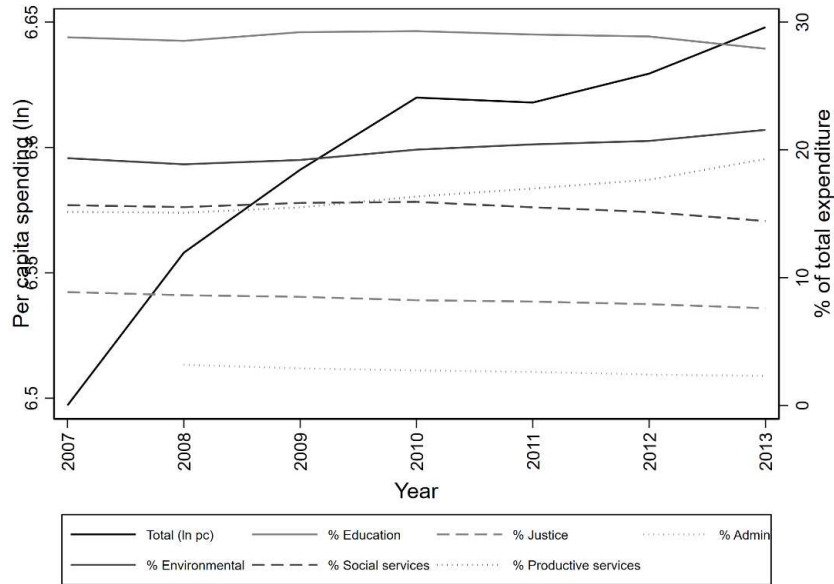
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## Figures and tables



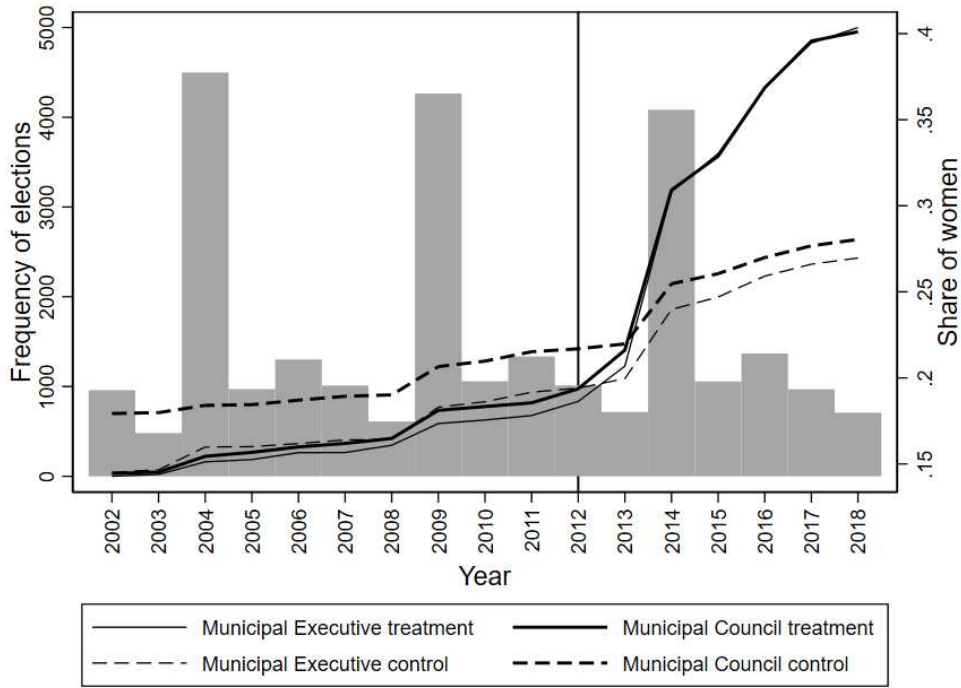
**Figure 1: per capita spending (ln) across Italian municipalities, by item**



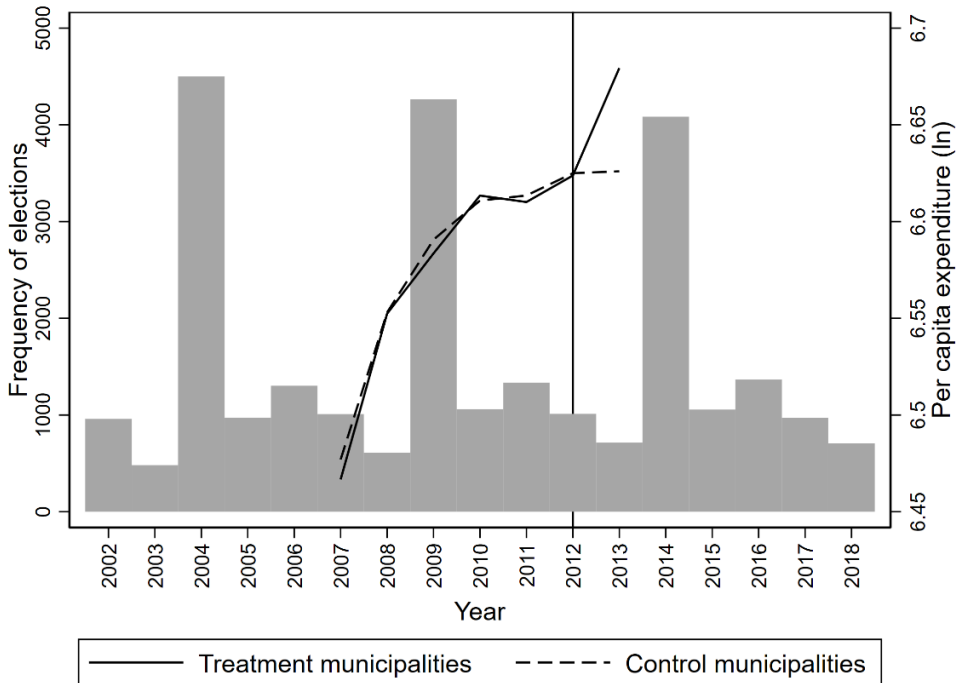
**Panel a) Changes in % women in council, before-after 2013**

