Can Gender Quotas Break the Glass Ceiling? Evidence from Italian Municipal Elections

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Do gender quotas promote the election of female mayors? I exploit the roll-out of three gender quota policies governing Italian municipal elections to answer this question. The quotas institute minimum legal levels of female representation in the lists of councilor candidates and in the municipal governments' executive bodies, but do not directly target mayoral positions. Therefore, their ability to promote female political leadership entirely depends on whether they induce a broader increase in female representation in municipal governments beyond that mechanically required by the law. Using event-study and regression discontinuity methods, I decompose the aggregate effects of the quotas into mechanical effects, driven by compliance with the law, and additional impacts, or "acceleration effects." The reforms have increased the share of female politicians in the less senior government positions beyond the minimum legal level, but there is no evidence of effects on the mayoral position. I also find no evidence of effects on female mayoral candidacies, or on electoral support for female mayoral candidates. I conclude that the acceleration effects produced by the quotas have been too weak to advance female political leadership in municipal governments.

Keywords: Gender quotas, affirmative actions, female political leadership, female political representation, municipal elections.
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1 Introduction

Despite the popularity of gender quota systems for promoting female participation in local politics in most member countries of the European Union,[1] as of 2021 just 17.4% of these countries' mayors and municipal-council chiefs were women (EIGE).[2] This unsatisfactory outcome calls into question whether quota systems can effectively promote female political leadership in municipal governments.

Gender quotas reserve for women a certain share of the open posts in electoral lists of councilor candidates and government bodies. By design, they increase female representation in the bodies in which they are applied to the minimum legal levels they institute. Originally, the quotas were thought of as temporary policies to be removed once political systems transitioned to an equilibrium with equitable political representation of men and women. To evaluate progress in this transition, it is essential to investigate whether the quotas increase female representation in municipal governments just up to the legal minimum level or beyond. I will distinguish between the "mechanical effects" of the quotas, generated by compliance with the law, and the spillover effects, or "acceleration effects"–following the terminology of O'Brien et al. (2016), generated by additional changes in the behavior of voters, female politicians, and male-dominated political elites. The quotas may break gender stereotypes and cultural norms about the role of women in society (Beaman et al. 2009; De Paola et al. 2010); create a critical mass of female politicians able to influence key appointments in governments; reduce the scope for political elites' discriminatory practices; attract highly qualified women to politics (Baltrunaite et al. 2014; Weeks et al. 2015; Besley et al. 2017); and encourage the use of gender-inclusive recruitment processes. As the typical gender quota systems in the European Union do not directly target top government offices, their ability to promote female political leadership entirely depends on the strength of the acceleration effects they generate.

This paper investigates the ability of gender quota systems to advance female political leadership in municipal governments. I exploit the roll-out of three gender quota policies, implemented in 1993, 2013, and 2014, respectively, governing Italian municipal elections that each instituted minimum standards of female representation in electoral lists of councilor candidates or municipal governments' executive bodies. Using administrative data on politicians elected in municipal governments provided by the Italian Ministry of the Interior and using a combination of event-study and regression discontinuity (RD) approaches, I decompose the aggregate effects of the quotas into their mechanical effects—the minimum change in female representation in municipal governments induced by the quotas under perfect compliance—and, residually, their acceleration effects. Then, I evaluate the strength of the acceleration

[1] Belgium, Czech Republic, Finland, France, Greece, Italy, Poland, Portugal, Slovenia, and Spain have introduced mandatory gender quotas in local elections. Moreover, in Austria, Croatia, Cyprus, Czech Republic, France, Germany, Greece, Hungary, Italy, Lithuania, Luxembourg, Malta, Netherlands, Romania, Slovakia, Slovenia, Spain, and Sweden there are voluntary political-party quota systems. Only in Bulgaria, Denmark, Estonia, Ireland, and Latvia is there no gender quota system (Gender Quotas Database, International IDEA).

[2] European Institute for Gender Equality.

effects by investigating the causal effect of these policies on the probability that women are elected or appointed to a range of municipal government positions with increasing degrees of decision-making power and responsibility: councilors (least power and responsibility), executive councilors, vice mayors, and mayors (most power and responsibility).

I find evidence that the three policies increased female representation in the lists of councilor candidates and the governments' executive bodies beyond the minimum legal level and that acceleration effects explain between 25% and 44% of the aggregate effects. However, acceleration effects are concentrated in less senior government positions: the quotas increase the share of female councilors and executive councilors, but the evidence of an effect on the probability to select a female vice mayor is mixed, and there is no evidence of an effect on the probability to elect a female mayor, although these estimates are imprecise and I cannot rule out the existence of sizable effects. I also find no evidence that the three policies have different effects in historically left- and right-wing municipalities, nor that the effect on senior government positions is more pronounced in municipalities with larger impacts on less senior government positions. Additionally, there is no evidence that the quotas incentivized females to launch mayoral candidacies or increased electoral support for female mayoral candidates. Overall, my findings suggest that the acceleration effects produced by the three Italian quota policies have been too weak to break the glass ceiling for female politicians.

These results are consistent with previous studies finding that gender quotas applied to local elections in European countries boost female representation in local governments (Schwindt-Bayer 2009; De Paola et al. 2010; Baltrunaite et al. 2019; Bagues et al. 2021) but do not affect mayoral positions (Baltrunaite et al. 2019; Bagues et al. 2021[3]). However, my findings appear inconsistent with two studies documenting a positive effect of the quotas on female political leadership in Italian (De Paola et al. 2010) and Swedish (O'Brien et al. 2016) municipalities. Compared to De Paola et al. (2010), which investigates the first quota system, my study employs a different methodological approach and finds no evidence of an effect on the probability that a woman will be elected as mayor. I reconcile the apparent inconsistency with O'Brien et al. (2016) by discussing three potential explanations for the emergence of an effect in Sweden but not in Italy. First, the rate of female labor force participation in Sweden is 42% higher than in Italy (World Bank), suggesting that Italian women face higher barriers to taking up high-responsibility jobs. Second, interest groups, including women's clubs, can attend and monitor the recruitment process of candidate politicians in Sweden (O'Brien et al. 2016), while in Italy the selection of politicians is highly informal and plausibly conducive to the persistence of discriminatory practices. Third, the Swedish quotas were spontaneously adopted by male-dominated parties facing the harsh competition of strong feminist movements demanding that half of all political power be allocated to women (O'Brien et al. 2016), which, in line with the interparty-competition theory described by Weeks (2018), gave

[3] Baltrunaite et al. (2019) find fewer female mayors in municipalities affected by the quotas.

them strong incentives to increase female representation in their ranks. By contrast, the Italian quotas were not demanded by bottom-up movements but were legislated by the parliament to align with international guidelines. This discussion sheds light on the necessary conditions for acceleration effects: a highly functional labor market for women, systems for monitoring prejudiced political actors, and a strong civil society engaged in defending gender equality. The low share of female political leaders in local governments in the EU27 countries suggests these conditions are rarely met.

This paper closely relates to the work of De Paola et al. (2010) and Baltrunaite et al. (2019), studying the first and second Italian gender quota systems, respectively. With respect to these studies, I use a different methodological approach and analyze how the effect of the quotas is distributed over the entire range of government positions, including the previously excluded yet prestigious office of the vice mayor. This inclusion also allows me to study two types of government offices (the vice mayor and the mayor) that are only affected by the acceleration effects of the quotas and not by the mechanical effects. Robust effects for these two positions would be evidence of strong acceleration effects.

More broadly, this study contributes to the literature on the effectiveness of gender quotas in three ways. First, I propose a simple yet rigorous test for acceleration effects based on the specific requirements of the three gender quota systems. Second, by analyzing how the effect of the quotas is distributed over a range of government positions in hierarchical order, I am able to characterize in detail the reallocation of decision-making power within municipal governments after these reforms. Third, I contribute to an open debate in the literature by providing additional evidence on the impact of gender quotas on female political leadership in local governments and offering insights about the conditions favoring the emergence of such impacts.

My findings suggest that gender quota systems which reserve to women open posts in electoral lists of councilor candidates and municipal governments' executive bodies may not alone increase the probability that a woman will be elected as mayor. Countries interested in rapidly increasing their share of female mayors should consider implementing reservation policies directly targeting top municipal government positions.

The rest of the paper is organized as follows. Section 2 provides some institutional background and describes the three gender quota systems. Section 3 describes my data sources and data sample. Section 4 describes my identification strategies. Section 5 presents and discusses my findings. Section 6 concludes.

2 Background

2.1 Italian Municipal Governments

Italy is divided into 20 regions, 110 provinces, and 7,094 municipalities.[4] Municipal governments are at the lowest level of government and are responsible for providing local public goods and services such as sewage, garbage collection, management of local roads, provision of water, public transportation, and public housing. Four main types of officials, in increasing order of decision-making power and responsibility, run municipal governments: councilors, executive councilors, vice mayors, and mayors. Councilors are members of the municipal council (*Consiglio Comunale*), a collegial body with the duty to draft the municipal government's statute, balance sheet, financial statements, and city plan. Executive councilors are members of the executive committee (*Giunta Comunale*), a smaller collegial body in charge of governing the municipality. Each executive councilor is assigned a different area of responsibility, such as budget, education, environment, or transportation. The vice mayor is the right-hand man of the mayor and can act on their behalf. The mayor is the highest authority in the municipality and has responsibilities including chairing the executive committee, overseeing the government's activities, appointing and dismissing public officials and public-service providers, and maintaining public health and order. The vice mayor and mayor also sit on the executive committee. The size of the government and numerous other features of the local political system, such as the electoral rule and politicians' stipends, depend on the municipality's *legal population*—that is, its population as recorded in the most recent census.[5]

Despite their long working hours and numerous responsibilities, mayors, vice mayors, and executive councilors receive relatively low stipends. For example, the mayor of the median municipality by population earned a monthly before-tax wage equal to 64% of monthly Italian GDP per capita in 2020.[6] Vice mayors' and executive councilors' wages are set in proportion to mayors' wages.[7] Councilors, who are only required to regularly attend the meetings of the municipal council, receive compensation of €18–€103, depending on the municipality's population, for every session they attend.

Municipal government elections take place every five years, unless the municipality holds early elections.[8]

[4] These numbers refer to 2021. The total numbers of provinces and municipalities change over time because of mergers and divisions.

[5] The census takes place every ten years.

[6] Mayors' monthly stipends range from €1290 in municipalities with fewer than 1,000 residents to €7,800 in municipalities with more than 500,000 residents. The stipend is halved if the mayor retains another job or is retired. The monthly mayoral stipend in the median municipality by population, with 2,333 residents, is €1,450. I divided this number (converted into US dollars using an exchange rate of €1=$1.16) by the monthly Italian GDP per capita in 2020, equal to $2,643 (World Bank Open Data).

[7] For vice mayors, this proportion ranges between 15% in municipalities with fewer than 1,000 residents and 75% in municipalities with more than 50,000 residents. For executive councilors, this proportion ranges between 15% in municipalities with fewer than 1,000 residents and 45% in municipalities with more than 5,000 residents. In municipalities with more than 50,000 residents it could be even higher. The stipend is halved if they retain another job or are retired.

[8] Early elections take place in specific circumstances: the death of or severe impediment to the mayor, the disqualification of the mayor, the removal of the mayor, the resignation of the mayor, the ineligibility of the mayor, votes of no confidence,

Depending on their election schedules, a different subgroup of municipalities holds elections each year.

2.2 The Formation of Municipal Governments

Local political groups in Italy are highly heterogeneous. In the vast majority of cases, they are organized as *civic lists*—groups of candidates without any party and ideological affiliation. National parties have a marginal role in local politics, and they generally contest municipal elections in coalitions with civic lists. In small municipalities, political groups tend to develop at the initiative of a citizen running for mayor, while in big municipalities national parties exert stronger influence over the choice of the mayoral candidate.

Mayoral candidates run for election backed by a list of councilor candidates.[9] Especially in small municipalities, the process of recruiting councilor candidates is highly informal and generally works by word of mouth. When forming their teams of councilor candidates, mayors look for individuals who have technical skills (mostly in accounting and engineering), belong to influential and large families, reside in the different neighborhoods (*frazioni*) into which the municipality is split, are engaged in neighborhood councils (*circoscrizioni*), or are active in organizations that do social good.

One month before the elections, generally held in the spring, political groups officially register their policy platforms, budgets, and electoral lists. Electoral lists include the names of the mayoral candidate and the councilor candidates. On the list, names are numbered in descending order; the numbers associated to politicians' names are called list numbers. At the polls, voters can vote for a mayoral candidate and express one preference vote for a councilor candidate on the same electoral list.[10] In municipalities with fewer (more) than 15,000 residents, the electoral law governing municipal elections is based on a majority principle that assigns two-thirds (60%) of the seats of the municipal council to the list backing the mayoral candidate obtaining the relative (absolute) majority of the votes. In big cities, a runoff election takes place if no mayoral candidate obtains an absolute majority. The remaining seats are attributed proportionally to the other lists. When a list wins a seat on the municipal council, the seat is assigned to the councilor candidate on that list with the highest electoral score, given by the sum of their list number and the number of preference votes the councilor candidate collects from the voters. After the elections, the mayor selects a group of councilors to appoint as executive councilors[11] and one executive councilor to appoint as vice mayor. Anecdotal evidence suggests that, when making these

the inability to substitute councilors, the resignation of the majority of councilors, financial crises, a veto on urban plans, and Mafia infiltration.

[9]In municipalities with more than 15,000 residents, mayors can head multiple lists of councilors united in a coalition.

[10]In municipalities with more than 15,000 residents, voters may express one preference vote for a councilor candidate on a separate electoral list. Moreover, as explained in Section 2.3.2, since 2013, in municipalities with more than 5,000 residents, voters can express two preference votes for councilor candidates of different genders.

[11]In municipalities with more than 15,000 residents, councilors are not permitted to hold both councilor and executive-councilor positions, and the mayor can choose executive councilors from the general population. This may also happen in smaller municipalities with specific clauses in their statutes.

appointments, mayors consider voters' preferences and their team members' opinions. Sometimes the mayor appoints as executive councilors the councilors that received the most preference votes; in other cases, appointments follow a group discussion. The mayor is generally more autonomous in choosing the vice mayor.

2.3 Gender Quotas in Italian Municipal Elections

Italy is one of the first countries in EU27 to experiment with gender quota systems. Given their novelty and the many controversies around them, implementing the quotas was a legal obstacle course requiring multiple interactions between the judiciary, executive, and legislative powers, an innovative interpretation of existing law, and a revision of the Constitution.

2.3.1 The First Gender Quota System

To align with the principle of equal opportunity for men and women promoted by the European Union during the '80s and the '90s, the Italian parliament[12] implemented the country's first gender quota system as part of a broader reform of municipal governments' electoral systems. Law 81/1993 took effect on March 28, 1993, and prescribed that, in municipalities with fewer (more) than 15,000 residents, neither gender could represent more than three-quarters (two-thirds) of the total number of councilor candidates on each electoral list. The law brought other major changes: it instituted the direct election of the mayor, who was previously appointed by the municipal council; it prescribed a single-ballot electoral system for municipalities with fewer than 15,000 residents and a double-ballot electoral system for bigger municipalities; it reduced the size of municipal councils and executive committees (as shown in Figure A.2); and it instituted the office of the vice mayor, whose activities were previously carried out by the senior executive councilor.[13]

As the law did not specify any system for sanctioning quota-violating lists of candidates, the only way to enforce it was through the judiciary system. In 1995 a citizen sued their municipal government for admitting electoral lists with just one female candidate out of thirty-six; the Constitutional Court evaluated the legitimacy of the law it was required to enforce. With sentence no. 422 of September 12, 1995, the court declared the quotas unconstitutional and repealed them, leaving the rest of Law 81/1993 unaltered. This decision was based on three considerations. First, the quotas violated two articles of the Constitution guaranteeing equality of political participation for citizens of both genders.[14] Second, the quotas "were not removing obstacles to female achievement but instead misattributing achievements to

[12]Italy is a parliamentary republic in which the government and the parliament operate in parallel.

[13]By the time of the reform, some municipalities had already adopted statutes instituting the office of the vice mayor.

[14]By introducing a minimum presence of both genders in fixed-length lists of candidates, the quotas were violating Article 49, which guarantees "the freedom of all citizens to freely associate in parties to democratically influence Italian politics," and Article 51, which guarantees "the possibility for citizens of both genders to access public offices and electoral positions in conditions of equality."

women." Third, the court urged parties to implement gender quota systems, deemed legitimate and desirable when spontaneously adopted by political actors. Although some left-wing parties responded by implementing internal quotas, the court's request went mostly unheeded, and the issue of female representation in municipal governments was temporarily put aside. [15]

2.3.2 The Second Gender Quota System

To overcome the legal impediments to the use of quota systems, between 2001 and 2003 the national parliament added to the Constitution provisions requiring all government levels to *actively* promote gender equality.[16] Moreover, interpreting the quotas as gender-neutral antidiscrimination policies rather than affirmative action policies favoring women was a key step to assert their legitimacy (Sulpizi 2020). After this legal and conceptual turnaround, the national parliament could legitimately legislate gender quotas in municipal elections.

Law 215/2012 took effect on January 1, 2013, and is still in force today.[17] It mandates that, in municipalities with more than 5,000 residents,[18] (i) each gender must represent at least one-third of the total number of councilor candidates on each list for municipal elections; (ii) both genders must be represented on executive committees; and (iii) voters can cast up to two preference votes for councilor candidates, conditional on the two candidates being of different genders. The law also specifies penalties for electoral lists that violate the quotas, and it places the districts' electoral commissions (*commissioni elettorali circondariali*) in charge of enforcement. Sanctions only take effect following a successful legal challenge to an invalid list, and they consist either in removal of candidates of the over-represented gender from the list, till reaching the minimum number of candidates required for a list to run for election, in municipalities with 5,000 to 15,000 residents or in invalidation of the list in municipalities with more than 15,000 residents.[19]

[15]A debate on the legitimacy of and the need for quota systems took place among legal experts, but not in the general population. At the time, Italian feminist movements were small scale and focused on issues such as sexual abuse. No protests followed the repeal.

[16]In 2001 the parliament added to Article 117 of the Italian Constitution, which outlines the responsibilities of national and regional governments, the following clause: "Regional laws remove every obstacle preventing full equality between men and women in the social and economic life, and promote equal access of men and women to elective offices." In 2003, the parliament added to Article 51 of the Constitution, on access to public offices, the following clause, which extended the possibility of adopting quota systems in the remaining government levels: "The Republic promotes equal opportunities between men and women with designated measures." These revisions allowed for early local adoptions of gender quota systems that were later extended to the entire country. For example, in 2003 the regional government of Valle d'Aosta declared electoral lists composed of candidates of the same gender as invalid; in 2010 the regional government of Campania allowed voters to express two preference votes for councilor candidates, conditional on them being of different genders.

[17]The law did not apply in the autonomous regions of Friuli-Venezia Giulia, Sicilia, Trentino-Alto Adige, and Valle d'Aosta.

[18]The 5,000-resident cutoff corresponds to the 73^{rd} percentile of the distribution of municipal legal population in 2013.

[19]More precisely, the law requires that both genders are represented in candidates' lists and executive committees in all the Italian municipalities, regardless of population size. In practice, these two requirements are binding only in municipalities with more than 5,000 residents. In these municipalities there are sanctions for electoral lists violating the requirement that women represent at least 33% of the councilor candidates. Together with the fact that the number of candidates on each list is smaller or equal to the number of seats in the municipal council and that 66% of the municipal council seats are assigned to the winning list, the 33% quotas and the double preference voting conditional on gender make

2.3.3 The Third Gender Quota System

Another controversial point concerned the desired gender composition of executive committees. To resolve complaints filed against committees with few or no women, judges could only rely on the ambiguous provisions in the revised Constitution or in local governments' statutes; the need soon developed for a more operational provision that would allow them to better identify the committees to be invalidated (Apostoli 2016).

Under these circumstances, the parliament approved Law 56/2014, which took effect on April 8, 2014 and is still in place; it requires that in municipalities with more than 3,000 residents[20] each gender represent at least 40% of the members of the executive committee. To guarantee continuity in the provision of public goods and services, there are no consequences for the incumbent government when this proportion is not achieved. However, mayors must draft an official document in which they describe their effort to find the required number of women even beyond their own political group. The law also changed municipal governments' sizes and extended term limits for mayors from two to three terms in municipalities with fewer than 3,000 residents.

2.3.4 The Three Systems Compared: Mechanical and Acceleration Effects

Table 1 compares the three gender quota systems governing Italian municipal elections in terms of the municipalities they have affected, the rules they instituted, and the mechanical effects they were expected to generate under the assumption of perfect compliance. While the first gender quota system applied to all Italian municipalities, the second and third systems only applied to sufficiently big municipalities, expected to hold enough women engaged in politics to meet the requirements of the law. And while the first and second gender quota systems imposed new rules on the gender composition of electoral lists of councilor candidates, the second and third systems imposed new rules on the gender composition of executive committees.

Because of their different requirements, the three quota systems are expected to generate different mechanical effects. Gender quotas for the lists of councilor candidates mechanically increase the share of female politicians on the lists to the level mandated by the law: 25% or 33%, depending on the size of the municipality, in the first system; 33% in the second system. Importantly, the presence of more

it virtually certain that at least one woman is elected in the municipal council. In all the municipalities with fewer than 15,000 residents, being elected as councilor is the prerequisite to become executive councilor. As the quotas guarantee the presence of at least a woman in the municipal council, there is no objective justification that local politicians can maintain in front of a court following a legal action against a single-gender executive committee. Conversely, in municipalities with fewer than 5,000 residents there is no sanctioning system for single-gender electoral lists. Left unpunished, single-gender lists remained common. This makes it possible that no woman is elected to the municipal council, providing a justification for local politicians to appoint single-gender executive committees. As a first step towards representation of both genders in electoral lists and executive committees, in 2022 the Italian Constitutional Court declared illegal the absence of a sanctioning system for single-gender electoral lists in municipalities with fewer than 5,000 residents.

[20] The 3,000-resident cutoff corresponds to the 57^{th} percentile of the distribution of municipal legal population in 2014.

women on electoral lists does not necessarily translate into more female representation on municipal councils: even if all the lists winning a council seat satisfy the quotas, the women on the lists may be ranked too low to be elected. There are only two cases in which an electoral list becomes the municipal council: when elections are uncontested and when one list wins all the council seats. In these cases, the share of female councilors mechanically increases to the level prescribed for the lists. Gender quotas for executive committees mechanically increase the share (or the number) of female members of the committees to the mandated level.

On top of mechanical effects, gender quotas may produce spillover effects, or acceleration effects, whose existence is proven either by higher-than-minimum female representation in directly affected government positions or by more female representation in more powerful, indirectly affected ones. As the Italian gender quota systems do not directly target top government positions, their ability to promote female leadership in municipal governments entirely depends on the strength of the acceleration effects they generate.

Acceleration effects emerge when the quotas change the behavior of voters, female politicians, and male-dominated political elites to the point that the quota-constraints are no longer binding. For example, gender quotas may increase the electoral support for female politicians, either by breaking gender stereotypes among voters (Beaman et al. 2009; De Paola et al. 2010), or by directly incentivizing them to express preference votes for female candidates. More electoral support for female politicians may result in a higher probability that a woman will be elected as mayor or as councilor. Moreover, in municipalities in which the political leader assigns executive positions to the councilors that garnered the most preference votes, more electoral support for women may indirectly translate into a higher share of female executive councilors and vice mayors. Gender quotas may also increase the supply of female politicians create "critical mass" effects: as a group, women may reduce the scope for discriminatory practices of political elites and play a role in choosing executive councilors, the vice mayor, and the mayor, increasing the probability that a woman will be (s)elected. Additionally, the quotas may induce male-dominated political elites to change their recruitment strategies by including more women in the pool of candidates they evaluate. Over time, the highly qualified "quota women" (Baltrunaite et al. 2014; Weeks et al. 2015; Besley et al. 2017) may climb the government ladder and reach powerful government offices.

Quota systems for lists of candidates may primarily operate along the extensive margin and increase female representation in governments by changing parties' recruitment strategies. By contrast, quotas for government bodies may primarily operate along the intensive margin through promotions. Similarly, quotas incentivizing voters to express preference votes for women may result in more electoral support (Baltrunaite et al. 2019) and a faster career for female politicians. Although these predictions seem sensible, these effects are likely to emerge as a bundle, making it challenging to associate them with specific quota provisions and to distinguish between them with the data available for this study.

3 Data and Sample

This paper relies on publicly available administrative data posted on the websites of the Italian Ministry of the Interior and the Italian Institute of Statistics.

The Italian Ministry of the Interior provides information on the gender[21] and role of all elected politicians in municipal governments[22] during the years 1986–2020. From these data I calculate the main outcomes of interest, measured at the municipality-year level: the share of female politicians among the councilors, the share of female politicians among the executive councilors, and two indicators for whether the municipality in that year has a female vice mayor[23] and mayor.[24] The Italian Ministry of the Interior also provides data on municipalities' election dates and legal population.

From the Italian Ministry of the Interior, I also collect data on the gender and electoral outcomes of the mayoral candidates running in municipal elections between 1993 and 2019. For each municipality-year, I calculate the share of female mayoral candidates among all candidates, the share of votes cast for female mayoral candidates among all votes, and the share of municipal-council seats gained by lists headed by female mayoral candidates among all municipal-council seats. When there is just one mayoral candidate in a municipality-election year, I assume that elections are uncontested.

From the Italian Institute of Statistics, I access data on a set of municipality characteristics: population and share of female residents from 1986 to 2020; the share of residents with a secondary school diploma, the share of residents with a university degree, the employment rate, and the unemployment rate from the 2011 Population and Housing Census; the number of nonprofit organizations per thousand residents and the number of firms per thousand residents from the 2011 Census of Enterprises and Services; area and altitude in 2011; and income per capita from 2012 to 2018.

[21] When missing, gender is inferred from the politician's first name. When the name and the gender of a politician are inconsistent, the gender is reclassified based on the name.

[22] In Italy there is no official data source for the lists of councilor candidates running for municipal elections.

[23] Before the position of the vice mayor was officially instituted in 1993, the role of the vice mayor was served by the senior executive councilor. For this reason, until election year 1993 the category of vice mayor includes senior executive councilors as well. After 1993, the category of senior executive councilor becomes less common but does not disappear. Sometimes a municipality has both a senior executive councilor and a vice mayor. Senior executive councilors are thus classified as executive councilors after 1993.

[24] In the few cases in which a municipality-year displays multiple vice mayors or mayors—for example, because they are replaced—the indicator takes a value of one if among them there is at least one woman. Moreover, in 24.5% of the municipality–election years there is no vice mayor and in 0.4% of the municipality–election years there is no mayor. Especially in the case of mayors, the absence may result from a mistake in the administrative data. However, the authorities signaled a common tendency of mayors not to appoint vice mayors (Italian Ministry of the Interior). In these cases, by law the most senior executive councilor can act on behalf of the mayor. To stress the existence of a power gap, I still classify the most senior executive councilor as executive councilor and not as vice mayor. All my results remain consistent when I use as outcome variables indicators for female vice mayors and female mayors conditional on the municipality having a vice mayor and mayor. Results are available upon request.

Last, from the Italian Ministry of the Interior I obtain data on the electoral list with which each elected politician is affiliated, and, for each municipality–national election year, I obtain data on the number of votes garnered by each electoral list running for national election between 1948 and 2013. I then classify municipal and national electoral lists as left wing, center, center right, Christian, far right, and, only for municipal lists, civic. As shown in Figure A.3, in most cases the list winning municipal election is a civic one.[25] The fact that civic lists have no party affiliation and ideology prevents me from using municipal electoral outcomes to classify municipalities as historically left wing or right wing. I thus base this classification on the modal highest-vote-receiving party in national elections in the years preceding the adoption of the quotas. For the analysis of the first gender quota system, implemented in 1993, I use information from the national electoral rounds of 1968, 1972, 1976, 1979, 1983, 1987, and 1992; for the second and third systems, implemented in 2013 and 2014 respectively, I use data from the national electoral rounds of 2001, 2006, and 2008. A municipality is classified as historically left wing if the modal most voted party in national elections in the pre-quota period year is left-wing, and as historically right wing if the modal most voted party in national elections in the pre-quota period is either center/Christian, far right, or center right. As shown in Figure A.4, the right-wing category coincides with center/Christian parties in the period preceding the implementation of the first gender quota system, and it coincides with modern right-wing parties in the period preceding the second and third gender quota systems.

The final sample consists of 275,351 municipality-years and 57,417 municipality–election years.[26] The number of municipalities that held elections during each sample year, shown in Figure A.1, ranges from 55 to more than 6,000.

Table 2 reports descriptive statistics for the main outcomes and a set of municipality characteristics. Panel A provides a clear picture of female underrepresentation in municipal governments. On average, women represent only 19% (standard deviation: 13%) of the councilors, 20% (s.d.: 27%) of the executive councilors, 11% (s.d.: 32%) of the vice mayors, and 8% (s.d.: 28%) of the mayors.

Figure 1 shows how the average share of female politicians in the four types of government offices evolved over time. The shares of female councilors, executive councilors and vice-mayors considerably increased during quota years (1993–95 and 2013—20) and remained flat both in the pre-quota period (1986–92) and in the period between the repeal of the first gender quota system—which abruptly interrupted the preceding increase—and the adoption of the new quota systems (1996–2012). These dynamics suggest that the quotas were the main driver of the observed increase in female representation in municipal governments. However, they seem to have induced a much smaller redistribution of political power between genders, as indicated by the modest increase in the share of female mayors over the last three

[25]The winning group in municipal elections is defined as the group to which electoral list of the mayor belongs. When the name of the mayor's list is missing, the winning group is defined as the modal group in the government.

[26]I obtain these numbers after dropping municipality–election years under receivership from the original sample.

decades.

The following section describes the empirical strategy with which I distinguish the mechanical and acceleration effects of the three quota systems and with which I study the distribution of the effect of the quotas across the four types of government positions. With respect to Figure 1, the analysis takes into account the potential sources of bias generated by time trends and confounding policies, and it interprets the observed improvements in the shares of female councilors and executive councilors in light of the several laws that progressively reduced the total numbers of councilors and executive councilors (as shown in Figure A.2), the share's respective denominators.

4 Methodology

This section describes my empirical approach to evaluating whether the three quota systems in Italian municipal elections generated acceleration effects and changed the gender composition of the four municipal government offices. I consider the three laws introducing gender quotas as three different experiments. The specific features of each policy allow me to implement different identification strategies.

4.1 The First Gender Quota System

The first gender quota system required that female councilor candidates represent at least 25% (33%) of the councilor candidates on each electoral list running in municipal elections in municipalities with fewer (more) than 15,000 residents.

To begin, I investigate whether the first gender quota system produced acceleration effects on top of mechanical effects. Because data are unavailable on lists of councilor candidates, I cannot directly test whether the share of female politicians on lists of candidates increased beyond the minimum mandated level: 25% in municipalities with fewer than 15,000 residents and 33% in bigger municipalities. I thus indirectly test this by restricting the sample to municipality–election years with uncontested elections, in which the only list running for elections mechanically becomes the municipal council.[27] Since in my sample there are no municipalities with more than 15,000 residents and uncontested elections, I focus on smaller municipalities and the 25% target. In these municipality–election years, the share of female councilors should mechanically be no lower than 25%. A share of female councilors above 25% would indicate that acceleration effects took place. Comparing this share with an appropriate control group will allow to isolate the component due to the quotas. I formally decompose the aggregate effects of the quotas into mechanical and acceleration effects by studying the causal effect of the quotas on the following three outcome variables: the aggregate, mechanical, and differential shares of female

[27] The second situation in which a list of candidates becomes the municipal council is when one list wins all council seats. However, I cannot establish with my data whether all members of the government belong to the same electoral list because I cannot distinguish between different civic lists.

councilors. The aggregate share of female councilors in a municipality-year is equal to the share of female councilors in that municipality-year. The mechanical share of female councilors is defined as the minimum of the share of female councilors in that municipality-year and the minimum standard of female representation imposed by the quotas (25% or 33%) for municipalities subject to the quotas, and it is defined as the share of female councilors in that municipality-year for unaffected municipalities. The differential share of female councilors is equal to the difference between the aggregate and mechanical shares. The causal effects of the quotas on these three variables capture, respectively, the aggregate, mechanical, and acceleration effects of the quotas.

$$\text{Aggregate \% Female Councilors}_{i,t} = \text{\% Female Councilors}_{i,t}$$

$$\text{Mechanical \% Female Councilors}_{i,t} = \begin{cases} \text{\% Female Councilors}_{i,t}, & \text{if (i,t)} \in \text{Control} \\ \min\left(\text{\% Female Councilors}_{i,t}, 25\%\right), & \text{if (i,t)} \in \text{Treatment \& } Pop_{i,t} < 15,000 \\ \min\left(\text{\% Female Councilors}_{i,t}, 33\%\right), & \text{if (i,t)} \in \text{Treatment \& } Pop_{i,t} \geq 15,000 \end{cases}$$

$$\text{Differential \% Female Councilors}_{i,t} = \text{Aggregate \% Female Councilors}_{i,t} - \text{Mechanical \% Female Councilors}_{i,t}$$

Second, I evaluate how the effect of the first gender quota system is distributed across the four municipal government positions. I analyze the effect of the quotas on the share of female councilors, the share of female executive councilors, an indicator for female vice mayors, and an indicator for female mayors.

Third, I study whether the first gender quota system influenced any relevant aspect of the mayoral electoral process. I investigate the causal impact of the quotas on the share of female mayoral candidates, the share of votes received by female mayoral candidates, and the share of municipal-council seats gained by electoral lists headed by female mayoral candidates.

To investigate the causal effect of the quotas on these outcomes, I use an event-study approach. Following De Paola et al. (2010), I define a treatment group that includes municipalities that held elections when the quotas were in place, between March 28, 1993, and September 12, 1995 (7,719 municipalities and 41,473 municipality–election years). The remaining municipalities had elections either before the quotas were introduced or after their repeal and are thus included in the control group (400 municipalities and 2,182 municipality–election years). The identifying assumption is that, absent the quotas, female representation in the four types of government offices would have evolved in the same way between treatment and control municipalities (parallel-trend assumption). This hypothesis is plausible in this context, in which we have two reasons to believe that municipalities did not strategically sort into their preferred quota frameworks and thus that assignment to treatment was as good as random: first, while election dates are set in advance, the dates of the introduction and repeal of the quotas and the repeal itself were unforeseeable; second, the political debate developed around other parts of the reform, mainly the direct election of the mayor (Grilli 1996), that seem unrelated to female representation.

