

The effectiveness of a gender quota in Portuguese local elections: a difference-in-discontinuity approach.

Master Thesis Policy Economics*

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Abstract

In 2006, Portugal implemented a political gender quota targeted at the candidate lists. This thesis causally examines how this quota and its recent amendment in 2021 affected female political representation, voter behaviour, council quality and policies in municipalities. Municipalities are especially interesting since they are characterized by low female representation. Employing a difference-in-discontinuity method, this paper finds that the quota was only effective in increasing female council members in the first two elections, by 10 p.p. on average. Additionally, non-compliance significantly reduced the quota's effectiveness. Further, evidence suggests an increase in the share of female list leaders of on average 13.6 p.p. in the long run. However, no effect is found on the mayor's gender. These findings are explained by a reduction in party bias and the adjustment theory - i.e. parties need time to adjust. Voter behaviour, council characteristics, the budget and its composition are only slightly affected by the quota and its amendment. First, the quota decreased the vote share of independent lists and the number of elected parties. Second, the amendment did not affect the council's quality. Third, the amendment decreased the vote share for left-wing parties, which shifted the mayors from left-wing to right-wing. Fourth, evidence suggests an increase in the budget balance, caused by a decrease in debt repayments and interest payments. Fifth, the quota increased investments in machinery and equipment and acquisition of land while it decreased investments in sewage and rural road significantly in individual elections.

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1 Introduction

Despite its societal importance, women are still underrepresented in politics, especially at the local level and in leadership positions. In the last two decades, gender quotas have been a popular instrument to reduce the scarcity of women in politics. However, causal evidence on the effectiveness and indirect effects of these quotas is limited and shows that the results differ per institutional setting (e.g. Bagues and Campa, 2021; Lassébie, 2020; Spaziani, 2022). Besides, the consequences of implementing gender quotas are a subject of debate. On the one hand, supporters argue that a quota increases female political representation, improves gender norms and biases, shapes policy and improves gender equality among other things (Duflo, 2012; Franceschet et al., 2012; Nayar, 2022; United Nations Development Programme, 2023). On the other hand, opponents argue that quotas are anti-democratic, do not guarantee that women will reach powerful positions and believe women in politics could be stigmatized among other things (BBC News, 2018; Franceschet et al., 2012; Nayar, 2022; O'Brien & Rickne, 2016). The effects of a gender quota are ultimately an empirical question. This research contributes to this debate by empirically studying the effectiveness of the gender quota in Portuguese municipalities

In 2006 Portugal implemented a gender quota to improve female political representation, which required parties to include at least 33.3% of women in their candidate list with at most two consecutive candidates of the same gender. This paper focuses on municipalities, which is especially interesting given the low level of female representation as compared to the national government (European Institute for Gender Equality, 2023).

Theoretically, this quota could increase female political representation in the council via mechanical effects, changes in supply-side factors, and a reduction in party bias or voter bias (e.g. Baskaran and Hessami, 2018; Beaman et al., 2009; Niederle and Vesterlund, 2007). Portugal is characterized by a proportional representation and closed-list system, which minimises parties' and voters' strategic reactions to the quota (Lassébie, 2020), for instance, voters cannot vote strategically to ensure the election of a specific candidate. Substantial effects could induce an improvement in the share of females in leadership positions. Further, the quota induces a shock to the candidate lists and could also adjust stereotypes. Both could affect voter behaviour, which in turn affects the electoral results (e.g. De Paola et al., 2014; Esteve-Volart and Bagues, 2012). Moreover, when effective, the quota affects the elected councillors and hereby potentially their characteristics and quality (e.g. Baltrunaite, Bello, et al., 2014; Besley et al., 2017). For example, the council quality improves if men are replaced with better-skilled women. Lastly, an increase in women in politics allows women to directly partake in policy-making and shift policy towards

their preferences and gender equality (e.g. Chattopadhyay and Duflo, 2004; Lippmann, 2022; Ordine et al., 2023). These effects determine the most important aspects of the effectiveness and relevance of a gender quota.

Therefore, this thesis aims to examine the causal effect of the Portuguese gender quota implementation and its amendment on female political representation, voter behaviour, council characteristics and policies at the municipality level. The quota allows for causal interpretation by employing the difference-in-discontinuity (diff-in-disc) method. This main method combines a Regression Discontinuity Design (RDD) with a difference-in-difference method. This is possible since municipalities with less than 7,500 eligible voters are exempted and the quota was implemented and adjusted within the sample period. The advantages of exploiting a diff-in-disc as compared to an RDD are twofold. First, it controls for sorting, which is not always detected by statistical tests (Eggers et al., 2018). Second, it increases the sample size and hereby allows for reducing the bandwidth and, consequently, the bias. For some variables, the identifying assumption does not hold and the Regression Discontinuity Design (RDD) is employed.

The results show that the quota would have been more effective without non-compliance. Further, the quota was effective in increasing female council members in the short run but ineffective in the long run. Specifically, the share of female councillors increased by on average 10 p.p. in three elections, however, significant effects are only present in the first (+9-12 p.p.) and second (+15-19 p.p.) elections. Moreover, in the long run, suggestive evidence shows an increase in the share of female list leaders by 13.6 p.p. on average. However, the quota did not affect the gender of the mayor, which is the most important decision-maker. Taken together, the results are in line with the adjustment theory, which implies that parties require time to adjust to a quota. Moreover, the results point towards a reduction in party bias, which occurs when a party unfavourably judges a candidate based on gender.

Voter behaviour, council characteristics and the budget composition are slightly affected by the quota and its amendment. First and most importantly, the quota had no significant effect on the quality of the council, in which quality is measured as the education level, the previous occupation and the age of the council members. Second, the vote share of independent lists (-5.1 p.p.) and the number of elected parties (-0.271 - -0.374) decreased due to the quota. Third, the amendment shifted the mayors from left-wing to right-wing (+25-35%) and increased the margin of victory (+11.09 p.p.), both caused by a decrease in the left-wing vote share (+10.8 p.p.). Fourth, the results suggest that the quota increased the budget balance (+193.9%) and is likely caused by a reduction in debt repayments (-33.4%) and interest payments (-49.2%). Fifth, in some individual elections, the quota significantly affected investments in machinery and equipment (+39.8%), acquisition of land (+168.3%), sewage (-73%) and rural road (638-802%).

This thesis is closely related to two strands of literature; literature studying the Portuguese gender quota and literature studying gender quota using the same empirical method. To start with the former, Rodrigues (2022) studies the effects of the same gender quota in Portugal using time series. He finds an increase in female council members but the share of female members does not increase above the legal threshold. To continue to the latter, the effects of a gender quota in Italy (Spaziani, 2022), France (Lassébie, 2020) and Spain (Bagues & Campa, 2021) have been studied using the diff-in-disc method. They all find, even though the magnitudes differ, that a quota increases the share of female council members but not the gender of the mayor. Further, the gender quota did not affect council quality (Bagues & Campa, 2021; Lassébie, 2020), voting behaviour and policies (Bagues & Campa, 2021).

This study contributes to academic research in several ways. Most importantly, the Portuguese gender quota and its amendment have not been studied using a causal method. Studying the Portuguese quota is especially interesting given the institutional setting, relatively low political popularity and municipality power. Moreover, it contributes to the literature by employing a dataset that is richer and larger in most aspects than those of closely related papers. For instance, it allows for testing the identifying assumption for almost all variables, studying the amendment and broadening the scope of research. More specifically, it extends the scope of the research by Rodrigues (2022) and Spaziani (2022) by also studying council quality, voting behaviour and policies. Further, it extends the scope of the research by Lassébie (2020) by also examining voting behaviour and policies. Lastly, voter behaviour is examined more extensively than in the study by Bagues and Campa (2021).

The rest of this thesis is structured as follows. Section 2 describes the institutional setting and the gender quota. Hereafter, related literature is reviewed in Section 3. Further, Sections 4 and 5 describe the empirical methods and data respectively. Section 6 examines the identifying results before discussing the results in Section 7. Moreover, Section 8 analysis the results' sensitivity. Lastly, Section 9 discusses and Section 10 concludes.

2 Institutional context

This section describes the institutional context. It starts with a general description of Portuguese municipalities and their responsibilities in Section 2.1. Hereafter, the municipality election process and the gender quota are presented in Sections 2.2 and 2.3.

2.1 Portuguese municipalities

Portugal consists of 308 municipalities and two autonomous regions, Azores and Madeira, from 2001 onwards. In 2021, the smallest municipality had 384 inhabitants (Corvo), the median municipality had 13,764 inhabitants (Serpa) and the largest municipality had 545,923 inhabitants (Lisbon).

Within these municipalities and regions, two representative branches exist; the Town Council and the Municipal Assembly.¹ The Town Council is responsible for the elaboration and implementation of local policies, which are approved by the Municipal Assembly. Further, the municipality's budget, plan of activities and financial accounts are submitted by the Town Council and approved by the Municipal Assembly (Bohn & Veiga, 2021). This study focuses on the Town Council since this branch is directly elected, elaborates and implements policies and is represented by the mayor.

A municipality's most important decision-maker is the mayor. When the plan of activities has been approved, the mayor decides which plans will be realised first, as well as when they are to be implemented. Further, the mayor leads the Town Council and has more power and responsibilities than the council, to which he assigns tasks. For instance, he has managerial autonomy for responsibilities related to the authorization of contracts, licenses and human resource management (Veiga & Veiga, 2007).