**Panel b) Treated municipalities (baseline T1)**

**Figure 2. Geographical distribution of the baseline treatment indicator**



**Figure 3. Identification of the effects of gender quotas on women participation in councils and in executive boards of Italian municipalities**



**Figure 4. Identification of the effect of gender composition of municipal councils on municipal spending**

**Table 1. Descriptive statistics of municipalities and municipal election outcomes.**

	Mean	Sd	Min	Max	N
<b>Characteristics of the municipality council and executive board:</b>					
Size of municipal council	18.67	6.229	2	79	134265
% woman in council	21.76	12.68	0	85.71	134265
of which:					
% At least secondary education	75.26	33.62	0	100	134265
% Less than secondary education	24.74	33.62	0	100	134265
of which:					
% Entrepreneurs	2.285	9.609	0	100	127221
% Employee/self employed	70.01	32.74	0	100	127221
% Unemployed, housekeeper, student	27.71	32.43	0	100	127221
% males in council	78.24	12.68	14.29	100	134265
of which:					
% At least secondary education	67.60	21.69	0	100	134265
% Less than secondary education	32.40	21.69	0	100	134265
of which:					
% Entrepreneurs	4.948	7.918	0	100	134248
% Employee/self employed	75.38	18.45	0	100	134248
% Unemployed, housekeeper, student	19.67	18.10	0	100	134248
Average age of women in council	42.48	7.677	18	85	96746
Average age of men in council	47.06	4.528	28.92	77.33	102964
% female and unemployed/housekeepers	1.726	3.968	0	50	134248
% female and student	0.877	2.612	0	33.33	134248
% female and entrepreneurs	0.513	2.098	0	41.18	134248
% female and employee/self employed	15.18	11.50	0	85.71	134248
At least a woman in council (dummy)	0.948	0.223	0	1	134265
At least 20% of women in council (dummy)	0.501	0.500	0	1	134265
% women in the executive	20.52	18.19	0	100	134168
Mayor is a woman (dummy)	0.111	0.314	0	1	134265
% of municipality council affiliated to:					
Center party	3.637	12.69	0	100	134265
Left party	4.483	13.75	0	100	134265
Right party	5.980	16.89	0	100	134265
Civic list	85.90	27.13	0	100	134265
<b>Municipality characteristics:</b>					
Population (ln)	7.805	1.309	3.401	14.78	133577
Families (ln)	3.598	0.607	0	13.80	131541
Density (ln)	275.4	603.1	0	13157.1	131541
% old (65+)	0.256	0.0315	0.0794	0.527	133460
% working age (35-65)	0.159	0.0439	0.0204	0.520	133460
% secondary education	5.700	1.463	0	17.01	133460
% women with university degree	4.082	1.632	0.190	37.38	131242
% women housekeepers	8.726	3.209	0.549	34.75	131537
% women unemployed	26.94	3.367	7.595	69.86	131537
% retired	13.12	3.187	1.538	37.38	131537
Average taxes per capita (Euro)	16570.2	3756.7	5869.7	63894.7	47241
<b>Treatment indicators (dummy):</b>					
Municipality holds election in or after 2013	0.252	0.434	0	1	134265
T1 - municipality size between 5000 and 15000.	0.218	0.413	0	1	107403
T2 - municipality size larger than 5000	0.286	0.452	0	1	117570
T3 - municipality size between 5000 and 8000.	0.131	0.337	0	1	96597
T4 - T1, including autonomous regions	0.217	0.412	0	1	122723
T5 - T2, including autonomous regions	0.284	0.451	0	1	134265
T6 - T1, limited to 2010-2018	0.223	0.417	0	1	56390
T7 - T1, limited to 2010-2013	0.215	0.411	0	1	25334

Note: extended sample used in DID estimation based on 2002-2018 data on the universe of municipalities.