I show the evolution of average female representation in the four types of government offices over time, separately for treatment and control municipalities. I then estimate the following event-study equation over the sample of municipalities that held elections between 1986 and 2012:[28]

$$Y_{it} = \alpha_t + \alpha_i + \sum_{y=1986}^{2012} \beta_y T_i \times 1_{t=y} + X_{it}'\gamma + \epsilon_{it} \tag{1}$$

In Equation 1, municipalities are indexed by i and years by t. Y_{it} is the outcome of interest in municipality i and year t; α_t stands for year fixed effects; α_i stands for municipality fixed effects; T_i is an indicator for treated municipalities; X_{it} is a vector of time-varying control variables measured at the municipality level including population, the share of female residents, and an indicator for whether the municipality has more than 15,000 residents;[29] ϵ_{it} is an error term. In this equation and all other event-study ones, standard errors are robust to heteroskedasticity and clustered at the municipality level.[30] I normalize β_{1992}, the coefficient for $T_i \times 1_{t=1992}$—the year prior to the implementation of the quotas, to zero.

Identification of the coefficients for the interaction terms comes from a within-year comparison between treatment and control municipalities, relative to the baseline in 1992, after controlling for year and municipality fixed effects. To compare these coefficients, I assume that treated and control municipalities that held elections during each year are respectively representative of the whole samples of treated and control municipalities. Under these assumptions, β_{1993}, β_{1994}, and β_{1995} represent the causal effect of gender quotas on the outcome Y. Specifically, β_{1993} is identified by comparing municipalities voting in 1993, before (for the control) and after (for the treatment) the implementation of the quotas.[31] Similarly, β_{1995} is identified by comparing municipalities voting in 1995, before (for the treatment) and after (for the control) the repeal of the quotas. However, β_{1994} is not identified, because all the municipalities that voted in 1994 were subject to the quotas and are thus included in the treatment group.

Importantly, β_{1993} does not isolate the effect of the quotas, because they were implemented together with other reforms. First, the law reformed municipal governments' electoral systems and made them less majoritarian for municipalities with fewer than 5,000 residents and more majoritarian for bigger municipalities. Given the positive association between proportional electoral systems and the election of female politicians (Profeta et al. 2022, Krook 2010), the overall effect on female representation in

[28]The sample is interrupted in 2012 because it is the last year before the second gender quota system took effect. The sample is further restricted to municipality–election years with uncontested elections when testing for the existence of acceleration effects. 32% of the municipality-election years have uncontested elections.

[29]I include the control for municipalities with more than 15,000 residents because they need to satisfy a higher quota requirement and are subject to a different electoral system. I do not control for the remaining time-invariant municipality characteristics.

[30]Note that the indicator for treatment status is captured by municipality fixed effects.

[31]The quotas took effect early in 1993, before the standard electoral season in the spring. For this reason, the number of municipalities in the control group in 1993 is very small.

governments is ambiguous. Second, the law reduced the size of the governments' municipal councils and executive committees (shown in Figure A.2); these numbers are the denominators in my calculations of the shares of female councilors and executive councilors. I discuss the role of these potential sources of bias when describing the main findings. By contrast, β_{1995} isolates the causal effect of interest: in 1995, the quotas were repealed, but the rest of the environment remained unaltered, and treatment and control municipalities only differed by the presence or absence of the quotas.

Finally, β_{1996} to β_{2012} capture eventual treatment effects persisting even after the repeal of the quotas.[32]

To shed light on the conditions under which the quotas are more likely to affect the top government position, I test for the existence of heterogeneous effects of the quotas between 1,740 historically left-wing municipalities and 6,361 historically right-wing ones. To do so, I show the evolution of average female representation in the four types of municipal government offices over time in left- and right- wing treatment municipalities and left- and right-wing control municipalities, and I estimate the following expansion of Equation 1:

$$Y_{it} = \alpha_t + \alpha_i + \sum_{y=1986}^{2012} \beta_y T_i \times 1_{t=y} + \sum_{y=1986}^{2012} \gamma_y 1_{t=y} \times Right_i + \sum_{y=1986}^{2012} \delta_y T_i \times 1_{t=y} \times Right_i + X_{it}'\zeta + \epsilon_{it} \quad (2)$$

Equation 2 includes all the interaction terms between year dummies, the indicator for treatment status, and an indicator for historically right-wing municipalities.[33] The β_t coefficients attached to the interaction terms between year dummies and treatment status measure the causal effect of the first gender quota system in historically left-wing municipalities in each year; the one attached to 1992 is normalized to zero. The δ_t coefficients attached to the interaction terms between year dummies, treatment status, and the right-wing dummy measure the differential effect of the quotas in historically right-wing municipalities in each year and allow me to formally test for the existence of heterogeneous effects of the quotas; the one attached to 1992 is normalized to zero.

Then, I follow the approach of O'Brien et al. (2016) and test whether effects on higher government positions are more pronounced in those municipalities with larger impacts at low government levels. I classify treated municipalities into low and high impact depending on whether the change in the average share of female councilors between quota election years (1993–95) and pre-quota election years (1986–92) is above or below the median change of 10 p.p. As I only have one pre-quota data point for each municipality, I cannot normalize the change in the share of female councilors by a linear pre-trend

[32]The coefficients for 1996 and 1997 are identified because some of the treated municipalities held early elections and voted before the end of their five-year electoral rounds. Given the variety of situations in which early elections can occur (listed in Section 2), and given that some municipalities in the control group held early elections as well, there is no reason to suspect that the treatment effect in these years depends on specific election schedules or on a peculiar subgroup of municipalities.

[33]The indicators for treatment and right-wing municipalities and their interaction are captured by municipality fixed effects.

as in O'Brien et al. (2016). Formally, for each municipality I define the change in the share of female councilors as follows:

$$\Delta\% \text{ Female Councilors}_i = \text{Average } \% \text{ Female Councilors}_i^{(1993-1995)} - \text{Average } \% \text{ Female Councilors}_i^{(1986-1992)}$$

I then define the following indicator for high-impact municipalities: $\text{High Impact}_i = 1_{\Delta\% \text{ Female Councilors}_i => 0.1}$.

Using this definition, the subsample of treated municipalities is split into 3,946 low-impact and 3,672 high-impact municipalities. To investigate the existence of differential effects, I plot the average share of women in the four types of government offices for high-impact, low-impact, and control municipalities over time, and I estimate the following equation for the sample of treated municipalities:

$$Y_{it} = \alpha_t + \alpha_i + \sum_{y=1986}^{2012} \beta_y HighImpact_i \times 1_{t=y} \times +X_{it}'\gamma + \epsilon_{it} \tag{3}$$

The β_t coefficients in the pre-quota years allow me to test for differences in baseline outcomes between low- and high-impact municipalities. Those for quota and post-quota years allow me to formally test differentials in quota effects between low- and high-impact municipalities.

4.2 The Second Gender Quota System

In 2013 a new policy instituted gender quotas for lists of councilor candidates, double preference voting conditional on gender, and representation of both genders in executive committees—which include executive councilors, the vice mayor, and the mayor—in municipalities with more than 5,000 residents.[34]

As a first step, I investigate whether the second gender quota system produced acceleration effects on top of mechanical effects. Because in the restricted sample for the analysis of the second gender quota system (described below) there are no municipality-years with uncontested elections, I cannot test for acceleration effects in the lists of councilor candidates. However, I can test for acceleration effects in the executive committees of affected municipalities, in which, by law, the number of female members of the executive committee should be no lower than one. Observing more than one female member would indicate that acceleration effects took place. Comparing this number with an appropriate control group will allow to isolate the component due to the quotas. Formally, I decompose the aggregate effects of the quotas into their mechanical and acceleration effects by studying the causal effect of the second gender quota system on the following three outcome variables: the aggregate, mechanical, and differential numbers of female members of the executive committee. The aggregate number of female members of the executive committee in a municipality-year is equal to the number of female members of the committee in that municipality-year. The mechanical number of female members of the executive

[34] As these rules are jointly implemented, their effects cannot be disentangled.

committee is defined as the minimum of the number of female members of the committee in that municipality-year and the minimum standard of female representation imposed by the law (one female member) for municipalities subject to the quotas, and it is defined as the number of female members of the committee in that municipality-year for unaffected municipalities. The differential number of female members of the executive committee is residually defined as the difference between the aggregate and mechanical numbers of female members of the executive committee. The causal effects of the quotas on these three variables capture, respectively, the aggregate, mechanical, and acceleration effects of the quotas.

$$\text{Aggregate Num Female Members Exec. Commit.}_{i,t} = \text{ Num Female Members Exec. Commit.}_{i,t}$$

$$\text{Mechanical Num Female Members Exec. Commit.}_{i,t} = \begin{cases} \text{Num Female Members Exec. Commit.}_{i,t}, & \text{if (i,t)} \in \text{Control} \\ \min\left(\text{Num Female Members Exec. Commit.}_{i,t}, 1\right), & \text{if (i,t)} \in \text{Treatment} \end{cases}$$

$$\begin{aligned} \text{Differential Num Female Members Exec. Commit.}_{i,t} &= \text{Aggregate Num Female Members Exec. Commit.}_{i,t} \\ &- \text{Mechanical Num Female Members Exec. Commit.}_{i,t} \end{aligned}$$

Second, I evaluate how the effect of the second gender quota system is distributed across the four types of municipal government positions and investigate the causal effect of the quotas on the share of female councilors, the share of female executive councilors, an indicator for female vice mayors, and an indicator for female mayors.

Third, I study whether the second gender quota system influenced any relevant aspect of the mayoral electoral process by investigating the causal effect of the quotas on the share of female mayoral candidates, the share of votes received by female mayoral candidates, and the share of municipal-council seats gained by electoral lists headed by female mayoral candidates.

To study the causal effect of the quotas on these outcomes, I exploit the fact that the policy only applies to municipalities with more than 5,000 residents, which creates a suitable setting for a regression discontinuity design (RDD) with legal population as the running variable and 5,000 as the cutoff. Identification is based on the comparison of observations near the cutoff: those below (control group) are used as the counterfactual for those above (treatment group), under the assumption that, absent the treatment, the unknown conditional mean function of the outcome would be continuous at the cutoff (nonparametric approach). Following Calonico et al. (2017), I report conventional estimates from a local first-degree polynomial equation in which the observations within the Mean-Squared-Error (MSE)-optimal bandwidth are weighted using a triangular kernel density estimator and robust bias-corrected confidence intervals. The corresponding RD plots show the binned average outcome against legal population and a local linear fit on the two sides of the cutoff. The number of bins is selected using a data-driven mimicking variance evenly spaced method based on spacings estimators.

The sample for which I perform this analysis consists of municipalities during election years in which the second gender quota system was in place. However, since April 8, 2014, municipalities with more than 5,000 residents have been simultaneously subject to both the second and third gender quota systems. To isolate the effect of the second gender quota system I restrict the sample to municipalities that held elections during 2013. Moreover, I exclude municipalities in the regions where the law did not apply.[35] Finally, I discard municipalities with more than 15,000 residents, as they have a different electoral system, so that all the municipalities in the sample are subject to the same electoral incentives. The final sample contains 470 observations: 321 municipality–election years with fewer and 149 with more than 5,000 residents.[36]

As a robustness test, I present estimates from three alternative specifications: a third-degree polynomial equation, to capture a monotonic relationship between the outcome and the running variable; an equation controlling for a set of baseline municipality characteristics,[37] to remove the bias emerging from pre-existing differences between municipalities on the two sides of the cutoff; and a difference-in-discontinuity equation, to remove the bias emerging when the same cutoff is used for multiple policies—a common issue with population thresholds (Eggers et al. 2018). Indeed, both mayors' stipends and the size of the municipal government increase at the 5,000-resident cutoff. The difference-in-discontinuity approach, detailed in Grembi et al. (2016), exploits the existence of a time window—the pre-quota period—in which these confounding policies take effect at the cutoff, while the quotas do not, to difference out the bias introduced by these other policies. Intuitively, the difference between the post-treatment and pretreatment discontinuity at the cutoff identifies the causal effect of the quotas. Formally, I estimate the following equation for the sample of municipalities in election years 2005–13 within the MSE-optimal bandwidth:

$$\begin{aligned} Y_{it} = \alpha &+ \beta RV_{i,t} + \gamma T_i + \delta RV_{i,t} \times T_i + \zeta Post_t + \eta Post_t \times RV_{i,t} \\ &+ \theta T_i \times Post_t + \iota Post_t \times RV_{i,t} \times T_i + X'_{it}\kappa + \epsilon_{it} \end{aligned} \tag{4}$$

Here, $RV_{i,t}$ is the rescaled running variable (that is, legal population, from which I subtract the original cutoff of 5,000); T_i is an indicator for whether the rescaled running variable is greater than 0 (that is, for treated municipalities); $Post_t$ is an indicator for municipality–election years in the period in which the second gender quota system is in place. X_{it} is a vector of municipality characteristics.[38] The estimate

[35] These regions are Friuli-Venezia Giulia, Sicilia, Trentino-Alto Adige, and Valle d'Aosta.

[36] Each municipality is observed once in this subsample.

[37] I control for the municipality's share of female residents, area, altitude, share of residents with a secondary school diploma, share of residents with a university degree, employment and unemployment rates, log income per capita, number of nonprofit organizations per thousand residents, and number of firms per thousand residents.

[38] I control for the municipality's share of female residents, area, altitude, share of residents with a secondary school diploma, share of residents with a university degree, employment and unemployment rates, log income per capita, number of nonprofit organizations per thousand residents, and number of firms per thousand residents.

of θ —the coefficient on $T_i \times Post_t$, is the difference-in-discontinuity estimate of the causal effect of the quotas at the cutoff.[39]

Additionally, I validate the RD approach by performing a set of standard tests. To rule out strategic sorting, I check that the running variable is smooth at the cutoff. Then, to exclude the existence of baseline differences between municipalities right below and above the threshold, I check that the outcome variables as predicted by a set of controls and the individual controls are smooth at the cutoff. Moreover, I test that the effect of the quotas is null in the pre-quota years. Last, I test for the existence of an effect at several different cutoffs to verify there are no other unexpected discontinuities in the sample.

To address the concern that the RD estimates are identified at specific population cutoffs and may lack generalizability, I also present the corresponding event-study plots and estimates. I estimate a version of Equation 1 for the sample of municipalities in regions affected by the quotas and with fewer than 15,000 residents in election years 2005–13. The treatment (control) group includes municipalities with more (fewer) than 5,000 residents, and I normalize β_{2012}, the coefficient for $T_i \times 1_{t=2012}$, to zero.[40] The effects are thus identified from the comparison of the entire sets of municipalities on the two sides of the cutoff, and not only from observations very close to the cutoff.

With this event-study framework and sample, I can explore the existence of heterogeneous effects of the second gender quota system. First, I show the evolution over time of the average share of female politicians in the four types of municipal government offices in left- and right-wing municipalities below and above the 5,000-resident cutoff. I estimate a version of Equation 2 in which δ_t coefficients indicate whether the effect of the quotas is different in historically left- and right-wing municipalities.

Then, I test whether the quotas have more pronounced effects on more powerful government offices in municipalities in which the effects on less powerful offices are larger. I classify treated municipalities as low or high impact depending on whether their normalized change in the average share of female councilors between the quota (2013) and pre-quota (2007–12) election years is above or below the median change of 0.21 p.p. The availability of multiple data points in the pre-quota period allows me to normalize the simple difference between quota and pre-quota years by subtracting another difference between the pre-quota period and an even earlier time (2001–6). With this procedure I remove time trends that could confound the effect of the quotas.[41] Formally, the change in the share of female councilors is defined as follows:

[39] This approach does not remove the bias emerging from the change in the rules of the Internal Stability Pact, regulating local public finances, in 2013 at the 5,000-resident cutoff. However, Baltrunaite et al. (2019) provide suggestive evidence that this change did not produce confounding effects.

[40] On top of municipality and year fixed effects, this equation also controls for population and the share of female residents.

[41] For some municipalities, the pre-quota difference is missing and I use the simple difference between quota and pre-quota years.

$$\Delta\%\text{Female Councilors}_i = (\text{Average \% Female Councilors}_i^{2013} - \text{Average \% Female Councilors}_i^{2007-2012}) - (\text{Average \% Female Councilors}_i^{2007-2012} - \text{Average \% Female Councilors}_i^{2001-2006})$$

The indicator for high-impact municipalities is defined as High Impact = $1_{\Delta\%\text{Female Councilors}>0.21}$. This classification splits the sample into 71 low-impact and 65 high-impact treated municipalities followed over the election years. The number is so low because a small number of municipalities had election in the only quota year of this subsample, 2013. I show the evolution of the average share of female politicians in the four types of municipal government offices for high-impact, low-impact, and control municipalities, and I formally test for heterogeneous effects by estimating a version of Equation 3, in which the β_t coefficients capture the differential effect of the quotas in low- and high-impact municipalities.

4.3 The Third Gender Quota System

The third gender quota system, implemented in 2014, requires that in municipalities with more than 3,000 residents each gender represent at least 40% of the politicians on the executive committee.

I begin the analysis by studying whether this system produced acceleration effects on top of mechanical effects. I focus on the executive committees of affected municipalities, in which, by law, the share of female members of the executive committee should be no lower than 40%. Observing a higher share of female members would indicate that acceleration effects took place. Comparing this share with an appropriate control group will allow to isolate the component due to the quotas. Formally, I decompose the aggregate effects of the quotas into their mechanical and acceleration effects by analyzing the causal effect of the quotas on the following three outcome variables: the aggregate, mechanical, and differential shares of female members of the executive committee. The aggregate share of female members of the executive committee in a municipality-year is equal to the share of female members of the committee in that municipality-year. The mechanical share of female members of the executive committee is defined as the minimum of the share of female members of the committee in that municipality-year and the minimum standard of female representation imposed by the law (40%) for municipalities subject to the quotas, and it is defined as the share of female members of the committee in that municipality-year for unaffected municipalities. The differential share of female members of the executive committee is residually defined as the difference between the aggregate and mechanical shares of female members of the executive committee. The causal effects of the quotas on these variables capture, respectively, the aggregate, mechanical, and acceleration effects of the quotas.

$$\text{Aggregate \% Female Members Exec. Commit.}_{i,t} = \text{\% Female Members Exec. Commit.}_{i,t}$$

$$\text{Mechanical \% Female Members Exec. Commit.}_{i,t} = \begin{cases} \text{\% Female Members Exec. Commit.}_{i,t}, & \text{if (i,t)} \in \text{Control} \\ \min\left(\text{\% Female Members Exec. Commit.}_{i,t}, 0.4\right), & \text{if (i,t)} \in \text{Treatment} \end{cases}$$

$$\begin{aligned} \text{Differential \% Female Members Exec. Commit.}_{i,t} = &\ \text{Aggregate \% Female Members Exec. Commit}_{i,t} \\ &- \text{Mechanical \% Female Members Exec. Commit}_{i,t} \end{aligned}$$

Second, I evaluate how the effect of the third gender quota system is distributed across the four types of municipal government positions and investigate the causal effect of the quotas on the share of female councilors, the share of female executive councilors, an indicator for female vice mayors, and an indicator for female mayors.

Third, I study whether the third gender quota system influenced any relevant aspect of the mayoral electoral process by investigating the causal effect of the quotas on the share of female mayoral candidates, the share of votes received by female mayoral candidates, and the share of municipal-council seats gained by electoral lists headed by female mayoral candidates.

To study the causal effect of the quotas on these outcomes, I employ an RDD using legal population as the running variable and 3,000 as the cutoff. This analysis is performed for the sample of municipality–election years following April 8, 2014, the date at which the third gender quota system took effect. To isolate the effect of the third system, I exclude municipalities with more than 5,000 residents that were also subject to the second gender quota system. I also exclude municipalities in the autonomous regions, which implemented different versions of the policy.[42] The restricted sample contains 7,791 municipality–election years: 6,193 with fewer and 1,598 with more than 3,000 residents.

I employ the same specifications and validation tests described for the second gender quota system. On top of introducing gender quotas for municipalities above this population cutoff, the reform extended term limits for mayors from two to three terms for municipalities below the cutoff. Considering that mayors are mostly male and benefit from incumbency, the RD estimate could be interpreted as a lower bound for the true effect of the quotas. Moreover, I use the difference-in-discontinuity approach to remove the bias arising from previously implemented policies at the same threshold, such as changes in mayors' stipends.

To test the generalizability of the locally estimated RD coefficients, I compare them with the corresponding event-study coefficients. I estimate a version of Equation 1 for the sample of municipality–election years between 2005 and 2020 in the affected regions and with fewer than 5,000 residents. The treatment (control) group includes municipalities with more (fewer) than 3,000 residents. I normalize to zero β_{2013}, the coefficient for $T_i \times 1_{t=2013}$. On top of municipality and year fixed effects, this equation also controls for population, the share of female residents, and log income per capita. The effects are thus identified

[42] The regions are Friuli-Venezia Giulia, Sicily, Sardinia, Trentino-Alto Adige, and Valle d'Aosta.

from the comparison of the entire sets of municipalities on the two sides of the cutoff, and not only from observations very close to the cutoff.

With this event-study framework and sample, I explore the existence of heterogeneous effects of the third gender quota system. First, I show the evolution over time of the average share of female politicians in the four types of municipal government offices in left- and right-wing municipalities below and above the 3,000-resident cutoff. In this sample, there are 1,726 left-wing municipalities and 3,058 right-wing municipalities followed over the election years. I estimate a version of Equation 2 in which the δ_t coefficients indicate whether the effects of the quotas differ between historically left- and right-wing municipalities.

Second, I test whether the quotas have more pronounced effects on more powerful government offices in municipalities in which the effects on less powerful offices are larger. I classify treated municipalities as low or high impact depending on whether their normalized change in the average share of female executive councilors between the quota (2014–20) and pre-quota (2008–13) election years is above or below the median change of 0.27 p.p. The availability of multiple data points in the pre-quota period allows me to normalize the simple difference between quota and pre-quota years by subtracting another difference between the pre-period and an even earlier time (2002–7). With this procedure I remove time trends that could confound the effect of the quotas. Formally, the change is defined as follows:

$$
\begin{aligned}
&\Delta\%\text{Female Executive Councilors}_i = \\
&\quad(\text{Average \% Female Executive Councilors}_i^{2014-2020} - \text{Average \% Female Executive Councilors}_i^{2008-2013}) \\
&-(\text{Average \% Female Executive Councilors}_i^{2008-2013} - \text{Average \% Female Executive Councilors}_i^{2002-2007})
\end{aligned}
$$

The indicator for high-impact municipalities is defined as High Impact $= 1_{\Delta\% \text{ Female Executive Councilors} \geq 0.27}$. This classification splits the sample into 431 low-impact and 423 high-impact treated municipalities followed over election years. I show the evolution of the average share of female politicians in the four types of municipal government offices for high-impact, low-impact, and control municipalities, and I formally test for heterogeneous effects by estimating a version of Equation 3 in which the β_t coefficients capture the existence of heterogeneous effects of the quotas in high- and low-impact municipalities.

5 Results

5.1 The Causal Effects of the First Gender Quota System

The first gender quota system introduced a 25% (or 33%, for municipalities with more than 15,000 residents) female quota for lists of councilor candidates for all municipalities that held elections between the date of its adoption and the date of its repeal.

First, I investigate whether the quotas for lists of councilor candidates produced acceleration effects on top of mechanical effects by analyzing whether the share of female councilors exceeds 25% in municipality–election years with uncontested elections, in which the only list running for elections mechanically shifts to the municipal council. Figure 2 illustrates the evolution of the aggregate (panel [a]), mechanical (panel [b]), and differential (panel [c]) shares of female councilors in treatment and control municipalities with uncontested elections between 1993, the first year in which information on uncontested elections is available, and 2012, the last year prior to the implementation of the second gender quota system. As there are no uncontested elections in the control group in 1993 and there are no control municipalities in 1994 by construction, the analysis is only informative about 1995 and the period following the repeal of the quotas. The figure shows that the share of female councilors is very similar in treatment and control municipalities, implying the absence of an aggregate effect and of mechanical and acceleration effects. Table 3, estimating Equation 1 for the sample of municipalities with uncontested elections, confirms these findings, as the estimated coefficients on the interaction terms between treatment status and year dummies are either negative or close to zero and mostly insignificant. Consistent with the absence of mechanical effects, the figure shows that the mechanical share of female councilors is lower than the mandated level of 25% for treated municipalities between 1993 and 1995, the period in which the first gender quota system was in place, suggesting that some affected municipalities did not comply with the law.

Looking at the full sample of municipalities, in which I investigate the distribution of the effect of the quotas across the four types of government offices, it appears that some acceleration effects in fact occurred. Figure 3 shows the average shares of female councilors, executive councilors, vice mayors, and mayors in election years 1986–2012, separately for treatment and control municipalities. This figure shows, first, that the shares of women appointed to the four types of offices were the same, in terms of level and trend, for treatment and control municipalities in the years preceding the quotas. This fact justifies the choice of the control group, which seems to provide a suitable counterfactual for the behavior of the treatment group in the absence of the quotas.[43] Moreover, female representation in the four types of government offices was stable over the pre-quota years, irrespective of the subgroup of municipalities voting in each year. This evidence suggests that these results are not driven by specific election schedules.

Second, Figure 3 shows that the share of female councilors, the share of female executive councilors, and the probability of appointing a female vice mayor increased by, respectively, 5–15, 5–15, and 2–10

[43] De Paola et al. (2010) and Baltrunaite et al. (2014) classify municipalities into the same treatment and control groups and provide additional evidence consistent with the parallel-trends assumption being satisfied. The former shows that there is no difference in female representation between treatment and control groups before the introduction of gender quotas. The latter shows that the pretreatment changes in the outcome variables are parallel and that other municipality characteristics (employment rate, local education level, and population) evolve in a parallel way over time for the two groups.

p.p. in treated municipalities compared to the control group and the pre-quota period.[44] While the effect on female councilors persisted for the following three elections, the effect on executive councilors and vice mayors rapidly dissipated.[45]

The figure also shows that control municipalities almost caught up with treated ones and, by 1995, arrived at similar shares of female councilors, executive councilors, and vice mayors. This evidence is consistent with gender quotas producing spillover effects in control municipalities—which is plausible since the few control municipalities were scattered around Italy and surrounded by treatment municipalities. However, as I discuss shortly, this dynamic may also be driven by the reduction in municipal governments' size that was instituted together with the quotas.

Last, the figure suggests that the first gender quota system had no effect on the probability that a woman will be elected as mayor. Both in treatment and control municipalities this probability remains stable and low, and there is no visible response in quota years.

To explore the possibility that the reduction in municipal governments' size (instituted together with the quotas) is driving the observed increase in the share of female councilors and executive councilors, I illustrate in Figure B.1 the evolution of the average number of male and female councilors and executive councilors in treatment and control municipal governments between 1986 and 2012. Similarly to gender quotas (except that the quotas were later repealed), the requirement to form smaller governments applied exclusively to treatment municipalities in 1993 and to all municipalities afterward. As the number of female politicians in government was too low to decline further,[46] the reduction in the size of governments entailed a drop in the number of male politicians, which we can observe in 1993 for the treatment group and in 1995 for the control group. Given that the numbers of male councilors and executive councilors contribute to the denominators in the shares of female councilors and executive councilors, the drop in the number of male politicians mechanically increases the shares of female councilors and executive councilors, confounding the causal effect of the quotas and their spillovers on the control group. However, the figure shows that after 1993 treated municipalities elected significantly more female councilors than control ones, discarding on average one additional male politician. This effect can be credibly imputed to the existence of gender quotas. The figure also shows that from 1995 onward, control municipalities also elected more female councilors than in the past and elected fewer male councilors than necessary, consistent with the existence of spillover effects of the quotas. Finally, the figure shows that the number of female executive councilors gradually increased in a similar

[44]The exact magnitude of the effect depends on the quota year and pre-quota year that are compared within a five-year-range, where five years is the maximum length of an electoral cycle.

[45]These dynamics seem inconsistent with gender quotas promoting female politicians' careers. However, career advancements and other dynamic effects are hard to evaluate with no data on lists of candidates because they are conditional on re-election.

[46]Between 1986 and 1992, the median shares of female councilors and executive councilors were 6.7% and 0% respectively.

way in treatment and control municipalities and no significant difference emerged during quota years,[47] suggesting that the effect observed in Figure 3 on the share of female executive councilors and the apparent spillover effects on the control group should in fact be attributed to the reduction in executive committees' sizes and not to the quotas.

To rigorously assess the causal effect of the first gender quota system on female representation in the four types of government offices, I estimate Equation 1, which includes year and municipality fixed effects and controls for time-varying municipality characteristics. The coefficients on the interaction terms between year dummies and treatment status are reported in Table 4. The table shows, first, that the coefficients corresponding to pre-quota years are almost all small and insignificant, suggesting that treatment and control municipalities were not systematically different before the reform. I test whether these coefficients are jointly zero, and I report at the bottom of the table the corresponding p-value. I cannot reject the null hypothesis that the coefficients are jointly equal to zero at the conventional significance levels, although when the dependent variable is the share of female councilors the p-value is 0.114. Second, the table reveals that the quotas significantly increased the share of female councilors by 6.2 p.p. in 1993 (95% CI: from 3.2 to 9.2 p.p.), or 69% over the 1992 average, but the effect is close to zero and insignificant in 1995 (95% CI: from -2.9 to 4.2 p.p.) in 1995. Third, the quotas significantly increased the share of female executive councilors by 7.8 p.p. (95% CI: from 2.1 to 13.4 p.p.), or 92%, in 1993, and by an insignificant 2.1 p.p. (95% CI: from -5 to 9.1 p.p.) in 1995. Last, for vice mayors and mayors, either the coefficients are negative or they are small and insignificant. However, the standard errors are large, and I cannot rule out the existence of sizable effects (95% CI in 1993 and 1995 for the effect on female vice mayors: from -10.2 to 4.9 p.p. and from -21.5 to -0.3 p.p. over an average of 2.4%; 95% CI in 1993 and 1995 for the effect on female mayors: from -9.2 to 9.4 p.p. and from -18.1 to 3.1 p.p. over an average of 3.7%). Finally, the coefficients for post-quota years are mostly small and insignificant. I test whether these coefficients are jointly zero, and I report the corresponding p-values at the bottom of the table. The test rejects the null hypothesis for councilors, which is consistent with the persistent effect of the quotas displayed in Figure 3, and almost rejects it for mayors (p-value: 0.161), which is inconsistent with the evidence presented so far but consistent with De Paola et al. (2010), who find a 3.1 p.p. increase in the probability that a female mayor will be elected when they pool the post-quota years. However, the graphical evidence and the estimates for the quota years lead me to interpret the results as showing no evidence of a positive effect of the quotas on female mayors.

I further investigate the absence of an effect on the mayoral position by analyzing the impact of the quotas on three aspects of the mayoral electoral process: the share of female mayoral candidates, the

[47] Although the share of female executive councilors in 1994 for the treatment group was higher than in 1993 and 1995 for the control group, there is no difference by treatment status in the share of female executive councilors in 1993 and 1995. This fact, paired with the absence, by construction, of a control group in 1994, prevents me from confidently claiming that the number of female executive councilors was higher in treated than in control municipalities.

share of votes received by female mayoral candidates, and the share of municipal-council seats gained by electoral lists headed by female mayoral candidates. As these outcome variables are only available from 1993 on and are also missing for the small number of municipalities in the control group in 1993, the evidence presented is only informative about the effect of the quotas in 1995 and in the period following the repeal. Figure B.2 and Table B.1 suggest that the quotas did not affect any relevant aspect of the mayoral electoral process.

Finally, I study the heterogeneities in the effect of the first gender quota system to identify conditions under which acceleration effects on the top government position are more likely to emerge. First, I test whether the effect is different in municipalities with different political ideologies. Figure B.3, showing the evolution of the average share of female politicians in the four types of government offices separately for left- and right- wing treatment municipalities and left- and right-wing control municipalities, suggests that in historically left-wing municipalities the quotas have slightly more pronounced effects on the shares of female councilors and executive councilors but the same effect on the probability of (s)electing a female vice mayor or mayor. Table B.2 formally shows that the quotas had no heterogeneous effects on female representation in municipal governments with different ideologies. I then compare municipalities with below- and above-median impact on the share of female councilors, following the approach by O'Brien et al. (2016). Figure B.4 shows the evolution of the average share of female politicians in the four types of government offices separately for control, low- and high- impact municipalities. The figure suggests that, since the adoption of the quotas, high-impact municipalities have had a higher share of female executive councilors, but no higher share of female vice mayors and mayors. These findings are confirmed in Table B.3.

Combining the graphical evidence with the estimates, I conclude that the first gender quota system increased the share of female councilors by increasing by one the number of female members of municipal councils. I find mixed evidence of the effects of the quotas on female executive councilors and vice mayors, and I find no evidence of an effect on female mayors, although the inaccuracy of the estimates prevents me from rejecting the possibility of large effects. I also find no evidence that the quotas increased the presence of female mayoral candidates or the electoral support for female mayoral candidates.

5.2 The Causal Effects of the Second Gender Quota System

The second gender quota system instituted gender quotas for lists of councilor candidates, instituted double preference voting conditional on councilor candidates being of different genders, and required the presence of both genders on executive committees in municipalities with more than 5,000 residents.

To begin, I test for acceleration effects in the executive committees of affected municipalities. Figure 4 shows RD plots of the causal effect of the quotas on the aggregate (panel [a]), mechanical (panel [b]), and differential (panel [c]) numbers of female members of executive committees. Municipalities to the left of the cutoff were not subject to the quotas, while those to the right were. The overall effect of the quotas on the number of female members of executive committees is captured by the jump of 1.2 female members in the aggregate measure at the cutoff. The average number of female members on the right side of the cutoff is above the dashed horizontal line corresponding to the minimum mandated level (one female member), which suggests that the quotas increased female representation on the committees by more than the minimum necessary. I decompose this aggregate effect into the mechanical and acceleration effects by investigating the causal effect of the quotas on the mechanical and differential numbers of female members of executive committees. The former jumps by about 1 female member at the cutoff, while the latter jumps by about 0.5 members at the cutoff. Table 5 reports the corresponding RD estimates: the aggregate effect is 1.22 female members (or 128% relative to the average number in 2012, the year before the adoption of the second gender quota system), the mechanical effect is 1.097 female members (115% relative to the same average), and the differential effect is 0.538 female members (61% relative to the same average), implying that acceleration effects explain 44% of the aggregate effect of the quotas on female representation in executive committees.

I now investigate how the effect of the quotas is distributed across the four types of municipal government offices. Figure 5 illustrates the RD plots of the estimated causal effect of the second gender quota system on the share of female councilors, the share of female executive councilors, the indicator for female vice mayors, and the indicator for female mayors. Municipalities to the left of the cutoff were not subject to the quotas, while those to the right were. The shares of female councilors, executive councilors, and vice mayors increase discontinuously at the cutoff, by about 25, 50, and 20 p.p respectively. Importantly, no clear pattern is observed at the cutoff for mayors. Table 6 shows the corresponding RD estimates. The quotas increase the share of female councilors by 25.9 p.p. (95% CI: from 9.4 to 46.3 p.p.), which represents a 118% increase over the average in 2012, the year before the quotas were implemented. The quotas also increase the share of female executive councilors by 48.2 p.p. (95% CI: from 21.5 to 89.9 p.p.), or 217%, and the probability of appointing a female vice mayor by 20.6 p.p. (95% CI: from -11.4 to 47.3 p.p., so zero effect cannot be rejected), or 146%. Importantly, the point estimate is small and insignificant for female mayors, although the null effect is imprecisely estimated (95% CI: from -28.5 to 26.9 p.p.). I test the stability of these coefficients in Table C.1, which shows results for alternative specifications. While the estimated effects for councilors and executive councilors are similar across specifications, the effect for vice mayor is sensitive to the specification used and even changes sign when using the third-degree polynomial specification. The effect for mayor changes size and sign but remains insignificant.