The salary of the mayor and council members is determined by law and depends on the number of eligible voters. The mayor earns 40%, 45% or 50% of the president's salary when the municipality consists of respectively less than 10,000 voters, 10,00-40,000 voters and more than 40,000 voters. Moreover, the mayors of Lisbon and Porto are paid 55% of the president's salary. Furthermore, council members are paid 80% of the salary of the mayor.²

The main responsibilities of municipalities are relatively broad and contain, for instance, primary education, local roads and public transport, municipal police and civil protection, healthcare, housing and water supply and waste (OECD & UCLG, 2014). It is important to note that these public expenditures are all highly visible to voters (Veiga & Pinho, 2007). Further, the municipalities are financially autonomous but are subject to various control mechanisms (Veiga & Veiga, 2019). However, on average 70% of their per capita revenues in 2011 were transfers from the government and the EU and the majority of current expenditures consist of budget items - e.g. municipal employee salaries and water provision. Therefore, Portuguese municipalities have relatively low autonomy concerning revenues (Aidt et al., 2011).

During the sample period, some municipalities were characterized by a high debt level. This resulted in amendments targeted at reducing the debt level to the local finance law for all municipalities, which

¹See Law 169/99 for more information on the legal framework and competencies of these branches.

²See the Statute of Local Elected Law n.º 29/87

were made in 2007 and 2013.³

2.2 Portuguese local elections

Local elections are held once every four years and take place on the same date, which is determined by national authorities and can, therefore, not be manipulated at the municipality level. They consist of the election for the municipal chamber, municipal assembly and parish assembly. The last six elections took place in September or October in 2001, 2005, 2009, 2013, 2017 and 2021.

Both independent lists and (coalitions of) national parties run for the Town Council elections. The five most important parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE).

The elections are characterized by a proportional representation system with a partisan close list. Thus, one only votes for a party and can, therefore, not affect the election of a specific candidate within a party. This strengthens the power of the party leader since the election of a candidate depends on their list position and not on their individual popularity. Additionally, women's political representation is relatively larger in proportional electoral systems, especially when combined with a closed list system (Casas-Arce & Saiz, 2015; Krook, 2018; Matland & Studlar, 1996; Schmidt, 2009; Valdini, 2012). Further, from the 2013 elections onwards, mayors were restricted to serving a maximum of three consecutive terms (Veiga & Veiga, 2019).

The mayor is the first candidate on the list of the party with the most votes. Further, the council size is always odd and depends on the number of eligible voters. Two sizes are present in this research setting; five and seven council members are elected for municipalities with respectively less than 10,000 voters and 10,000-50,000 voters.⁴ These seats are allocated according to the d'Hondt method.⁵

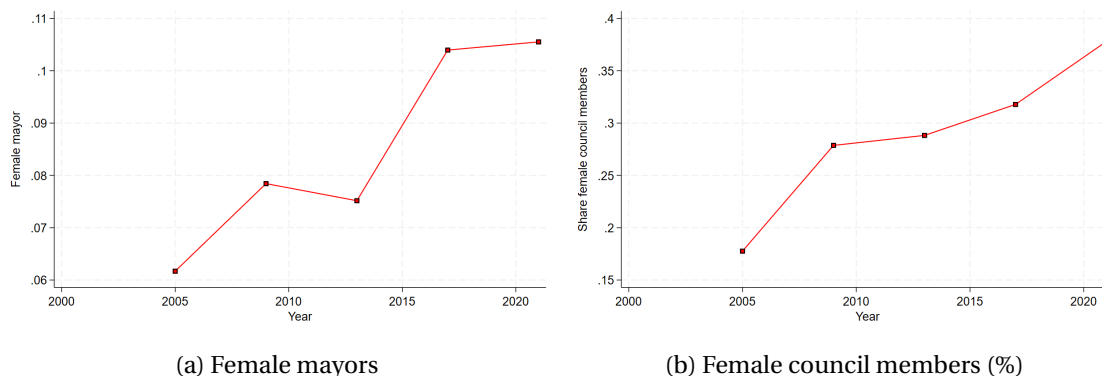
As can be seen in Figure 1, female political representation has been rising since 2005 at the local level, but is still relatively low, especially among mayors. In 2005 6% of all mayors were female and in 2021 10.5% of all mayors were female. Furthermore, female political representation at the council level was 17% in 2005 and 38% in 2021.

³For more information, see Law n.º 2/2007, 15th of January and Law n.º 73/2013, 3rd of September

⁴Article 57.º Law n.º 169/99 18th September.

⁵The allocation using the d'Hondt method works as follows. First, a quotient $\frac{V}{S+1}$ is calculated for each list, in which V is the list's number of votes and S is the seats allocated so far. Thus, initially S is zero. The first seat is allocated to the list with the highest quotient, whereafter this procedure is repeated until all seats are allocated.

Figure 1: Histogram municipalities with less than 15,000 eligible voters



Remarks: for each election year (x-axis), this figure shows the means (y-axis) of (a) a dummy indicating whether the mayor is a female; (b) the share of female council members within a municipality. Only municipalities with less than 15,000 eligible voters are included.

2.3 Gender quota

The political gender quota in Portugal goes back to 1988 when the Socialist Party (PS) implemented the first voluntary party quota and first complied with it in 1999. Between 1998 and 2006, several mandatory gender quotas were proposed by the PS and the Left Bloc (BE) (Espírito-Santo, 2015). When the PS had a majority in parliament the gender quota law, better known as the parity law, was passed in 2006.

The parity law states that both genders should be represented for at least 33.3% in each candidate list and there may not be more than two candidates of the same gender consecutively placed in the final ordering - i.e. a zipper quota.⁶ The election quota applies to the national parliament, European parliament and local governments. When a list does not comply with this law, its campaign subsidies from the federal government are lowered significantly. Further, lists with less than three candidates and municipalities with less than 7,500 eligible voters are exempted from this law.

Several changes have been made to this law in 2017 and 2019. The 2021 election was the first election in which the amendments applied. First, the threshold of 7,500 eligible voters was abolished in 2017. Second, the minimum gender requirement was increased from 33.3% to 40% in 2019. Third, the non-compliance consequences were made stricter in 2019, instead of lowering the campaign budget, non-complying lists are now rejected.⁷

⁶See Organic Law n° 3/2006, 21st August.

⁷For the first, see Organic Law n.º 1/2017, 2nd May. For the second and third, see Organic Law n.º 1/2019, 29th March.

3 Literature review

This section starts with a discussion of the mechanisms affecting female political representation in Section 3.1. Hereafter, Section 3.2 compares this thesis to the literature studying the gender quota in Portugal and gender quota using the same empirical method.

3.1 Mechanisms

The potential mechanisms of a gender quota affecting female political representation, voter behaviour, council characteristics and the municipality budget are analysed theoretically and empirically in respectively Sections 3.1.1 and 3.1.2.

3.1.1 Theoretical

The Portuguese setting is characterized by a proportional representation and closed-list system. This minimises parties' and voters' strategic reactions to the quota (Lassébie, 2020). For instance, voters cannot strategically vote on a candidate to ensure his election.

A gender quota at the candidate lists mechanically increases the number of female councillors. The magnitude of the mechanical effect depends on the gender order on the list and the impact of non-compliance. For instance, assume that parties only place female candidates in third places and receive a maximum number of seats of two. Then, the quota does not increase the number of female councillors.

Three other forces affect the magnitude of the quota's effect on female political representation; voter bias, party bias and supply-side factors. All are related to gender stereotypes and discrimination, in which the latter implies that women are treated less favourably or differentially than males with otherwise identical characteristics in similar circumstances (Bertrand & Duflo, 2017).

A voter bias exists when a voter unfavourably judges a candidate based on gender and can be heterogeneous between parties. Thus, a voter prefers the male candidate even when the female candidate is identical in all other aspects. Various reasons explain this bias. For example, voters have a dislike towards women, believe in traditional gender norms or believe males make better politicians.

Closely related is party bias, which occurs when a party unfavourably judges a candidate based on gender and is generally heterogeneous between parties. Then, parties place fewer women on their lists or place them in a worse position on the zipper list than identical male candidates. Several factors can cause this bias. For instance, parties just prefer males or believe that women are less likely to win elections. This bias can be a strategic response to voter bias, with the intent to win as many seats as possible (Beaman

et al., 2009). Also, party bias can affect voter bias, for instance, by shaping stereotypes.

The last channel via which female political representation is influenced is supply-side factors. A lower supply of female candidates can be driven by differences between men and women. For instance, women could be less likely to compete, underestimate themselves or have non-egalitarian beliefs about women in politics. Then, women are less likely to run.

A gender quota can affect these three factors when it increases female representation in candidate lists and politics. For instance, this increase can influence stereotypes and discrimination or increase the power of women within parties. Also, a female politician can be a role model for potential candidates (Ladam et al., 2018). This can eventually affect female representation in leadership positions.

Besides these direct effects, the quota could also affect voting behaviour, council characteristics and the municipality budget. The expected effects are discussed briefly.

To start, the sign and magnitude of the effects on voter turnout and voting percentages per party depend on the voter preferences concerning female candidates, the relative gender change in the candidate lists and the average quality of the politicians on the list. Further, after one election, the sign and magnitude also depend on the effects on the supply side, voter and party bias. Further, voting behaviour could also be unaffected, for instance, if voters only care about the gender of the list leader - i.e. the potential mayor - and the gender composition of the list leader is unaffected.

A gender quota can also affect council characteristics and, more specifically, quality. The quality is reduced mechanically for political experience. Further, the quality of the council improves if men are replaced with better-skilled women (Baltrunaite, Bello, et al., 2014), for instance, because of party bias. However, it could also reduce the quality of the council if the lack of female representation is due to supply-side factors. It needs to be noted that the council quality effects also influence stereotypes.

Women have different preferences than males and one can, therefore, expect the composition of the municipality budget to change with the female political representation towards expenditures related to female preferences (Chattopadhyay & Duflo, 2004; Clayton & Zetterberg, 2018; Croson & Gneezy, 2009; Lippmann, 2022). However, this effect can diminish if the mayor's gender is unaffected, which is the most important decision-maker.