**Table 2: Descriptive statistics of municipal expenditures**

	Mean	SD	Min	Max	N
<b>Expenditure (millions Euro)</b>					
Total	6.583	58.4	0	5533.2	78183
Education	2.128	20.3	0	1471.6	78426
Security	0.711	8.76	0	722.8	78426
Administration	0.194	2.53	0	281.1	46276
Anvironment	1.346	11.1	0	1305.5	78426
Social services	1.335	12.0	0	882.8	78426
Productive services	0.909	7.61	0	1065.9	80883
<b>Expenditure per capita (Euro)</b>					
Total	773.8	430.4	0	9656.7	77952
Education	238.6	155.3	0	3691.3	77949
Security	71.36	78.4	0	3744.7	77949
Administration	27.82	100.4	0	6643.2	46032
Anvironment	174.9	148.3	0	6246.8	77949
Social services	136.8	142.3	0	4333.3	77949
Productive services	135.7	93.8	0	3522.2	77952
<b>Composition of expenditure (%)</b>					
Education	28.61	13.5	0	92.64	78179
Security	8.486	6.17	0	93.50	78180
Administration	2.686	3.01	0	68.52	46204
Anvironment	19.92	9.13	0	98.61	78179
Social services	15.20	9.81	0	84.39	78180
Productive services	15.99	7.32	0	79.44	78180
<b>Women in municipality political bodies:</b>					
% woman in council	19.07	11.3	0	85.71	79192
% woman in executive board	17.53	16.5	0	100	79622
<b>T1 - 5000 and 15000 residents vs less (dummy)</b>	0.215	0.41	0	1	63576
<b>Municipality holds election in or after 2013</b>	0.00903	0.095	0	1	79192

Note: data restricted to period 2007-2013 to all municipalities.

**Table 3. DiD baseline estimates**

	% women in the municipality council					Women in the board at least 20%	% women in executive
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post*treat	14.38*** (0.16)	14.08*** (0.15)	14.06*** (0.15)	13.78*** (0.16)	13.74*** (0.16)	0.32*** (0.01)	12.27*** (0.24)
Post	7.97*** (0.10)	5.09*** (0.17)	3.46*** (0.18)	3.54*** (0.19)	3.64*** (0.19)	0.14*** (0.01)	4.99*** (0.30)
Treat	-2.69*** (0.09)	-1.04*** (0.34)	-1.15*** (0.34)	-1.14*** (0.35)	-1.12*** (0.35)	-0.05*** (0.02)	-1.44*** (0.54)
Constant	19.74*** (0.05)	325.72*** (57.26)	-653.5*** (74.21)	1721.86* (1041.03)	2013.32* (1053.95)	55.11* (30.43)	798.16 (1414.35)
<b>Election controls:</b>							
Election year			0.47*** (0.02)	0.48*** (0.02)	0.48*** (0.02)	0.02*** (0.00)	0.48*** (0.04)
Center party			-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.00*** (0.00)	-0.02*** (0.00)
Left party			-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00*** (0.00)	-0.00 (0.00)
Right party			-0.02*** (0.00)	-0.02*** (0.00)	-0.02*** (0.00)	-0.00*** (0.00)	-0.01*** (0.00)
Size of council			0.05*** (0.02)	0.05*** (0.02)	0.05*** (0.02)	0.01*** (0.00)	0.11*** (0.03)
<b>Municipality characteristics controls:</b>							
Population (ln)				-7.63*** (2.14)	-30.18*** (4.82)	-1.00*** (0.19)	-27.05*** (7.39)
Families (ln)				2.39*** (0.55)	4.08*** (0.84)	0.15*** (0.03)	2.23* (1.15)
Density (ln)				0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.01*** (0.00)
% old (65+)				5.58** (2.35)	5.56** (2.39)	0.28*** (0.10)	14.49*** (3.95)
% working age (35-65)				-3.07* (1.82)	-3.27* (1.85)	0.10 (0.08)	-7.45** (3.06)
<b>Municipality education and labor market controls:</b>							
% secondary education					0.03 (0.04)	-0.00 (0.00)	0.05 (0.07)
% Women with university					0.33 (0.25)	0.03*** (0.01)	1.03** (0.44)
% women housekeepers					0.26 (0.43)	0.00 (0.02)	2.49*** (0.79)
% women unemployed					-1.25*** (0.33)	-0.04*** (0.01)	-3.05*** (0.61)
<b>Additional controls</b>							
Year FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Province trend	No	Yes	Yes	Yes	Yes	Yes	Yes
N	107403	107381	107381	105682	105431	105431	105406
R2	0.186	0.598	0.600	0.598	0.598	0.482	0.479

Note: regressions based on years 2002-2018 limited to municipalities below 15,000 residents. Post is for elections taking place in 2013 onward, treat is for baseline treatment T1. Effects in models (1)-(5) and (7) are in percentage points, effects in models (6) can be understood as growth rates. All models report OLS estimates with robust standard errors. Significance: \* = 10%, \*\* = 5%, \*\*\* = 1%.