To address the concern that these estimates are identified at specific population cutoffs and may lack generalizability, I also show event-study plots and estimates. For this analysis, the control group includes municipalities with fewer than 5,000 residents and the treatment group includes municipalities with more than 5,000 residents. The effects are thus identified by comparing the entire sets of municipalities on the two sides of the cutoff, and not only municipalities very close to the cutoff. Figure C.1 shows the evolution of the average share of female politicians in the four types of government offices over time for municipalities with fewer and more than 5,000 residents, and Table C.2 shows the corresponding event-study estimates obtained by estimating Equation 1 for 2005–13. First, both the table and the graph suggest that there are no substantial differences between the treatment and the control group in the pre-period. Second, the event-study estimates of the quotas on the share of female councilors, vice-mayors and mayors are consistent with the ones from the RDD: the shares of female councilors increases by 17 p.p., the share of female vice-mayors increases by 9.9. insignificant p.p., and there is no evidence of an effect on the share of female mayors. Inconsistently with the RDD, far from the cutoff there is no effect of the quotas on the share of female executive councilors–share that in 2013 increases in parallel in treated and control municipalities.

To understand how gender quotas interact with the gradual reduction in the size of municipal governments that characterized this period (shown in Figure A.2), Figure C.2 displays the evolution of the average number of male and female councilors and executive councilors elected between 2005 and 2013, separately for municipalities below and above the 5,000-resident cutoff. Those below were never subject to the quotas, while those above were, from 2013 onward. The figure shows that, until 2011, the number of female and male politicians moved in parallel for the two groups of municipalities. However, to some extend in 2012 but mainly in 2013, treated municipalities saw a disproportionate decline in the number of male councilors and a disproportionate increase in the number of female councilors and executive councilors. Together, these changes drive the observed improvements in the shares of female councilors and executive councilors.

To further investigate the absence of an effect of the quotas on the mayoral position, I examine their impact on three aspects of the mayoral electoral process: the share of female mayoral candidates running for elections, the share of votes received by female mayoral candidates, and the share of municipal-council seats gained by lists backing female mayoral candidates. Figure C.3, showing the RD plots of the causal estimates, and Table C.3, reporting the RD estimates, suggest the quotas did not produce any effects on these outcomes (if anything, the effect is negative), although the coefficients are imprecisely estimated.

Finally, I test for the existence of heterogeneous effects of the second gender quota system. First, I test whether the effect is different in municipalities with different political ideologies. Figure C.4, showing the evolution of the average share of female politicians in the four types of government offices separately for left- and right- wing treatment municipalities and left- and right-wing control municipalities, and Table C.4, formally testing for heterogeneous effects, show that there is no significant differential effect of the quotas in left- and right-wing municipalities (although the estimated differential effect in right-wing municipalities is negative for all the outcomes except the indicator for female vice mayors). Then, I compare the effect of the quotas in treated municipalities experiencing below- and above-median effects on the share of female councilors. Figure C.5 shows the evolution of the average share of female politicians in the four types of government offices, separately for control, low- and high- impact municipalities. Detecting heterogeneities is complicated by the small sample available for the analysis, which explains the large confidence intervals (not reported to make the graph readable) and the presence of outliers in the point estimates associated with the various election years. If anything, the figure and Table C.5, formally testing for heterogeneous effects, show that the effect on powerful government offices is less pronounced in high-impact municipalities.

To validate this analysis, I perform a set of standard tests. First, I show in Figure C.6 that the density of the running variable is smooth at the cutoff, thereby ruling out strategic sorting. Second, I confirm that the outcomes predicted by the usual set of municipality characteristics are smooth at the cutoff in Figure C.7 and that the corresponding RD estimates are null and insignificant in Table C.6. I also test whether these municipality characteristics are individually smooth at the cutoff, and I report the corresponding RD estimates in Table C.7. I find that these estimates are all close to zero and insignificant, except the share of residents with a secondary school diploma, which is 2.8 significant p.p. higher above the cutoff. This difference could suggest that my estimates are biased upward, which would not contradict my interpretation of no effect of the quotas on the mayoral position. The fact that these variables have equal conditional-expectation limits from above and below the cutoff validates their use as covariates in the RD analysis (Calonico et al. 2019). Then, I check in Figure C.8 and Table C.8 whether there is a discontinuous change in the outcomes at the cutoff during the five years before the implementation of the second gender quota system. The RD estimate is positive and marginally significant for female mayors, which again would point towards an overestimation of the true effect and would not contradict my interpretation of no effect. The corresponding RD plot shows no clear changes at the cutoff, supporting the hypothesis that municipalities close to the threshold had similar female representation in the pre-quota period. Finally, I explore in Figure C.9 the existence of jumps at different and unpredictable cutoffs. For mayors, I find a significant jump at 3,000 inhabitants, at which point there were no changes in gender quotas but an increase in mayors' stipend.

Combining the graphical analysis with the estimates, I conclude that the second gender quota system increased female representation on executive committees beyond the minimum level required by the law, more precisely by 1.22 female members or 128%. Acceleration effects contribute 44% of this effect. The distribution of the effect of the quotas across the four types of government positions suggests that acceleration effects also emerged from the quotas on lists of candidates and the new rules on preference votes. The quotas increased the share of female councilors by 26 p.p., or 118%, and the share of female executive councilors by 48 p.p., or 217%, by increasing the number of female politicians in municipal governments. I find mixed evidence of an effect of the quotas on female vice mayors, and I find no evidence of an effect on female mayors. I also find no evidence that the quotas increased the presence of female mayoral candidates or the electoral support for female mayoral candidates.

5.3 The Causal Effects of the Third Gender Quota System

The third gender quota system requires that, in municipalities with more than 3,000 residents, each gender represents at least 40% of the members of the executive committee.

To begin, I test the existence of acceleration effects of the quotas in the executive committees of affected municipalities. Figure 6 shows RD plots of the causal effect of the quotas on the aggregate (panel [a]), mechanical (panel [b]), and differential (panel [c]) shares of female members of executive committees. Municipalities to the left of the cutoff were not subject to the quotas, while those to the right were. The overall effect of the quotas on the share of female members of the executive committee is captured by a jump in the aggregate measure of about 10 p.p. at the cutoff. The average share of female members on the right side of the cutoff is very close to the minimum mandated level (40%), which suggests that the quotas increased female representation on executive committees just by the necessary amount. I decompose this aggregate effect into mechanical and acceleration effects by investigating the causal effect of the quotas on the mechanical and differential shares of female members of executive committees. The former, capturing the mechanical effects of the quotas, jumps by about 8 p.p. at the cutoff and lies below 40%, consistent with the fact that municipalities could avoid meeting the quota requirement upon providing evidence of unfeasibility. The latter, capturing the acceleration effects of the quotas, jumps by about 3 p.p. at the cutoff. Table 7 reports the corresponding RD estimates: the aggregate effect is 10.9 p.p. (or 56% of the average share in 2013, the year before the implementation of the third gender quota system), the mechanical effect is 8.5 p.p. (or 43% of the same share), and the differential effect is 2.7 p.p. (or 14% of the same share). All these effects are highly significant and imply that acceleration effects contribute 25% of the aggregate effect of the quotas.

I now evaluate how the effect of the quotas is distributed across the four types of municipal government offices. Figure 7 presents the RD plots of the estimated causal effect of the third gender quota system on the shares of female councilors, executive councilors, vice mayors, and mayors. Consistent with the fact that the third gender quota system only affects executive committees, there is no clear pattern at the cutoff for female councilors. The figure also shows that, within executive committees, the quotas increased the share of female executive councilors by 10 p.p. but had no effect on female vice mayors and mayors. Table 8 reports the corresponding RD estimates. The quotas increased the share of female executive councilors by 12 p.p. (95% CI: from 3 to 21 p.p.), which represents a 53% increase over the average in 2013, the year before the quotas were implemented. Conversely, the estimated coefficients for female councilors, vice mayors, and mayors are all close to zero and insignificant. However, these estimates are relatively imprecise, and I cannot reject the presence of large effects (95% CI for councilors: from -1.5 to 8.6 p.p. over a mean of 22.5%; for vice mayors: from -14.4 to 11.4 p.p. over a mean of 14.5%; and for mayors: from -12.2 to 8.7 p.p. over a mean of 12.6%). I test and confirm the stability of these coefficients in Table D.1, in which I show results from a set of alternative specifications.

To address the concern that these estimates are identified at specific population cutoffs and may lack generalizability, I also show event-study plots and estimates. For this analysis, the control group includes municipalities with fewer than 3,000 residents, and the treatment group includes municipalities with more than 3,000 residents. The effects are thus identified by comparing the entire sets of municipalities on the two sides of the cutoff, and not only municipalities very close to the cutoff. Figure D.1 shows the evolution of the average share of female politicians in the four types of government offices over time for municipalities with fewer and more than 3,000 residents, and Table D.2 shows the corresponding event-study estimates obtained by estimating Equation 1 for 2005–20. Both the table and the graph suggest that there are no substantial differences between the treatment and the control group in the pre-period. Consistently with the RD results, both the event-study plot and table show no effect of the quotas on female councilors, vice mayors, and mayors, and a 13–25 p.p. increase in the share of female executive councilors.

To understand whether the gradual reduction in the size of municipal governments (shown in Figure A.2) confounds the effect of the quotas, Figure D.2 illustrates the number of male and female councilors and executive councilors between 2005 and 2020, separately for municipalities below and above the 3,000-resident cutoff. Those below were never subject to the quotas, while those above were from 2014 onward. The figure shows, first, that the number of male politicians declined in parallel for the two groups. Second, until 2012 the number of female politicians in treatment and control municipalities coincided. To some extent from 2013 but mostly from 2014, treatment municipalities started appointing relatively more female executive councilors. The number of female councilors, however, did not change differentially for the two groups.

To further investigate the absence of an effect of the quotas on the mayoral position, I examine their impact on three aspects of the mayoral electoral process: the share of female mayoral candidates running for elections, the share of votes received by female mayoral candidates, and the share of municipal-council seats gained by lists backing female mayoral candidates. Figure D.3, showing RD plots, and Table D.3, reporting RD estimates, suggest there is no evidence of an effect of the quotas on these outcomes.

Finally, I test for the existence of heterogeneous effects of the third gender quota system. Figure D.4, showing the evolution of the average share of female politicians in the four types of government offices separately for left- and right- wing treatment municipalities and left- and right-wing control municipalities, and Table D.4, formally testing for heterogeneous effects, suggest there was no significant heterogeneity in the effect of the third gender quota system by political ideology (significant differences in the indicator for female vice mayors between left- and right-wing municipalities seem to exist even before the introduction of the quotas). I then compare the effect of the quotas in municipalities with below- and above-median effect on the share of female executive councilors. Figure D.5, showing the evolution of the average share of female politicians in the four types of government offices for control, low- and high- impact municipalities, shows that the municipalities displaying larger effects on the share of female executive councilors are those with the lowest share to begin with. Consistently with the fact that this increase is merely due to compliance with the law, the figure shows no larger effect on vice mayors and mayors in high-impact municipalities. This test is formalized in Table D.5. Controlling for year and municipality fixed effects and for municipality characteristics reveals that high-impact municipalities maintained a higher share of female executive councilors and a lower share of female vice-mayors throughout the period, but have no higher share of female mayors.

To validate this analysis, I perform a set of standard tests. First, I show in Figure D.6 that the density of the running variable is smooth at the cutoff, thereby ruling out strategic manipulation of the running variable. Second, I check that the outcomes predicted by municipality characteristics are smooth at the cutoff. The results, presented in Figure D.7 and Table D.6, show small yet significant differences between municipalities on the two sides of the cutoff: the predicted shares of female councilors, vice mayors, and mayors are significantly higher in municipalities above the cutoff. I then test whether these municipality characteristics are individually smooth at the cutoff, and I report the corresponding RD estimates in Table D.7. The table shows that all the variables are smooth at the cutoff, except for income and the employment rate, which are higher in treated municipalities, and the unemployment rate, which is lower. These differences in municipality characteristics on the two sides of the cutoff may confound any observed positive effect. This does not contradict my interpretation of null effects on the mayoral position. In Figure D.8 and Table D.8 I reject the existence of a discontinuous increase in the outcomes at the cutoff in the five years before the quotas were implemented. Finally, I rule out in Figure D.9 the existence of discontinuous changes in the outcomes at different and unpredictable cutoffs.

Combining the graphical analysis and the estimates, I conclude that the third gender quota system increased the share of female members in executive committees by 10.9 p.p. (or 56%); most of this increase is driven by municipalities' compliance with the law, and only 25% is due to the acceleration effects of the quotas. The quotas increase the share of female executive councilors by 12 p.p. (or 53%), and there is no evidence of an effect on female councilors, who do not contribute to satisfying the quota requirement, or on female vice mayors and mayors, who do contribute to meeting the quota. I also find no evidence that the quotas increased the presence of female mayoral candidates or the electoral support for female mayoral candidates.

5.4 Discussion

These findings indicate that the three gender quota systems increased female representation in Italian municipal governments beyond the minimum legal level. However, the increase is concentrated in the least powerful government positions. There is no evidence that the three quota systems increased female candidacies for the mayoral position, electoral support for female candidates, and the probability that a woman will be elected as mayor. Overall, these results suggest that the acceleration effects produced by the quotas have been too weak to promote female political leadership in municipal governments.

The absence of heterogeneous effects in historically left- versus right-wing municipalities and in low- versus high-impact municipalities suggests that the strength of acceleration effects is not explained by variations in local conditions. To build intuition about the most favorable conditions for strong acceleration effects, I compare three macro factors—female labor market participation, politicians' recruitment processes, and party incentives—in Italy and Sweden, as Sweden is the country in which O'Brien et al. (2016) find a positive causal effect of quotas on the election of female leaders in local governments. First, female labor force participation is 57% in Italy and 81% in Sweden, suggesting that Italian women face stronger barriers to taking high-responsibility jobs: an absence of widespread public childcare support in the early lives of children, an uneven distribution of childcare and housework within the household, and widespread social norms about the role of women in society. Indeed, I find large effects of the quotas on low-responsibility, low-working-time government positions, and not on high-responsibility, high-working-time, low-paying positions, which few women can afford to take.

Second, while candidates' recruitment processes are mostly unofficial in Italy, in Sweden parties select candidates following a formal three-step procedure in which various stakeholders, including women's clubs, can hold political groups accountable (O'Brien et al. 2016), discourage discriminatory practices, and support women interested in running for political offices.

Third, in Sweden the quotas were spontaneously adopted by national parties. As theorized by Weeks (2018), male-dominated parties implement quota systems when they risk losing votes relative to more progressive parties that explicitly require higher female representation in top government positions. In line with this interparty-competition hypothesis, Swedish parties spontaneously adopted gender quotas under the threat of losing votes to strong feminist movements explicitly requiring that half of all political power be allocated to women (O'Brien et al. 2016). By contrast, in Italy the quotas were legislated by the parliament to align with international guidelines, and there was no strong feminist movement campaigning for more involvement of women in the political process.

On top of resolving an apparent inconsistency in the literature on gender quotas and female political leadership in local governments, these explanations highlight what is necessary for quotas to produce strong acceleration effects: a highly functional labor market for women, monitoring systems for political actors, and a strong civil society engaged in defending gender equality. The low share of female mayors in the EU27 countries, 17.4% in 2021, suggests these conditions are rarely met.

6 Conclusion

This paper exploited the roll-out of three gender quota policies in Italian municipal elections to study the effect of gender quota systems governing electoral lists of councilor candidates and municipal governments' executive bodies on the probability that women will be elected as mayors (municipal-council chiefs). The minimum levels of female representation established by the quotas allowed me to distinguish between mechanical effects, or improvements in female representation in municipal governments generated by mere compliance with the law, and any additional effects, known as acceleration effects. My findings indicate that the Italian quotas have increased female representation in municipal governments beyond the legal minimum level. This suggests that acceleration effects took place and that the behavior of voters, female politicians, and political elites was changed to the point that the quota-constraints were no longer binding. However, the increase in female representation is concentrated in less senior government positions and there is no evidence of an effect on the probability that a woman will be elected as mayor. I also investigated the existence of heterogeneous effects of the quotas and found no differential increase in female political leadership between left- and right-wing municipalities, nor between municipalities experiencing below- and above-median impacts on less powerful government offices. Additionally, there is no evidence that the quotas increased female mayoral candidacies or electoral support for female mayoral candidates. Overall, the evidence presented indicates that the acceleration effects produced by the three Italian quota systems have been too weak to break the glass ceiling for female politicians. Gender quotas directly targeting the mayoral position may be more effective than gender quotas on electoral lists and executive bodies in rapidly advancing female leadership in municipal governments.

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Main Results

Table 1: The Three Gender Quota Systems in Comparison

	First Gender Quota System	**Second Gender Quota System**	**Third Gender Quota System**
Panel A: Affected Observations			
Affected municipalities	All	5,000+ Residents	3,000+ Residents
Affected years	1993—1995	2013—today	2014—today
Panel B: Restrictions			
On the lists of candidates	Neither gender can represent less than 25% (33%) of the total number of councilor candidates on each electoral list in municipalities with fewer (more) than 15,000 residents	Neither gender can represent less than 33% of the total number of councilor candidates on each electoral list	None
On the executive committee	None	Both genders must be represented on the executive committee	Neither gender can represent less than 40% of the total number of members of the executive committee
On preference votes	None	Voters can express two preference votes for candidate councilors, conditional on them being of different genders	None
Panel C: Mechanical Effects			
On the lists of candidates	The share of female politicians in the lists of councilor candidates is at least 25% (or 33%)	The share of female politicians in the lists of councilor candidates is at least 33%	None
On the municipal council	The share of female politicians in the municipal council is at least 25% (or 33%) if the election is uncontested	The share of of female politicians in the municipal council is at least 33% if the election is uncontested	None
On the executive committee	None	The number of female members of the executive committee is at least 1	The share of female members of the executive committee is at least 40%

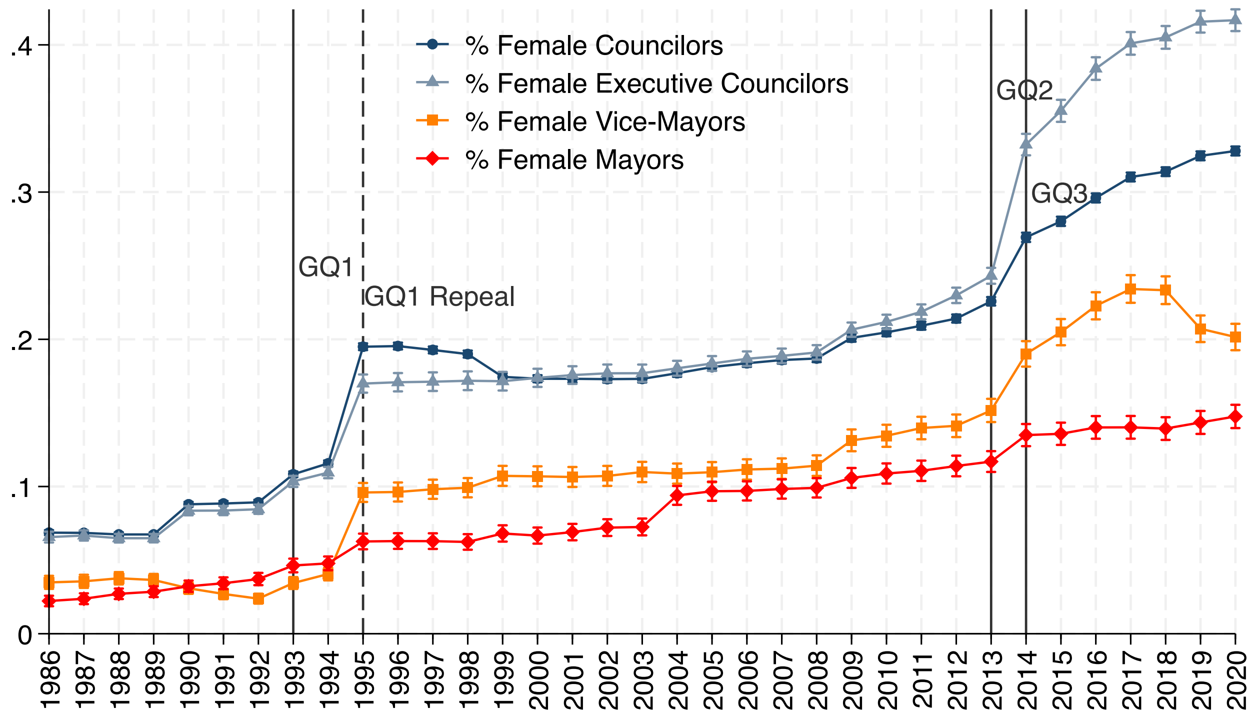
Notes: This table compares the three gender quota systems applied to the Italian municipal elections in terms of the municipality-election years they affect (panel [A]), the restrictions they impose (panel [B]), and the effects they are mechanically expected to produce under the assumption of perfect compliance with the law (panel [C]).

Table 2: Summary Statistics

	Obs	Mean	Std.dev.	Min	Median	Max
Panel A: Main Outcomes						
% Female councilors	273708	0.186	0.134	0.000	0.167	1.000
% Female executive councilors	271113	0.202	0.273	0.000	0.000	1.000
1(Female vice-mayor)	275351	0.114	0.318	0.000	0.000	1.000
1(Female mayor)	275351	0.084	0.277	0.000	0.000	1.000
Panel B: Auxiliary Outcomes						
Size of municipal council	275351	14.720	5.546	0.000	14.000	80.000
Number of female councilors	275351	2.543	1.831	0.000	2.000	23.000
Number of male councilors	275351	12.177	5.563	0.000	11.000	76.000
Number of executive councilors	275351	3.231	1.711	0.000	3.000	19.000
Number of female executive councilors	275351	0.603	0.765	0.000	0.000	6.000
Number of male executive councilors	275351	2.628	1.653	0.000	3.000	18.000
Size of executive committee	273928	5.020	1.637	1.000	5.000	20.000
% Female members of executive committee	273928	0.164	0.177	0.000	0.143	1.000
Size of municipal government	275351	19.714	6.905	1.000	19.000	100.000
% Female members of municipal government	275351	0.180	0.130	0.000	0.158	1.000
Panel C: Outcomes from Mayoral Electoral Process						
% Female mayoral candidates	43276	0.126	0.222	0.000	0.000	1.000
% Votes received by female mayoral candidates	43276	0.119	0.229	0.000	0.000	1.000
% Council seats gained by female mayoral candidates	39619	0.110	0.233	0.000	0.000	1.000
Panel D: Municipality Characteristics						
Municipal population	275351	7095.623	41092.890	9.000	2333.000	2836826.000
% Female population	275348	0.508	0.017	0.000	0.509	0.854
Area (squared km)	274400	37.111	49.775	0.121	21.748	1287.390
Altitude (m)	274400	358.061	297.644	0.000	291.000	2035.000
Log income per capita	273735	9.360	0.271	7.895	9.426	11.683
Unemployment rate	273446	0.101	0.062	0.006	0.077	0.422
Employment rate	274400	0.392	0.065	0.167	0.406	0.589
% Residents with secondary school diploma	274400	0.269	0.044	0.090	0.271	0.445
% Residents with university degree	274297	0.070	0.026	0.005	0.067	0.277
Number of firms per thousand residents	274371	0.545	3.873	0.001	0.147	244.688
Number of nonprofit organizations per thousand residents	270095	0.038	0.206	0.001	0.013	12.436

Notes: This table reports summary statistics for the main variables used in the analysis. Each observation corresponds to a municipality-year.

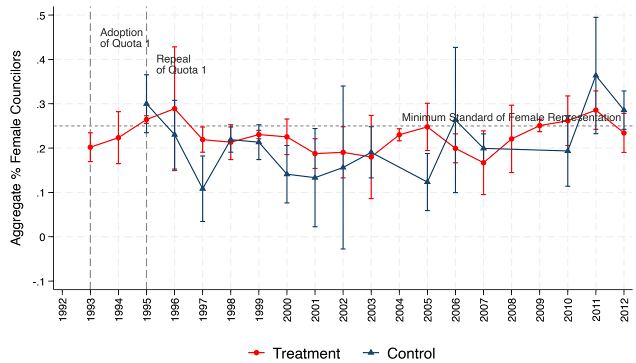
Figure 1: Female Representation in Italian Municipal Governments



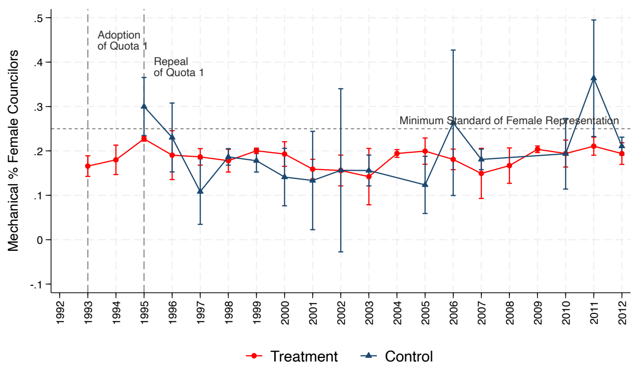
Notes: This figure shows the average share of female politicians in the four municipal governments' offices between 1986 and 2020. The average for each year is calculated over the sample of all Italian municipalities and reflects elections happened in that year and in the preceding four years. The three solid vertical lines correspond to the years in which the three gender quota systems were implemented: the first in 1993, the second in 2013 and the third in 2014. The dashed vertical line corresponds to the year in which the first gender quota system was repealed: 1995. Shaded areas correspond to 95% robust confidence intervals.

Figure 2: The Mechanical and Acceleration Effects of the First Gender Quota System

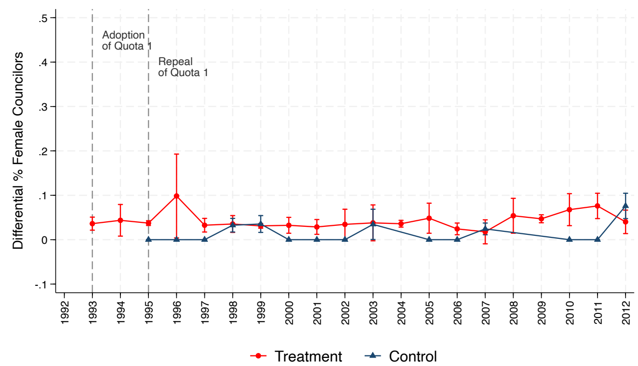
(a) Aggregate Effect



(b) Mechanical Effect



(c) Acceleration Effect



Notes: This figure shows the average aggregate (panel [a]), mechanical (panel [b]), and differential (panel [c]) shares of female councilors between 1993 (the first year in which data on uncontested elections are available) and 2012, separately for treatment and control municipalities with uncontested elections. The aggregate share of female councilors in a municipality-year is equal to the share of female councilors in that municipality-year. The mechanical share of female councilors is defined as the minimum of the share of female councilors in that municipality-year and the minimum standard of female representation imposed by the quotas (25%) for municipalities subject to the quotas, and it is defined as the share of female councilors in that municipality-year for unaffected municipalities. The differential share of female councilors is equal to the difference between the aggregate and mechanical shares. The average for each year is calculated over the sample of municipalities that held uncontested elections during that year. The treatment group includes municipalities that held elections when the first gender quota system was in place. The control group includes municipalities that held elections either before its implementation or after its repeal. The solid vertical line corresponds to the year in which the first gender quota system was implemented: 1993. The dashed vertical line corresponds to the year in which the first gender quota system was repealed: 1995. The dashed horizontal line indicates the minimum share of female councilors that would be observed under the assumptions of perfect compliance with the quotas: 25%. Shaded areas correspond to 95% robust confidence intervals.

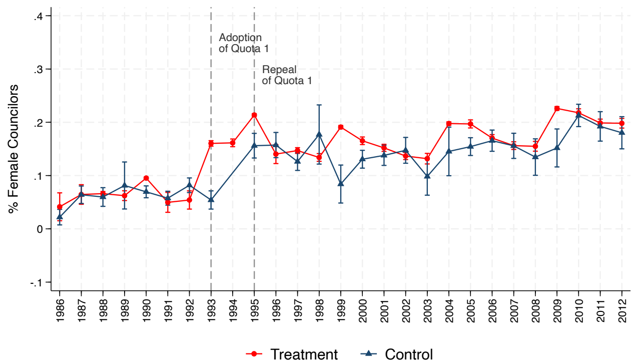
Table 3: The Mechanical and Acceleration Effects of the First Gender Quota System

Outcome	(1) Aggregate Effect	(2) Mechanical Effect	(3) Acceleration Effect
Treatment × 1995	-0.237	-0.208	-0.029
	(0.227)	(0.185)	(0.044)
Treatment × 1996	0.132	0.079	0.059
	(0.257)	(0.154)	(0.127)
Treatment × 1997	0.041	0.082	-0.039
	(0.112)	(0.089)	(0.051)
Treatment × 2000	0.168	0.250**	-0.078
	(0.151)	(0.124)	(0.075)
Treatment × 2001	0.020	0.072	-0.048
	(0.099)	(0.086)	(0.042)
Treatment × 2005	0.069	0.146	-0.073
	(0.150)	(0.125)	(0.072)
Treatment × 2006	-0.065	-0.028	-0.024
	(0.193)	(0.185)	(0.049)
Observations	2,180	2,196	2,180
R-squared	0.847	0.845	0.813
P-value: Post Jointly Zero	0.298	0.000	0.682
Lower 95% CI for β_{1995}	-0.683	-0.572	-0.114
Upper 95% CI for β_{1995}	0.209	0.156	0.0566
Mean % F Counc Uncontested in 1993	0.202	0.202	0.202
S.d. % F Counc Uncontested in 1993	0.147	0.147	0.147

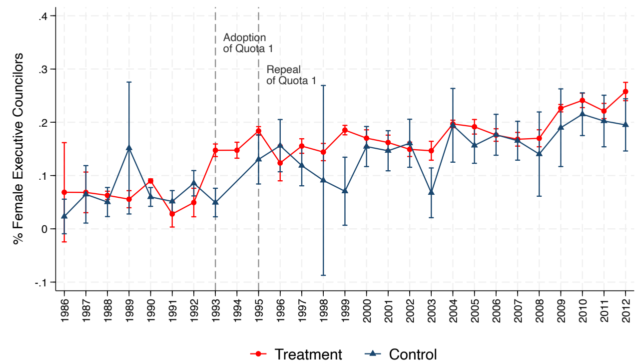
Notes: This table reports the estimates of β_t from Equation 1, estimated for the sample of municipalities with uncontested elections in election years 1993–2012. 1993 is the first year in which data on uncontested elections are available. The dependent variables are the aggregate (column 1), mechanical (column 2), and differential (column 3) shares of female councilors. The aggregate share of female councilors in a municipality-year is equal to the share of female councilors in that municipality-year. The mechanical share of female councilors is defined as the minimum of the share of female councilors in that municipality-year and the minimum standard of female representation imposed by the quotas (25%) for municipalities subject to the quotas, and it is defined as the share of female councilors in that municipality-year for unaffected municipalities. The differential share of female councilors is equal to the difference between the aggregate and mechanical shares. The treatment group includes municipalities that held elections when the first gender quota system was in place. The control group includes municipalities that held elections either before its implementation or after its repeal. β_{1993} is not identified because there are no control observations that held uncontested elections in 1993. Indeed, the control group in 1993 is very small: it contains the few municipalities that held elections before the quotas were implemented, prior to the standard electoral season. β_{1994} is not identified by construction. β_{2012} is normalized to zero. All regressions include the following controls: year fixed effects, municipality fixed effects, population and share of female residents. For each regression, the table reports the p-value from the test that all post-quota coefficients are jointly zero, the confidence interval for β_{1995}, and the mean and standard deviation of the share of female councilors, calculated over the sample of municipalities with uncontested elections in 1993, the first year in which data for uncontested elections are available. Standard errors are robust to heteroskedasticity and clustered at the municipality level. * p<0.1, ** p<0.05, *** p<0.01.

Figure 3: The Effect of the First Gender Quota System on Female Representation in Municipal Governments

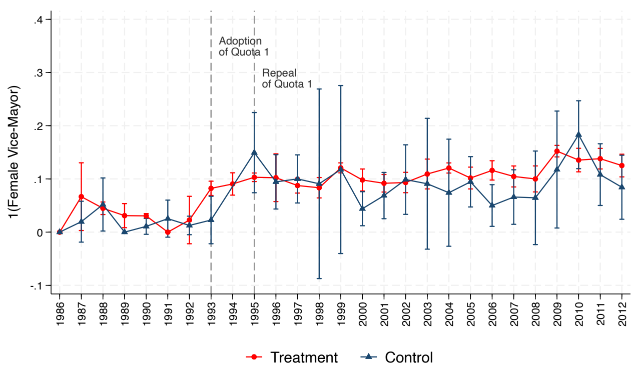
(a) Effect on Female Councilors



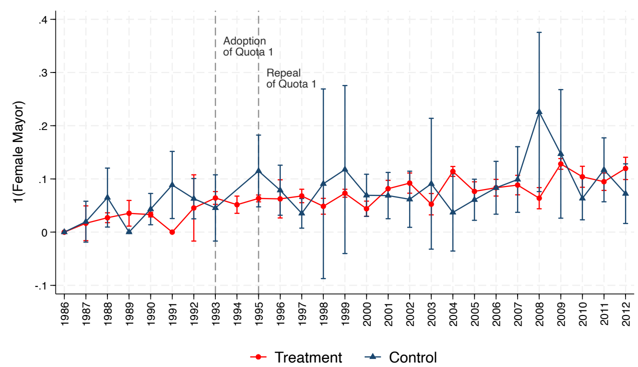
(b) Effect on Female Executive Councilors



(c) Effect on Female Vice Mayors



(d) Effect on Female Mayors



Notes: This figure shows the average shares of female councilors (panel [a]), executive councilors (panel [b]), vice mayors (panel [c]), and mayors (panel [d]) in election years 1986–2012, separately for treatment and control municipalities. The average for each year is calculated over the sample of municipalities that held elections during that year. The treatment group includes municipalities that held elections when the first gender quota system was in place. The control group includes municipalities that held elections either before its implementation or after its repeal. The solid vertical line corresponds to the year in which the first gender quota system was implemented: 1993. The dashed vertical line corresponds to the year in which the first gender quota system was repealed: 1995. Shaded areas correspond to 95% robust confidence intervals.