Further, during the time studied, as discussed in Section 2, Portuguese municipalities had a relatively high debt level and as a response financial laws became stricter. Women can respond differently to high debt levels than men, for instance, because they are more risk-averse (Eckel & Grossman, 2008).

3.1.2 Empirical

The literature confirms that a gender quota increases female political representation in the council but not at the leadership level (e.g. Bagues and Campa, 2021; Lassébie, 2020; Rodrigues, 2022; Spaziani, 2022). However, in some settings, female representation at the leadership level also increases (e.g. De Paola et al., 2010; O'Brien and Rickne, 2016). It is unexplained why these results differ, but it could be related to a difference in countries, periods, quota characteristics and the empirical method.

The presence of voter bias, party bias and supply-side factors are confirmed by the literature, even though the exact mechanism and magnitude differ per study. To start, female representation increases reduces voter bias due to female council members (Bhavnani, 2009) and female mayors (Baskaran & Hessami, 2018; Beaman et al., 2009), for instance, by an improvement of perceptions of female leader effectiveness and by weakening stereotypes about gender roles. Its effect can indeed be heterogeneous, for instance, affecting right-wing candidates relatively more (Eyméoud & Vertier, 2022). Furthermore, party bias also affects female representation (e.g. Casas-Arce and Saiz, 2015; Thomas and Bodet, 2013; Weeks and Baldez, 2015). Moreover, women are less likely to run for or stay in office due to political perseverance (Lassébie, 2020), distaste for competition (Niederle & Vesterlund, 2007; Preece & Stoddard, 2015), election aversion (Kanthak & Woon, 2015), believe they are less qualified (Fox & Lawless, 2004, 2011) and social and political gender norms (Gagliarducci & Paserman, 2011).

To continue to the voter behaviour effects, research by Esteve-Volart and Bagues (2012) and Hogan (2010) indeed shows that voters can respond differently to female and male candidates since women attract (slightly) more votes than men in Spain and the United States. However, the findings in the literature are ambiguous regarding the effects of the gender composition of the candidate lists. More specifically, Bagues and Campa (2021) and Broockman (2014) find no effect of the lists' gender composition on the voter turnout and behaviour while De Paola et al. (2014) find that a quota increased voter turnout, with heterogeneous effects between regions. Further, the most affected parties can expect their vote share to increase (Casas-Arce & Saiz, 2015) but evidence against this is provided by Bagues and Campa (2020).

The findings in the literature on a gender quota on council quality are ambiguous. Some papers find no effect (Bagues & Campa, 2021; Lassébie, 2020) while some find positive effects (Barnes & Holman, 2020; Besley et al., 2017; Weeks & Baldez, 2015). Further, Baltrunaite, Casarico, et al. (2014) find an average age reduction driven by fewer older male councillors, while Lassébie (2020) finds that male councillors are older.

The literature generally finds that a quota or increase in female representation does not affect the

total budget but does affect its composition (e.g. Cabaleiro-Casal and Buch-Gómez, 2020; Casal and Gómez, 2018; Funk and Gathmann, 2015; Ordine et al., 2023; Svaleryd, 2009). For instance, expenditures related to the environment, childcare and education increase, while expenditures related to military and elderly care decrease. These effects can be heterogeneous per party. For example, an increase in right-wing female political representation can decrease current expenditures concerning non-social spending (Cabaleiro-Casal & Buch-Gómez, 2020). However, the literature also finds null effects on the composition (e.g. Bagues and Campa, 2021; Ferreira and Gyourko, 2014; Geys and Sørensen, 2019; Rigon and Tanzi, 2012). This could be explained by negligible effects on the mayor's gender, who is the most important decision-maker. Further, when the mayor is female, she potentially shifts expenditures towards female-preferred policies when there are more women represented in the council (Casarico et al., 2022).

Women could respond differently than men to societal concerns regarding high debt levels. Research by Suzuki and Avellaneda (2018) shows that female representation at the local level is positively associated with financial risk-averse behaviour as it is negatively correlated with local investment in public corporations and issuing municipal bonds. The quota could also affect the number of elected parties, influencing the response. In Italy, when fiscal rules were relaxed, deficits were increased and taxes were lowered, with larger effects for councils characterized by a higher number of parties (Grembi et al., 2016).

3.2 Closely related literature

Two strands of literature are closely related to this thesis; literature on the Portuguese gender quota and difference-in-discontinuity (diff-in-disc) literature on gender quota.

To start with the former, Rodrigues (2022) has already studied the implementation of the Portuguese gender quota at the local level and found that it increased female political representation but also created a glass ceiling. He further shows that the competitive environment and institutional history of gender diversity increase the number of elected women. Three important aspects differ between the research by Rodrigues (2022) and this thesis. First, the empirical strategy differs. I employ a diff-in-disc method and Regression Discontinuity Design (RDD) while Rodrigues (2022) employs a time series method. Thus, this thesis improves the internal validity significantly. Second, this thesis extends the research by Rodrigues (2022) by studying the quota amendment. Third, I broaden the research scope by also considering the effects on voter behaviour, council characteristics and spending.

The diff-in-disc method has also already been employed to study quota effects in Italy (Spaziani, 2022), France (Lassébie, 2020) and Spain (Bagues & Campa, 2021). Even though the magnitudes differ, these three related papers all find that the quota increased female political representation among council

members but not among mayors. Lassébie (2020) shows that supply-side factors explain those findings for France. She further finds no effect on the council quality and suggestive evidence for older male councillors. Furthermore, Bagues and Campa (2021) find that the Spanish gender quota did not affect voting behaviour, council quality and policies.

The Portuguese setting is an interesting extension given the differences in the institutional setting, the relatively lower number of parties voting for the gender bill - i.e. the popularity - and the power of municipalities. In contrast, the Portugal setting has a significantly lower number of municipalities, which forces the bandwidth to be larger and the sample size to be smaller - i.e. the estimates are less precise. Besides the country, the dataset I employed is larger and richer in most aspects than those of the related papers. To start, it allows for testing the identifying assumption for almost all variables given the time span of the data. Furthermore, it allows for studying both the implementation as well as the amendment. Also, the research scope differs between my thesis and these three related papers. To start, I extend the research by Spaziani (2022) by studying more council characteristics, voting behaviour and policies. The last two are also not studied by Lassébie (2020). Finally, my research scope is closest to Bagues and Campa (2021), however, they also study the candidate lists, while this paper examines voting behaviour more extensively.

4 Methodology

Before discussing the data, this section discusses the empirical methods. First, the Regression Discontinuity Design (RDD) is analysed in Section 4.1. Hereafter, in Section 4.2, this method is combined with a difference-in-differences design to overcome two common pitfalls and to increase the sample size. This yields the difference-in-discontinuity method, which is the main estimation method.

4.1 Regression Discontinuity Design

The quota law allows for using a Regression Discontinuity Design (RDD), which compares municipalities just below and above the quota threshold of 7,500 registered voters. Therefore, it is expected that the treatment is assigned randomly - i.e. the potential outcomes of the control and treatment groups are equal. Then, all elements that could affect a municipality's reaction to a gender quota are hence naturally held constant, and thus, control variables are not essential. In contrast, when one would employ an Ordinary Least Squares (OLS) or time series regression, as Rodrigues (2022) employed for the Portuguese gender quota, the estimate is biased due to endogeneity. Thus, this approach is preferred to

OLS (Hahn et al., 2001). Note that this method is not the main method, but its basis. The sample for the quota implementation includes the 2009, 2013 and 2017 elections and includes the 2021 election for its amendment.

The aim is to estimate the causal effects of the gender quota and its amendment. Since a municipality should satisfy the quota when it has more than 7,500 registered voters, a municipality is treated when crossing this threshold. For ease of interpretation, the number of eligible voters is location normalized - i.e. 7,500 is subtracted from the number of eligible voters - and is referred to as X_m , in which m is a municipality. Formally, the treatment D_m is defined as follows for the 2006 quota:

$$D_m = \begin{cases} 1 & \text{if } X_m > 0 \\ 0 & \text{if } X_m \leq 0. \end{cases}$$

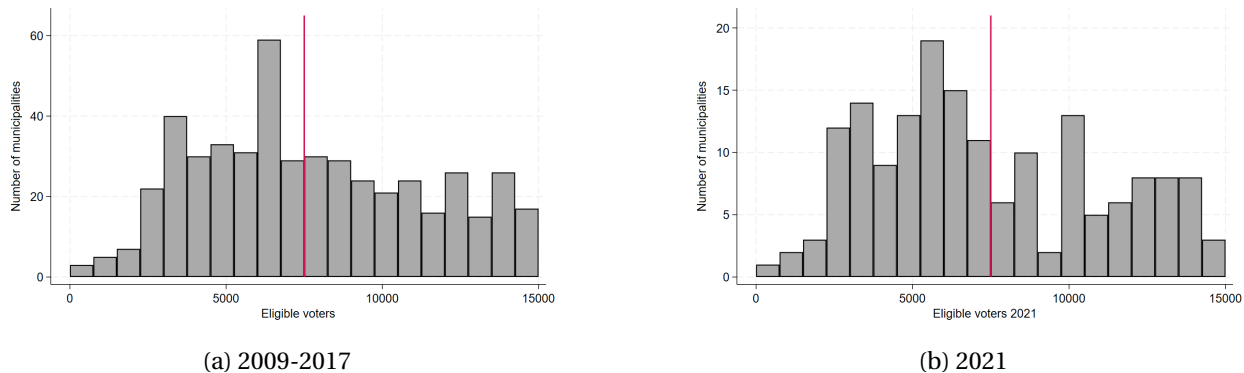
In the 2021 amendment, the threshold was abolished. This allows for studying whether and how this abolishment affected municipalities adopting a quota for the first time. To examine this, the treatment and control group definition switches for the 2021 amendment. This implies that municipalities with fewer than 7,500 eligible voters are now treated and those with more than 7,500 registered voters are in the control group.