**Table 4. DiD model: effects by characteristics of elected**

Dependent variable	Highly educated women as:		Highly educated men as:	Age female (ln)	% of women in council who are:			
	% of council	% of women in council	% in council		Unemployed	Student	Entrepreneurs	Employed or self-employed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post*treat	10.84*** (0.19)	-0.37 (0.50)	-12.96*** (0.23)	-0.02*** (0.01)	0.84*** (0.05)	0.39*** (0.04)	0.67*** (0.04)	8.78*** (0.19)
Post	2.32*** (0.19)	0.92 (0.62)	-4.16*** (0.26)	-0.02*** (0.01)	-0.06 (0.06)	-0.17*** (0.04)	0.06* (0.03)	1.67*** (0.18)
Treat	-0.92** (0.42)	1.22 (1.19)	3.11*** (0.51)	-0.00 (0.01)	-0.32*** (0.11)	0.09 (0.07)	-0.03 (0.10)	-0.87** (0.42)
Constant	2918.70*** (1115.00)	5682.51 (4109.30)	-3127.45*** (1126.20)	-12.18 (35.12)	244.99** (98.49)	164.38*** (31.44)	-183.70 (153.69)	694.06 (805.71)
N	105431	105431	105431	75788	105430	105430	105430	105430
R2	0.537	0.394	0.639	0.526	0.476	0.358	0.446	0.515

Note: regression based on years 1998-2018 limited to municipalities below 15000 residents. Post is for councils elected in 2013 onward, Treat is for council elections taking place in municipalities identified by T1. Effects are always in percentage points, except in model (4) which can be interpreted as growth rates. All models control for year FE, municipality FE, provincial trends, population size, demographics and population human capital at municipality level. All OLS regressions include robust standard errors. Significance levels: \* = 10%, \*\* = 5%, \*\*\* = 1%.

**Table 5. IV estimates on municipal spending: baseline.**

	Total expenditure	Expenditure items:					
	(1)	Education (2)	Security (3)	Administration (4)	Environment (5)	Social Services (6)	Productive services (7)
<b>A) Aggregate (ln)</b>							
OLS: % women	-0.0001 (0.0001)	-0.0002 (0.0002)	0.0003 (0.0003)	-0.0007 (0.0006)	-0.0001 (0.0002)	0.0001 (0.0002)	0.0000 (0.0002)
IV 2nd stage: % women	0.0018 (0.0014)	0.0003 (0.0019)	0.0102*** (0.0037)	-0.0094** (0.0047)	0.0032 (0.0033)	0.0041 (0.0028)	0.0072** (0.0029)
IV 1st stage: Treat*post	14.9917*** (1.2999)	14.9643*** (1.3002)	15.0878*** (1.3159)	15.3655*** (1.5628)	14.9679*** (1.2999)	14.9652*** (1.3001)	14.9638*** (1.3004)
N	62191	62144	55533	29884	62164	62156	61934
R2	0.980	0.973	0.886	0.793	0.931	0.961	0.926
<b>B) Per capita (ln)</b>							
OLS: % women	-0.0001 (0.0001)	-0.0002 (0.0002)	0.0008* (0.0004)	0.0002 (0.0010)	-0.0002 (0.0002)	0.0000 (0.0002)	0.0000 (0.0002)
IV 2nd stage: % women	0.0018 (0.0015)	0.0005 (0.0021)	0.0089** (0.0044)	-0.0089 (0.0069)	0.0032 (0.0027)	0.0040 (0.0026)	0.0078** (0.0032)
IV 1st stage: Treat*post	14.9928*** (1.2999)	14.9676*** (1.3000)	14.9676*** (1.3000)	15.4513*** (1.3110)	14.9676*** (1.3000)	14.9676*** (1.3000)	14.9928*** (1.2999)
N	62185	62182	62182	36843	62182	62182	62185
R2	0.864	0.874	0.838	0.620	0.794	0.865	0.810
<b>C) % of total expenditures</b>							
OLS: % women		0.002 (0.003)	-0.003 (0.002)	-0.002 (0.002)	-0.005* (0.003)	0.000 (0.002)	-0.003 (0.002)
IV 2nd stage: % women		0.010 (0.043)	0.029 (0.023)	-0.007 (0.014)	0.058 (0.046)	0.012 (0.035)	0.052 (0.035)
IV 1st stage: Treat*post		13.788*** (0.156)	14.968*** (1.300)	14.968*** (1.300)	15.445*** (1.311)	14.968*** (1.300)	14.968*** (1.300)
N		62181	62182	36803	62181	62182	62182
R2		0.900	0.782	0.613	0.760	0.887	0.793

Note: regression based on years 2007-2013 and municipalities of size smaller than 15,000 residents. The main treatment variable is the % of women in municipality council. The IV estimator is based on a two steps procedure: the first stage is an OLS regression in which the % of women in council is regressed on controls and on the instrument, identifying municipalities in the treatment group (T1) and holding elections at or after 2013 (effects of the first stage are always in percentage points); the second stage makes use of predictions of the % of women as main treatment. Effects in panels A) and B) are growth rates, while effects in panel C) are in percentage points. All models control for treatment and post indicators, year FE, municipality FE, provincial trends, population size, demographics and population human capital at municipality level. All OLS regressions include robust standard errors, standard errors for second stage coefficients are bootstrapped 500 times. R2 always refers to second stage regressions. Significance level: \* = 10%, \*\* = 5%, \*\*\* = 1%.