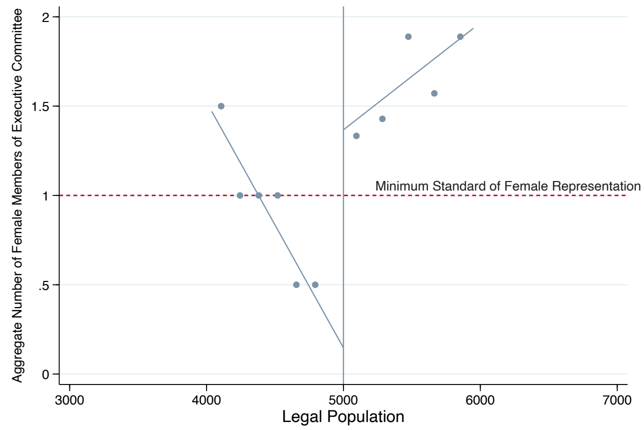
Table 4: The Effect of the First Gender Quota System on Female Representation in Municipal Governments

Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
Treatment × 1986	0.036	0.054	0.005	0.012
	(0.026)	(0.056)	(0.052)	(0.054)
Treatment × 1987	-0.012	0.005	-0.029	-0.030
	(0.019)	(0.044)	(0.048)	(0.050)
Treatment × 1988	-0.021	0.005	-0.045	-0.018
	(0.015)	(0.032)	(0.045)	(0.054)
Treatment × 1989	-0.050*	-0.077	-0.010	-0.016
	(0.026)	(0.071)	(0.053)	(0.046)
Treatment × 1990	-0.012	-0.005	-0.049	-0.011
	(0.015)	(0.028)	(0.036)	(0.046)
Treatment × 1991	0.009	-0.010	-0.048	-0.071
	(0.020)	(0.037)	(0.054)	(0.060)
Treatment × 1993	0.062***	0.078***	-0.027	0.001
	(0.015)	(0.029)	(0.038)	(0.048)
Treatment × 1995	0.006	0.021	-0.106*	-0.075
	(0.018)	(0.036)	(0.056)	(0.054)
Treatment × 1996	-0.016	-0.033	-0.034	-0.003
	(0.021)	(0.040)	(0.054)	(0.053)
Treatment × 1997	-0.006	0.029	-0.062	0.031
	(0.015)	(0.032)	(0.042)	(0.042)
Treatment × 1998	-0.026	0.036	-0.059	-0.020
	(0.032)	(0.091)	(0.104)	(0.095)
Treatment × 1999	0.047***	0.109**	-0.068	-0.086
	(0.018)	(0.055)	(0.086)	(0.085)
Treatment × 2000	0.000	-0.012	0.009	-0.037
	(0.017)	(0.034)	(0.041)	(0.048)
Treatment × 2001	-0.011	0.009	-0.019	0.022
	(0.016)	(0.033)	(0.042)	(0.046)
Treatment × 2002	-0.031*	-0.024	-0.066	0.016
	(0.018)	(0.037)	(0.052)	(0.054)
Treatment × 2003	0.017	0.078	-0.025	0.018
	(0.026)	(0.049)	(0.089)	(0.082)
Treatment × 2004	-0.016	-0.015	-0.051	0.041
	(0.026)	(0.046)	(0.067)	(0.049)
Treatment × 2005	0.013	0.016	-0.036	-0.002
	(0.018)	(0.033)	(0.045)	(0.050)
Treatment × 2006	-0.020	-0.004	0.027	0.011
	(0.016)	(0.032)	(0.042)	(0.052)
Treatment × 2007	-0.022	-0.019	-0.032	-0.031
	(0.018)	(0.035)	(0.046)	(0.058)
Treatment × 2008	-0.010	0.015	-0.017	-0.146
	(0.025)	(0.051)	(0.065)	(0.094)
Treatment × 2009	0.002	0.007	-0.067	-0.069
	(0.022)	(0.049)	(0.074)	(0.074)
Treatment × 2010	-0.018	0.018	-0.089*	0.030
	(0.019)	(0.035)	(0.051)	(0.051)
Treatment × 2011	-0.019	0.009	-0.012	-0.007
	(0.019)	(0.037)	(0.049)	(0.056)
Treatment × 2012	-0.007	0.039	-0.028	0.032
	(0.021)	(0.041)	(0.051)	(0.057)
Observations	43,342	43,080	43,655	43,655
R-squared	0.531	0.313	0.259	0.318
P-value: Pre Jointly Zero	0.114	0.829	0.612	0.780
P-value: Post Jointly Zero	0.000243	0.457	0.673	0.161
Lower 95% CI for β_{1993}	0.0320	0.0212	-0.102	-0.0922
Upper 95% CI for β_{1993}	0.0915	0.134	0.0489	0.0949
Lower 95% CI for β_{1995}	-0.0289	-0.0495	-0.215	-0.181
Upper 95% CI for β_{1995}	0.0416	0.0912	0.00303	0.0306
Mean Dep. Var. in 1992	0.0893	0.0846	0.0238	0.0372
S.d. Dep. Var. in 1992	0.0783	0.142	0.153	0.189

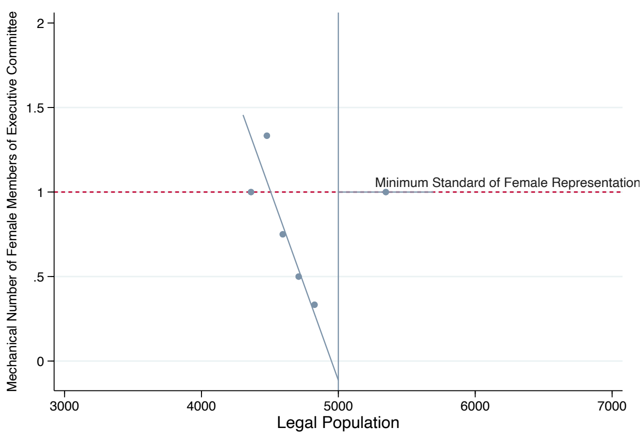
Notes: This table reports the estimates of β_t from Equation 1, estimated for the sample of municipalities in election years 1986–2012. The dependent variables are the share of female councilors in column (1), the share of female executive councilors in column (2), the indicator for female vice mayors in column (3), and the indicator for female mayors in column (4). The treatment group includes municipalities that held elections when the first gender quota system was in place. The control group includes municipalities that held elections either before its implementation or after its repeal. β_{1992} is normalized to zero. β_{1994} is not identified by construction. All regressions include controls for year fixed effects, municipality fixed effects, population, share of female residents and an indicator for municipalities with more than 15,000 residents. For each regression, the table reports the p-value from the test that all pre-quota coefficients are jointly zero, the p-value from the test that all post-quota coefficients are jointly zero, the confidence intervals for β_{1993} and β_{1995}, and the mean and standard deviation of the dependent variable, calculated over the sample of all Italian municipalities in 1992, the year before the implementation of the quotas. Standard errors are robust to heteroskedasticity and clustered at the municipality level. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Figure 4: The Mechanical and Acceleration Effects of the Second Gender Quota System

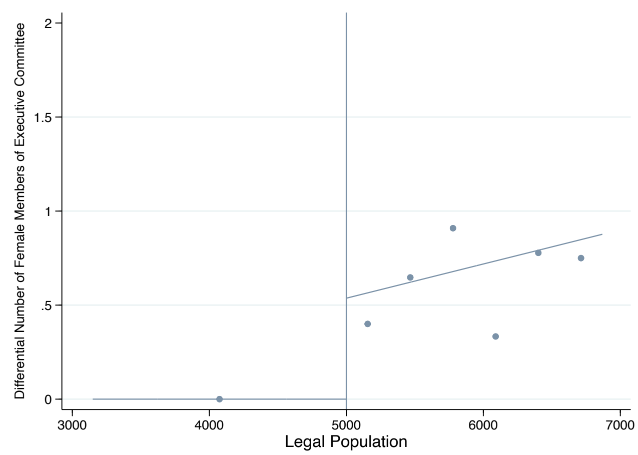
(a) Aggregate Effect



(b) Mechanical Effect



(c) Acceleration Effect



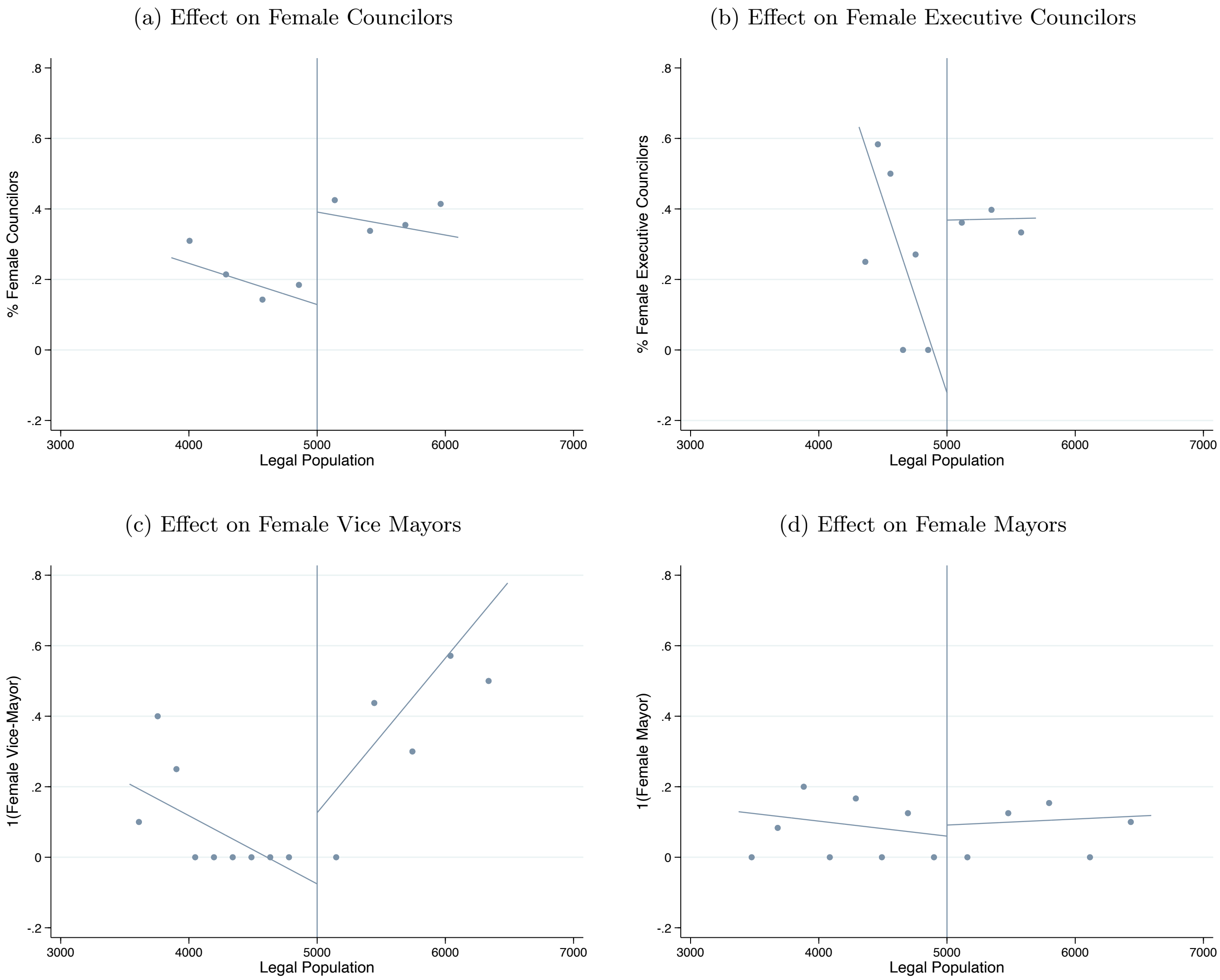
Notes: This figure shows the binned averages of the aggregate (panel [a]), mechanical (panel [b]), and differential (panel [c]) number of female members of the executive committee against legal population, and a local first-degree polynomial equation on both sides of the 5,000-resident cutoff. The aggregate number of female members of the executive committee in a municipality-year is equal to the number of female members of the committee in that municipality-year. The mechanical number of female members of the executive committee is defined as the minimum of the number of female members of the committee in that municipality-year and the minimum standard of female representation imposed by the law (one female member) for municipalities subject to the quotas, and it is defined as the number of female members of the committee in that municipality-year for unaffected municipalities. The differential number of female members of the executive committee is residually defined as the difference between the aggregate and mechanical numbers of female members of the executive committee. The estimation is performed within the MSE-optimal bandwidth for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. Municipalities to the left of the cutoff were not subject to the quotas, while those to the right were. The dashed horizontal line indicates the minimum number of female members of the executive committee that would be observed under the assumptions of perfect compliance with the quotas: one female member. The corresponding RD estimates are reported in Table 5.

Table 5: The Mechanical and Acceleration Effects of the Second Gender Quota System

Outcome:	(1) Aggregate Effect	(2) Mechanical Effect	(3) Differential Effect
RD_Estimate	1.220***	1.097***	0.538***
	(0.400)	(0.312)	(0.173)
Observations	470	470	470
Obs in bandwidth	58	43	122
Bandwidth size	966.8	709.2	1879
Lower 95% CI	0.433	0.514	0.0804
Upper 95% CI	2.311	2.013	0.918
Mean Num F Ex Com in 2012	0.950	0.950	0.950
S.d. Num F Ex Com in 2012	0.859	0.859	0.859

Notes: This table reports the RD estimates of the causal effect of the second gender quota system on the aggregate (column 1), mechanical (column 2), and differential (column 3) number of female members of the executive committee. The aggregate number of female members of the executive committee in a municipality-year is equal to the number of female members of the committee in that municipality-year. The mechanical number of female members of the executive committee is defined as the minimum of the number of female members of the committee in that municipality-year and the minimum standard of female representation imposed by the law (one female member) for municipalities subject to the quotas, and it is defined as the number of female members of the committee in that municipality-year for unaffected municipalities. The differential number of female members of the executive committee is residually defined as the difference between the aggregate and mechanical numbers of female members of the executive committee. The estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. The running variable is legal population, and the cutoff is at 5,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth, the 95% robust-bias corrected confidence interval, and the mean and the standard deviation of the number of female members of the executive committee, calculated over the sample including all Italian municipalities with fewer than 15,000 residents in non-autonomous regions in 2012, the year before the implementation of the quotas. The corresponding RD plots are shown in Figure 4. * p<0.1, ** p<0.05, *** p<0.01.

Figure 5: The Effect of the Second Gender Quota System on Female Representation in Municipal Governments



Notes: This figure shows the binned averages of the share of female councilors (panel [a]), the share of female executive councilors (panel [b]), the indicator for female vice mayors (panel [c]), and the indicator for female mayors (panel [d]) against legal population, and a local first-degree polynomial equation on both sides of the 5,000-resident cutoff. The estimation is performed within the MSE-optimal bandwidth for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. Municipalities to the left of the cutoff were not subject to the quotas, while those to the right were. The corresponding RD estimates are reported in Table 6.

Table 6: The Effect of the Second Gender Quota System on Female Representation in Municipal Governments

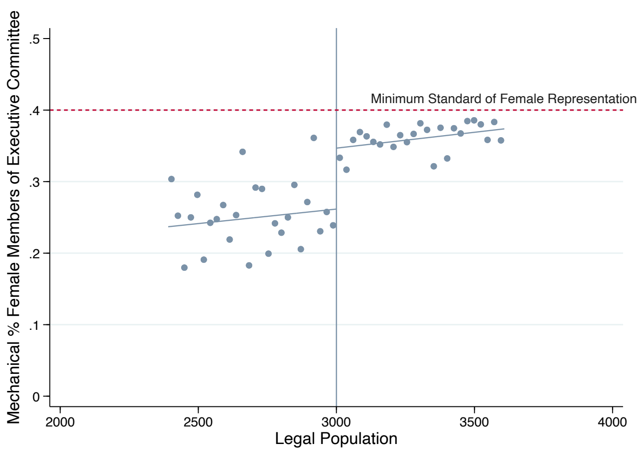
Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
RD_Estimate	0.259***	0.482***	0.206*	0.031
	(0.079)	(0.139)	(0.123)	(0.120)
Observations	470	385	470	470
Obs in bandwidth	65	42	86	96
Bandwidth size	1179	695.9	1507	1641
Lower 95% CI	0.0935	0.215	-0.114	-0.285
Upper 95% CI	0.463	0.899	0.473	0.269
Mean Dep. Var. in 2012	0.220	0.222	0.141	0.120
S.d. Dep. Var. in 2012	0.127	0.242	0.348	0.325

Notes: This table reports the RD estimates of the causal effect of the second gender quota system on the share of female councilors (column 1), the share of female executive councilors (column 2), the indicator for female vice mayors (column 3), and the indicator for female mayors (column 4). The estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. The running variable is legal population, and the cutoff is at 5,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth, the 95% robust-bias corrected confidence interval, and the mean and standard deviation of the dependent variable, calculated over the sample of all Italian municipalities with fewer than 15,000 residents in non-autonomous regions in 2012, the year before the implementation of the quotas. The corresponding RD plots are shown in Figure 5. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

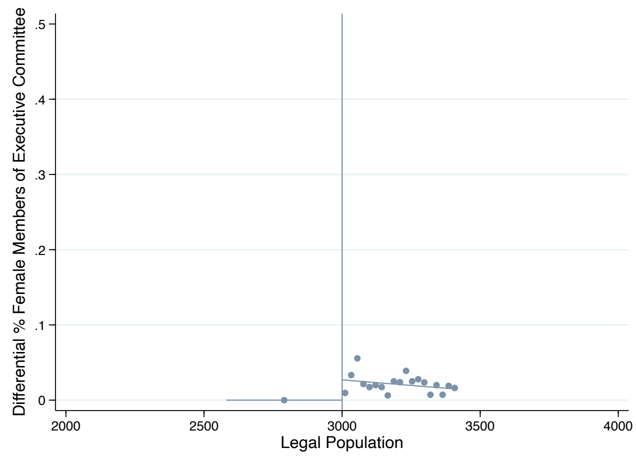
Figure 6: The Mechanical and Acceleration Effects of the Third Gender Quota System

(a) Aggregate Effect

(b) Mechanical Effect



(c) Acceleration Effect



Notes: This figure shows the binned averages of the aggregate (panel [a]), mechanical (panel [b]), and differential (panel [c]) share of female members of the executive committee against legal population, and a local first-degree polynomial equation on both sides of the 3,000-resident cutoff. The aggregate share of female members of the executive committee in a municipality-year is equal to the share of female members of the committee in that municipality-year. The mechanical share of female members of the executive committee is defined as the minimum of the share of female members of the committee in that municipality-year and the minimum standard of female representation imposed by the law (40%) for municipalities subject to the quotas, and it is defined as the share of female members of the committee in that municipality-year for unaffected municipalities. The differential share of female members of the executive committee is residually defined as the difference between the aggregate and mechanical shares of female members of the executive committee. The estimation is performed within the MSE-optimal bandwidth for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–20. Municipalities to the left of the cutoff were not subject to the quotas, while those to the right were. The dashed horizontal line indicates the minimum share of female members of the executive committee that would be observed under the assumptions of perfect compliance with the quotas: 40%. The corresponding RD estimates are reported in Table 7.

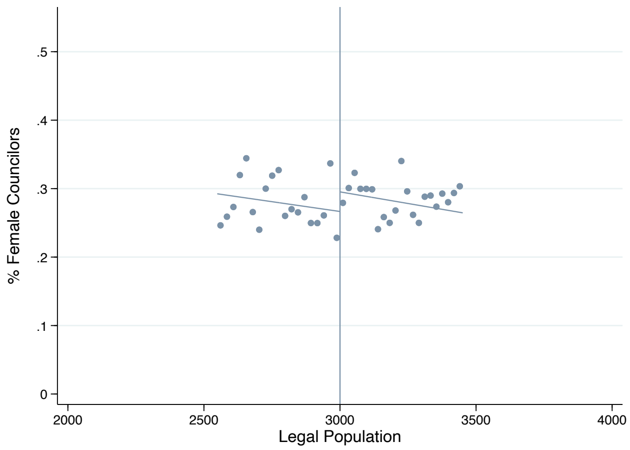
Table 7: The Mechanical and Acceleration Effects of the Third Gender Quota System

Outcome:	(1) Aggregate Effect	(2) Mechanical Effect	(3) Acceleration Effect
RD_Estimate	0.109***	0.085***	0.027***
	(0.018)	(0.019)	(0.007)
Observations	7,788	7,789	7,788
Obs in bandwidth	1597	1295	897
Bandwidth size	752.7	611.8	419.8
Lower 95% CI	0.0623	0.0364	0.0123
Upper 95% CI	0.148	0.125	0.0440
Mean % F Ex Com in 2013	0.196	0.196	0.196
S.d. % F Ex Com in 2013	0.188	0.188	0.188

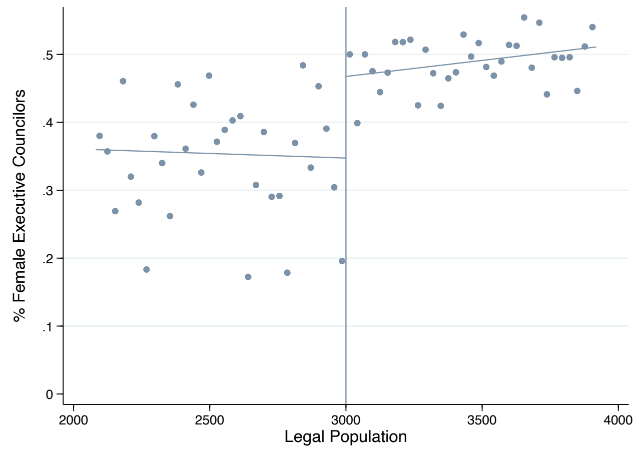
Notes: This table reports the RD estimates of the causal effect of the third gender quota system on the aggregate (column 1), mechanical (column 2), and differential (column 3) share of female members of the executive committee. The aggregate share of female members of the executive committee in a municipality-year is equal to the share of female members of the committee in that municipality-year. The mechanical share of female members of the executive committee is defined as the minimum of the share of female members of the committee in that municipality-year and the minimum standard of female representation imposed by the law (40%) for municipalities subject to the quotas, and it is defined as the share of female members of the committee in that municipality-year for unaffected municipalities. The differential share of female members of the executive committee is residually defined as the difference between the aggregate and mechanical shares of female members of the executive committee. The estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–20. The running variable is legal population, and the cutoff is at 3,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth, the 95% robust-bias corrected confidence interval, and the mean and standard deviation of the share of female members of the executive committee, calculated over the sample including all Italian municipalities with fewer than 5,000 residents in non-autonomous regions in 2013, the year before the implementation of the quotas. The corresponding RD plots are shown in Figure 6. * p<0.1, ** p<0.05, *** p<0.01.

Figure 7: The Effect of the Third Gender Quota System on Female Representation in Municipal Governments

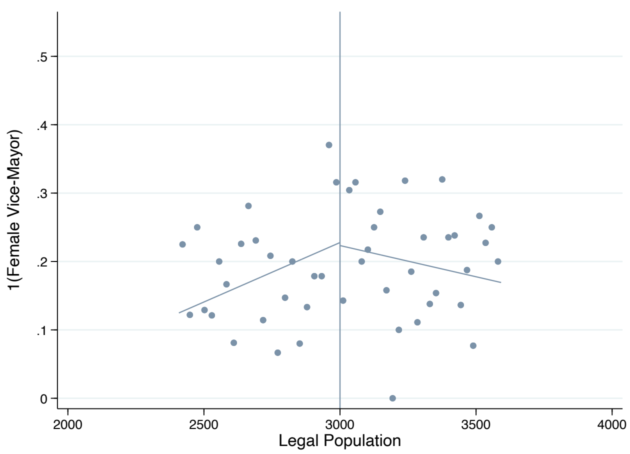
(a) Effect on Female Councilors



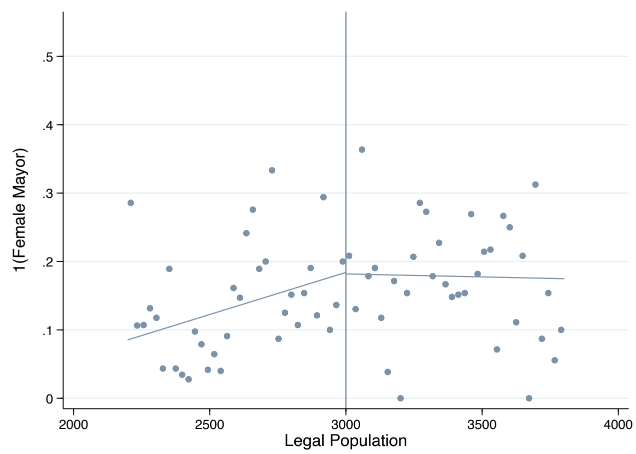
(b) Effect on Female Executive Councilors



(c) Effect on Female Vice Mayors



(d) Effect on Female Mayors



Notes: This figure shows the binned averages of the share of female councilors (panel [a]), the share of female executive councilors (panel [b]), the indicator for female vice mayors (panel [c]), and the indicator for female mayors (panel [d]) against legal population, and a local first-degree polynomial equation on both sides of the 3,000-resident cutoff. The estimation is performed within the MSE-optimal bandwidth for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–20. Municipalities to the left of the cutoff were not subject to the quotas, while those to the right were. The corresponding RD estimates are reported in Table 8.

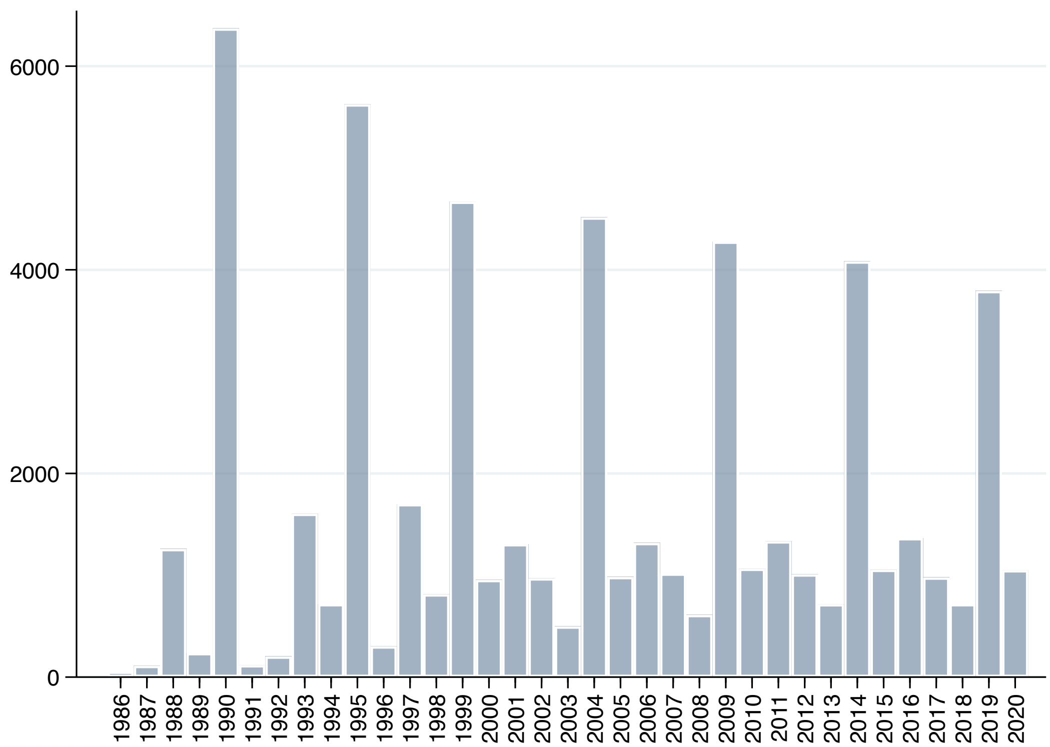
Table 8: The Effect of the Third Gender Quota System on Female Representation in Municipal Governments

Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
RD_Estimate	0.029	0.120***	-0.004	-0.004
	(0.021)	(0.035)	(0.054)	(0.040)
Observations	7,760	7,693	7,791	7,791
Obs in bandwidth	945	1993	1267	1675
Bandwidth size	445.8	914.4	596.6	783.5
Lower 95% CI	-0.0129	0.0360	-0.141	-0.108
Upper 95% CI	0.0847	0.204	0.112	0.0723
Mean Dep. Var. in 2013	0.225	0.228	0.145	0.126
S.d. Dep. Var. in 2013	0.131	0.265	0.352	0.332

Notes: This table reports the RD estimates of the causal effect of the third gender quota system on the share of female councilors (column 1), the share of female executive councilors (column 2), the indicator for female vice mayors (column 3), and the indicator for female mayors (column 4). The estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–2020. The running variable is legal population, and the cutoff is at 3,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth, the 95% robust-bias corrected confidence interval, and the mean and standard deviation of the dependent variable, calculated over the sample including all Italian municipalities with fewer than 5,000 residents in non-autonomous regions in 2013, the year before the implementation of the quotas. The corresponding RD plots are shown in Figure 7. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Appendix A: Background

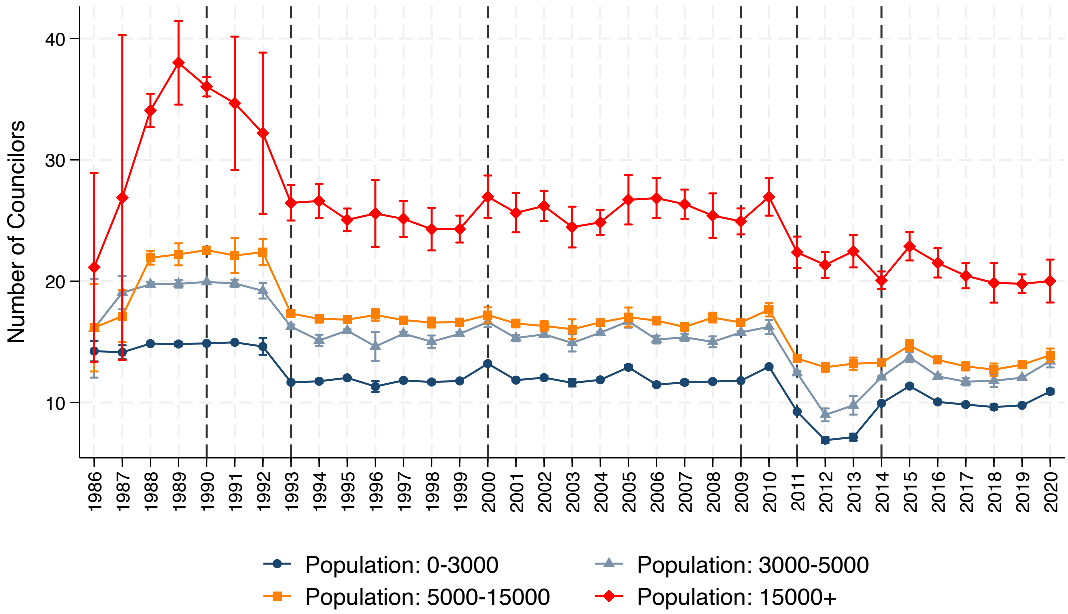
Figure A.1: Number of Municipalities by Election Year



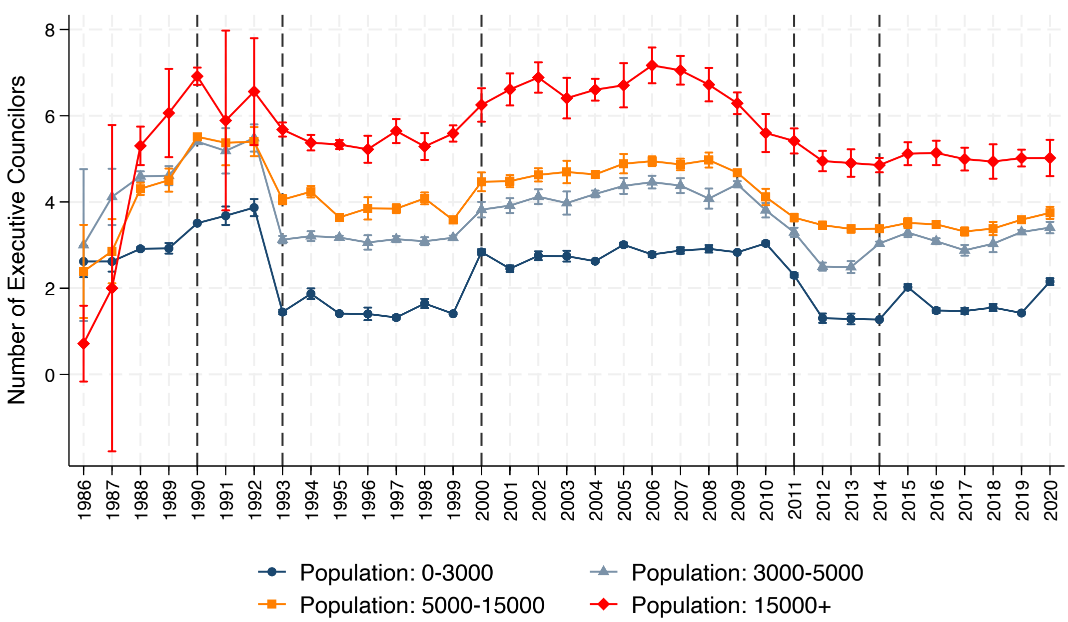
Notes: This figure shows the number of municipalities that held elections during each year between 1986 and 2020. The minimum is of 55 in 1986; the maximum is 6,371 in 1990.