For this method to be valid, the identifying assumption must hold, which states that the municipalities cannot *precisely* control their number of eligible voters - i.e. there may not be manipulation of the running variable or sorting. It is expected that this assumption holds as the threshold is based on the law and population count. As a first test, histograms on the municipalities close to the threshold are inspected. Histograms for the 2006 quota and the 2021 amendment are presented in Figures 2a and 2b. The histograms per election are presented in Figures A1a - A1f. A histogram suggests that manipulation is present when remarkable density changes occur around the threshold. For all histograms, jumps are visible in the density, however, these are generally not present at the threshold. Thus, these histograms provide suggestive evidence for the identifying assumption to hold. However, this is not true for the 2005 and 2021 elections and suggests sorting is present. Moreover, this jump can also be explained by the relatively low number of observations and is further of no great concern since no policy is present at this threshold in those samples.

To study whether the identifying assumption is also supported by statistical tests, a density test and a balance test are performed. These are discussed in Section 6.1. Besides this, there may not be any interaction between the quota and confounding policies. This assumption is met since there are no

confounding policies at the quota threshold.

Figure 2: Histogram of municipalities with less than 15.000 eligible voters



Remarks: these histograms show the Portuguese municipality distribution regarding the number of eligible voters, in bins of 750, with a maximum of 15,000 eligible voters. The left figure includes the elections of 2009, 2013 and 2017, while the right figure includes the 2021 election. The y-axis shows the number of municipalities (frequency) and the x-axis the number of eligible voters. The red line represents the gender quota threshold of 7,500 eligible voters.

Formally, the following equation is estimated and the sample is restricted to municipalities close to the threshold D_m :

$$Y_m = \alpha_0 + \alpha_1 D_m + X_m(\alpha_2 + \alpha_3 D_m) + C_m + \mu_m, \quad (1)$$

in which Y_m are the outcome variables, as will be described in Section 5.3. Further, the interaction term between D_m and X_m allows for a different function on both sides of the threshold. The coefficient of interest is α_1 and measures the effect of needing to satisfy the quota. Further, C_m contains the additional variables as described below, α_0 is the constant and μ_m is the error term. Moreover, the standard errors are clustered at the municipality level.

Five important choices require further explanation and are discussed below: the function of the running variable, usage of a sharp design, inclusion of controls, bandwidth and kernel.

First, the function of X_m is important and is called the polynomial. As research by Gelman and Imbens (2019) shows, it is only justified to estimate Equation 1 using a first-order (local linear regression) or second-order (quadratic) polynomial since higher-order polynomials lead to noisy estimates, sensitivity to the polynomial degree and poor coverage of the confidence intervals. However, due to low variability in the running variable in the data, it is uninformative to examine a second-order polynomial. Therefore, only a first-order polynomial is used. One of its advantages is that the risk of misspecification bias is reduced (Lee & Lemieux, 2010), which can arise when the functional form is incorrect. Besides, random treatment is more likely to be present for a first-order polynomial RDD since it requires a relatively

smaller bandwidth.

Second, a sharp RDD is most appropriate even though non-compliance is present when the quota was implemented. As can be seen in Table D1, relatively few municipalities have a non-complying party (parties), especially for the 2013 and 2017 elections. Moreover, data on non-compliance for municipalities below the threshold is simply not available. Besides, non-compliance is present at the municipality-party level and not at the municipality level. However, to examine the effect of non-compliance, a dummy indicating whether non-compliance is present in the municipality is included.

Third, two other variables are included in the regression. Since elections are pooled together for the 2006 quota estimation, a year dummy is added. Further, to account for various policy changes at the 10,000 eligible voters threshold - e.g. salary increase of the mayor and council members, which potentially increases the education level on candidate lists (Gagliarducci & Nannicini, 2013; Kotakorpi & Poutvaara, 2011) - a dummy for passing this threshold is included. However, the municipality characteristics differing between the treatment and control groups are not included but are examined in the sensitivity analysis.

Fourth, following the literature, the main bandwidth is selected using a Means Squared Error (MSE) selector and is the same at both sides of the cutoff. Given the relatively small number of municipalities, this implies that all municipalities below the threshold are in the sample. Further, the selector selects on the pooled samples since averaging the optimal yearly bandwidth is not feasible given the sample size. The sensitivity to this bandwidth is analysed by comparing its results to those with a coverage error probability (CER) bandwidth selector and with an MSE-selector which differs at both sides of the cutoff in Section 8.⁸ When the results are sensitive to the bandwidth, these should be interpreted carefully. It needs to be mentioned that an RDD estimates a local average treatment effect due to studying municipalities within a bandwidth. This implies that the estimated effect is only externally valid for municipalities close to the threshold. However, this threshold lies within the 25 and 50%-percentile since in 2021 these municipalities had respectively 6,200 and 13,044 eligible voters.

Fifth, a triangular kernel is employed because of its straightforward implementation with the *rdrobust* package. This implies that a higher weight is attached to observations close to the threshold as these observations are more informative. In contrast, a standard regression attaches an equal weight to each observation - i.e. a uniform kernel. Employing a triangular kernel is, therefore, likely more appropriate (Calonico et al., 2020). Besides, the *rdrobust* package also estimates a bias-corrected estimate.⁹

⁸More details about the MSE and CER selectors can be found in Cattaneo and Titiunik (2022).

⁹More information on the bias-corrected estimate can be found in Calonico et al. (2014).

4.2 Difference-in-discontinuities

The main approach is the difference-in-discontinuity (diff-in-disc) method and was first formally employed by Grembi et al. (2016). It extends the RDD approach with a Difference-in-Differences (DiD) approach.

It overcomes two common potential pitfalls arising from exploiting population-based policies in an RDD: sorting and confounding policies (Eggers et al., 2018). Even though density and balancing tests provide convincing evidence for no sorting, as analysed in Section 6.1, sorting could still be an issue. Eggers et al. (2018) show for municipalities in Germany, Italy and France that these tests could be biased with a discrete running variable. Although no evidence for sorting in Portugal has been provided, it could still be present. To my best knowledge, no compound treatment is present at the 7,500 eligible voters threshold, only at the 10,000 threshold. Thus, it is implausible that the second common pitfall is present in this setting. Employing a diff-in-disc has another advantage in the Portuguese municipality setting with only 308 municipalities. Namely, it increases the total sample size by adding another election, which allows for narrowing the bandwidth. This implies that more precise and powerful estimates are estimated. Thus, the diff-in-disc method is preferred over the RDD in this setting since it controls for sorting and increases the sample size.

For the diff-in-disc estimates to be internally valid, both the identifying assumption for the RDD and DiD need to hold. The latter is called the common or parallel trend assumption. It implies that in the absence of the quota, the trend in the outcome variable for unaffected municipalities would have been equal to the trend for affected municipalities. Then, a change in the observed trends between the treatment and control groups is caused by the quota. An advantage of exploiting a diff-in-disc instead of a DiD is that this assumption only needs to hold for those municipalities close to the threshold. When the common trend assumption does not hold and it is unclear why or when data are unavailable, I employ an RDD since it is the best available research design. However, in these cases, the results could be (slightly) biased due to sorting (Eggers et al., 2018). Section 6.2 discusses the employed test and its results for this assumption.

Formally, the following diff-in-disc estimation is estimated:

$$Y_{mt} = \beta_0 + \beta_1 D_m + X_{mt}(\beta_2 + \beta_3 D_m) + T_t[\beta_4 + \beta_5 X_{mt} + D_m(\beta_6 + \beta_7 X_{mt})] + \epsilon_{mt}, \quad (2)$$

in which t indicates the election year. T_t is a dummy equal to one after the quota (amendment) implementation. Thus, the implementation and amendment samples are extended with respectively the 2005

and 2017 elections. The estimate β_6 is the diff-in-disc coefficient of interest as the treatment is equal to affected municipalities after the quota implementation. Further, β_0 and ϵ_{mt} are respectively the constant and error term. Most specification choices are the same as for the RDD. The only difference is that a uniform kernel is used since it is more straightforward to implement without using the *rdrobust* package.

Intuitively, the RDD coefficient after the quota estimates the impact of the intervention, potential other confounding policies and potential sorting. The RDD coefficient before the quota estimates the impact of potential confounding policies and potential sorting. Then, subtracting the before estimate from the after estimate gives the impact of the intervention. Thus, the estimate does not suffer from a potential confounding policy and sorting.

5 Data

The data are discussed in this section. In Section 5.1 the data are described, whereafter the descriptive statistics are discussed in Section 5.2. Hereafter, the outcome variables are reviewed in Section 5.3.

5.1 Data description

To examine the effect of the quota and its amendment on female representation, voter behaviour, council characteristics and the budget composition, three panel datasets at the municipality level are used. The main dataset has been collected and provided by Linda Gonçalves Veiga and Francisco José Veiga. This rich dataset contains information on all Portuguese municipalities between 1998 and 2021 and can be broadly categorized into four aspects: municipality, election, council and financial characteristics.