**Table 6. IV estimates on municipal spending: municipality board effects.**

	Total expenditure	Expenditure items:					
	(1)	Education (2)	Security (3)	Administration (4)	Environment (5)	Social Services (6)	Productive services (7)
<b>A) % Women in council</b>							
OLS : % Women	-0.0001 (0.0001)	-0.0002 (0.0002)	0.0003 (0.0003)	-0.0006 (0.0006)	-0.0001 (0.0002)	0.0001 (0.0002)	-0.0000 (0.0002)
Size board	0.0125* (0.0067)	-0.0031 (0.0080)	0.0126 (0.0160)	-0.0686** (0.0277)	0.0280*** (0.0094)	0.0181* (0.0108)	0.0317*** (0.0088)
IV 2nd stage: % Women	0.0015 (0.0015)	0.0008 (0.0021)	0.0102** (0.0042)	-0.0060 (0.0048)	0.0026 (0.0033)	0.0038 (0.0028)	0.0060* (0.0033)
Size board	0.0107 (0.0073)	-0.0042 (0.0082)	0.0011 (0.0173)	-0.0581* (0.0334)	0.0248** (0.0106)	0.0135 (0.0110)	0.0246** (0.0098)
IV 1st stage: Treat*post	14.5007*** (1.3035)	14.4696*** (1.3039)	14.6338*** (1.3208)	14.5539*** (1.5746)	14.4582*** (1.3034)	14.4524*** (1.3036)	14.4569*** (1.3040)
Size board	0.6280** (0.2538)	0.6314** (0.2548)	0.5838** (0.2704)	1.0814** (0.4414)	0.6588*** (0.2543)	0.6616*** (0.2543)	0.6351** (0.2553)
N	62191	62144	55533	29884	62164	62156	61934
R2	0.980	0.973	0.886	0.793	0.931	0.961	0.926
<b>B) % Women in council and its interaction with board size indicator I(size&gt;=average)</b>							
OLS: % Women	-0.0002 (0.0002)	-0.0001 (0.0003)	-0.0008 (0.0006)	-0.0009 (0.0010)	0.0000 (0.0003)	-0.0001 (0.0004)	0.0002 (0.0003)
% Women*I(size>=average)	0.0001 (0.0002)	-0.0000 (0.0003)	0.0015** (0.0007)	0.0002 (0.0010)	-0.0002 (0.0004)	0.0002 (0.0004)	-0.0003 (0.0003)
IV 2nd stage: % Women	0.0083* (0.0049)	-0.0004 (0.0041)	0.0042 (0.0141)	0.0003 (0.0126)	0.0396*** (0.0120)	0.0012 (0.0054)	0.0473*** (0.0174)
% Women*I(size>=average)	-0.0065 (0.0043)	0.0007 (0.0034)	0.0047 (0.0120)	-0.0089 (0.0113)	-0.0356*** (0.0107)	0.0029 (0.0045)	-0.0390** (0.0156)
N	62183	62136	55527	29877	62156	62148	61926
R2	0.980	0.973	0.886	0.793	0.931	0.961	0.926
<b>C) % Women in board</b>							
OLS: % women	0.0001 (0.0001)	0.0001 (0.0001)	0.0007*** (0.0002)	-0.0001 (0.0004)	-0.0000 (0.0001)	0.0000 (0.0001)	-0.0000 (0.0001)
IV 2nd stage: % women	0.0029 (0.0029)	0.0016 (0.0038)	0.0205** (0.0082)	-0.0118 (0.0088)	0.0050 (0.0065)	0.0075 (0.0056)	0.0118* (0.0069)
IV 1st stage: Treat*post	7.3953*** (1.8374)	7.3909*** (1.8392)	7.2469*** (1.8626)	7.4199*** (2.1798)	7.3680*** (1.8387)	7.3535*** (1.8388)	7.3268*** (1.8396)
N	62191	62144	55533	29884	62164	62156	61934
R2	0.980	0.973	0.886	0.793	0.931	0.961	0.926

Note: sample selection is as in Table 5. All models control for treatment and post indicators, year FE, municipality FE, provincial trends, population size, demographics and population human capital at municipality level, geographic characteristics, characteristics of the council, the size of the council and the size of the board (quadratic expansion) and for the baseline treatment T1. In model B, an indicator for the size of the board is interacted with the share of female representatives in council. All OLS regressions include robust standard errors. Standard errors for second stage coefficients are bootstrapped 500 times. R2 always refers to second stage regressions. Significance level: \* = 10%, \*\* = 5%, \*\*\* = 1%.

## Appendix

**Table A.1. Description of data sources**

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**Administrative records on elected politicians – Archivio storico delle amministrazioni regionali e locali AARL, (2002-2018).**

Source: Italian Ministry of Interior, Department of Interior and Territorial affairs

Site: <https://elezionistorico.interno.gov.it/>

Variables: ISTAT identification code of Municipality; ISTAT code of Region; ISTAT code of Provinces; Date of election. For each elected candidate, the database reports : Level of office held in Council; Civil list affiliation of candidate; Political affiliation of candidate (see replication code for assignment of parties on left-right scale based on position with national parliament wings); Education level of candidate (higher diploma achieved); Age of candidate; Gender of candidate; Employment status of candidate.

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**Archive of national 2011 census aggregate tables, by municipality, and Socio demographic characteristics and dynamics of the population by year (2002-2018)**

Source: ISTAT- National Statistics Institute and Italian Population Census

Site: [www.demo.istat.it](http://www.demo.istat.it)

Variable: Resident population in each municipality: by gender; by age; by immigration status; by employment status and occupation; by education level.