Figure A.2: Size of Municipal Governments by Population

(a) Size of Municipal Councils

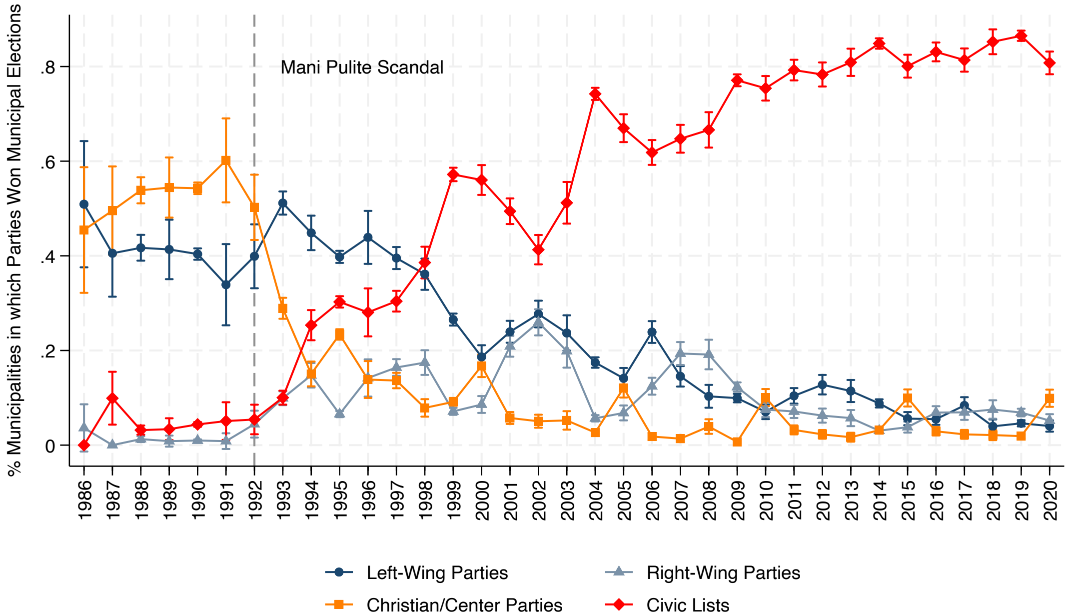


(b) Size of Executive Committees



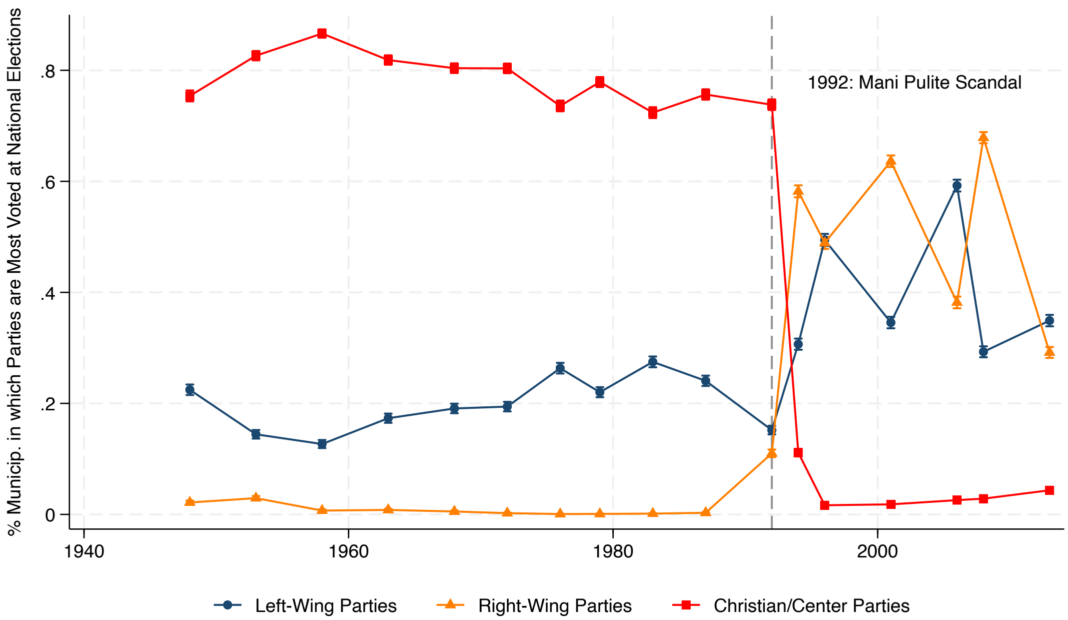
Notes: This figure illustrates the legal changes in the sizes of municipal councils (panel [a]) and executive committees (panel [b]), by municipality's legal population. The average for each year is calculated over the sample of municipalities that held elections during that year. The laws that changed the sizes of the municipal governments' main bodies are Laws 142/1990, 81/1993, 267/2000, 191/2009, 138/2011 and 56/2014. The dashed vertical lines correspond to the years in which these laws were passed. The laws specify the exact number of councilors and the maximum number of executive councilors allowed for each legal population bracket. Shaded areas correspond to 95% robust confidence intervals.

Figure A.3: Parties' Popularity in Municipal Elections



Notes: This figure shows the average share of municipalities in which left-wing parties, right-wing parties, center/Christian parties and civic lists won municipal elections between 1986 and 2020. The average for each year is calculated over the sample of municipalities that held elections in that year. The dashed vertical line in 1992 corresponds to the "Mani Pulite" scandal: the Public Prosecutor in Milan uncovered the existence of a diffused bribery system through which politicians belonging to all national parties would assign public tenders to entrepreneurs. After the scandal, the old parties quickly dissolved from the national political scenario and left the floor to the modern ones. At the local level, the diffused mistrust in politics lead to the proliferation of civic lists. Shaded areas correspond to 95% robust confidence intervals.

Figure A.4: Parties' Popularity in National Elections

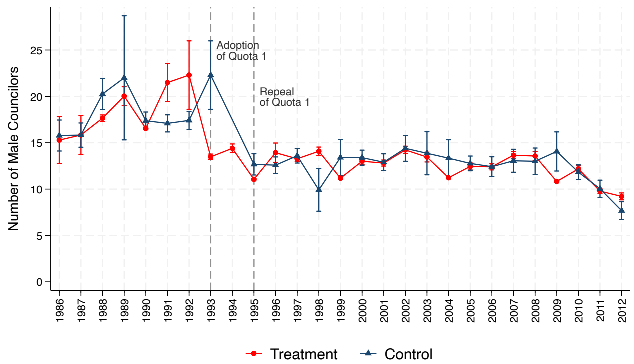


Notes: This figure shows the average share of municipalities in which left-wing parties, right-wing parties and center/Christian parties were the highest-vote-receiving party in national elections. The average for each year is calculated over the sample of all Italian municipalities. The dashed vertical line in 1992 corresponds to the "Mani Pulite" scandal: the Public Prosecutor in Milan uncovered the existence of a diffused bribery system through which politicians belonging to all national parties would assign public tenders to entrepreneurs. After the scandal, the old parties quickly dissolved from the national political scenario and left the floor to the modern ones. Shaded areas correspond to 95% robust confidence intervals.

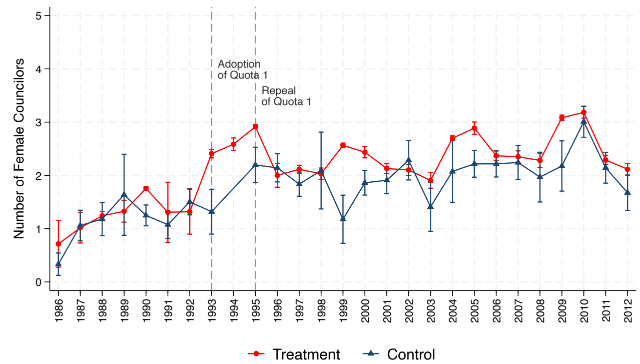
Appendix B: First Gender Quota System

Figure B.1: The Effect of the First Gender Quota System on the Number of Male and Female Politicians

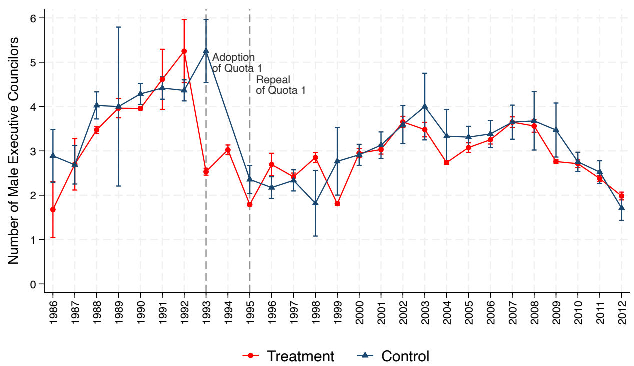
(a) Effect on the Number of Male Councilors



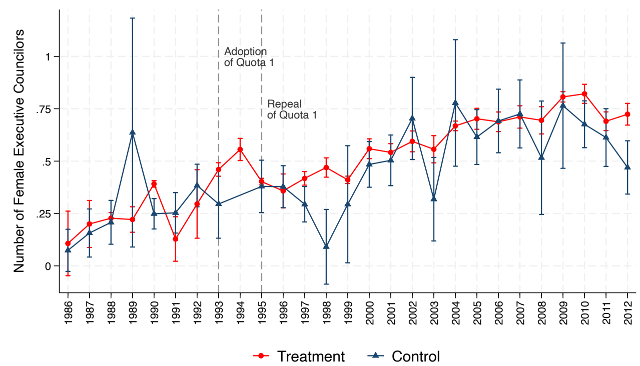
(b) Effect on the Number of Female Councilors



(c) Effect on the Number of Male Executive Councilors



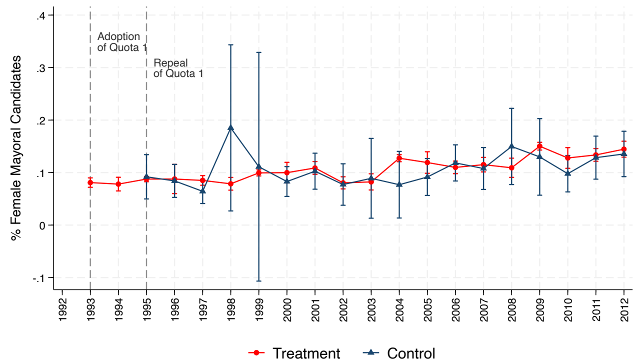
(d) Effect on the Number of Female Executive Councilors



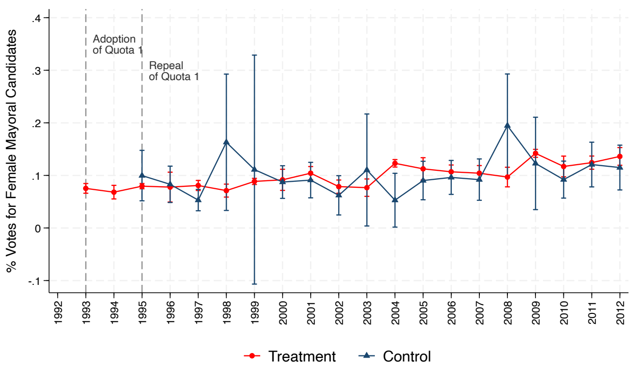
Notes: This figure shows the average numbers of male councilors (panel [a]), female councilors (panel [b]), male executive councilors (panel [c]), and female executive councilors (panel [d]) in election years 1986–2012, separately for treatment and control municipalities. The average for each year is calculated over the sample of municipalities that held elections during that year. The treatment group includes municipalities that held elections when the first gender quota system was in place. The control group includes municipalities that held elections either before its implementation or after its repeal. The solid vertical line corresponds to the year in which the first gender quota system was implemented: 1993. The dashed vertical line corresponds to the year in which the first gender quota system was repealed: 1995. Shaded areas correspond to 95% robust confidence intervals.

Figure B.2: The Effect of the First Gender Quota System on the Mayoral Electoral Process

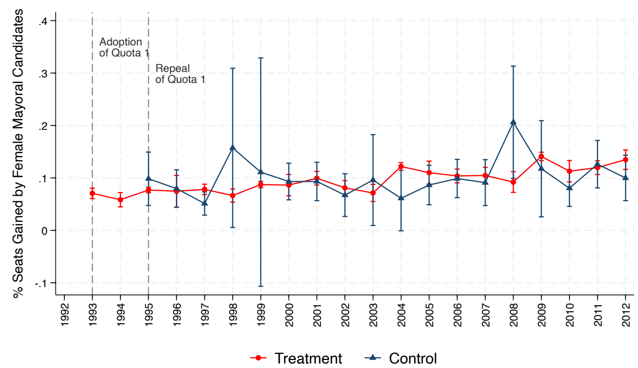
(a) Effect on Female Mayoral Candidates



(b) Effect on the Votes for Female Mayoral Candidates



(c) Effect on the Council Seats of Female Mayoral Candidates



Notes: This figure shows the average share of female mayoral candidates (panel [a]), share of votes received female mayoral candidates (panel [b]), and share of municipal-council seats gained by electoral lists headed by female mayoral candidates (panel [c]) in election years 1993–2012, separately for treatment and control municipalities. These outcomes are only available from 1993 on. The average for each year is calculated over the sample of municipalities that held elections during that year. The treatment group includes municipalities that held elections when the first gender quota system was in place. The control group includes municipalities that held elections either before its implementation or after its repeal. There are no control observations for which I observe the outcomes in 1993 because the control group in that year is very small: it contains the few municipalities that held elections before the quotas were implemented, prior to the standard electoral season. The solid vertical line corresponds to the year in which the first gender quota system was implemented: 1993. The dashed vertical line corresponds to the year in which the first gender quota system was repealed: 1995. Shaded areas correspond to 95% robust confidence intervals.

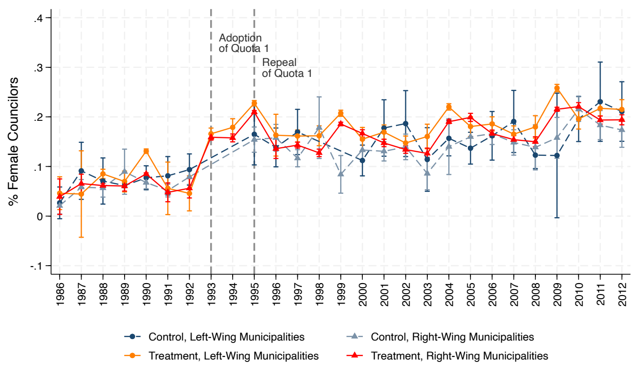
Table B.1: The Effect of the First Gender Quota System on the Mayoral Electoral Process

Outcome:	(1) % Female Mayoral Candidates	(2) % Votes for Female Mayoral Candidates	(3) % Seats Gained by Female Mayoral Candidates
Treatment × 1995	-0.007	-0.032	-0.045
	(0.038)	(0.042)	(0.043)
Treatment × 1996	0.035	0.021	0.015
	(0.039)	(0.042)	(0.044)
Treatment × 1997	0.032	0.026	0.013
	(0.032)	(0.032)	(0.035)
Treatment × 1998	-0.073	-0.067	-0.069
	(0.104)	(0.069)	(0.062)
Treatment × 1999	0.028	0.012	0.022
	(0.117)	(0.098)	(0.075)
Treatment × 2000	0.024	0.001	-0.021
	(0.039)	(0.042)	(0.045)
Treatment × 2001	0.034	0.031	0.012
	(0.035)	(0.034)	(0.036)
Treatment × 2002	0.004	0.003	-0.013
	(0.038)	(0.037)	(0.038)
Treatment × 2003	0.052	0.029	0.035
	(0.060)	(0.066)	(0.060)
Treatment × 2004	0.029	0.040	0.030
	(0.049)	(0.045)	(0.044)
Treatment × 2005	0.037	0.021	0.012
	(0.039)	(0.040)	(0.043)
Treatment × 2006	0.022	0.032	0.012
	(0.038)	(0.038)	(0.041)
Treatment × 2007	-0.006	-0.014	-0.025
	(0.031)	(0.029)	(0.030)
Treatment × 2008	-0.013	-0.068	-0.088
	(0.057)	(0.063)	(0.074)
Treatment × 2009	0.004	-0.014	-0.014
	(0.059)	(0.060)	(0.061)
Treatment × 2010	0.045	0.030	0.028
	(0.040)	(0.043)	(0.045)
Treatment × 2011	0.037	0.026	0.003
	(0.040)	(0.042)	(0.044)
Observations	31,790	31,790	31,789
R-squared	0.366	0.396	0.401
P-value: Post Jointly Zero	0.980	0.911	0.752
Lower 95% CI for β_{1995}	-0.0816	-0.113	-0.129
Upper 95% CI for β_{1995}	0.0677	0.0497	0.0394
Mean Dep. Var. in 1993	0.0810	0.0754	0.0706
S.d. Dep. Var. in 1993	0.170	0.175	0.189

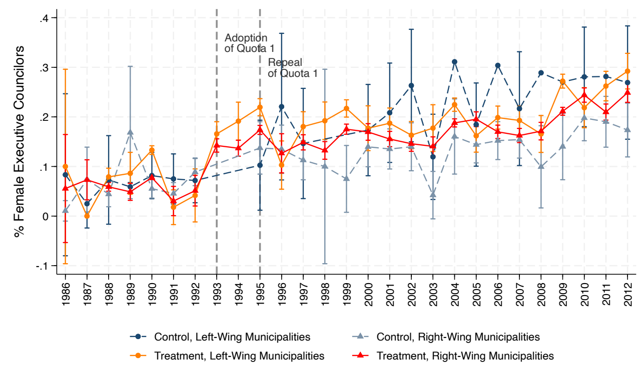
Notes: This table reports the estimates of β_t from Equation 1, estimated for the sample of municipalities in election years 1993–2012. The dependent variables are the share of female mayoral candidates in column (1), the share of votes received by female mayoral candidates in column (2) and the share of municipal-council seats gained by electoral lists headed by female mayoral candidates in column (3). The outcomes are only available from 1993 on. The treatment group includes municipalities that held elections when the first gender quota system was in place. The control group includes municipalities that held elections either before its implementation or after its repeal. β_{1993} is not identified because there are no control observations for which I observe the outcomes in 1993. The control group in that year is very small: it contains the few municipalities that held elections before the quotas were implemented, prior to the standard electoral season. β_{1994} is not identified by construction. β_{2012} is normalized to zero. All regressions include controls for year fixed effects, municipality fixed effects, population, share of female residents and an indicator for municipalities with more than 15,000 residents. For each regression, the table reports the p-value from the test that all post-quota coefficients are jointly zero, the confidence interval for β_{1995}, and the mean and standard deviation of the dependent variable, calculated over the sample of all municipalities that held elections in 1993, the first year for which the outcome data are available. Standard errors are robust to heteroskedasticity and clustered at the municipality level. * p<0.1, ** p<0.05, *** p<0.01.

Figure B.3: The Heterogeneous Effect of the First Gender Quota System in Left- and Right-Wing Municipalities

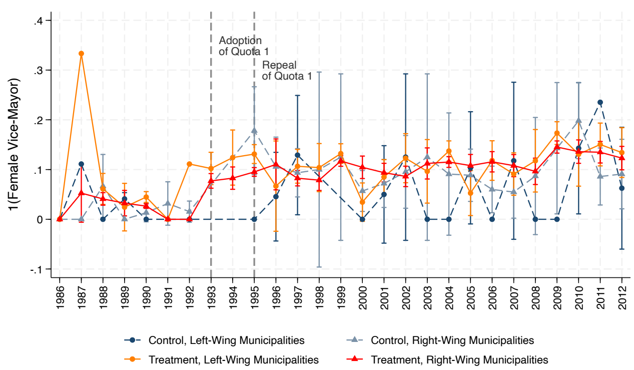
(a) Heterogeneous Effect on Female Councilors



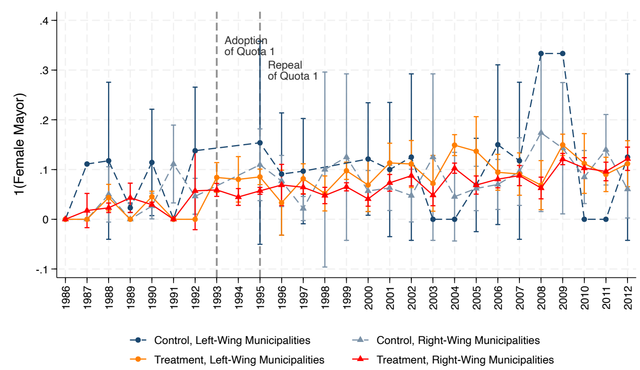
(b) Heterogeneous Effect on Female Executive Councilors



(c) Heterogeneous Effect on Female Vice Mayors



(d) Heterogeneous Effect on Female Mayors



Notes: This figure shows the average shares of female councilors (panel [a]), executive councilors (panel [b]), vice mayors (panel [c]), and mayors (panel [d]) in election years 1986–2012, separately for left- and right- wing treatment municipalities and left- and right-wing control municipalities. I classify municipalities as left or right wing depending on the modal highest-vote-receiving party in the 1968, 1972, 1976, 1979, 1983, 1987 and 1992 rounds of national elections. The right-wing category includes center/christian, right-wing and far-right parties. The average for each year is calculated over the sample of municipalities that held elections during that year. The treatment group includes municipalities that held elections when the first gender quota system was in place. The control group includes municipalities that held elections either before its implementation or after its repeal. There are no control left-wing observations in 1993 because the control group in that year is very small: it contains the few municipalities that held elections before the quotas were implemented, prior to the standard electoral season. The solid vertical line corresponds to the year in which the first gender quota system was implemented: 1993. The dashed vertical line corresponds to the year in which the first gender quota system was repealed: 1995. Shaded areas correspond to 95% robust confidence intervals. Only those within a range of [-0.1;0.4] are reported to guarantee the readability of the graph.

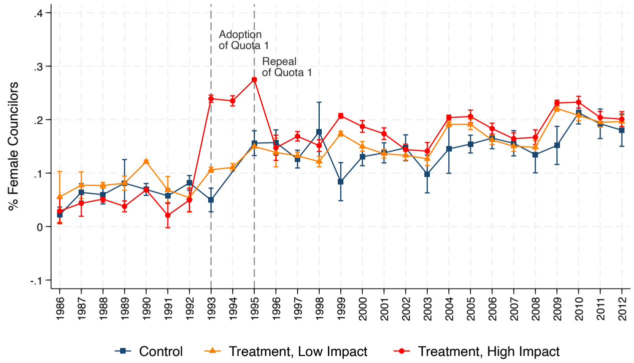
Table B.2: The Heterogeneous Effect of the First Gender Quota System in Left- and Right-Wing Municipalities

Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
Treatment × 1986	0.079	0.241	-0.121	0.277
	(0.080)	(0.210)	(0.193)	(0.148)
Treatment × 1987	-0.041	0.046	-0.030	0.056
	(0.060)	(0.100)	(0.173)	(0.149)
Treatment × 1988	0.064	0.050	0.027	0.078
	(0.042)	(0.084)	(0.153)	(0.113)
Treatment × 1989	-0.030	-0.153	-0.064	0.090
	(0.045)	(0.101)	(0.153)	(0.137)
Treatment × 1990	0.034	-0.100	-0.037	0.087
	(0.040)	(0.084)	(0.152)	(0.119)
Treatment × 1991	0.005	-0.122	-0.109	0.162
	(0.050)	(0.102)	(0.200)	(0.131)
Treatment × 1993	0.128***	0.087**	0.037	0.061
	(0.017)	(0.036)	(0.043)	(0.061)
Treatment × 1995	0.048	0.060	0.043	0.052
	(0.047)	(0.102)	(0.150)	(0.139)
Treatment × 1996	0.051	-0.223*	-0.002	0.084
	(0.050)	(0.125)	(0.168)	(0.150)
Treatment × 1997	0.025	-0.006	-0.063	0.156
	(0.038)	(0.095)	(0.167)	(0.097)
Treatment × 1998	-0.016	0.014	-0.029	-0.039
	(0.059)	(0.095)	(0.158)	(0.124)
Treatment × 1999	0.066***	0.051	-0.037	-0.075
	(0.023)	(0.054)	(0.112)	(0.092)
Treatment × 2000	0.050	-0.079	0.010	0.072
	(0.043)	(0.110)	(0.158)	(0.139)
Treatment × 1986 × Right	-0.117	-0.244	0.173	-0.372
	(0.085)	(0.217)	(0.205)	(0.172)
Treatment × 1987 × Right	0.049	-0.037	0.008	-0.102
	(0.064)	(0.114)	(0.179)	(0.160)
Treatment × 1988 × Right	-0.078*	-0.035	-0.061	-0.087
	(0.045)	(0.095)	(0.164)	(0.133)
Treatment × 1989 × Right	0.003	0.136	0.060	-0.070
	(0.060)	(0.142)	(0.163)	(0.153)
Treatment × 1990 × Right	-0.027	0.096	0.003	-0.063
	(0.043)	(0.091)	(0.157)	(0.133)
Treatment × 1991 × Right	0.018	0.147	0.103	-0.271*
	(0.057)	(0.114)	(0.210)	(0.152)
Treatment × 1995 × Right	-0.013	-0.040	-0.168	-0.087
	(0.051)	(0.111)	(0.166)	(0.156)
Treatment × 1996 × Right	-0.061	0.209	-0.013	-0.087
	(0.056)	(0.135)	(0.180)	(0.164)
Treatment × 1997 × Right	-0.012	0.041	0.038	-0.119
	(0.041)	(0.102)	(0.173)	(0.113)
Treatment × 2000 × Right	-0.026	0.090	0.005	-0.092
	(0.047)	(0.117)	(0.165)	(0.151)
Observations	24,560	24,461	24,731	24,731
R-squared	0.637	0.438	0.407	0.524

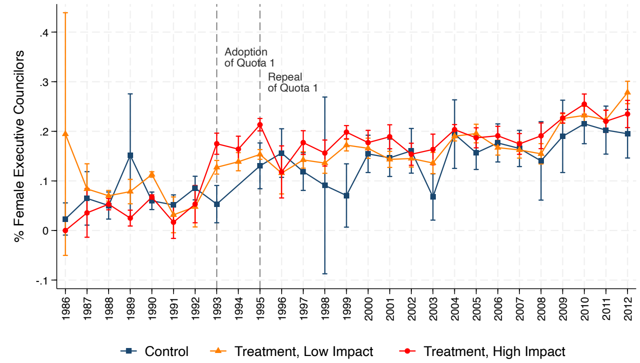
Notes: This table reports the estimates of β_t and δ_t from Equation 2, estimated for the sample of municipalities in election years 1993–2000. The dependent variables are the share of female councilors in column (1), the share of executive councilors in column (2), the indicator for female vice mayors in column (3), and the indicator for female mayors in column (4). I classify municipalities as left or right wing depending on the modal highest-vote-receiving party in the 1968, 1972, 1976, 1979, 1983, 1987 and 1992 rounds of national elections. The right-wing category includes center/Christian, right-wing and far-right parties. The treatment group includes municipalities that held elections when the first gender quota system was in place. The control group includes municipalities that held elections either before its implementation or after its repeal. There are no control left-wing observations in 1993 because the control group in that year is very small: it contains the few municipalities that held elections before the quotas were implemented, prior to the standard electoral season. β_{1994} is not identified by construction. β_{1992} and δ_{1992} are normalized to zero. All regressions include controls for year fixed effects, municipality fixed effects, population, share of female residents and an indicator for municipalities with more than 15,000 residents. Standard errors are robust to heteroskedasticity and clustered at the municipality level. * p<0.1, ** p<0.05, *** p<0.01.

Figure B.4: The Heterogeneous Effect of the First Gender Quota System in Low- and High-Impact Municipalities

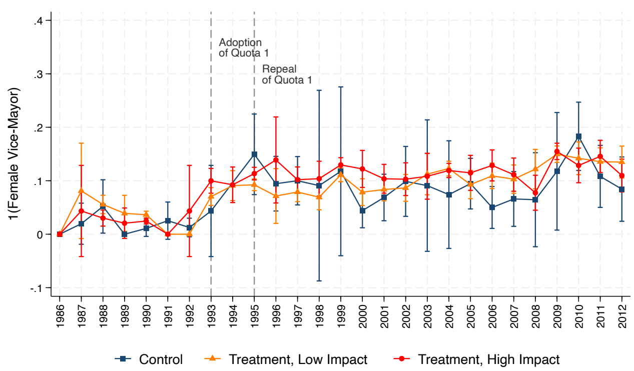
(a) Heterogeneous Effects on Female Councilors



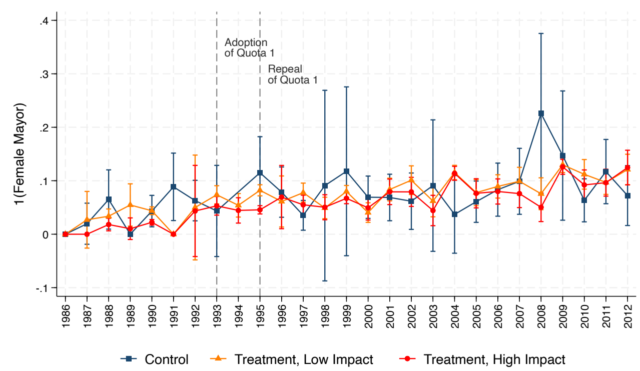
(b) Heterogeneous Effect on Female Executive Councilors



(c) Heterogeneous Effect on Female Vice Mayors



(d) Heterogeneous Effect on Female Mayors



Notes: This figure shows the average shares of female councilors (panel [a]), executive councilors (panel [b]), vice mayors (panel [c]), and mayors (panel [d]) in election years 1986–2012, separately for high-impact, low-impact and control municipalities. I classify treated municipalities, that is, municipalities that held elections when the quotas were in place, as low or high impact depending on whether the change in the average share of female councilors between quota election years (1993–95) and pre-quota election years (1986–92) is above or below the median change of 10 p.p. The average for each year is calculated over the sample of municipalities that held elections during that year. The solid vertical line corresponds to the year in which the first gender quota system was implemented: 1993. The dashed vertical line corresponds to the year in which the first gender quota system was repealed: 1995. Shaded areas correspond to 95% robust confidence intervals.

Table B.3: The Heterogeneous Effect of the First Gender Quota System in Low- and High-Impact Municipalities

Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
High Impact × 1986	0.003	0.032	-0.135	-0.159
	(0.029)	(0.099)	(0.110)	(0.127)
High Impact × 1987	-0.042	-0.063	-0.061	-0.037
	(0.028)	(0.074)	(0.078)	(0.108)
High Impact × 1988	-0.025	-0.047	-0.144*	-0.017
	(0.020)	(0.042)	(0.076)	(0.090)
High Impact × 1989	-0.025	0.007	-0.080	0.016
	(0.023)	(0.050)	(0.082)	(0.095)
High Impact × 1990	-0.034*	-0.036	-0.122*	-0.006
	(0.020)	(0.041)	(0.074)	(0.089)
High Impact × 1991	-0.031	0.048	-0.052	-0.057
	(0.028)	(0.059)	(0.100)	(0.102)
High Impact × 1993	0.137***	0.022	-0.087	-0.022
	(0.020)	(0.043)	(0.077)	(0.091)
High Impact × 1994	0.143***	0.051	-0.093	0.023
	(0.021)	(0.042)	(0.076)	(0.088)
High Impact × 1995	0.146***	0.071*	-0.087	-0.020
	(0.020)	(0.041)	(0.074)	(0.089)
High Impact × 1996	0.019	-0.014	-0.061	-0.005
	(0.029)	(0.058)	(0.094)	(0.101)
High Impact × 1997	0.038*	0.012	-0.101	-0.025
	(0.021)	(0.043)	(0.076)	(0.091)
High Impact × 1998	0.044**	0.045	-0.060	0.030
	(0.021)	(0.043)	(0.073)	(0.089)
High Impact × 1999	0.056***	0.041	-0.086	0.007
	(0.021)	(0.042)	(0.075)	(0.089)
High Impact × 2000	0.053**	0.009	-0.077	-0.001
	(0.022)	(0.045)	(0.080)	(0.091)
Observations	23,220	23,114	23,330	23,330
R-squared	0.739	0.443	0.407	0.525

Notes: This table reports the estimates of β_t from Equation 3, estimated for the sample of treated municipalities in election years 1986–2000. The dependent variables are the share of female councilors in column (1), the share of executive councilors in column (2), the indicator for female vice mayors in column (3), and the indicator for female mayors in column (4). I classify treated municipalities, that is, municipalities that held elections when the quotas were in place, as low or high impact depending on whether the change in the average share of female councilors between quota election years (1993–95) and pre-quota election years (1986–92) is above or below the median change of 10 p.p. β_{1992} is normalized to zero. All regressions include controls for year fixed effects, municipality fixed effects, population, share of female residents and an indicator for municipalities with more than 15,000 residents. Standard errors are robust to heteroskedasticity and clustered at the municipality level. * p<0.1, ** p<0.05, *** p<0.01.

Appendix C: Second Gender Quota System

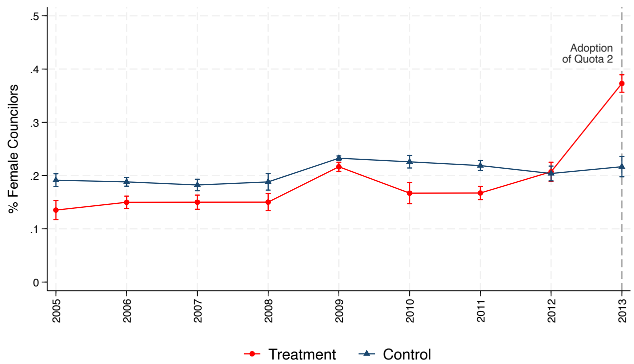
Table C.1: Alternative Specifications for the Analysis of the Second Gender Quota System

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Outcome	% Female Councilors			% Female Executive Councilors			1(Female Vice-Mayor)			1(Female Mayor)		
RD_Estimate	0.301**	0.242***	0.262***	0.615***	0.438***	0.373**	-0.242*	0.215*	0.265*	0.085	0.080	-0.059
	(0.129)	(0.082)	(0.072)	(0.221)	(0.126)	(0.150)	(0.133)	(0.123)	(0.148)	(0.186)	(0.120)	(0.125)
Observations	470	461	1,269	385	385	742	470	461	1,643	470	461	1,801
Specification	3rd polyn.	Controls	Diff-in-disc	3rd polyn.	Controls	Diff-in-disc	3rd polyn.	Controls	Diff-in-disc	3rd polyn.	Controls	Diff-in-disc
Obs in bandwidth	143	66	66	114	43	43	118	91	91	100	100	100
Bandwidth size	2216	1196	1179	1800	728.1	695.9	1847	1545	1507	1683	1676	1641
Mean Dep. Var. in 2012	0.220	0.220	0.220	0.222	0.222	0.222	0.141	0.141	0.141	0.120	0.120	0.120
S.d. Dep. Var. in 2012	0.127	0.127	0.127	0.242	0.242	0.242	0.348	0.348	0.348	0.325	0.325	0.325

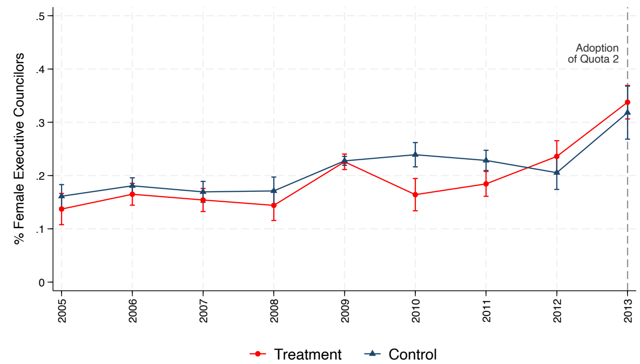
Notes: This table shows the RD estimates of the causal impact of the second gender quota system on the share of female councilors, (columns 1-3), the share of female executive councilors, (columns 4-6), the indicator for female vice mayors, (columns 7-9), and the indicator for female mayors (columns 10-12). Columns 1, 4, 7 and 10 report the estimates from a local third-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. Columns 2, 5, 8 and 11 report the estimates from a linear specification controlling for the following municipality characteristics: share of female residents, area, altitude, share of residents with secondary school diploma, share of residents with university degree, employment rate, unemployment rate, log income per capita, number of nonprofit organizations and firms per thousand residents. In these cases the estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. Columns 3, 6, 9 and 12 display the difference-in-discontinuity estimates, θ, from Equation 4. In these cases the estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election years 2005–13, before the implementation of the third gender quota system. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth, the 95% robust-bias corrected confidence interval, and the mean and standard deviation of the dependent variable, calculated over the sample including all municipalities with fewer than 15,000 residents in non-autonomous regions in 2012, the year before the implementation of the quotas. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Figure C.1: The Event-Study Effect of the Second Gender Quota System on Female Representation in Municipal Governments

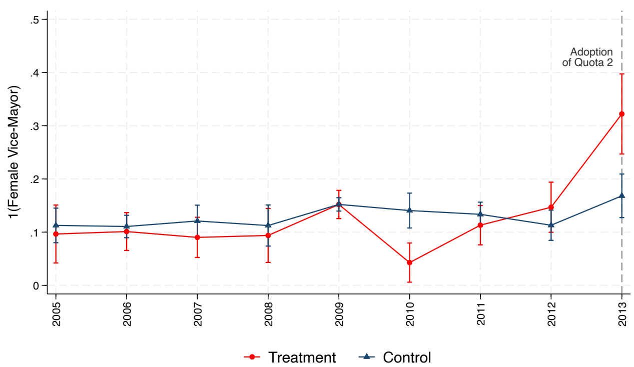
(a) Effect on Female Councilors



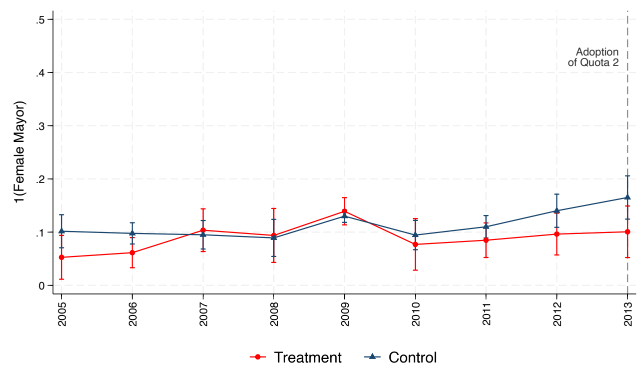
(b) Effect on Female Executive Councilors



(c) Effect on Female Vice Mayors



(d) Effect on Female Mayors



Notes: This figure shows the average shares of female councilors (panel [a]), executive councilors (panel [b]), vice mayors (panel [c]), and mayors (panel [d]) in election years 2005–13, separately for treatment and control municipalities. The graph is interrupted in 2013 to isolate the effect of the second gender quota system from the effect of the third gender quota system, that took effect in 2014. The average for each year is calculated over the sample of municipalities with fewer than 15,000 residents in non-autonomous regions that held elections during that year. The treatment group includes municipalities with more than 5,000 residents. The control group includes municipalities with fewer than 5,000 residents. The solid vertical line corresponds to the year in which the second gender quota system was implemented: 2013. Shaded areas correspond to 95% robust confidence intervals.