To start, municipality characteristics contain the population per age and education category, unemployment rates and average private-sector wages. It has been collected from the National Statistics Institute (INE). Further, the election data include information on the number of eligible voters, voter turnout, whether the incumbent mayor runs for reelection and votes per party. These data have been collected from the Ministry of Internal Affairs (MAI). Moreover, the Town Council data consist of characteristics such as whether the mayor represents a left-wing, right-wing or independent list, whether the mayor changed and the effective number of parties. These data were also obtained from the MAI. The last aspect contains detailed financial data on revenues, expenditures, investments¹⁰ and notional

¹⁰Investment expenditures are classified into seven categories: (1) acquisition of land, (2) housing, (3) other buildings, (4) miscellaneous construction, (5) transportation material, (6) machinery equipment, and (7) other investments. The third category can be characterized into subcategories: (3.1) sports, recreational and schooling infrastructures; (3.2) social equipment; and (3.3) other. The fourth category can also be characterized into subcategories:(4.1) overpasses, streets and complementary work; (4.2) sewage; (4.3) water treatment and distribution; (4.4) rural roads; (4.5) infrastructures for solid waste treatment; and

consumer price index and has been collected from the Directorate General of Local Authorities (DGAL), Marktest's Sales Index database and National Statistics Institute (INE).

The second dataset consists of the name and gender of the list leader for each party. For the elections of 2005, 2009 and 2013, it has been obtained from the website of MAI. For the 2017 and 2021 elections, it has been provided by MAI.

Furthermore, the third dataset contains information on the elected mayor and council members. For the elections of 2005 and 2009, this has been collected from the website of MAI and consists of the name and gender of the mayor and council members. For the elections of 2013, 2017 and 2021 also data on the age, education level, previous occupation category (ISCO-08), birthplace and residence in the municipality of all council members are available and have been provided by MAI.

For the election years in which only the members' name was available, gender has been determined both by hand and automatically using a database of names and their gender published by the Portuguese Institute of Registries and Notary (IRN).

5.2 Descriptive statistics

The descriptive statistics for the quota and the amendments are presented in Tables 1 and 2. For the ease of interpretation, only one bandwidth is illustrated, namely, municipalities with less than 15,000 voters. Within this bandwidth, more municipalities are present in the treatment (control) group for the quota (amendment). The total population differs significantly between the control and treatment groups, however, this is a mechanical effect - i.e. a bigger population increases the number of eligible voters. By design, the empirical methods account for this. Moreover, municipalities with more registered voters have, on average, a larger proportion of their area classified as urban, a higher population density, a slightly younger population and a higher education level. Further, the employment rate and average wage of workers in the private sector are higher in those municipalities. These patterns hold for both the periods before and after the quota implementation and amendment. Whether these characteristics statistically differ is examined in Section 6.1

5.3 Dependent variables of interest

The outcome variables can be broadly categorized into four categories; gender, voting behaviour, council and municipality budget. The descriptive statistics of all can be found in Tables A2 and A3.

(4.6) other (Veiga & Veiga, 2007).

First, four gender outcome variables are examined; the share of female list leaders, the mayor's gender and the share of female council members including and excluding the mayor. As argued in Section 3, it is expected that the quota increases the share of council members and potentially increases the female list leaders and mayors in the middle-long run.

Second, the effect of the quota on voter turnout and vote share of the five main parties is analysed. As argued in Section 3.1, the sign of the effect depends on several factors and is, therefore, ambiguous. All voting variables are in percentages.

Third, the effects on general council characteristics are considered. Regarding the mayor, it is examined whether the quota affects the political position (dummy left-wing and right-wing), running for reelection, changing, supported by a coalition, majorities in the town hall and municipal assembly, whether the national government is led by the mayor's party, margin of victory (p.p.) and vote share of the incumbent mayor's party. It needs to be mentioned that if there are no gender council effects, it is unlikely that effects on the council characteristics will be present. Moreover, the effect on the number of running and elected parties is examined. It is expected that the sign of both variables is negative, for instance, because it is more difficult to submit a complying list. Additionally, for the quota amendment analysis, it is possible to test whether the average age, education level and previous experience are affected. If the quota increases female political representation, these council characteristics change since the background characteristics of men and women differ. As these characteristics are closely related to quality, this thus examines whether the quality of the council declines, as commonly argued by opponents of a quota. In line with the literature in Section 3, a zero or positive effect on quality is expected.

Fourth, the effects on the size and composition of the budget are evaluated. In line with the literature, it is expected that the total budget is unaffected while the composition shifts towards female-preferred expenditures. Moreover, no revenue effects are expected and studied since a municipality has relatively less autonomy concerning their revenues, as already mentioned in Section 2. All budget variables are in real terms, per capita and are logarithmic to account for skewness. Moreover, they are the average of the four years the council is in office to capture the effects on policies unrelated to the election cycle as in pre-electoral periods municipalities tend to increase their total expenditures or change the allocation of expenditures to positively affect their election results (e.g. Akhmedov and Zhuravskaya, 2004; Castro and Martins, 2013; Chortareas et al., 2016; Drazen and Eslava, 2010; Veiga and Veiga, 2007). Since the 2021 council is currently still in office, only the budget effects for the 2006 quota are examined. Note, if there are no gender effects, it is unlikely that these indirect effects are present.

Table 1: Descriptive statistics 2006 quota

Variable	No quota						Quota					
	Control			Treatment			Control			Treatment		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Area of the municipality (km ²)	83	240.3	166.4	110	318.7	305.0	259	272.5	209.3	297	312.9	305.0
Area classified as urban (%)	68	2.876	2.974	100	7.288	8.117	213	2.641	2.696	262	6.608	5.604
Population - total	83	5,316	1,746	110	13,711	4,590	259	4,967	1,636	297	12,636	4,103
Population younger than 15 years old (%)	83	0.127	0.0258	110	0.140	0.0271	259	0.116	0.0237	297	0.129	0.0244
Population between 15 and 24 years old (%)	83	0.122	0.0215	110	0.127	0.0179	259	0.105	0.0190	297	0.109	0.0165
Population between 25 and 64 years old (%)	83	0.499	0.0425	110	0.520	0.0352	259	0.518	0.0430	297	0.531	0.0312
Population 65 years old or older(%)	83	0.254	0.0598	110	0.224	0.0556	259	0.271	0.0639	297	0.244	0.0567
Population density (inhabitants/km ²)	83	36.53	34.47	110	122.0	291.5	259	30.78	28.51	297	91.22	155.9
Population with no formal education completed	83	1,150	404.7	110	2,716	868.7	259	1,089	388.9	297	2,603	807.6
Population with the 3rd cycle of basic education (%)	83	13.35	2.146	110	13.61	1.878	259	16.44	2.439	297	16.56	2.374
Population with complete secondary education (%)	83	11.88	2.716	110	12.94	3.180	259	14.18	3.334	297	14.93	3.546
Population with complete university education (%)	83	6.173	1.446	110	7.405	2.392	259	7.772	2.042	297	9.027	2.957
Population with less than complete secondary education (%)	83	26.22	4.518	110	24.22	5.266	259	27.04	5.209	297	25.73	5.293
Municipal Purchasing Power index	83	62.07	12.13	110	67.82	17.51	259	68.31	9.899	297	72.71	14.70
Unemployment rate (%)	83	5.953	2.805	110	5.981	2.477	259	7.199	2.808	297	7.303	2.805
Employment rate - private sector (%)	83	28.32	8.259	110	31.32	12.68	259	37.02	33.32	297	43.62	61.89
Average wage private firm workers (real euros)	83	837.7	177.6	110	846.3	131.2	259	892.4	164.0	297	923.6	170.9

Remarks: this table shows the descriptive statistics for four distinct samples that are used in the main analysis. No quota refers to the election in 2005, which is used for the DiD design. The quota refers to the pooled elections in 2009, 2013 and 2017 which are used for both the RDD and DiD designs. The control group contains all municipalities with less than 7,500 eligible voters while the treatment group contains all municipalities with 7,500-19,000 eligible voters. The latter bandwidth is the maximum bandwidth used in the DiD design. N indicates the number of observations and SD indicates the standard deviation. All means and standard deviations are rounded. The education levels are the percentage of the population older than 14 years old. Portugal is considered the base level (100) in the municipal purchasing power index. The unemployment rate is the percentage of unemployed individuals in the population aged 15-65. The employment rate is defined in a similar fashion.

Table 2: Descriptive statistics 2021 amendment

Variable	No amendment						Quota amendment					
	Control			Treatment			Control			Treatment		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Area of the municipality (km ²)	216	309.3	303.1	92	275.5	206.2	210	311.7	305.8	99	271.5	203.4
Area classified as urban (%)	195	13.35	13.52	77	2.685	2.704	191	13.60	13.57	82	2.758	2.685
Population - total	216	45,562	61,688	92	4,887	1,657	210	47,144	64,069	99	4,885	1,634
Population with less than 15 years old (%)	216	0.133	0.0212	92	0.113	0.0227	210	0.122	0.0195	99	0.104	0.0208
Population between 15 and 24 years old (%)	216	0.109	0.0151	92	0.104	0.0153	210	0.102	0.0131	99	0.0889	0.0139
Population between 25 and 64 years old (%)	216	0.543	0.0251	92	0.524	0.0316	210	0.519	0.0326	99	0.488	0.0418
Population with 65 years old or older(%)	216	0.226	0.0593	92	0.282	0.0677	210	0.258	0.0600	99	0.319	0.0701
Population density (inhabitants/km ²)	216	408.7	965.6	92	29.36	27.13	210	421.6	980.1	99	29.71	26.28
Population with no formal education completed (%)	216	7,234	8,866	92	961.9	330.5	210	6,414	8,184	99	777.5	272.2
Population with 3rd cycle of basic education (%)	216	18.06	2.237	92	17.18	2.282	210	17.64	2.026	99	17.05	2.535
Population with complete secondary education (%)	216	19.56	3.458	92	16.98	2.682	210	22.98	3.485	99	20.07	2.921
Population with complete university education (%)	216	13.45	5.474	92	9.173	1.927	210	15.36	5.677	99	10.67	2.143
Population with less than complete secondary education (%)	216	18.74	4.240	92	22.47	3.663	210	11.25	3.743	99	14.73	3.129
Unemployment rate (%)	216	6.063	2.430	92	6.729	2.773	210	5.215	2.118	99	5.763	2.416

Remarks: this table shows the descriptive statistics for four distinct samples that are used in the main analysis. No amendment refers to the election in 2017, which is used for the DiD design. The amendment refers to the 2021 election, which is used for both the RDD and DiD designs. The control group contains all municipalities with 7,500-19,000 eligible voters while the treatment group contains all municipalities with less than 7,500 eligible voters. The control bandwidth is the maximum bandwidth used in the DiD design. N indicates the number of observations and SD indicates the standard deviation. All means and standard deviations are rounded. The education levels are the percentage of the population older than 14 years old. Portugal is considered the base level (100) in the municipal purchasing power index. The unemployment rate is the percentage of unemployed individuals in the population aged 15-65.