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**Individual Income Tax Declarations aggregate data by municipality of residence – Imposta sui redditi da persona fisica IRPEF, (2008-2013)**

Source : Ministry of Economics and Finance

Site: [https://www1.finanze.gov.it/finanze3/pagina\\_dichiarazioni/dichiarazioni.php](https://www1.finanze.gov.it/finanze3/pagina_dichiarazioni/dichiarazioni.php)

Variables: Data on income declarations at municipality level: Frequency of taxpayers distribution across 8 pre-tax income brackets; Total taxable income declared in each bracket; Pre-tax income level per capita; Quartiles of the distribution of pre-tax income per capita; Total amount of municipality pre-tax income.

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**Data on Municipal Spending – Certificati consuntivi di bilancio (2007-2013)**

Source: Italian Ministry of Interior – Department of Interior and Territorial affairs

Site: <https://finanzalocale.interno.gov.it/apps/floc.php/in/cod/4>

Variables: Selected indicators of budgeted expenditures in current fiscal year on Security; Education; Environment; Administration; Social Services; Productive Services. Selected aggregate indicators of spending which are present in all municipality budgets, as classified by budgeting rules (consuntivo di bilancio) for public administrations. See replication code for details concerning the selection and aggregation of expenditure items.

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**Table A.2. DiD model robustness checks: definition of treatment**

Dependent variable	% women in the municipal council					
	T2	T3	T4	T5	T6	T7
Type of treatment "T":	(1)	(2)	(3)	(4)	(5)	(6)
Post*treat "T"	12.05*** (0.14)	14.19*** (0.21)	12.60*** (0.15)	10.99*** (0.13)	13.90*** (0.18)	14.62*** (1.27)
Post	3.51*** (0.17)	3.59*** (0.20)	4.46*** (0.17)	4.35*** (0.16)	3.17*** (0.26)	2.27** (0.92)
Treat "T" (depends on model)	0.07 (0.34)	-1.74*** (0.37)	-0.82** (0.33)	0.23 (0.33)	-1.97*** (0.44)	-1.72 (3.22)
Constant	1195.79* (611.72)	8276.96*** (2347.54)	1959.89* (1048.19)	1176.18* (607.60)	1714.61 (1108.56)	768.90 (1881.85)
N	114773	94849	120543	131179	55753	25259
R2	0.610	0.576	0.600	0.613	0.704	0.868

Note: regression based on years 1998-2018. Post is for councils elected in 2013 onward. The treatment depends on the underlying model: T2 is for municipality size larger than 5000; T3 if for municipality size between 5000 and 8000, T4 is like T1 and includes autonomous regions; T5 is like T2 and includes autonomous regions; T6 is like T1 but limited to period 2010-2018; T7 is like T1 but limited to period 2010-2013. Effects are always interpreted in percentage points. All models control for year FE, municipality FE, provincial trends, population size, demographics and population human capital at municipality level. All OLS regressions include robust standard errors. Significance level: \* = 10%, \*\* = 5%, \*\*\* = 1%.

**Table A.3. IV estimates on municipal spending: robustness checks.**

	Total expenditure	Expenditure items:					
	(1)	Education (2)	Security (3)	Administration (4)	Environment (5)	Social Services (6)	Productive services (7)
<b>A) Aggregate expenditure (ln); specific treatment: % women with high education</b>							
OLS: % women with high education	-0.0000 (0.0001)	0.0000 (0.0002)	0.0004 (0.0003)	-0.0005 (0.0006)	0.0001 (0.0002)	0.0000 (0.0002)	-0.0000 (0.0002)
IV 2nd stage: % women high education	0.0023 (0.0017)	0.0004 (0.0023)	0.0130*** (0.0048)	-0.0124** (0.0054)	0.0042 (0.0038)	0.0053 (0.0033)	0.0092** (0.0042)
N	62191	62144	55533	29884	62164	62156	61934
R2	0.980	0.973	0.886	0.793	0.931	0.961	0.926
<b>B) Aggregate expenditure (ln); specific treatment: % women employed</b>							
OLS: % women employed	-0.0000 (0.0001)	0.0002 (0.0002)	-0.0002 (0.0004)	-0.0012** (0.0006)	0.0000 (0.0002)	0.0004* (0.0002)	-0.0000 (0.0002)
IV 2nd stage: % women employed	0.0032 (0.0025)	0.0006 (0.0034)	0.0184** (0.0076)	-0.0171** (0.0075)	0.0058 (0.0054)	0.0073 (0.0047)	0.0127** (0.0053)
N	62191	62144	55533	29884	62164	62156	61934
R2	0.980	0.973	0.886	0.793	0.931	0.961	0.926
<b>C) Aggregate expenditure (ln); controls for fiscal revenues levels and distribution at municipality level</b>							
OLS: % women in council	-0.0001 (0.0002)	0.0001 (0.0002)	-0.0010** (0.0005)	-0.0008 (0.0006)	0.0001 (0.0003)	0.0001 (0.0003)	0.0002 (0.0003)
IV 2nd stage: % women in council	0.0011 (0.0013)	0.0005 (0.0018)	0.0068* (0.0037)	-0.0093** (0.0046)	0.0038 (0.0029)	0.0029 (0.0025)	0.0073** (0.0029)
N	37337	37309	33276	29806	37319	37314	37174
R2	0.937	0.982	0.978	0.917	0.792	0.941	0.968
<b>D) Aggregate expenditure (ln); Control group limited to municipalities below 1000 residents</b>							
OLS: % women in council	-0.0003 (0.0002)	-0.0008*** (0.0003)	-0.0002 (0.0006)	-0.0012 (0.0010)	0.0004 (0.0003)	-0.0001 (0.0003)	0.0003 (0.0003)
IV 2nd stage: % women in council	0.0021 (0.0022)	0.0011 (0.0038)	0.0224** (0.0094)	0.0004 (0.0055)	0.0008 (0.0033)	0.0040 (0.0039)	0.0051 (0.0033)
N	29770	29733	24276	14073	29754	29747	29666
R2	0.987	0.979	0.920	0.831	0.948	0.973	0.938
<b>E) Aggregate expenditure (ln); Specific treatment: most conservative, limited to period 2010/2013 (treatment T7)</b>							
OLS: % women in council	0.0001 (0.0003)	0.0003 (0.0004)	-0.0010 (0.0007)	-0.0012 (0.0008)	0.0005 (0.0005)	0.0002 (0.0005)	0.0005 (0.0004)
IV 2nd stage: % women in council	0.0007 (0.0015)	0.0005 (0.0019)	0.0050 (0.0035)	-0.0089* (0.0049)	0.0026 (0.0032)	0.0027 (0.0028)	0.0056* (0.0032)
N	24913	24893	22182	19609	24901	24896	24808
R2	0.868	0.868	0.868	0.873	0.868	0.868	0.868