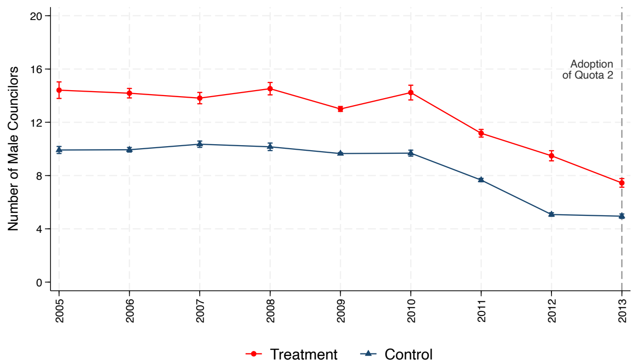
Table C.2: The Event-Study Effect of the Second Gender Quota System on Female Representation in Municipal Governments

Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
Treatment × 2005	-0.002	-0.017	-0.128	-0.183
	(0.051)	(0.108)	(0.176)	(0.160)
Treatment × 2006	-0.047	-0.012	-0.093	0.005
	(0.043)	(0.098)	(0.151)	(0.129)
Treatment × 2007	-0.031	-0.056	-0.057	0.051
	(0.022)	(0.047)	(0.069)	(0.056)
Treatment × 2008	-0.021	-0.053	-0.029	0.086
	(0.053)	(0.123)	(0.171)	(0.144)
Treatment × 2009	-0.037	0.007	-0.058	0.012
	(0.046)	(0.102)	(0.167)	(0.143)
Treatment × 2010	-0.001	-0.069	-0.212	-0.177
	(0.051)	(0.105)	(0.175)	(0.166)
Treatment × 2011	-0.061	-0.034	-0.117	0.024
	(0.042)	(0.096)	(0.151)	(0.131)
Treatment × 2013	0.170***	0.006	0.099	0.003
	(0.052)	(0.125)	(0.171)	(0.141)
Observations	9,346	9,116	9,403	9,403
R-squared	0.807	0.764	0.751	0.797
P-value: Pre Jointly Zero	0.708	0.844	0.838	0.719
Lower 95% CI for β_{2013}	0.0687	-0.239	-0.236	-0.273
Upper 95% CI for β_{2013}	0.271	0.252	0.435	0.279
Mean Dep. Var. in 2012	0.220	0.222	0.141	0.120
S.d. Dep. Var. in 2012	0.127	0.242	0.348	0.325

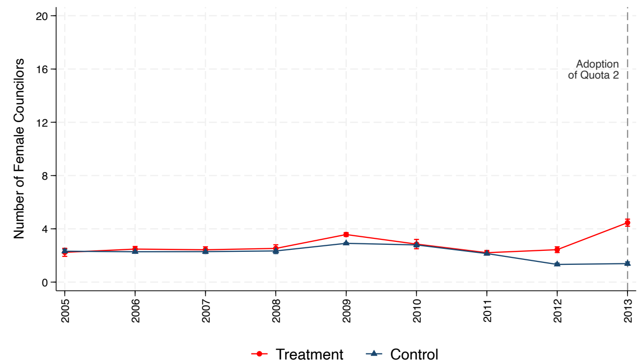
Notes: This table reports the estimates of β_t from Equation 1, estimated for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election years 2005–13, before the implementation of the third gender quota system. The outcome variables are the share of female councilors in column (1), the share of female executive councilors in column (2), the indicator for female vice mayors in column (3), and the indicator for female mayors in column (4). The treatment group includes municipalities with more than 5,000 residents. The control group includes municipalities with fewer than 5,000 residents. β_{2012} is normalized to zero. All regressions include controls for year fixed effects, municipality fixed effects, population, and the share of female residents. For each regression, the table reports the p-value from the test that all pre-quota coefficients are jointly zero, the confidence interval for β_{2013}, and the mean and standard deviation of the dependent variable, calculated over the sample including all municipalities with fewer than 15,000 residents in non-autonomous regions in 2012, the year before the implementation of the quotas. Standard errors are robust to heteroskedasticity and clustered at the municipality level. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Figure C.2: The Effect of the Second Gender Quota System on the Number of Male and Female Politicians

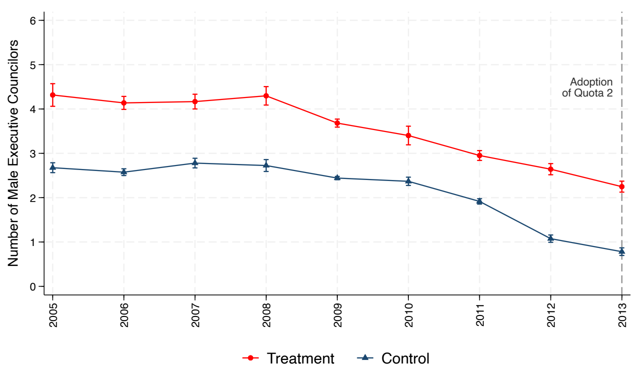
(a) Effect on the Number of Male Councilors



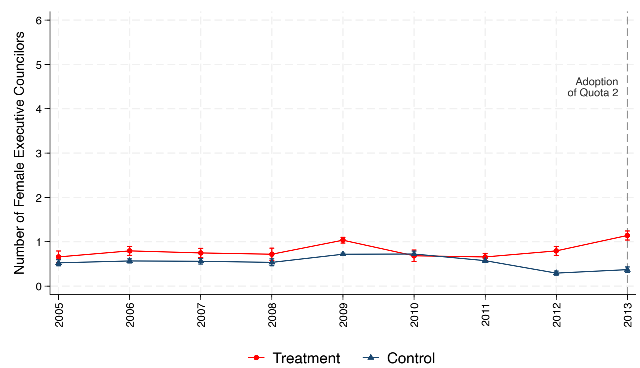
(b) Effect on the Number of Female Councilors



(c) Effect on the Number of Male Executive Councilors



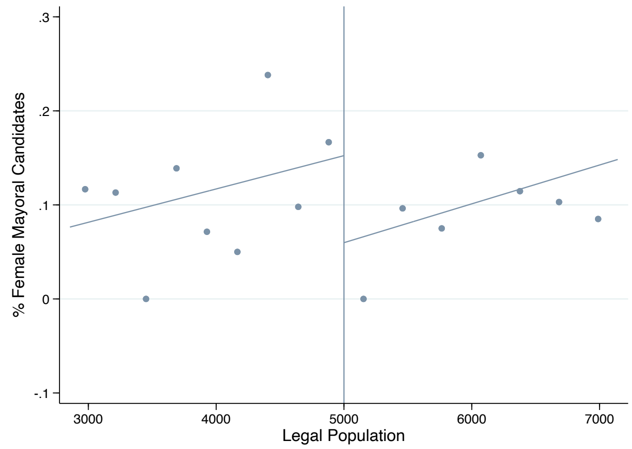
(d) Effect on the Number of Female Executive Councilors



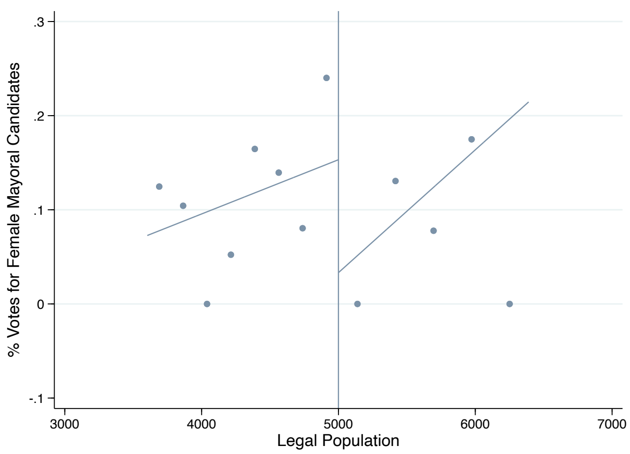
Notes: This figure shows the average numbers of male councilors (panel [a]), female councilors (panel [b]), male executive councilors (panel [c]), and female executive councilors (panel [d]) in election years 2005–13, separately for treatment and control municipalities. The graph is interrupted in 2013 to isolate the effect of the second gender quota system from the effect of the third gender quota system, that took effect in 2014. The average for each year is calculated over the sample of municipalities with fewer than 15,000 residents in non-autonomous regions that held elections during that year. The treatment group includes municipalities with more than 5,000 residents. The control group includes municipalities with fewer than 5,000 residents. The solid vertical line represents the year in which the second gender quota system was implemented: 2013. Shaded areas correspond to 95% robust confidence intervals.

Figure C.3: The Effect of the Second Gender Quota System on the Mayoral Electoral Process

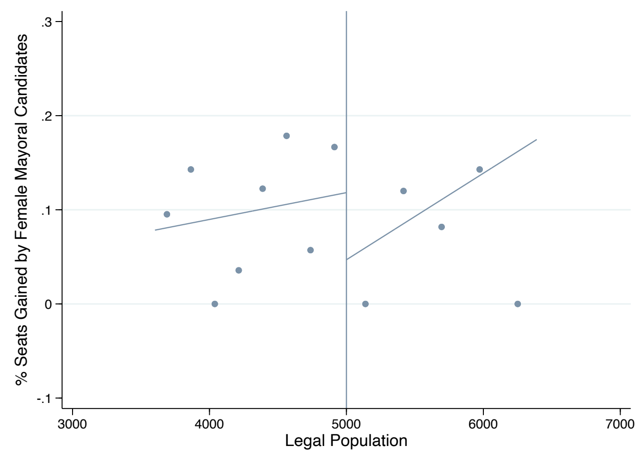
(a) Effect on Female Mayoral Candidates



(b) Effect on the Votes for Female Mayoral Candidates



(c) Effect on the Council Seats of Female Mayoral Candidates



Notes: This figure shows the binned averages of the share of female mayoral candidates (panel [a]), the share of votes received by female mayoral candidates (panel [b]), and the share of municipal-council seats gained by electoral lists headed by female mayoral candidates (panel [c]), against legal population, and a local first-degree polynomial equation on both sides of the 5,000-resident cutoff. The estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. Municipalities to the left of the cutoff were not subject to the quotas, while those to the right were. The corresponding RD estimates are reported in Table C.3.

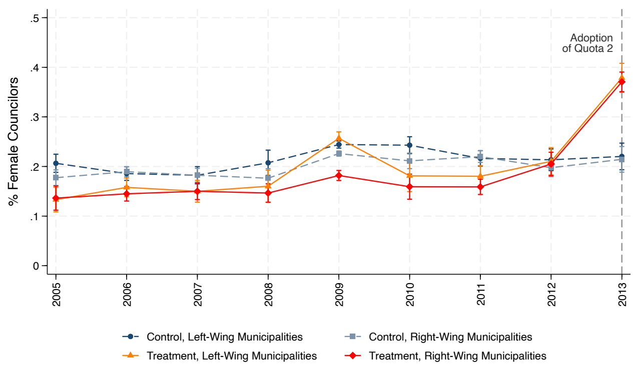
Table C.3: The Effect of the Second Gender Quota System on the Mayoral Electoral Process

Outcome:	(1) % Female Mayoral Candidates	(2) % Votes for Female Mayoral Candidates	(3) % Seats Gained by Female Mayoral Candidates
RD_Estimate	-0.092	-0.119	-0.068
	(0.072)	(0.106)	(0.106)
Observations	470	470	470
Obs in bandwidth	139	79	80
Bandwidth size	2146	1398	1417
Lower 95% CI	-0.274	-0.401	-0.355
Upper 95% CI	0.0669	0.0801	0.131
Mean Dep. Var. in 2012	0.149	0.142	0.138
S.d. Dep. Var. in 2012	0.221	0.238	0.257

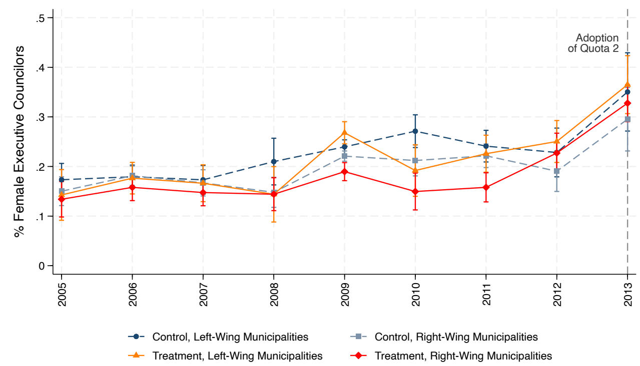
Notes: This table reports the RD estimates of the causal effect of the second gender quota system on the share of female mayoral candidates (column 1), the share of votes received by female mayoral candidates (column 2), and the share of municipal-council seats gained by electoral lists headed by female mayoral candidates (column 3). The estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. The running variable is legal population, and the cutoff is at 5,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth, the 95% robust-bias corrected confidence interval, and the mean and standard deviation of the dependent variable, calculated over the sample including all municipalities with fewer than 15,000 residents in non-autonomous regions in 2012, the year before the implementation of the quotas. The corresponding RD plots are shown in Figure C.3. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Figure C.4: The Heterogeneous Effect of the Second Gender Quota System in Left- and Right-Wing Municipalities

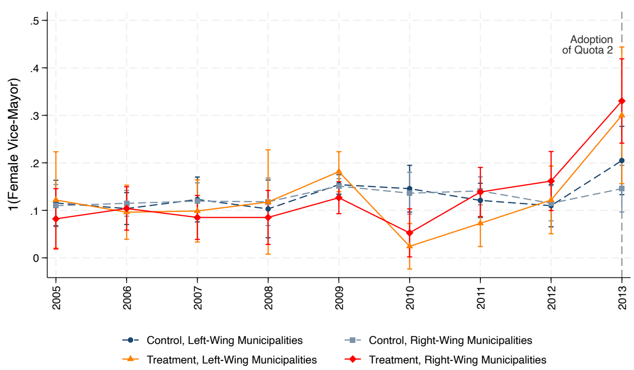
(a) Heterogeneous Effect on Female Councilors



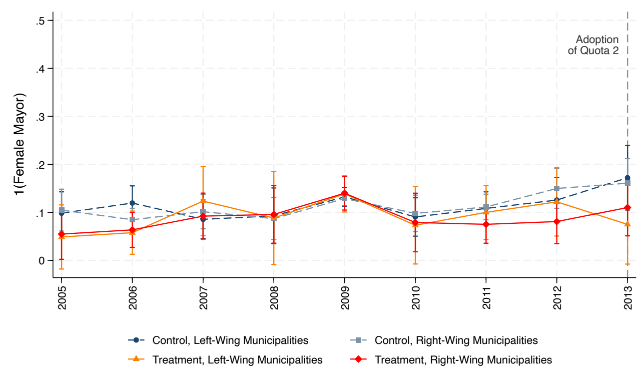
(b) Heterogeneous Effect on Female Executive Councilors



(c) Heterogeneous Effect on Female Vice Mayors



(d) Heterogeneous Effect on Female Mayors



Notes: This figure shows the average shares of female councilors (panel [a]), executive councilors (panel [b]), vice mayors (panel [c]), and mayors (panel [d]) in election years 2005–13, separately for left- and right- wing treatment municipalities and left- and right-wing control municipalities. The graph is interrupted in 2013 to isolate the effect of the second gender quota system from the effect of the third gender quota system, that took effect in 2014. I classify municipalities as left or right wing depending on the modal highest-vote-receiving party in the 2001, 2006 and 2008 rounds of national elections. The right-wing category includes center/Christian, right-wing and far-right parties. The average for each year is calculated over the sample of municipalities with fewer than 15,000 residents in non-autonomous regions that held elections during that year. The treatment group includes municipalities with more than 5,000 residents. The control group includes municipalities with fewer than 5,000 residents. The solid vertical line represents the year in which the second gender quota system was implemented: 2013. Shaded areas correspond to 95% robust confidence intervals.

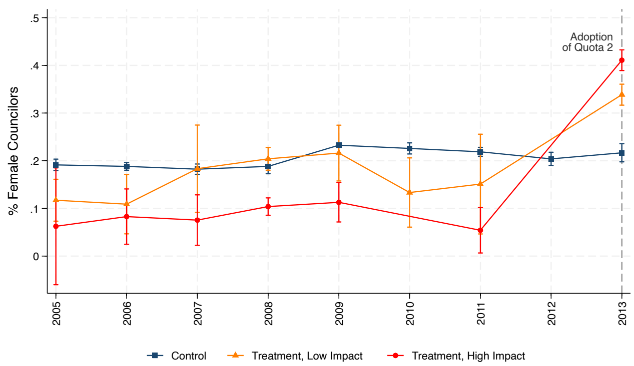
Table C.4: The Heterogeneous Effect of the Second Gender Quota System in Left- and Right-Wing Municipalities

Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
Treatment × 2005	0.102	-0.136	-0.095	-0.333
	(0.109)	(0.306)	(0.559)	(0.546)
Treatment × 2006	0.080	-0.078	-0.016	0.156
	(0.103)	(0.208)	(0.384)	(0.362)
Treatment × 2007	0.008	-0.072	-0.093	0.168
	(0.049)	(0.097)	(0.137)	(0.118)
Treatment × 2008	0.116	-0.059	0.090	0.265
	(0.113)	(0.238)	(0.401)	(0.418)
Treatment × 2009	0.032	-0.091	0.172	0.066
	(0.108)	(0.196)	(0.381)	(0.385)
Treatment × 2010	0.131	-0.151	-0.409	-0.356
	(0.115)	(0.276)	(0.571)	(0.553)
Treatment × 2011	0.050	-0.083	-0.079	0.195
	(0.101)	(0.207)	(0.384)	(0.364)
Treatment × 2013	0.292***	0.109	0.051	0.078
	(0.105)	(0.220)	(0.380)	(0.363)
Treatment × 2005 × Right	-0.115	0.128	-0.035	0.171
	(0.123)	(0.327)	(0.588)	(0.570)
Treatment × 2006 × Right	-0.149	0.075	-0.058	-0.157
	(0.113)	(0.234)	(0.420)	(0.387)
Treatment × 2007 × Right	-0.046	0.020	0.048	-0.148
	(0.054)	(0.109)	(0.155)	(0.131)
Treatment × 2008 × Right	-0.163	-0.018	-0.108	-0.186
	(0.128)	(0.275)	(0.445)	(0.446)
Treatment × 2009 × Right	-0.076	0.122	-0.268	-0.050
	(0.119)	(0.226)	(0.427)	(0.415)
Treatment × 2010 × Right	-0.153	0.087	0.252	0.207
	(0.128)	(0.298)	(0.600)	(0.579)
Treatment × 2011 × Right	-0.130	0.052	-0.010	-0.176
	(0.111)	(0.233)	(0.421)	(0.390)
Treatment × 2013 × Right	-0.143	-0.144	0.095	-0.066
	(0.120)	(0.262)	(0.427)	(0.396)
Observations	9,329	9,099	9,386	9,386
R-squared	0.809	0.765	0.753	0.799

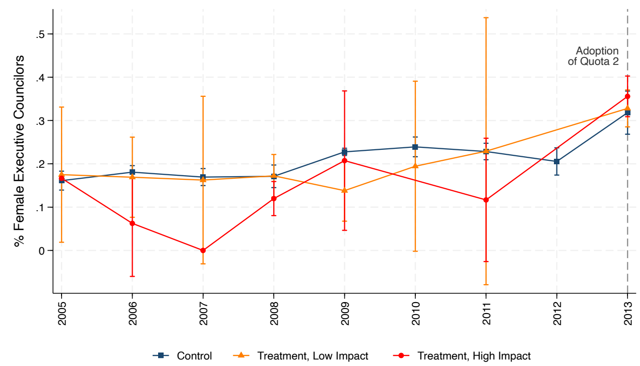
Notes: This table reports the estimates of β_t and δ_t from Equation 2, estimated for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election years 2005–13, before the implementation of the third gender quota system. The dependent variables are the share of female councilors in column (1), the share of executive councilors in column (2), the indicator for female vice mayors in column (3), and the indicator for female mayors in column (4). I classify municipalities as left or right wing depending on the modal highest-vote-receiving party in the 2001, 2006 and 2008 rounds of national elections. The right-wing category includes center/Christian, right-wing and far-right parties. The treatment group includes municipalities with more than 5,000 residents. The control group includes municipalities with more fewer 5,000 residents. β_{2012} and δ_{2012} are normalized to zero. All regressions include controls for year fixed effects, municipality fixed effects, population, and the share of female residents. Standard errors are robust to heteroskedasticity and clustered at the municipality level. * p<0.1, ** p<0.05, *** p<0.01.

Figure C.5: The Heterogeneous Effect of the Second Gender Quota System in Low- and High-Impact Municipalities

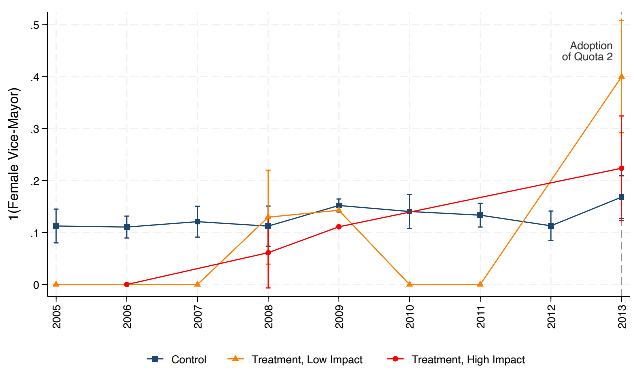
(a) Heterogeneous Effect on Female Councilors



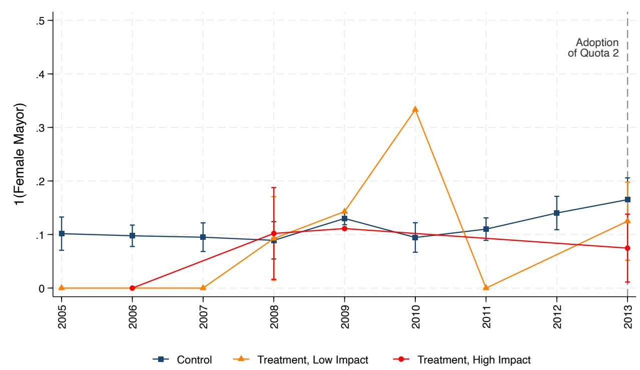
(b) Heterogeneous Effect on Female Executive Councilors



(c) Heterogeneous Effect on Female Vice Mayors



(d) Heterogeneous Effect on Female Mayors



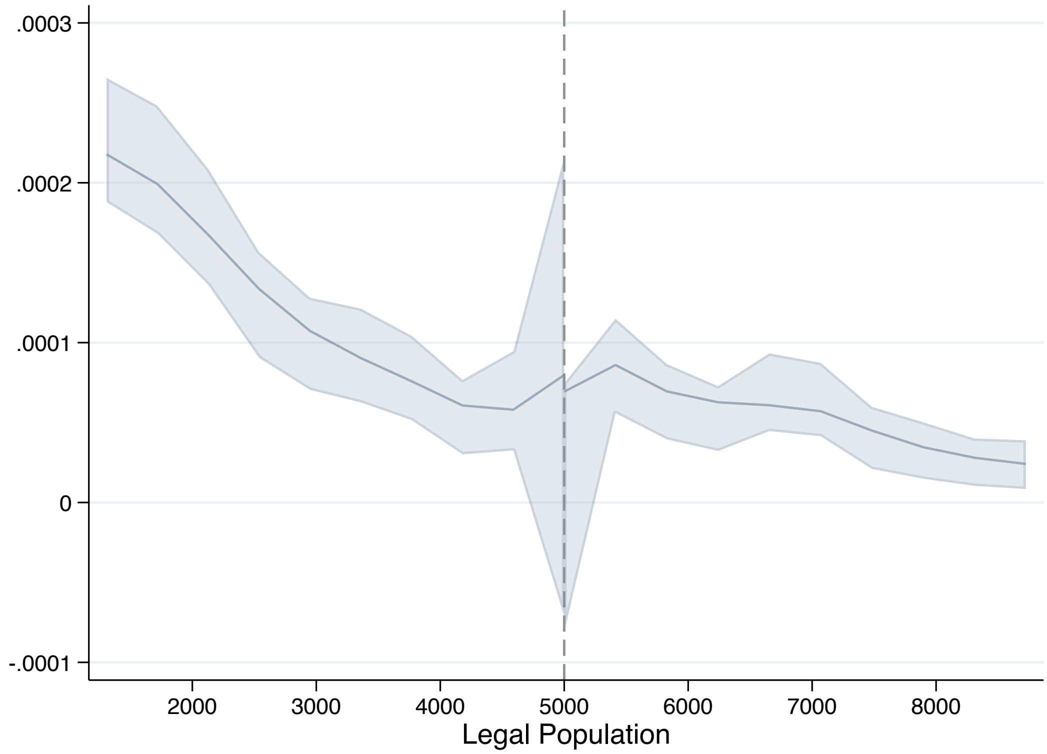
Notes: This figure shows the average shares of female councilors (panel [a]), executive councilors (panel [b]), vice mayors (panel [c]), and mayors (panel [d]) in election years 2005–13, separately for high-impact, low-impact and control municipalities. The graph is interrupted in 2013 to isolate the effect of the second gender quota system from the effect of the third gender quota system, that took effect in 2014. I classify treated municipalities, that is, municipalities with more than 5,000 residents, as low or high impact depending on whether their normalized change in the average share of female councilors between the quota (2013) and pre-quota (2007–12) election years is above or below the median change of 0.21 p.p. The average for each year is calculated over the sample of municipalities with fewer than 15,000 residents in non-autonomous regions that held elections during that year. The solid vertical line represents the year in which the second gender quota system was implemented: 2013. Shaded areas correspond to 95% robust confidence intervals. Only those within a range of [-0.1;0.7] are reported to guarantee the readability of the graph.

Table C.5: The Heterogeneous Effect of the Second Gender Quota System in Low- and High-Impact Municipalities

Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
High Impact × 2005	0.095	0.398	-0.244	-0.105
	(0.114)	(0.407)	(0.318)	(0.335)
High Impact × 2006	0.044	0.030	-0.026	-0.009
	(0.076)	(0.244)	(0.123)	(0.129)
High Impact × 2007	-0.043	0.124	-0.487	0.146
	(0.086)	(0.325)	(0.364)	(0.428)
High Impact × 2008	0.009	0.186	-0.104	-0.013
	(0.072)	(0.258)	(0.299)	(0.330)
High Impact × 2009	-0.038	0.291	-0.181	-0.078
	(0.098)	(0.315)	(0.565)	(0.488)
High Impact × 2010	0.101	0.292	0.275	-0.485
	(0.073)	(0.295)	(0.355)	(0.503)
High Impact × 2013	0.174**	0.266	-0.226	-0.086
	(0.068)	(0.256)	(0.288)	(0.325)
Observations	313	312	314	314
R-squared	0.913	0.693	0.578	0.576

Notes: This table reports the estimates of β_t from Equation 3, estimated for the sample of treated municipalities with fewer than 15,000 residents in non-autonomous regions in election years 2005–13, before the implementation of the third gender quota system. The dependent variables are the share of female councilors in column (1), the share of executive councilors in column (2), the indicator for female vice mayors in column (3), and the indicator for female mayors in column (4). I classify treated municipalities, that is, municipalities with more than 5,000 residents, as low or high impact depending on whether their normalized change in the average share of female councilors between the quota (2013) and pre-quota (2007–12) election years is above or below the median change of 0.21 p.p. β_{2011} is normalized to zero. As there are no low-impact observations in 2012, β_{2012} is not identified. All regressions include controls for year and municipality fixed effects, population and share of female residents. Standard errors are robust to heteroskedasticity and clustered at the municipality level. * p<0.1, ** p<0.05, *** p<0.01.

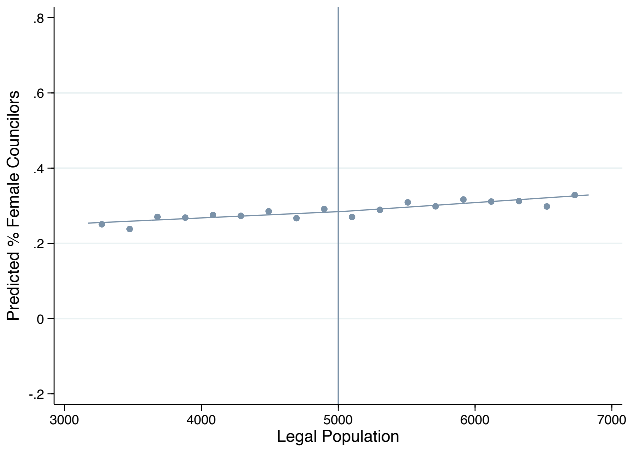
Figure C.6: Manipulation of the Running Variable for the Analysis of the Second Gender Quota System



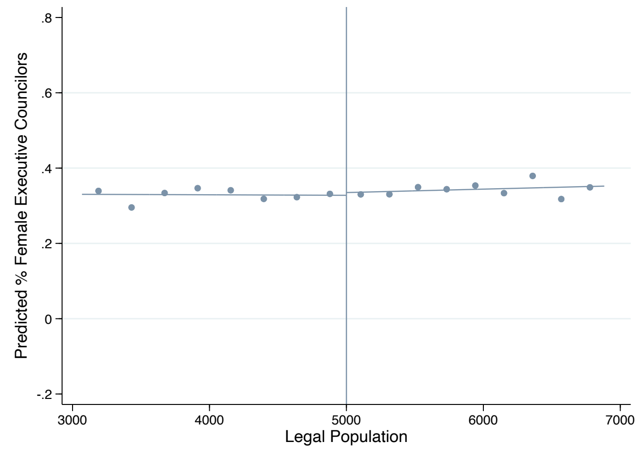
This figure shows the density of the running variable, legal population, around the 5,000-resident cutoff used in the RD analysis. The estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. Using the local polynomial density estimator proposed in Cattaneo et al. (2018), I test the hypothesis that the running variable is smooth at the cutoff. The p-value of 0.364 indicates that I cannot reject the null hypothesis of no manipulation of the running variable around the cutoff.

Figure C.7: The Effect of the Second Gender Quota System on the Outcomes Predicted by Pre-Quota Municipality Characteristics

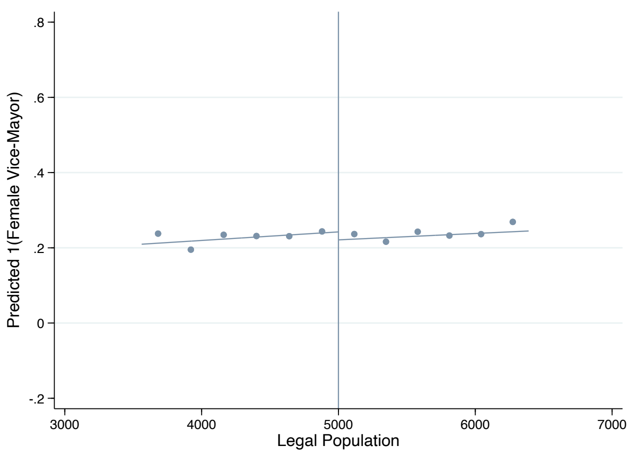
(a) Effect on the Predicted % Female Councilors



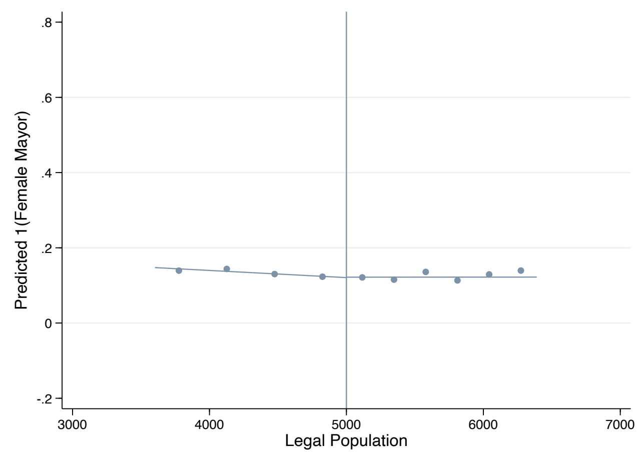
(b) Effect on the Predicted % Executive Councilors



(c) Effect on the Predicted 1(Female Vice Mayor)



(d) Effect on the Predicted 1(Female Mayor)



Notes: This figure shows the binned averages of the predicted share of female councilors (panel [a]), the predicted share of female executive councilors (panel [b]), the predicted indicator for female vice mayors (panel [c]), and the predicted indicator for female mayors (panel [d]) against legal population, and a local first-degree polynomial equation on both sides of the 5,000-resident cutoff. The outcomes are predicted by the following municipality characteristics: share of female residents, area, altitude, share of residents with secondary school diploma, share of residents with university degree, employment rate, unemployment rate, log income per capita, number of nonprofit organizations and firms per thousand residents. The estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. Municipalities to the left of the cutoff were not subject to the quotas, while those to the right were. The corresponding RD estimates are reported in Table C.6.