6 Identifying assumptions

Before reviewing the results, the two identifying assumptions of the RDD and diff-in-disc approach are discussed in this section respectively since these are necessary to determine whether the RDD or diff-in-disc is most appropriate.

6.1 RDD: municipalities cannot *fully and precisely* control their number of eligible voters

For both the RDD and diff-in-disc, the RDD assumption needs to hold, which implies that there may not be manipulation or sorting around the threshold of 7,500 eligible voters. If sorting is present, municipalities in the treatment and control groups are not random, which implies that the estimates are not causal. This is already examined by a graphical analysis of the histograms and statistical evidence is provided using a density and balance test in this section.

The density test, developed by Cattaneo et al. (2018), statistically tests this assumption. The examined bandwidths are the minimum and maximum bandwidths of the main results as well as some intuitive bandwidths. As can be seen in Table B1, even though the magnitudes differ per bandwidth, the p-values of the density test provide statistical evidence for the assumption to hold since none of the p-values is significant. It needs to be noted that the p-values for the diff-in-disc sample of the 2021 amendment are relatively low. However, since the threshold was abolished in this amendment, sorting around the (non-existent) threshold is of no great concern.

Additionally, a balance test is performed to provide evidence for the identifying assumption. A regression for each election year is run of various municipality characteristics on a dummy indicating whether the municipality passed the threshold. It indicates whether the municipality characteristics are balanced during the election, and, thus, indicates whether the treatment and control groups are indeed randomly selected. Even though the most important municipality characteristics are added to this estimation, including additional characteristics would enhance the balance test further. The results of these regressions can be found in Table B2. Except for some education level characteristics, none of the characteristics significantly differ between the treatment and control groups. In 2005, all education dummies are significantly different below and above the threshold. However, this year the threshold was non-existent, thus, manipulation of the number of eligible voters around this threshold is of no great concern. Further, the population without complete formal education is significantly higher in the bigger municipalities. However, this effect is relatively small and thus economically insignificant. Moreover, for all years, the bigger municipalities have a significantly smaller probability to have a population share

with less than or equal to complete secondary education. This difference is respectively 2-4 and 5 p.p. on average. To conclude, since most characteristics do not differ between the control and treatment groups, the balance test provides evidence against manipulation. However, the results should be interpreted carefully for the significant variables. Therefore, a sensitivity analysis is performed in Section 8, which controls for the education level in a municipality.

6.2 Diff-in-disc: parallel trend assumption

For the diff-in-disc to be valid, the parallel or common trend assumption also needs to hold. It states that the trend of the control and treatment groups should have evolved similarly over time if there had been no quota. This implies that these groups need to have been evolving similarly before the policy intervention. Since the trends without the quota are not observed, I make the assumption plausible by performing a simple regression.¹¹ Generally, evidence for the common trend assumption is provided by presenting the trends resulting from this regression graphically. However, presenting graphs is unfeasible given the high number of variables and, therefore, the regression results are presented instead. The regressions provide evidence for the assumption when the estimate of the interaction between an election year before the policy change, as compared to the first election before the policy change, and passing the threshold is not significantly different from zero. Intuitively, before the policy intervention, the trends may not differ significantly between the treatment and control groups. When the test does not provide evidence for this assumption, the RDD estimates are presented instead of the diff-in-disc estimates since this is the best method available.

The corresponding results are presented in Tables B3 and B4. Data was only available from the 2001 election onwards. Data on earlier elections would enhance this analysis. Further, due to data unavailability, the test cannot be performed for the 2006 gender characteristics. Therefore, for these effects, the results are presented for both the RDD and diff-in-disc.

To start with the 2006 quota, for about half of the expenditure and investment variables, the parallel trend does not hold. During this period, the high debt level in all municipalities was brought to the attention of the municipalities and their voters by the government and an amendment to the local finance law was taken.¹² This potentially affected the smaller municipalities more since the mean debt levels

¹¹The following regression is run: $y_m = v_m + \text{election year}_{mt} + D_m \cdot \text{election year}_{mt} + \theta_{mt}$, in which v_m is the constant and θ_{mt} is the error term. In this equation, the base election year - i.e. the election year to which the other years are compared - is the 2005 election for the quota and the 2017 election for the amendment. The coefficients of $D_m \cdot \text{election year}_{mt}$ before the policy change may not be significant since it implies that the trends of the treatment and control groups differ significantly from each other before the intervention.

¹²More information can be found in the OECD paper by Cunha and Braz (2007).

per capita were relatively higher for those municipalities. However, we are unable to test whether this explanation is valid. Since for half of those variables the trend is not similar, it is possible that the trend also differs for the other expenditure and investment variables. Therefore, both the RDD and diff-in-disc estimates are presented in the main results. Furthermore, the trend of the share of votes for independent lists differs. It is unclear what the reason is for this disparity, but is potentially caused by voters voting on bigger parties that are characterized by promoting anti-debt measurements. For all other variables for the quota implementation, the common trend assumption holds.

Further, for the 2021 amendment, the common trend does not hold for the share of female councilors, which can be explained by the 2006 quota. Moreover, the trends of some occupation and education characteristics, the residence of the council and most voter variables significantly differ. A plausible explanation for all is the 2006 quota which affected the control and treatment groups differently.

7 Results

The main results are presented and analysed in this section. It first examines an important goal of the quota, increasing female political representation, in Section 7.1. Hereafter, the effects on voter behaviour and the council are reviewed in respectively Sections 7.2 and 7.3. Lastly, the effects on the municipality budget and its composition are examined in Section 7.4. Note that the discussed estimates are from the diff-in-disc specification unless specified otherwise.

7.1 Gender effects

The 2006 quota targeted female representation on candidate lists. This could mechanically increase female political representation in parties and the council, and cause reductions in voter and party bias and supply-side factors. Since data to test the common trend assumption are unavailable, in this section both the RDD and diff-in-disc estimates are discussed.

As can be seen in Table A2, female political representation in 2005 was low, especially at the mayor level. Further, it was slightly lower in the control group. After the quota, the difference between the control and treatment groups increased. Whether this is caused by the quota is empirically tested.

Graphical representations of the RDD and diff-in-disc are presented in Figure C1. It needs to be noted that for ease of interpretation, the y-axis is in differences, while the main estimations are not. Only a small jump is visible at the threshold for the female list leaders for both the diff-in-disc and RDD samples, suggesting no effect of the quota on the share of female list leaders. Further, a relatively small downward

jump is present in the probability of a female mayor for the RDD sample, however, this is not true for the diff-in-disc sample. Thus, if there is an effect on the probability of a female mayor, it is negative. Moreover, for all samples, an upward jump is visible at the threshold on the share of female council members, indicating a positive effect of the quota on female political representation at the council level.

Table 3 presents the corresponding causal effects of the quota on female political representation. The results indeed provide no evidence for an increase in the gender of the list leader and mayor when all elections are pooled for both the diff-in-disc and RDD estimates. However, the quota increased the female representation among council members, excluding and including the mayor by respectively 8.8 p.p. and 6.2 p.p. on average. This effect is statistically, and given the magnitude also economically, significant at the 10% level when considering the RDD but insignificant when considering the diff-in-disc estimate. Thus, the results provide small evidence that the quota increased female political representation among council members.

These regressions are also estimated per election year. A significant increase at the council level, excluding and including the mayor, is only present in 2013. This year, the quota caused the share of female council members to increase on average by respectively 13 - 17 p.p. and 9-12 p.p., which is statistically significant at respectively the 5% and 10% levels. This effect is also economically significant given its magnitude. Further, the findings suggest the probability of a female mayor in 2013 decreased by around 10% on average. However, this effect is only significant for the RDD estimate and only at the 10% level and is, therefore, suggestive.

An important aspect of the Portuguese quota is non-compliance. To analyse whether the effect is heterogeneous between complying and non-complying municipalities and to study how this affected the effectiveness, a dummy variable indicating the presence of a non-complying party in the municipality is included. Graphical representations are presented in Figures C2 - C5. The pooled graphs (diff-in-disc and RDD) suggest only a small jump in the list leader share, thus, indicating no significant effect. In 2009, a downward jump is present for the RDD sample, while no jump is present for the diff-in-disc sample, thus suggesting a negative or insignificant effect of the quota on female representation at the list leader level in 2009. Similarly, the pooled graphs suggest that the quota had an insignificant or positive effect on the share of female list leaders in 2013 and 2017. Further, the jumps in the female mayor probability are generally negative or relatively small and thus suggest a negative or insignificant effect (diff-in-disc and RDD). The only exception is the diff-in-disc sample of 2009, which suggests an increase. Moreover, even though the slope differs for each sample, all graphs suggest that the quota increased female political representation at the council member level, both with and without the mayor.