Note: regressions based on years 2007-2013 (except panel E) and municipalities of size smaller than 15,000 residents. The IV estimates are obtained from a two steps procedure as in table 6. The dependent variable in models OLS and IV 2nd stage is always the log of expenditure at municipality level. The treatment, sample selection and controls vary across panels. Effects are always interpreted as growth rates. The dependent variable in IV 1st stage regressions are in % terms. All models in all panels control for treatment and post indicators, year FE, municipality FE, provincial trends, population size, demographics and population human capital at municipality level. Models in panel C) also control for the distribution of taxable revenues within and across municipalities for selected municipalities where information is available. All OLS regressions include robust standard errors. Standard errors for second stage coefficients are bootstrapped 500 times. R2 always refers to second stage regressions. Significance levels: \* = 10%, \*\* = 5%, \*\*\* = 1%.

**Table A.4. IV estimates on municipal spending: Placebo tests**

	Total expenditure		Expenditure items:				
	(1)	Education (2)	Security (3)	Administration (4)	Environment (5)	Social Services (6)	Productive services (7)
<b>A) Effects simulated in 2012 using municipalities with treat*post=1 in 2013.</b>							
IV 2nd stage: % women in council	0.0169 (0.0335)	0.0318 (0.0391)	-0.1239 (0.0792)	-0.0773 (0.2723)	-0.0149 (0.0800)	-0.0017 (0.0462)	-0.0881 (0.0807)
IV 1st stage: Treat*post	-0.4906 (0.4711)	-0.4893 (0.4709)	-0.4407 (0.4742)	-0.4253 (0.2614)	-0.4846 (0.4712)	-0.4872 (0.4710)	-0.4947 (0.4714)
N	56075	56037	50071	25188	56056	56048	55846
R2	0.983	0.976	0.891	0.791	0.939	0.963	0.937
<b>B) Effects simulated in 2010 using municipalities with treat*post=1 in 2013.</b>							
IV 2nd stage: % women in council	-3.6006 (6.0590)	-0.4321 (4.2254)	0.4351 (0.3999)	0.1091 (0.1901)	-14.0651 (18.1441)	2.1103 (9.5200)	-2.5651 (6.5170)
IV 1st stage: Treat*post	-0.0019 (0.4155)	-0.0034 (0.4155)	0.0750 (0.4165)	-0.3557 (0.2213)	-0.0019 (0.4156)	-0.0019 (0.4156)	-0.0055 (0.4158)
N	56075	56037	50071	25188	56056	56048	55846
R2	0.983	0.976	0.891	0.791	0.939	0.963	0.937
<b>C) Effects simulated in 2010 on municipalities where election took place in 2010-2012.</b>							
IV 2nd stage: % women in council	-0.0826*** (0.0182)	0.0149 (0.0242)	-0.3149*** (0.0574)	-2.8583*** (0.4732)	-0.2709*** (0.0465)	-0.0353 (0.0371)	-0.2950*** (0.0484)
IV 1st stage: Treat*post	-0.3108 (0.2714)	-0.3015 (0.2716)	-0.2292 (0.2785)	0.0497 (0.3410)	-0.3046 (0.2718)	-0.2945 (0.2715)	-0.3027 (0.2723)
N	62044	61997	55388	29758	62017	62009	61787
R2	0.980	0.973	0.886	0.792	0.931	0.961	0.926
<b>D) Using eligible*post indicator as the main treatment.</b>							
OLS: % women in council	-0.0001 (0.0001)	-0.0002 (0.0002)	0.0001 (0.0003)	-0.0005 (0.0006)	-0.0002 (0.0002)	-0.0001 (0.0002)	0.0000 (0.0002)
IV 2nd stage: % women in council	0.0397*** (0.0040)	-0.0097** (0.0048)	0.0361*** (0.0089)	-0.0298** (0.0135)	0.1456*** (0.0108)	0.0085 (0.0060)	0.1978*** (0.0133)
IV 1st stage: Treat*post	1.5813*** (0.2736)	1.5880*** (0.2736)	1.6548*** (0.2813)	1.5217*** (0.2551)	1.5893*** (0.2736)	1.5949*** (0.2736)	1.5848*** (0.2742)
N	62191	62144	55533	29884	62164	62156	61934
R2	0.980	0.973	0.886	0.793	0.932	0.961	0.927