Table C.6: The Effect of the Second Gender Quota System on the Outcomes Predicted by Pre-Quota Municipality Characteristics

Outcome:	(1) Predicted % Female Councilors	(2) Predicted % Female Executive Councilors	(3) Predicted 1(Female Vice-Mayor)	(4) Predicted 1(Female Mayor)
RD_Estimate	-0.000	0.008	-0.021	0.001
	(0.020)	(0.025)	(0.023)	(0.024)
Observations	461	461	461	461
Obs in bandwidth	118	124	82	80
Bandwidth size	1834	1938	1451	1405
Lower 95% CI	-0.0545	-0.0556	-0.0789	-0.0545
Upper 95% CI	0.0447	0.0669	0.0297	0.0604

Notes: This table reports the RD estimates of the causal effect of the second gender quota system on the share of female councilors (column 1), the share of female executive councilors (column 2), the indicator for female vice mayors (column 3), and the indicator for female mayors (column 4) predicted by the following municipality characteristics: share of female residents, area, altitude, share of residents with secondary school diploma, share of residents with university degree, employment rate, unemployment rate, log income per capita, number of nonprofit organizations and firms per thousand residents. The estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. The running variable is legal population, and the cutoff is at 5,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth and the 95% robust-bias corrected confidence interval. The corresponding RD plots are shown in Figure C.7. * p<0.1, ** p<0.05, *** p<0.01.

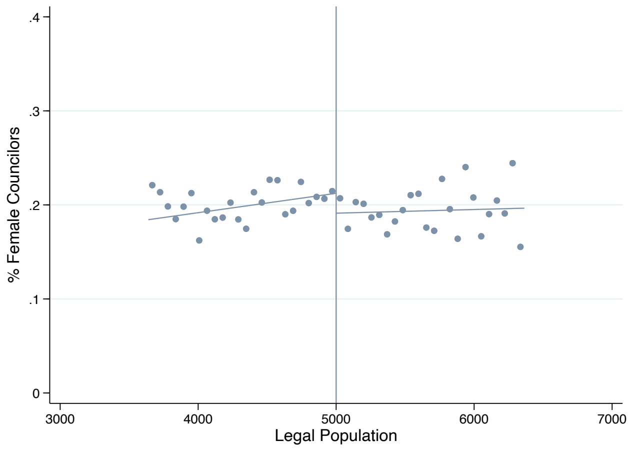
Table C.7: The Effect of the Second Gender Quota System on Pre-Quota Municipality Characteristics

	Coef.	Std.Err.	P-value	Lower 95% CI	Upper 95% CI	Bandwidth	Obs.
% Female Population	0.003	0.004	0.421	-0.007	0.013	1848.589	118
Area (squared km)	1.398	21.274	0.948	-46.971	54.707	1452.724	82
Altitude (m)	6.379	133.790	0.962	-282.647	354.148	1282.661	71
Log Income per Capita	0.065	0.131	0.621	-0.240	0.395	1717.421	104
Unemployment Rate	-0.022	0.031	0.482	-0.097	0.054	1860.064	120
Employment Rate	0.003	0.029	0.927	-0.071	0.069	1770.676	111
% Residents with Secondary School Diploma	0.028**	0.014	0.042	-0.003	0.065	1113.291	63
% Residents with University Degree	0.007	0.009	0.434	-0.013	0.030	1417.760	80
Number of Firms per thousand Residents	-0.045	0.044	0.309	-0.157	0.050	1446.299	82
Number of Nonprofit Organizations per thousand Residents	-0.000	0.004	0.978	-0.009	0.010	1603.177	94

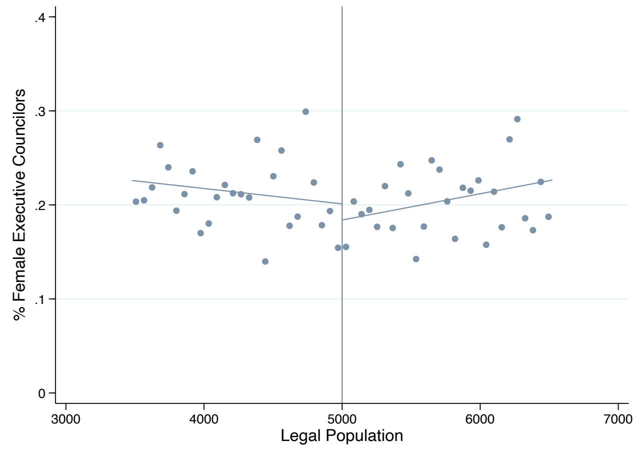
Notes: This table reports the RD estimates of the causal effect of the second gender quota system on a set of pre-quota municipality characteristics. The estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. The running variable is legal population, and the cutoff is at 5,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the conventional p-value, the 95% robust-bias corrected confidence interval, the MSE-optimal bandwidth and the number of observations within the bandwidth. * p<0.1, ** p<0.05, *** p<0.01.

Figure C.8: The Effect of the Second Gender Quota System in the Pre-Quota Period

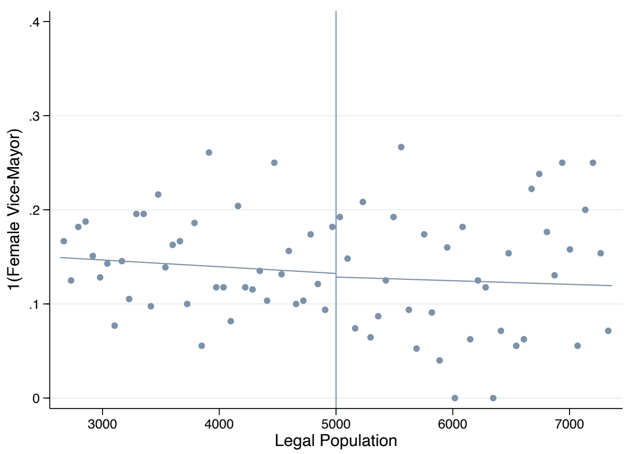
(a) Effect on Female Councilors



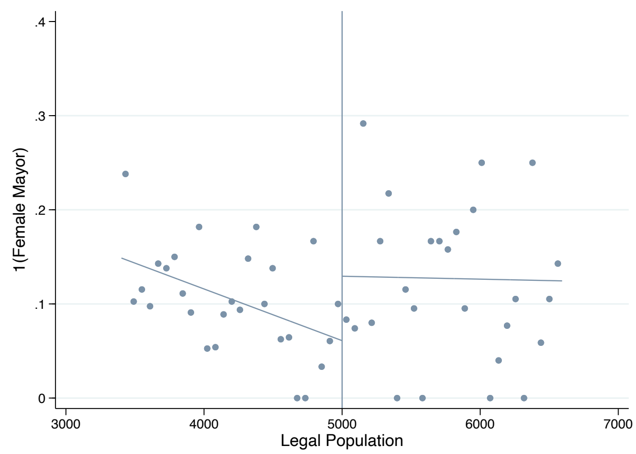
(b) Effect on Female Executive Councilors



(c) Effect on Female Vice Mayors



(d) Effect on Female Mayors



Notes: This figure shows the binned averages of the share of female councilors (panel [a]), the share of female executive councilors (panel [b]), the indicator for female vice mayors (panel [c]), and the indicator for female mayors (panel [d]) in the five years before the introduction of the second gender quota system against legal population, and a local first-degree polynomial equation on both sides of the 5,000-resident cutoff. The estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election years 2007–12. The corresponding RD estimates are reported in Table C.8.

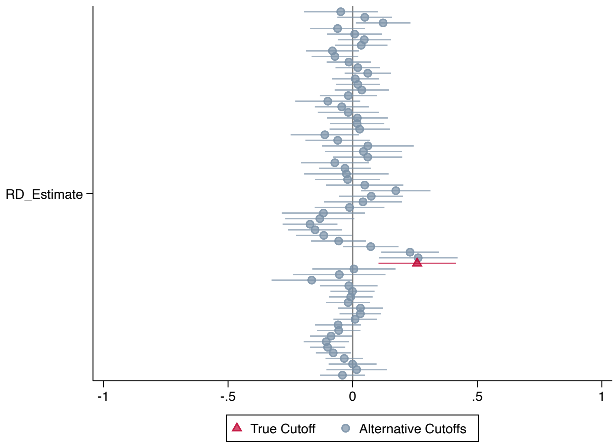
Table C.8: The Effect of the Second Gender Quota System in the Pre-Quota Period

Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
RD_Estimate	-0.021	-0.017	-0.004	0.069*
	(0.015)	(0.026)	(0.034)	(0.037)
Observations	7,295	7,149	7,328	7,328
Obs in bandwidth	1180	1320	2208	1397
Bandwidth size	1365	1525	2365	1602
Lower 95% CI	-0.0606	-0.0779	-0.0752	-0.0174
Upper 95% CI	0.00999	0.0464	0.0842	0.156
Mean Dep. Var. in 2006	0.189	0.186	0.117	0.105
S.d. Dep. Var. in 2006	0.114	0.231	0.322	0.307

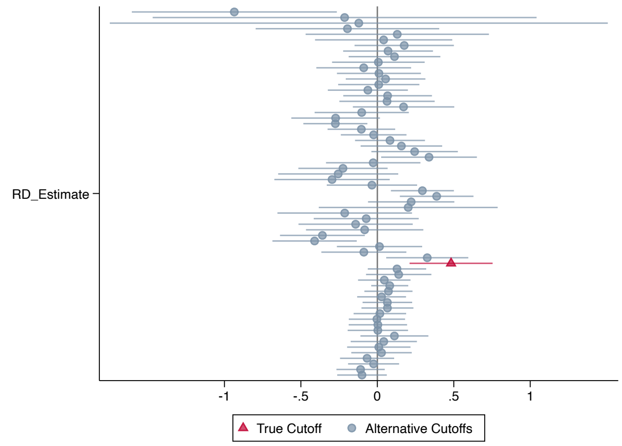
Notes: This table reports the RD estimates of causal effect of the second gender quota system on the share of female councilors (column 1), the share of female executive councilors (column 2), the indicator for female vice mayors (column 3), and the indicator for female mayors (column 4) in the five years before the introduction of the second gender quota system. The estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election years 2007–12. The running variable is legal population, and the cutoff is at 5,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth, the 95% robust-bias corrected confidence interval, and the mean and standard deviation of the dependent variable, calculated over the sample including all municipalities with fewer than 15,000 residents in non-autonomous regions in 2006, the year prior to the beginning of this placebo sample. The corresponding RD plots are shown in Figure C.8. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Figure C.9: The Effect of the Second Gender Quota System at Placebo Cutoffs

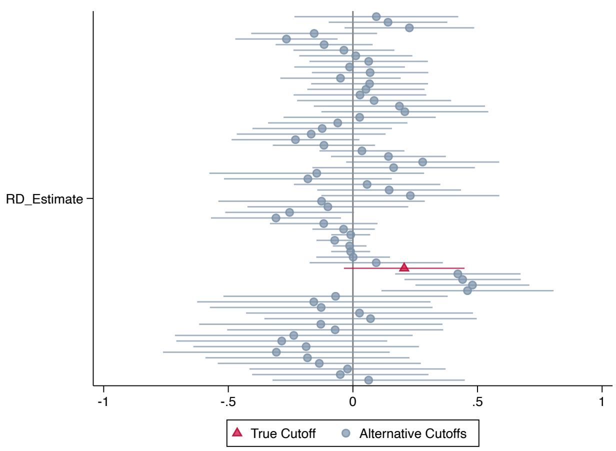
(a) Effect on Female Councilors



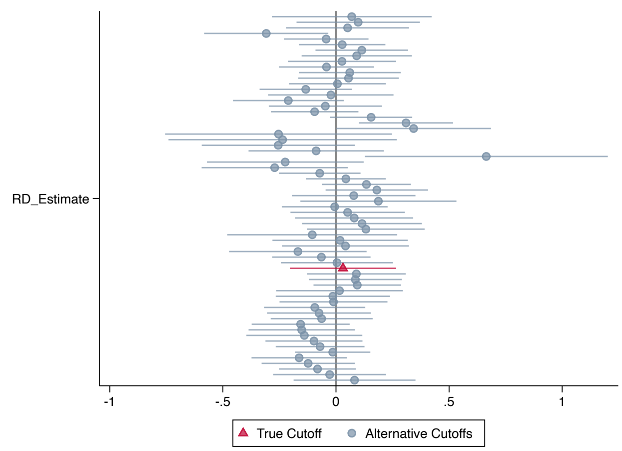
(b) Effect on Female Executive Councilors



(c) Effect on Female Vice Mayors



(d) Effect on Female Mayors



Notes: This figure shows the RD estimates and 95% confidence intervals of the causal effect of the second gender quota system on the share of female councilors (panel [a]), the share of female executive councilors (panel [b]), the indicator for female vice mayors (panel [c]), and the indicator for female mayors (panel [d]) at various cutoffs, ranging from 500 to 7000 with intervals of 100. The triangular marker corresponds to the real quota cutoff (5000). The estimation is performed for the sample of municipalities with fewer than 15,000 residents in non-autonomous regions in election year 2013, before the implementation of the third gender quota system. The figure shows conventional estimates from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator.

Appendix D: Third Gender Quota System

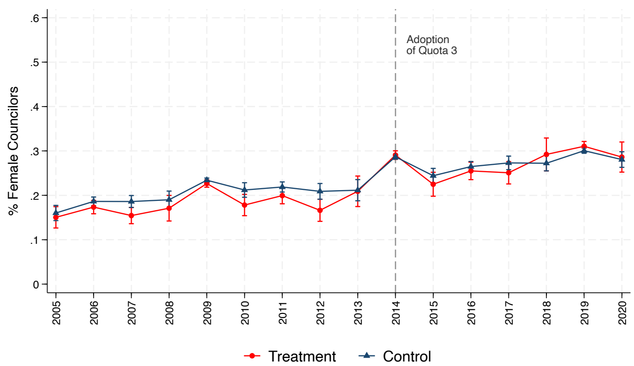
Table D.1: Alternative Specifications for the Analysis of the Third Gender Quota System

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Outcome	% Female Councilors			% Female Executive Councilors			1(Female Vice-Mayor)			1(Female Mayor)		
RD_Estimate	0.038	0.015	0.011	0.146**	0.125***	0.093**	-0.057	-0.016	0.025	0.121	-0.019	0.061
	(0.027)	(0.020)	(0.024)	(0.061)	(0.038)	(0.040)	(0.088)	(0.052)	(0.062)	(0.086)	(0.041)	(0.052)
Observations	7,760	7,500	1,757	7,693	7,433	3,712	7,791	7,530	2,368	7,791	7,530	3,183
Specification	3rd polyn.	Controls	Diff-in-disc	3rd polyn.	Controls	Diff-in-disc	3rd polyn.	Controls	Diff-in-disc	3rd polyn.	Controls	Diff-in-disc
Obs in BW	2374	962	962	2832	1699	1699	2097	1295	1295	1698	1487	1487
Bandwidth size	1054	457.9	445.8	1252	801.9	914.4	942	616.1	596.6	791.6	707.7	783.5
Mean Dep. Var. in 2013	0.225	0.225	0.225	0.228	0.228	0.228	0.145	0.145	0.145	0.126	0.126	0.126
S.d. Dep. Var. in 2013	0.131	0.131	0.131	0.265	0.265	0.265	0.352	0.352	0.352	0.332	0.332	0.332

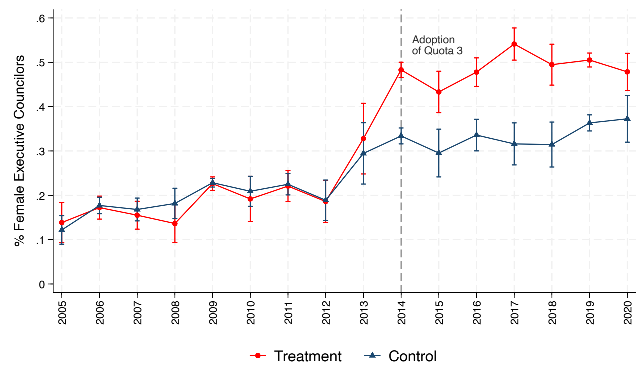
Notes: This table shows the RD estimates of the causal impact of the third gender quota system on the share of female councilors, (columns 1-3), the share of female executive councilors, (columns 4-6), the indicator for female vice mayors, (columns 7-9), and the indicator for female mayors (columns 10-12). Columns 1, 4, 7 and 10 report the estimates from a local third-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. Columns 2, 5, 8 and 11 report the estimates from a linear specification controlling for the following municipality characteristics: share of female residents, area, altitude, share of residents with secondary school diploma, share of residents with university degree, employment rate, unemployment rate, log income per capita, number of nonprofit organizations and firms per thousand residents. In these cases the estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–20. Columns 3, 6, 9 and 12 display the difference-in-discontinuity estimates, θ, from Equation 4. In these cases the estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2005–20. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth, 95% robust-bias corrected confidence intervals, and the mean and standard deviation of the dependent variable, calculated over the sample including all municipalities with fewer than 5,000 residents in non-autonomous regions in 2013, the year before the implementation of the quotas. * p<0.1, ** p<0.05, *** p<0.01.

Figure D.1: The Event-Study Effect of the Third Gender Quota System on Female Representation in Municipal Governments

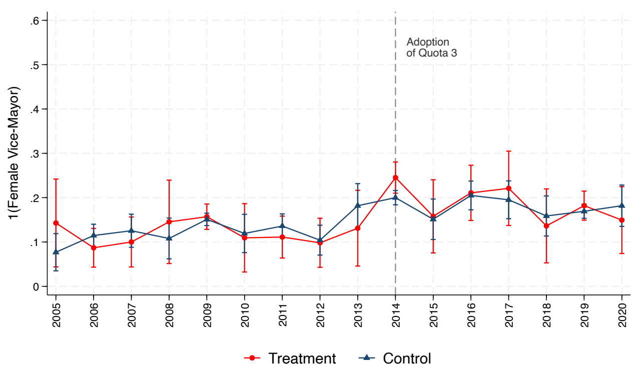
(a) Effect on Female Councilors



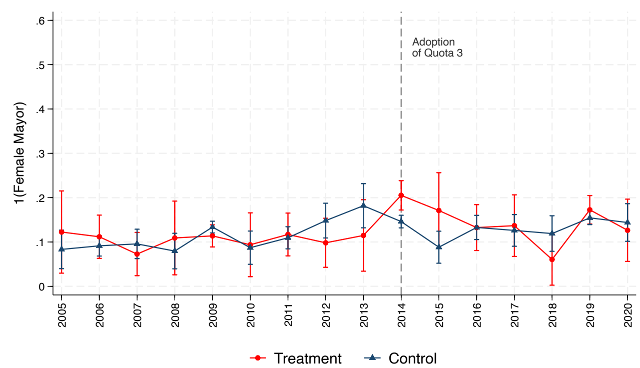
(b) Effect on Female Executive Councilors



(c) Effect on Female Vice Mayors



(d) Effect on Female Mayors



Notes: This figure shows the average shares of female councilors (panel [a]), executive councilors (panel [b]), vice mayors (panel [c]), and mayors (panel [d]) in election years 2005–20, separately for treatment and control municipalities. The average for each year is calculated over the sample of municipalities with fewer than 5,000 residents in non-autonomous regions that held elections during that year. The treatment group includes municipalities with more than 3,000 residents. The control group includes municipalities with fewer than 3,000 residents. The solid vertical line corresponds to the year in which the third gender quota system was implemented: 2014. Shaded areas correspond to 95% robust confidence intervals.

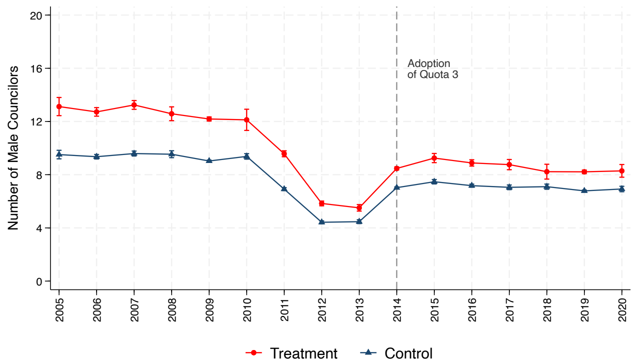
Table D.2: The Event-Study Effect of the Third Gender Quota System on Female Representation in Municipal Governments

Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
Treatment × 2005	-0.025	0.064	0.015	0.072
	(0.044)	(0.104)	(0.119)	(0.115)
Treatment × 2006	-0.034	-0.002	-0.036	0.050
	(0.038)	(0.086)	(0.099)	(0.086)
Treatment × 2007	-0.027	-0.014	0.033	0.042
	(0.041)	(0.099)	(0.117)	(0.090)
Treatment × 2008	-0.011	-0.045	0.028	0.095
	(0.030)	(0.077)	(0.084)	(0.075)
Treatment × 2009	-0.048	-0.072	0.057	0.021
	(0.035)	(0.082)	(0.088)	(0.076)
Treatment × 2010	-0.042	0.041	-0.047	0.047
	(0.043)	(0.101)	(0.121)	(0.109)
Treatment × 2011	-0.040	-0.005	-0.032	0.051
	(0.038)	(0.088)	(0.102)	(0.083)
Treatment × 2012	-0.035	0.000	0.084	0.030
	(0.041)	(0.100)	(0.111)	(0.089)
Treatment × 2014	-0.040	0.074	0.076	0.084
	(0.035)	(0.082)	(0.091)	(0.077)
Treatment × 2015	-0.031	0.156	-0.057	0.087
	(0.040)	(0.097)	(0.115)	(0.108)
Treatment × 2016	-0.031	0.134	0.013	0.038
	(0.037)	(0.087)	(0.103)	(0.085)
Treatment × 2017	-0.021	0.254***	0.070	0.069
	(0.040)	(0.097)	(0.118)	(0.093)
Treatment × 2018	0.013	0.132*	0.024	-0.016
	(0.033)	(0.076)	(0.080)	(0.062)
Treatment × 2019	-0.033	0.061	0.045	0.051
	(0.035)	(0.082)	(0.090)	(0.079)
Treatment × 2020	-0.008	0.128	-0.086	-0.012
	(0.042)	(0.095)	(0.108)	(0.104)
Observations	14,225	13,936	14,292	14,292
R-squared	0.585	0.483	0.423	0.534
P-value: Pre Jointly Zero	0.906	0.750	0.895	0.973
P-value: During Jointly Zero	0.665	0.0774	0.762	0.617
Lower 95% CI for β_{2014}	-0.108	-0.0874	-0.102	-0.0672
Upper 95% CI for β_{2014}	0.0287	0.236	0.253	0.236
Mean Dep. Var. in 2013	0.225	0.228	0.145	0.126
S.d. Dep. Var. in 2013	0.131	0.265	0.352	0.332

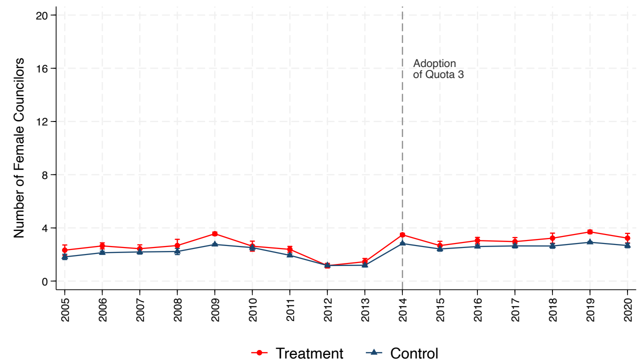
Notes: This table reports the estimates of β_t from Equation 1, estimated for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2005–20. The dependent variables are the share of female councilors in column (1), the share of female executive councilors in column (2), the indicator for female vice mayors in column (3), and the indicator for female mayors in column (4). The treatment group includes municipalities with more than 3,000 residents. The control group includes municipalities with fewer than 3,000 residents. β_{2013} is normalized to zero. All regressions include controls for year fixed effects, municipality fixed effects, population, the share of female residents, and log income per capita. For each regression, the table reports the p-value from the test that all pre-quota coefficients are jointly zero, the p-value from the test that all quota coefficients are jointly zero, the confidence interval for the estimate of β_{2014}, and the mean and standard deviation of the dependent variable, calculated over the sample including all municipalities with fewer than 5,000 residents and in non-autonomous regions in 2013, the year before the implementation of the quotas. Standard errors are robust to heteroskedasticity and clustered at the municipality level. * p<0.1, ** p<0.05, *** p<0.01.

Figure D.2: The Effect of the Third Gender Quota System on the Number of Male and Female Politicians

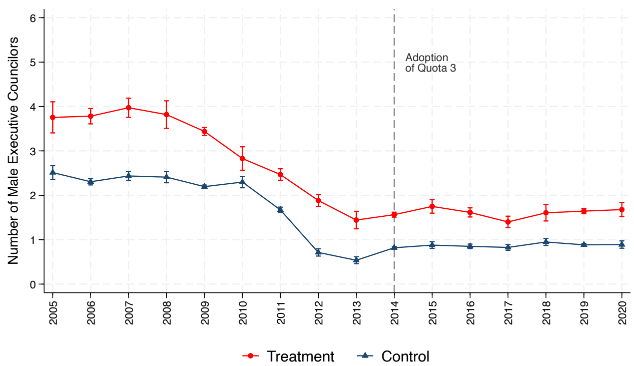
(a) Effect on the Number of Male Councilors



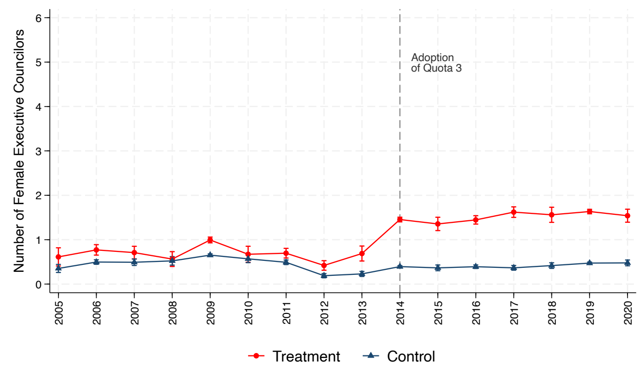
(b) Effect on the Number of Female Councilors



(c) Effect on the Number of Male Executive Councilors



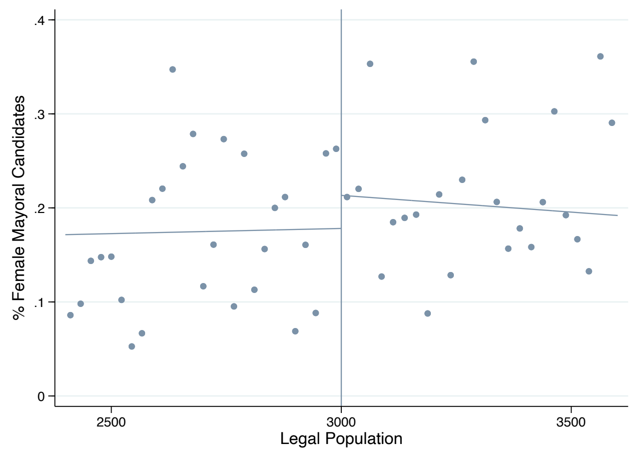
(d) Effect on the Number of Female Executive Councilors



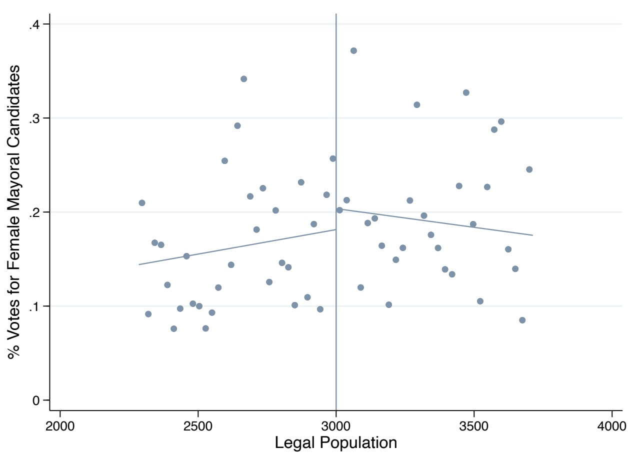
Notes: This figure shows the average numbers of male councilors (panel [a]), female councilors (panel [b]), male executive councilors (panel [c]), and female executive councilors (panel [d]) in election years 2005–20, separately for treatment and control municipalities. The average for each year is calculated over the sample of municipalities with fewer than 5,000 residents in non-autonomous regions that held elections during that year. The treatment group includes municipalities with more than 3,000 residents. The control group includes municipalities with fewer than 3,000 residents. The solid vertical line represents the year in which the third gender quota system was implemented: 2014. Shaded areas correspond to 95% robust confidence intervals.

Figure D.3: The Effect of the Third Gender Quota System on the Mayoral Electoral Process

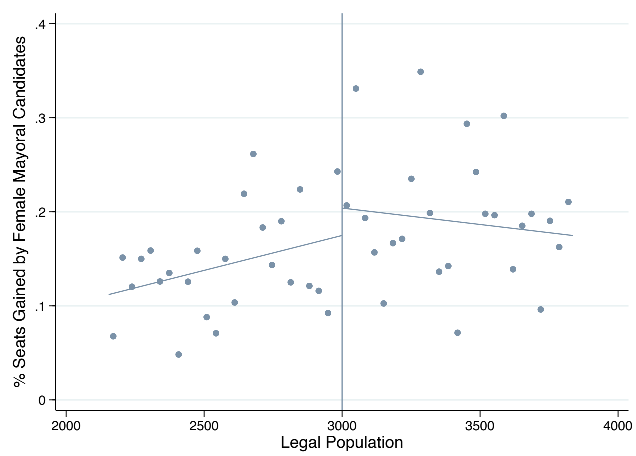
(a) Effect on Female Mayoral Candidates



(b) Effect on the Votes for Female Mayoral Candidates



(c) Effect on the Council Seats of Female Mayoral Candidates



Notes: This figure shows the binned averages of the share of female mayoral candidates (panel [a]), the share of votes received by female mayoral candidates (panel [b]), and the share of municipal-council seats gained by electoral lists headed by female mayoral candidates (panel [c]) against legal population, and a local first-degree polynomial equation on both sides of the 3,000-resident cutoff. The estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–19. Municipalities to the left of the cutoff were not subject to the quotas, while those to the right were. The corresponding RD estimates are reported in Table D.3.

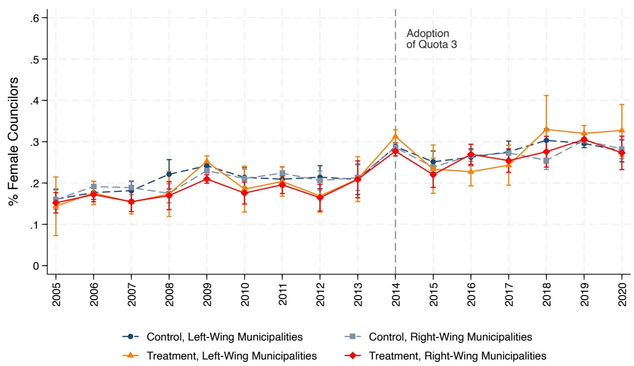
Table D.3: The Effect of the Third Gender Quota System on the Mayoral Electoral Process

Outcome:	(1) % Female Mayoral Candidates	(2) % Votes for Female Mayoral Candidates	(3) % Seats Gained by Female Mayoral Candidates
RD_Estimate	0.035	0.022	0.029
	(0.036)	(0.033)	(0.039)
Observations	7,436	7,436	4,750
Obs in bandwidth	1227	1470	1137
Bandwidth size	601.8	715.8	846.9
95% CI - L	-0.0492	-0.0528	-0.0741
95% CI - U	0.122	0.103	0.108
Mean Dep. Var. in 2013	0.141	0.145	0.153
S.d. Dep. Var. in 2013	0.222	0.256	0.279

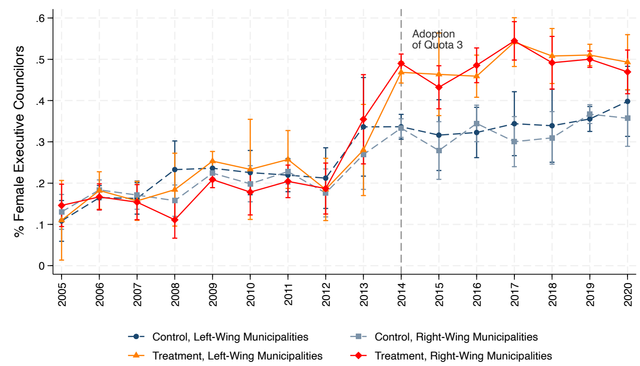
Notes: This table reports the RD estimates of the causal effect of the third gender quota system on the share of female mayoral candidates (column 1), the share of votes received by female mayoral candidates (column 2), and the share of municipal-council seats gained by electoral lists headed by female mayoral candidates (column 3). The estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–19. The running variable is legal population, and the cutoff is at 3,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth, the 95% robust-bias corrected confidence interval, and the mean and standard deviation of the dependent variable, calculated over the sample including all municipalities with fewer than 5,000 residents in non-autonomous regions in 2013, the year before the implementation of the quotas. The corresponding RD plots are shown in Figure D.3. * p<0.1, ** p<0.05, *** p<0.01.