Table 3: Gender effects without accounting for non-compliance, 2006 quota

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
<i>Pooled sample</i>								
Female list leader (%)	-0.0101	(0.0366)	514	9371	0.0369	(0.0533)	593	6150
Female mayor	-0.0471	(0.0512)	515	9644	-0.0787	(0.0963)	577	5772
Female council members, including mayor (%)	0.0623*	(0.0347)	501	8992	0.0482	(0.0544)	583	6048
Female council members, excluding mayor(%)	0.0879**	(0.0393)	496	8573	0.0889	(0.0614)	576	5818
<i>2009</i>								
Female list leader (%)	-0.0809	(0.0555)	176	10445	-0.0348	(0.0652)	454	6137
Female mayor	-0.0133	(0.0697)	184	11577	-0.0242	(0.104)	453	6066
Female council members, including mayor (%)	0.0573	(0.0429)	175	10189	0.0696	(0.0566)	456	6221
Female council members, excluding mayor(%)	0.0713	(0.0485)	174	9969	0.0921	(0.0639)	456	6266
<i>2013</i>								
Female list leader (%)	0.0201	(0.0459)	177	10241	0.0499	(0.0618)	449	5662
Female mayor	-0.103*	(0.0624)	184	11564	-0.113	(0.0846)	451	6070
Female council members, including mayor (%)	0.0904*	(0.0468)	168	9503	0.123**	(0.0563)	460	6722
Female council members, excluding mayor(%)	0.133**	(0.0564)	166	9119	0.168**	(0.0656)	458	6462
<i>2017</i>								
Female list leader (%)	0.0404	(0.0580)	181	10385	0.0631	(0.0736)	455	5968
Female mayor	-0.0352	(0.0573)	189	12280	-0.0619	(0.0819)	452	6069
Female council members, including mayor (%)	0.0398	(0.0452)	186	11348	0.0616	(0.0587)	460	6595
Female council members, excluding mayor(%)	0.0663	(0.0528)	181	11006	0.0924	(0.0681)	461	6678

Remarks: this table shows the estimation results of RDD (Equation 1) and difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota on the gender of the council for the pooled sample as well as for all elections separately, without accounting for non-compliance. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. A year dummy as well as a dummy for passing the 10,000 threshold are added as controls. No dummy for non-compliance is included. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

The corresponding estimates are presented in Table 4. Non-compliance reduced the increase in female council members since the estimates are larger when accounting for non-compliance, especially for the 2009 election. More specifically, without accounting for non-compliance, the quota increased female council representation, excluding and including the mayor, on average by respectively 8.8 p.p. and 4.8-6.2 p.p., while this pooled effect increases to 10 and 7 p.p. when accounting for non-compliance. The former is statistically significant at the 1% (RDD) and 10% (diff-in-disc) levels and the latter at the 5% (RDD) level. Thus, the quota was more effective in increasing female political representation within municipalities in which all parties complied.

Further, in the 2009 election, the quota increased female representation amongst council members excluding and including the mayor, on average, by respectively 9-12 and 7-9 p.p. and turn significant at the 5 or 10% level (except for the diff-in-disc including mayor estimate). Thus, non-compliance decreases both the magnitude and significance levels. The quota was even more effective in increasing female representation in the 2013 election - i.e. in the middle-long run-, it increased the female representation among council members excluding and including the mayor, by respectively 15-19 and 10-14 p.p. on average. These effects are statistically significant at the 1% and 5% levels for both the diff-in-disc and RDD. Even though female representation at the council level increased over time due to the quota, the effect is insignificant in 2017. Thus, these results show that non-compliance negatively affected female representation. Given the importance of the heterogeneous effect on the effectiveness of the quota on female political representation, the dummy is also included in all other results so that the effect of female political representation on the variables of interest is estimated more precisely.

The gender effects can be explained by two mechanisms, explaining different findings. First, the parties increased the female representation on their candidate lists but generally placed women in second or third place. This is supported by finding no effect on the list leaders and the mayor.

Second, parties required time to adjust to the quota. This is in line with the decrease in non-compliance over time, as can be seen in Table D1, and the relatively bigger increase in female council members in 2013 as compared to 2009. However, no significant effect is present anymore for the election in 2017. This can be explained by time effects, spillovers and anticipation in the control group - i.e. the female representation at the council level also increased for municipalities below the threshold. Indeed, in 2017 the share of female council members rose by 5.7 p.p. in municipalities below the threshold, as compared to 2013, as can be seen in Table A1. If this is caused by time trends, the quota is rather ineffective in increasing female representation in the long run since female representation is simply unaffected by the quota and potentially creates a glass ceiling. In contrast, in the case of spillovers, the positive effect on

the council is even bigger. Reasons for spillovers are a decrease in voter bias, party bias or supply-side factors, as discussed in Section 3. Closely related, in case of anticipation, parties could have already increased the number of female candidates in response to the parity law amendment in 2017, which became only binding in the 2021 election. A potential reason is satisfying their voters. However, the data do not allow for testing the extent to which this increase in municipalities below the threshold is caused by time trends, spillovers, anticipation or a combination.

In the 2021 election, several quota amendments took effect; the threshold was abolished, the quota increased from 33.3% to 40% and non-compliance resulted in the exclusion instead of a financial sanction. The joint effect of these amendments is studied. Further, the treatment definition switches - i.e. the treatment group consists of municipalities below the 7,500 threshold. The descriptive statistics in Table A3 suggest an increase in female council members, list leaders and mayors.

Figure C6 shows the graphical representation of the effects on female political representation. Generally, the figures show a downward or small jump after the threshold, implying that the female representation increased or was unaffected in municipalities affected for the first time. The only exception is the RDD sample for the effect on female council members, excluding the mayor; this jump is upward and thus suggests a decrease in female council representation.

The corresponding estimates are presented in Table 5. In line with the adjustment theory and the already higher level of female council representation in smaller municipalities in 2017, the amendment did not affect female council representation. However, in contrast to the 2006 quota, the share of female list leaders increased by 13.6 p.p. on average and is only significant at the 10% level. Since a female list leader is not mandatory and the number of running parties is unaffected, see Table 8, this economically significant increase can be explained by the 2006 quota, which increased the exposure to and experience of female council members. To start with the former, exposure to female councillors could decrease biases against women in politics and hereby increase the probability of a female list leader and increase the supply of female candidates. To continue to the latter, members with more experience are more likely to be the list leader and since more women have gained experience due to the 2006 quota, women are more likely to become list leaders. These mechanisms are both in line with the adjustment theory, however, the data do not allow to test for the magnitudes per mechanism.

Even though the quota was effective in increasing female list leaders, it was ineffective in increasing the municipality's most important decision-maker, the mayor. However, with an increasing share of female list leaders, the probability that the quota (indirectly) will increase female representation among mayors in the future rises.

Table 4: Gender effects with accounting for non-compliance, 2006 quota

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
<i>Pooled sample</i>								
Female list leader (%)	-0.00428	(0.0365)	512	9360	0.0431	(0.0538)	593	6150
Female mayor	-0.0455	(0.0512)	515	9644	-0.0771	(0.0966)	577	5772
Female council members, including mayor (%)	0.0738**	(0.0344)	501	8966	0.0609	(0.0552)	583	6048
Female council members, excluding mayor(%)	0.102***	(0.0389)	495	8542	0.104*	(0.0625)	576	5818
<i>2009</i>								
Female list leader (%)	-0.0755	(0.0556)	176	10449	-0.0275	(0.0662)	454	6137
Female mayor	-0.00767	(0.0696)	184	11572	-0.0180	(0.106)	453	6066
Female council members, including mayor (%)	0.0746*	(0.0412)	175	10089	0.0905	(0.0553)	456	6221
Female council members, excluding mayor(%)	0.0913**	(0.0463)	173	9865	0.116*	(0.0624)	456	6266
<i>2013</i>								
Female list leader (%)	0.0284	(0.0454)	177	10214	0.0603	(0.0637)	449	5662
Female mayor	-0.103*	(0.0624)	184	11564	-0.112	(0.0848)	451	6070
Female council members, including mayor (%)	0.107**	(0.0455)	168	9436	0.141**	(0.0578)	460	6722
Female council members, excluding mayor(%)	0.156***	(0.0547)	166	9048	0.190***	(0.0676)	458	6462

Remarks: this table shows the estimation results of RDD (Equation 1) and difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota on the gender of the council for the pooled sample as well as for all elections separately, with accounting for non-compliance. SEs is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SE are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. Dummies indicating the year, passing the 10,000 threshold an a non-complying party are included. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table 5: Gender effects, 2021 amendment

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
Female list leader (%)	Yes	0.136*	(0.0785)	464	6281
Female mayor	Yes	0.106	(0.0898)	468	7022
Female council members, including mayor (%)	No	-0.00792	(0.0462)	186	10862
Female council members, excluding mayor(%)	No	0.0201	(0.0553)	184	10924

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2021 gender quota amendment on the gender of the council, with accounting for non-compliance. The second column indicates whether the diff-in-disc (when common trend holds) or RDD method is employed. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. A dummy indicating passing the 10,000 threshold is included. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

7.2 Voter behaviour

A shock to the candidate lists such as the quota can affect voter turnout as well as their behaviour. Table 6 shows the causal effect of the quota and its amendment on voting behaviour.

To start with the effects of the implementation, the findings provide evidence for a decrease in votes for the independent list (RDD) while not significantly affecting the voter turnout or other parties' vote share. More specifically, the quota decreased the vote share for independent lists by on average 5.1 p.p. and is significant at the 10% level. This effect is likely driven by the elections of 2013 (-7.1 p.p., significant at the 10% level) and 2017 (-10.3 p.p., significant at the 5% level), as can be seen in Table D.2. The reduction in votes for independent lists could be related to a greater difficulty to include female candidates. For instance, if independent lists are shorter and, therefore, do not need to comply with the law, some voters may switch to another party if they attach a higher value to voting on a party with (more) women on the list.