Note: regressions based on years 2007-2012, except panel D) which includes 2013. The dependent variable is always the log of aggregate expenditure at municipality level (total and by item). All models contain covariates, fixed effects by municipality and province-specific trends. Effects are always interpreted as growth rates. The dependent variable in IV 1st stage regressions are in % terms. All OLS regressions include robust standard errors. Standard errors for second stage coefficients are bootstrapped 500 times. R2 always refers to second stage regressions. Significance level: \* = 10%, \*\* = 5%, \*\*\* = 1%.

**Table A.5. IV estimates on municipal spending: eligibility and treatment.**

	Total expenditure	Expenditure items:					
	(1)	Education (2)	Security (3)	Administration (4)	Environment (5)	Social Services (6)	Productive services (7)
<b>A) Aggregate (ln)</b>							
IV 2nd stage: % women in council	-0.0025* (0.0015)	0.0014 (0.0020)	0.0068* (0.0041)	-0.0070 (0.0047)	-0.0128*** (0.0035)	0.0034 (0.0026)	-0.0143*** (0.0036)
IV 2nd stage: eligible*post	0.0671*** (0.0067)	-0.0167** (0.0082)	0.0536*** (0.0154)	-0.0392* (0.0210)	0.2498*** (0.0180)	0.0112 (0.0095)	0.3334*** (0.0227)
N	62191	62144	55533	29884	62164	62156	61934
R2	0.980	0.973	0.886	0.793	0.932	0.961	0.927
<b>B) Aggregate (ln) - Dropping municipalities of size 1,000-4,999</b>							
IV 2nd stage: % women in council	-0.0024 (0.0021)	0.0009 (0.0039)	0.0195** (0.0091)	0.0012 (0.0058)	-0.0127*** (0.0036)	0.0033 (0.0042)	-0.0134*** (0.0033)
IV 2nd stage: eligible*post	0.0865*** (0.0104)	0.0035 (0.0137)	0.0629** (0.0309)	-0.0189 (0.0303)	0.2655*** (0.0195)	0.0122 (0.0147)	0.3604*** (0.0213)
N	29770	29728	24272	14070	29749	29742	29661
R2	0.987	0.979	0.920	0.831	0.949	0.973	0.940
<b>C) Aggregate (ln) - Only years 2010-2013</b>							
IV 2nd stage: % women in council	-0.0025* (0.0015)	0.0014 (0.0020)	0.0068* (0.0041)	-0.0070 (0.0047)	-0.0128*** (0.0035)	0.0034 (0.0026)	-0.0143*** (0.0036)
IV 2nd stage: eligible*post	0.0671*** (0.0067)	-0.0167** (0.0082)	0.0536*** (0.0154)	-0.0392* (0.0210)	0.2498*** (0.0180)	0.0112 (0.0095)	0.3334*** (0.0227)
N	62191	62144	55533	29884	62164	62156	61934
R2	0.980	0.973	0.886	0.793	0.932	0.961	0.927
<b>D) Reduced form estimates</b>							
Treatment*post	-0.0376* (0.0219)	0.0212 (0.0293)	0.1014* (0.0603)	-0.1072* (0.0633)	-0.1911*** (0.0489)	0.0505 (0.0400)	-0.2130*** (0.0520)
Eligible*post	0.0670*** (0.0066)	-0.0166** (0.0083)	0.0542*** (0.0150)	-0.0396** (0.0193)	0.2492*** (0.0177)	0.0114 (0.0096)	0.3328*** (0.0216)
N	62191	62144	55533	29884	62164	62156	61934
R2	0.980	0.973	0.886	0.793	0.932	0.961	0.927

Note: sample structure and dependent variables are as in Table 5. All estimating models include covariates, fixed effects by municipality and province-specific trends and additional time-varying controls. The instrument of IV models (A) to C) is always eligibility\*post indicator. Eligibility dummy identifies municipalities with a population of 5,000-15,000 residents, irrespectively of whether elections were held in 2013. Treatment municipalities are eligible municipalities which hold elections in 2013. Effects are always interpreted as growth rates. Standard errors for second stage coefficients are bootstrapped 500 times. R2 always refers to second stage regressions. Significance levels: \* = 10%, \*\* = 5%, \*\*\* = 1%.