Figure D.4: The Heterogeneous Effects of the Third Gender Quota System in Left- and Right-Wing Municipalities

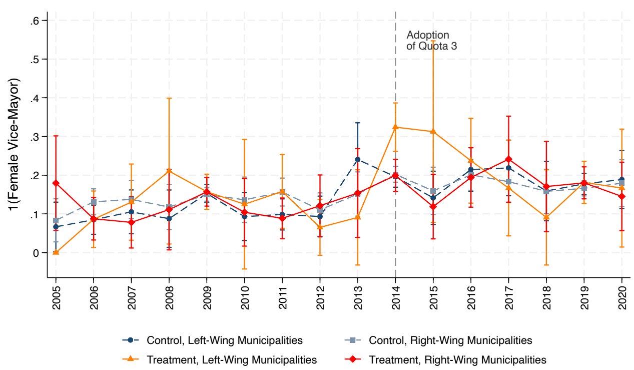
(a) Heterogeneous Effect on Female Councilors



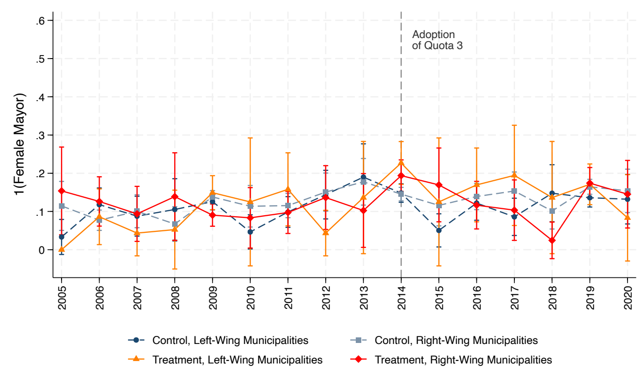
(b) Heterogeneous Effect on Female Executive Councilors



(c) Heterogeneous Effect on Female Vice Mayors



(d) Heterogeneous Effect on Female Mayors



Notes: This figure shows the average shares of female councilors (panel [a]), executive councilors (panel [b]), vice mayors (panel [c]), and mayors (panel [d]) in election years 2005–20 for left- and right- wing treatment municipalities and left- and right-wing control municipalities. I classify municipalities as left or right wing depending on the modal highest-vote-receiving party in the 2001, 2006 and 2008 rounds of national elections. The right-wing category includes center/Christian, right-wing and far-right parties. The average for each year is calculated over the sample of municipalities with fewer than 5,000 residents in non-autonomous regions that held elections during that year. The treatment group includes municipalities with more than 3,000 residents. The control group includes municipalities with fewer than 3,000 residents. The solid vertical line represents the year in which the third gender quota system was implemented: 2014. Shaded areas correspond to 95% robust confidence intervals.

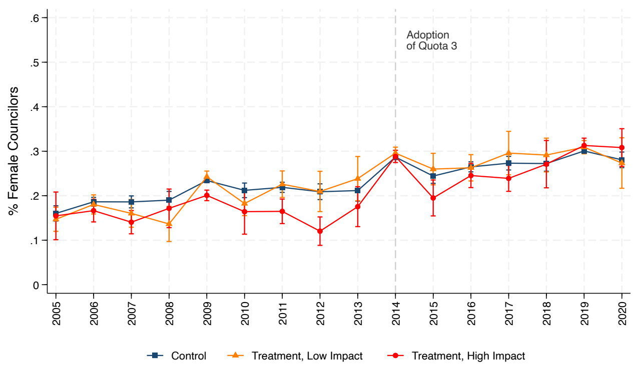
Table D.4: The Heterogeneous Effect of the Third Gender Quota System in Left- and Right-Wing Municipalities

Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
Treatment × 2005	-0.018	0.130	0.194	-0.008
	(0.067)	(0.171)	(0.196)	(0.134)
Treatment × 2006	-0.024	0.149	0.217	-0.032
	(0.060)	(0.137)	(0.182)	(0.119)
Treatment × 2007	-0.034	0.178	0.105	0.007
	(0.064)	(0.153)	(0.202)	(0.127)
Treatment × 2008	-0.033	0.004	0.184	0.043
	(0.046)	(0.139)	(0.176)	(0.105)
Treatment × 2009	-0.034	0.004	0.274	-0.056
	(0.057)	(0.130)	(0.171)	(0.118)
Treatment × 2010	-0.021	0.138	0.291	0.156
	(0.075)	(0.175)	(0.213)	(0.173)
Treatment × 2011	-0.029	0.169	0.259	0.067
	(0.061)	(0.142)	(0.189)	(0.112)
Treatment × 2012	-0.038	0.143	0.113	-0.042
	(0.065)	(0.157)	(0.198)	(0.130)
Treatment × 2014	-0.020	0.115	0.369**	-0.009
	(0.057)	(0.132)	(0.178)	(0.119)
Treatment × 2015	-0.013	0.233	0.316	0.120
	(0.067)	(0.161)	(0.242)	(0.149)
Treatment × 2016	-0.057	0.238*	0.242	0.052
	(0.060)	(0.139)	(0.186)	(0.117)
Treatment × 2017	-0.033	0.376**	0.025	0.117
	(0.066)	(0.154)	(0.203)	(0.156)
Treatment × 2018	-0.006	0.214*	0.067	-0.043
	(0.064)	(0.115)	(0.146)	(0.124)
Treatment × 2019	-0.018	0.134	0.251	-0.043
	(0.058)	(0.133)	(0.177)	(0.124)
Treatment × 2020	0.060	0.163	0.120	-0.027
	(0.069)	(0.153)	(0.197)	(0.135)
Treatment × 2005 × Right	-0.019	-0.093	-0.302	0.078
	(0.087)	(0.214)	(0.242)	(0.204)
Treatment × 2006 × Right	-0.014	-0.228	-0.399*	0.118
	(0.078)	(0.176)	(0.215)	(0.167)
Treatment × 2007 × Right	0.011	-0.311	-0.081	0.052
	(0.083)	(0.199)	(0.244)	(0.175)
Treatment × 2008 × Right	0.034	-0.080	-0.242	0.085
	(0.060)	(0.167)	(0.195)	(0.145)
Treatment × 2009 × Right	-0.019	-0.120	-0.331*	0.103
	(0.072)	(0.165)	(0.198)	(0.153)
Treatment × 2010 × Right	-0.037	-0.130	-0.500*	-0.163
	(0.092)	(0.214)	(0.256)	(0.224)
Treatment × 2011 × Right	-0.016	-0.257	-0.459**	-0.030
	(0.078)	(0.180)	(0.222)	(0.160)
Treatment × 2012 × Right	0.003	-0.234	-0.008	0.111
	(0.085)	(0.201)	(0.237)	(0.174)
Treatment × 2014 × Right	-0.027	-0.064	-0.454**	0.130
	(0.072)	(0.167)	(0.204)	(0.155)
Treatment × 2015 × Right	-0.027	-0.100	-0.527*	-0.069
	(0.085)	(0.202)	(0.274)	(0.205)
Treatment × 2016 × Right	0.043	-0.155	-0.364	-0.030
	(0.077)	(0.177)	(0.222)	(0.164)
Treatment × 2017 × Right	0.019	-0.189	0.086	-0.081
	(0.083)	(0.197)	(0.245)	(0.193)
Treatment × 2018 × Right	0.030	-0.128	-0.060	0.040
	(0.074)	(0.152)	(0.173)	(0.141)
Treatment × 2019 × Right	-0.019	-0.114	-0.318	0.131
	(0.073)	(0.167)	(0.203)	(0.159)
Treatment × 2020 × Right	-0.091	-0.053	-0.302	0.030
	(0.088)	(0.194)	(0.234)	(0.194)
Observations	14,192	13,903	14,259	14,259
R-squared	0.587	0.484	0.426	0.535

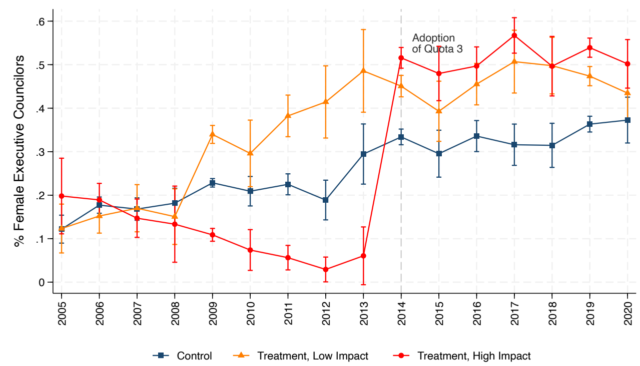
Notes: This table reports the estimates of β_t and δ_t from Equation 2, estimated for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–20. The dependent variables are the share of female councilors in column (1), the share of executive councilors in column (2), the indicator for female vice mayors in column (3), and the indicator for female mayors in column (4). I classify municipalities as left or right wing depending on the highest-vote-receiving party in the 2001, 2006 and 2008 rounds of national elections. The right-wing category includes center/Christian, right-wing and far-right parties. The treatment group includes municipalities with more than 3,000 residents. The control group includes municipalities with fewer than 3,000 residents. β_{2013} and δ_{2013} are normalized to zero. All regressions include controls for year fixed effects, municipality fixed effects, population, the share of female residents, and log income per capita. Standard errors are robust to heteroskedasticity and clustered at the municipality level. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Figure D.5: The Heterogeneous Effect of the Third Gender Quota System in Low- and High-Impact Municipalities

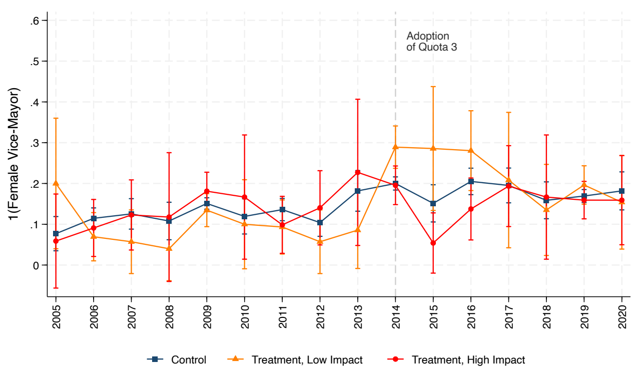
(a) Heterogeneous Effect on Female Councilors



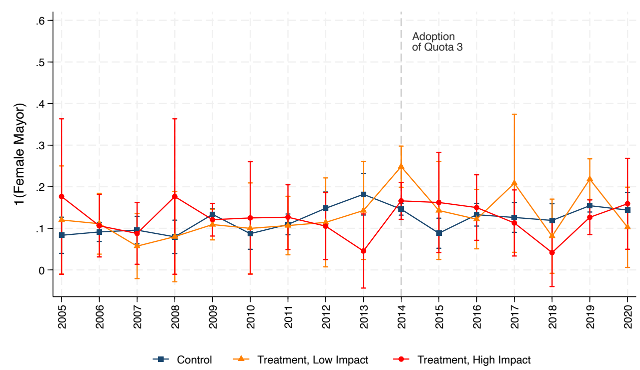
(b) Heterogeneous Effect on Female Executive Councilors



(c) Heterogeneous Effect on Female Vice Mayors



(d) Heterogeneous Effect on Female Mayors



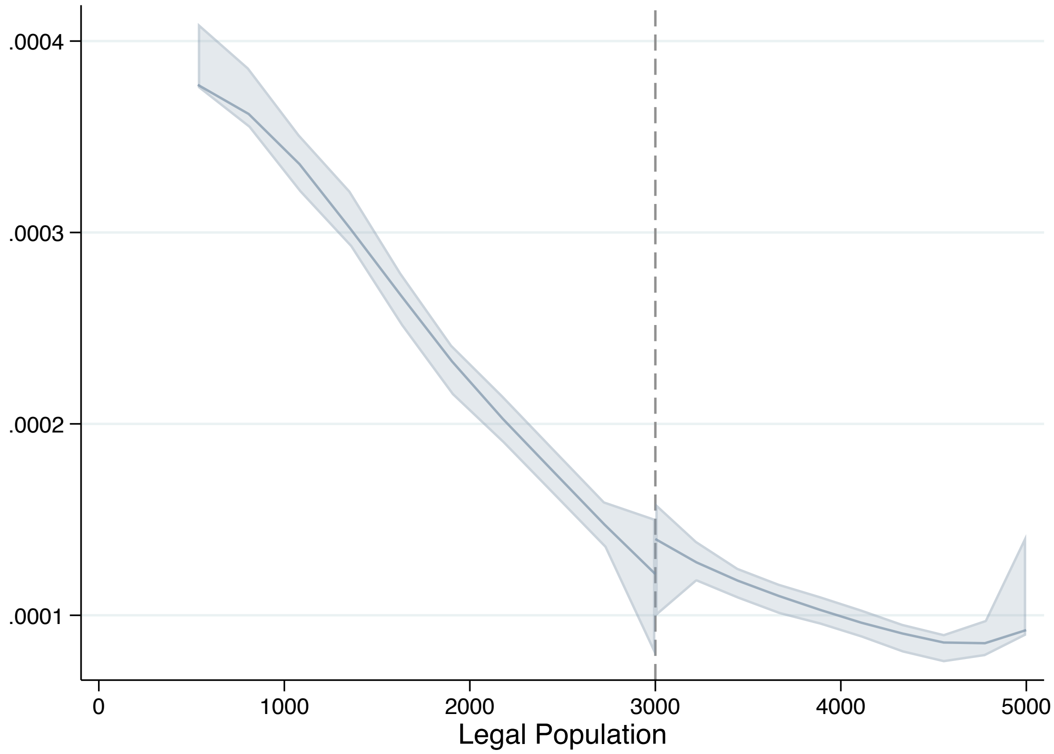
Notes: This figure shows the average shares of female councilors (panel [a]), executive councilors (panel [b]), vice mayors (panel [c]), and mayors (panel [d]) in election years 2005–20, separately for high-impact, low-impact and control municipalities. I classify treated municipalities, that is, municipalities with more than 3,000 residents, as low or high impact depending on whether their normalized change in the average share of female executive councilors between the quota (2014–20) and pre-quota (2008–13) election years is above or below the median change of 0.27 p.p. The average for each year is calculated over the sample of municipalities with fewer than 5,000 residents and in non-autonomous regions that held elections during that year. The solid vertical line represents the year in which the third gender quota system was implemented: 2014. Shaded areas correspond to 95% robust confidence intervals.

Table D.5: The Heterogeneous Effect of the Third Gender Quota System in Low- and High-Impact Municipalities

Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
High Impact × 2005	0.095	0.681***	-0.646***	0.095
	(0.094)	(0.144)	(0.237)	(0.237)
High Impact × 2006	0.097	0.641***	-0.367**	0.082
	(0.069)	(0.115)	(0.187)	(0.161)
High Impact × 2007	0.125	0.644***	-0.265	0.034
	(0.077)	(0.138)	(0.226)	(0.149)
High Impact × 2008	0.064	0.390***	-0.179	0.237*
	(0.045)	(0.100)	(0.174)	(0.132)
High Impact × 2009	0.054	0.318***	-0.218	0.123
	(0.065)	(0.108)	(0.168)	(0.127)
High Impact × 2010	0.056	0.397***	-0.421*	-0.075
	(0.093)	(0.123)	(0.238)	(0.197)
High Impact × 2011	0.060	0.268**	-0.362*	0.126
	(0.069)	(0.116)	(0.189)	(0.153)
High Impact × 2012	0.046	0.259**	-0.230	-0.012
	(0.078)	(0.128)	(0.217)	(0.145)
High Impact × 2014	0.084	0.622***	-0.359**	0.046
	(0.066)	(0.110)	(0.174)	(0.132)
High Impact × 2015	0.037	0.714***	-0.685***	0.013
	(0.083)	(0.118)	(0.216)	(0.183)
High Impact × 2016	0.079	0.626***	-0.505**	0.092
	(0.068)	(0.115)	(0.200)	(0.157)
High Impact × 2017	0.100	0.731***	-0.219	-0.016
	(0.078)	(0.129)	(0.240)	(0.172)
High Impact × 2018	0.026	0.475***	-0.228	0.024
	(0.055)	(0.082)	(0.156)	(0.114)
High Impact × 2019	0.097	0.617***	-0.291*	0.037
	(0.066)	(0.110)	(0.172)	(0.135)
High Impact × 2020	0.127	0.689***	-0.460**	0.052
	(0.086)	(0.116)	(0.200)	(0.170)
Observations	2,747	2,745	2,752	2,752
R-squared	0.640	0.722	0.428	0.517

Notes: This table reports the estimates of β_t from Equation 3, estimated for the sample of treated municipalities with fewer than 5,000 residents and in non-autonomous regions in election years 2005–20. The dependent variables are the share of female councilors in column (1), the share of executive councilors in column (2), the indicator for female vice mayors in column (3), and the indicator for female mayors in column (4). I classify treated municipalities, that is, municipalities with more than 3,000 residents, as low or high impact depending on whether their normalized change in the average share of female executive councilors between the quota (2014–20) and pre-quota (2008–13) election years is above or below the median change of 0.27 p.p. β_{2013} is normalized to zero. All regressions include controls for year fixed effects, municipality fixed effects, population, share of female residents and log income per capita. Standard errors are robust to heteroskedasticity and clustered at the municipality level. * p<0.1, ** p<0.05, *** p<0.01.

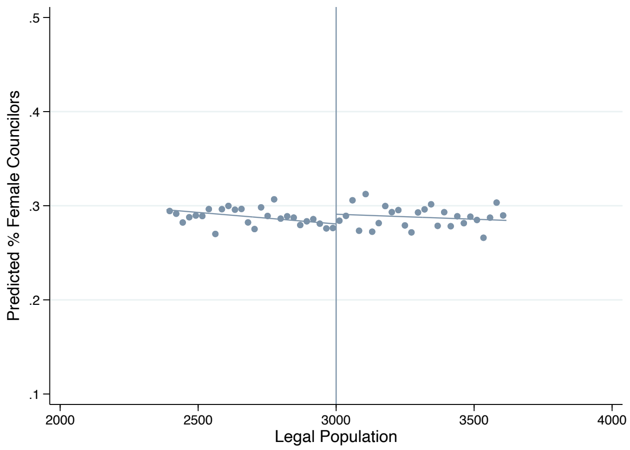
Figure D.6: Manipulation of the Running Variable for the Analysis of the Third Gender Quota System



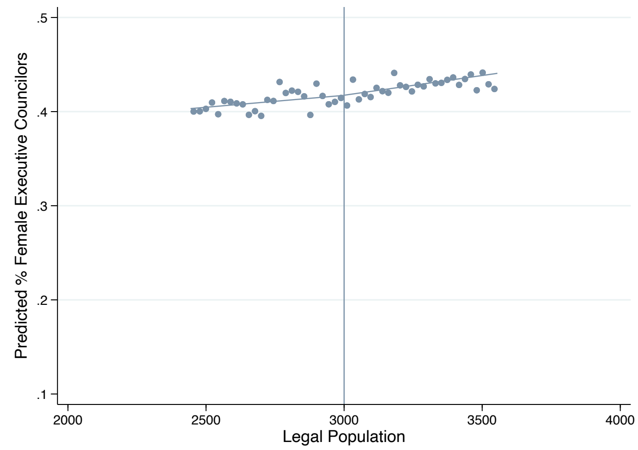
This figure shows the density of the running variable, legal population, around the 3,000-resident cutoff used in the RD analysis. The estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–20. Using the local polynomial density estimator proposed in Cattaneo et al. (2018), I test the hypothesis that the running variable is smooth at the cutoff. The p-value of 0.549 indicates that I cannot reject the null hypothesis of no manipulation of the running variable around the cutoff.

Figure D.7: The Effect of the Third Gender Quota System on the Outcomes Predicted by Pre-Quota Municipality Characteristics

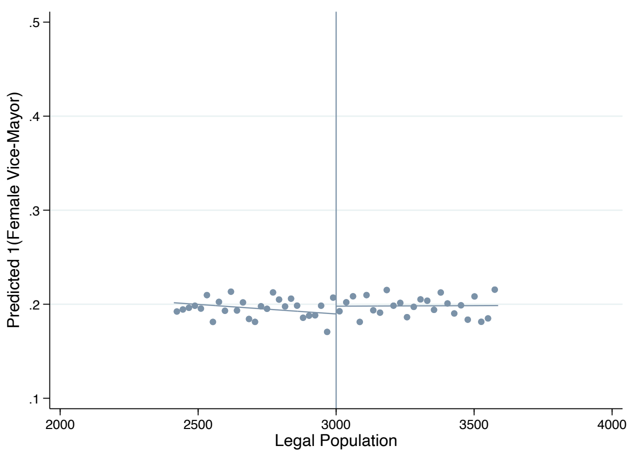
(a) Effect on the Predicted % Female Councilors



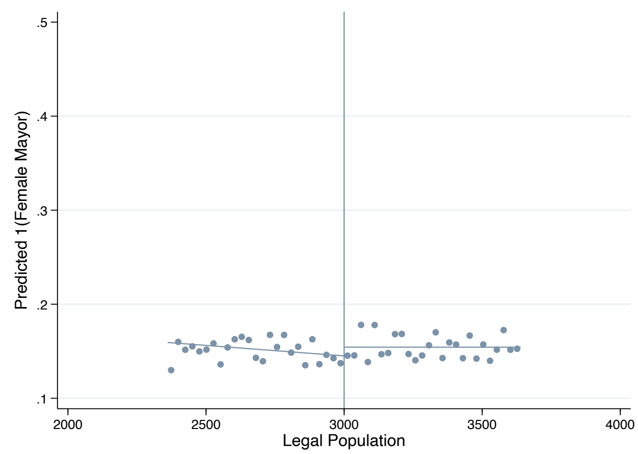
(b) Effect on the Predicted % Female Executive Councilors



(c) Effect on the Predicted 1(Female Vice Mayor)



(d) Effect on the Predicted 1(Female Mayor)



Notes: This figure shows the binned averages of the predicted share of female councilors (panel [a]), the predicted share of female executive councilors (panel [b]), the predicted indicator for female vice mayors (panel [c]), and the predicted indicator for female mayors (panel [d]) against legal population, and a local first-degree polynomial equation on both sides of the 3,000-resident cutoff. The outcomes are predicted by the following municipality characteristics: share of female residents, area, altitude, share of residents with secondary school diploma, share of residents with university degree, employment rate, unemployment rate, log income per capita, number of nonprofit organizations and firms per thousand residents. The estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–20. Municipalities to the left of the cutoff were not subject to the quotas, while those to the right were. The corresponding RD estimates are reported in Table D.6.

Table D.6: The Effect of the Third Gender Quota System on the Outcomes Predicted by Pre-Quota Municipality Characteristics

Outcome:	(1) Predicted % Female Councilors	(2) Predicted % Female Executive Councilors	(3) Predicted 1(Female Vice-Mayor)	(4) Predicted 1(Female Mayor)
RD_Estimate	0.010***	0.000	0.008**	0.009**
	(0.004)	(0.004)	(0.004)	(0.005)
Observations	7,530	7,530	7,530	7,530
95% CI - L	0.00336	-0.00676	0.000877	0.000682
95% CI - U	0.0200	0.00927	0.0187	0.0211
Obs in bandwidth	1299	1168	1240	1346
Bandwidth size	617.7	556.3	588.5	639.9

Notes: This table reports the RD estimates of the causal effect of the third gender quota system on the share of female councilors (column 1), the share of female executive councilors (column 2), the indicator for female vice mayors (column 3), and the indicator for female mayors (column 4) predicted by the following municipality characteristics: share of female residents, area, altitude, share of residents with secondary school diploma, share of residents with university degree, employment rate, unemployment rate, log income per capita, number of nonprofit organizations and firms per thousand residents. The estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–20. The running variable is legal population, and the cutoff is at 3,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth and the 95% robust-bias corrected confidence interval. The corresponding RD plots are shown in Figure D.7. * p<0.1, ** p<0.05, *** p<0.01.

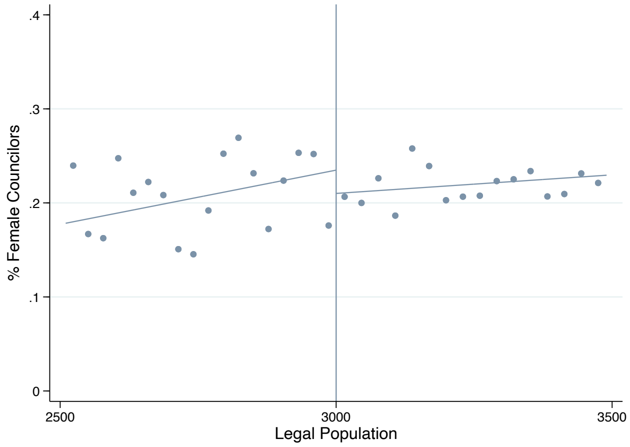
Table D.7: The Effect of the Third Gender Quota System on Pre-Quota Municipality Characteristics

	Coef.	Std.Err	P-value	Lower 95% CI	Upper 95% CI	Bandwith	Obs.
% Female Population	0.000	0.001	0.939	-0.002	0.003	745.692	1588.000
Area (squared km)	2.714	3.299	0.411	-5.046	10.545	603.070	1265.000
Altitude (m)	-12.456	27.106	0.646	-82.077	44.533	455.134	965.000
Log Income per Capita	0.068**	0.029	0.018	0.014	0.143	514.930	1076.000
Unemployment Rate	-0.009*	0.005	0.071	-0.022	0.001	730.314	1544.000
Employment Rate	0.015**	0.006	0.019	0.003	0.031	614.888	1291.000
% Residents with Secondary School Diploma	0.001	0.004	0.804	-0.008	0.010	613.899	1289.000
% Residents with University Degree	-0.000	0.003	0.865	-0.007	0.005	498.047	1044.000
Number of Firms per thousand Residents	-0.004	0.005	0.411	-0.016	0.008	599.844	1257.000
Number of Nonprofit Organizations per thousand Residents	0.001	0.001	0.370	-0.001	0.002	735.990	1553.000

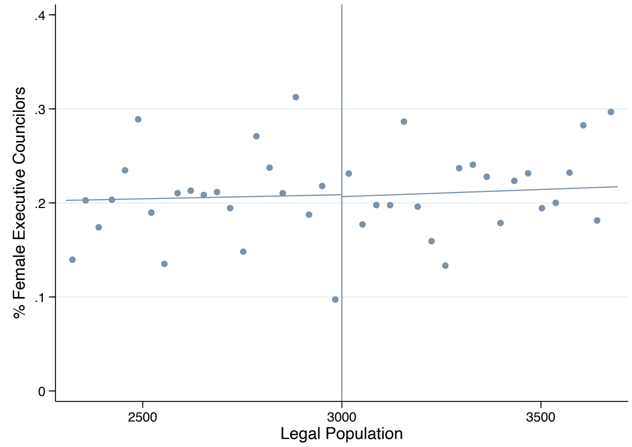
Notes: This table reports the RD estimates of the causal effect of the third gender quota system on a set of pre-quota municipality characteristics. The estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–20. The running variable is legal population, and the cutoff is at 3,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the conventional p-value, the 95% robust-bias corrected confidence interval, the MSE-optimal bandwidth and the number of observations within the bandwidth. * p<0.1, ** p<0.05, *** p<0.01.

Figure D.8: The Effect of the Third Gender Quota System in the Pre-Quota Period

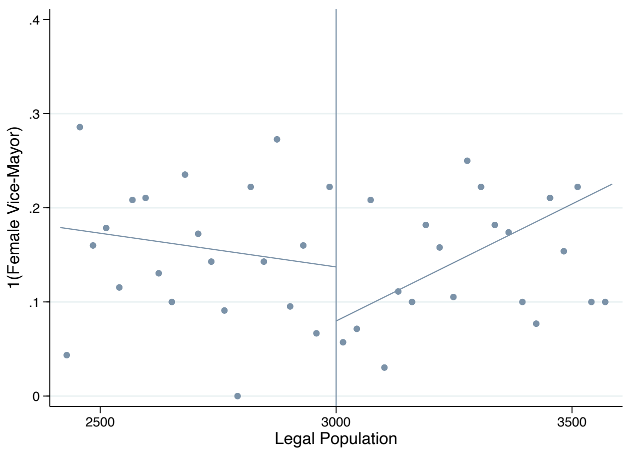
(a) Effect on Female Councilors



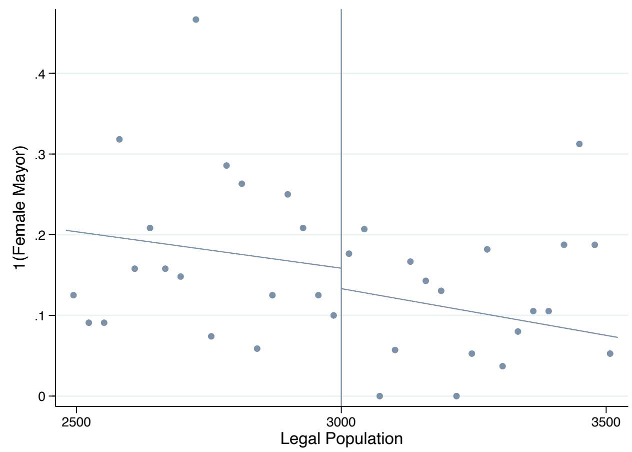
(b) Effect on Female Executive Councilors



(c) Effect on Female Vice Mayors



(d) Effect on Female Mayors



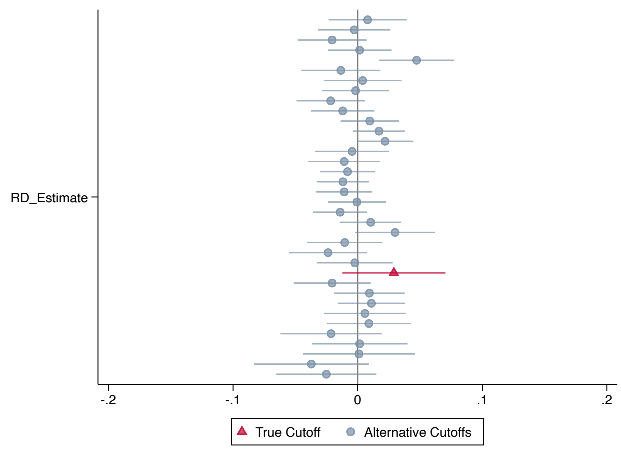
Notes: This figure shows the binned averages of the share of female councilors (panel [a]), the share of female executive councilors (panel [b]), the indicator for female vice mayors (panel [c]), and the indicator for female mayors (panel [d]) in the five years before the introduction of the third gender quota system against legal population, and a local first-degree polynomial equation on both sides of the 3,000-resident cutoff. The estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2008–13. The corresponding RD estimates are reported in Table D.8.

Table D.8: The Effect of the Third Gender Quota System in the Pre-Quota Period

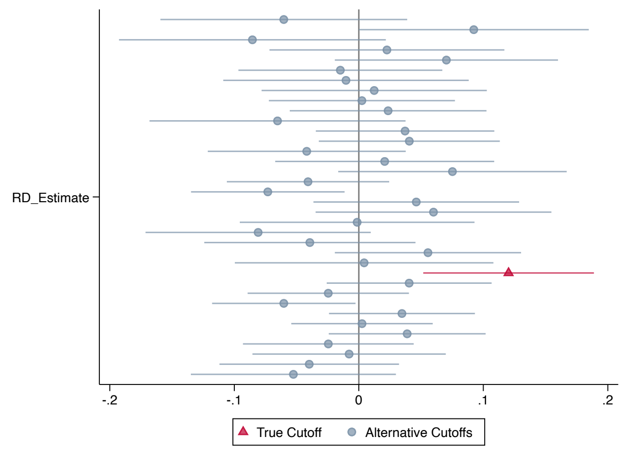
Outcome:	(1) % Female Councilors	(2) % Female Executive Councilors	(3) 1(Female Vice-Mayor)	(4) 1(Female Mayor)
RD_Estimate	-0.025	-0.002	-0.057	-0.026
	(0.020)	(0.033)	(0.048)	(0.057)
Observations	5,149	4,926	5,169	5,169
Obs in bandwidth	706	1023	856	762
Bandwidth size	491	693.8	586.9	522.6
95% CI - L	-0.0769	-0.0845	-0.172	-0.136
95% CI - U	0.0131	0.0699	0.0513	0.122
Mean Dep. Var. in 2007	0.197	0.190	0.115	0.108
S.d. Dep. Var. in 2007	0.115	0.244	0.319	0.310

Notes: This table reports the RD estimates of causal effect of the third gender quota system on the share of female councilors (column 1), the share of female executive councilors (column 2), the indicator for female vice mayors (column 3), and the indicator for female mayors (column 4) in the five years before the introduction of the third gender quota system. The estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2008–13. The running variable is legal population, and the cutoff is at 3,000 residents. The table shows conventional estimates and standard errors from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator. For each regression, the table reports the total number of observations, the number of observations within the bandwidth, the size of the bandwidth, the 95% robust-bias corrected confidence interval, and the mean and standard deviation of the dependent variable, calculated over the sample including all municipalities with fewer than 5,000 residents in non-autonomous regions in 2007, the year prior to the beginning of this placebo sample. The corresponding RD plots are shown in Figure D.8. * p<0.1, ** p<0.05, *** p<0.01.

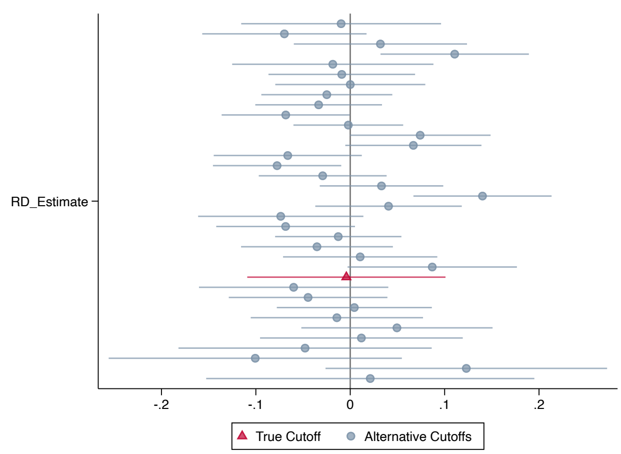
Figure D.9: The Effect of the Third Gender Quota System at Placebo Cutoffs



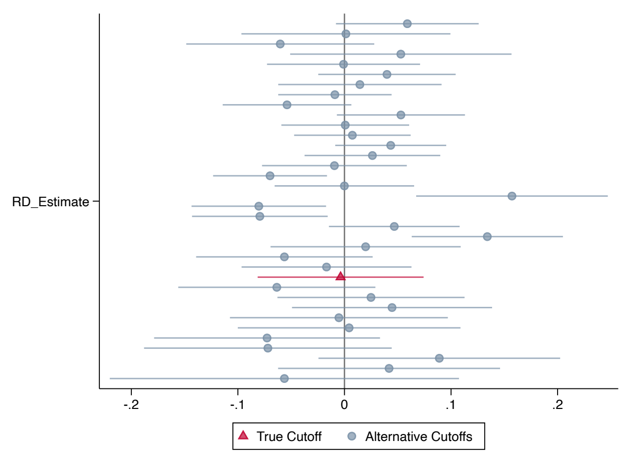
(a) Effect on Female Councilors



(b) Effect on Female Executive Councilors



(c) Effect on Female Vice Mayors



(d) Effect on Female Mayors

Notes: This figure illustrates the RD estimates and confidence intervals of the causal effect of the third gender quota system on the share of female councilors (panel [a]), the share of female executive councilors (panel [b]), the indicator for female vice mayors (panel [c]), and the indicator for female mayors (panel [d]) at various cutoffs, ranging from 500 to 4000 with intervals of 100. The triangular marker corresponds to the real quota cutoff (3000). The estimation is performed for the sample of municipalities with fewer than 5,000 residents in non-autonomous regions in election years 2014–20. The figure shows conventional estimates from a local first-degree polynomial equation in which the observations within the MSE-optimal bandwidth are weighted using a triangular kernel density estimator.