In contrast, the 2021 amendment did not significantly affect the independent list vote share but affected the vote share of the left bloc (BE) party, which is estimated with an RDD. It decreased the vote share of this party on average by 0.6 p.p., which is statistically significant at the 5% level. A potential explanation is that it was hard to comply with the quota since BE is characterized by a very small structure at the local level. However, this decrease is relatively small and thus economically insignificant.

Even though there is no evidence that the amendment decreased the vote share of the left-wing parties separately, their combined vote share decreased by 10.8 p.p. on average. This is only statistically

significant at the 10% level and is, therefore, only suggestive. The effect is, however, economically significant given the magnitude. In the 2021 election, left-wing parties lost some ground. However, this is unrelated to the gender quota. Another intuitive reason related to the amendment is that left-wing parties were already characterized by promoting gender representation in politics. This could cause the gender composition of the candidate lists of right-wing parties to be relatively more affected and could improve its comparative advantage by an increase in the diversity of candidates as well as campaigned policies. This could have caused the left-wing parties to lose votes.

Table 6: Voter behaviour

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
<i>2006 quota</i>					
Voter turnout (%)	Yes	-1.685	(1.878)	596	6192
Votes PS (%)	Yes	0.0124	(0.0508)	587	5983
Votes PSD (%)	Yes	-0.00509	(0.0691)	581	5746
Votes BE (%)	Yes	0.00103	(0.00307)	583	5837
Votes PCP (%)	Yes	0.00542	(0.0638)	564	5481
Votes CDS (%)	Yes	-0.00573	(0.0204)	618	6657
Votes independent list (%)	No	-0.0512*	(0.0279)	538	10791
Votes left-wing (%)	Yes	0.0211	(0.0704)	591	6120
Votes right-wing (%)	Yes	0.0120	(0.0724)	458	5906
<i>2021 amendment</i>					
Voter turnout (%)	No	0.0734	(1.687)	193	12086
Votes PS (%)	No	0.0704	(0.0532)	193	11881
Votes PS (%)	Yes	-0.0658	(0.0536)	474	7129
Votes PSD (%)	No	-0.0419	(0.0631)	187	10976
Votes BE (%)	No	-0.00629**	(0.00307)	210	15047
Votes CDS (%)	No	-0.0270	(0.0283)	172	8617
Votes PCP (%)	No	0.0201	(0.0397)	187	10860
Votes PCP (%)	Yes	-0.0463	(0.0316)	468	6488
Votes independent list (%)	No	-0.0176	(0.0433)	179	9520
Votes left-wing (%)	Yes	-0.108*	(0.0594)	476	7439
Votes right-wing (%)	No	-0.0649	(0.0664)	187	10884

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota or 2021 gender quota amendment on voting variables. The second column indicates whether the diff-in-disc (when common trend holds) or RDD method is employed. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. Dummies indicating passing the 10,000 threshold as a non-complying (only 2006 quota) party are included. All variables are in shares. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

7.3 Council characteristics

Table 7 presents the effect of the quota implementation on the council characteristics. Since the quota did not affect the mayor's gender, it is expected that the implementation did not affect the mayor's characteristics. This is confirmed by the results. However, on average, the quota decreased the effective number of elected parties by 0.374. This effect is statistically significant at the 1% level and implies that, on average, a smaller number of parties elect the council members. This decrease is similar in magnitude across the different election years, as can be seen in Appendix D.3. A potential explanation is that the number of running parties decreased because of the difficulty to comply or because more coalitions are formed before the elections. However, no significant effect has been found on the number of running parties (diff-in-disc and RDD). This mechanism can still be present if more lists were split into a maximum of two candidates so they are exempted from the quota. A more likely explanation is that the number of elected parties decreased due to the decrease in votes on independent lists. This is in line with the voting results in Section 7.2. A potential direct effect of this decrease is the probability that the mayor is supported by a coalition in 2009, which increased on average by 9.3%. However, this effect is only suggestive since it is only statistically significant at the 10% level.

To continue to the amendment, which likely increased the share of female list leaders and decreased the vote share for left-wing parties. Consistent with the latter is the shift from left-wing to right-wing mayors, the reduction in the probability that the national government is led by the mayor's party and the increase in the margin of victory. These findings can be found in Table 8. More specifically, on average, the quota decreased the probability of a mayor being left-wing by 35.7% (1% significance level) and increased the probability of a mayor being right-wing by 34.2% (5% significance level). Besides, the quota indirectly increased the margin of victory by on average 11.09 p.p. and decreased the probability that the national government is led by the mayor's party by on average 27.1%. The effect on the margin of victory is also consistent with the reduction in the effective number of parties in 2017; which reduces the number of influential parties and increases the potential benefits parties can gain from their past council performance.

While the 2006 quota decreased the number of parties in the council, the 2021 amendment did not significantly affect the number of running or elected parties (diff-in-disc and RDD). As argued in Section 3, the effect of the amendment on the quality of the council could be negative or positive. However, since female council representation is unaffected in 2021, no quality effect is expected. This is confirmed by the insignificant effects on age, birthplace, residence, schooling level and previous occupation. One

Table 7: Council characteristics, 2006 quota

Variables	Estimate	SE	N	Bandwidth
<i>Mayor</i>				
Left-wing	0.152	(0.161)	585	5921
Independent	-0.0126	(0.0494)	624	6760
Right-wing	-0.126	(0.156)	584	5886
Runs for reelection	-0.100	(0.139)	547	5032
Changes	0.135	(0.157)	555	5173
Supported by a coalition	0.0312	(0.0456)	649	7508
Has majorities in TH and MA	0.0151	(0.153)	512	4596
Margin of victory	6.490	(5.314)	583	5859
National government led by mayor's party	0.0788	(0.150)	586	5946
Vote share incumbent mayor's party	2.734	(4.129)	574	5607
<i>Parties</i>				
Number running (RDD)	0.0141	(0.199)	501	8517
Number running	0.347	(0.250)	555	5177
Effective number elected	-0.374***	(0.138)	581	5727

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota implementation on council characteristics. For the number of running variables, also the RDD regression (Equation 1) is presented, which is indicated between brackets. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. Dummies indicating the election year, passing the 10,000 threshold and a non-complying party are included. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). TH implies town hall (council) and MA implies municipal assembly. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

exception is the previous occupation of technicians. More specifically, the share of technicians in the council decreased by 7.9 p.p on average due to the quota, which could be explained by the fact that men are more often technicians. However, this effect is only statistically significant at the 10% level and could suffer from multiple hypothesis testing. It is, therefore, unclear whether the quota decreased the share of technicians.

7.4 Municipality budget

The quota could affect the municipality budget via the observed increase in female political representation or the decrease in the effective number of parties in the council. Regarding the former, it is expected that the composition of the municipality budget is shifted towards expenditures and investments preferred by women. In Portugal, the mayor is the most important decision-maker and no effect has been found on the gender of the mayor. This could reduce the magnitude of the shift towards female-preferred policies. Further, fewer parties in the council could increase the effectiveness of policy elaboration and

Table 8: Council characteristics, 2021 amendment

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
<i>Mayor</i>					
Left-wing	Yes	-0.357***	(0.137)	475	7239
Independent	Yes	0.00273	(0.0449)	480	8392
Right-wing	Yes	0.343**	(0.140)	475	7327
Runs for reelection	Yes	-0.237	(0.198)	464	6222
Changes	Yes	0.0140	(0.204)	467	6369
Supported by a coalition	Yes	-0.00210	(0.0563)	478	7781
Has majorities in TH and MA	Yes	-0.0316	(0.103)	471	6556
Margin of victory	Yes	11.09**	(5.326)	476	7576
National government led by mayor's party	Yes	-0.271*	(0.145)	474	6985
Vote share incumbent mayor's party	Yes	4.516	(4.644)	473	6977
<i>Parties</i>					
Number running	Yes	0.708	(0.447)	462	6002
Effective elected number	No	-0.149	(0.124)	187	11043
Effective elected number	Yes	0.0513	(0.125)	473	6886
<i>Council Characteristics</i>					
Born in municipality (%)	Yes	0.0120	(0.0891)	464	6532
Average age council	Yes	-0.485	(1.476)	467	6863
Members resident of municipality (%)	No	0.0258	(0.0279)	190	11774
<i>Education level council</i>					
Basic schooling	Yes	0.00378	(0.0258)	456	6188
Secondary schooling	Yes	0.0110	(0.0577)	461	6439
Undergraduate university degree	Yes	0.00658	(0.117)	461	6428
Post-graduate (master or PhD)	No	0.0322	(0.0417)	192	11948
<i>Previous occupation council</i>					
Not defined, retired, unemployed, students, domestic	No	-0.0581	(0.0491)	170	8315
Administrative workers	Yes	0.0140	(0.0322)	456	5895
Teaching professionals	Yes	0.0348	(0.0555)	473	8092
Small business owners	Yes	-0.00160	(0.0311)	454	5765
Technicians (intermediate level)	Yes	-0.0791*	(0.0436)	473	7803
Service and sales workers	No	0.0160	(0.0335)	173	8765
Managers and senior staff	Yes	-0.0295	(0.0768)	469	7207
Intellectual and scientific professionals	Yes	0.109	(0.0856)	469	7334

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2021 gender quota amendment on the council characteristics. The second column indicates whether the diff-in-disc (when common trend holds) or RDD method is employed. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. A dummy indicating passing the 10,000 threshold is included. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. TH implies town hall (council) and Ma implies municipal assembly. Born in the municipality is the percentage of council members that are born in the municipality, residence is defined in a similar fashion. The education level is the share of council members with the corresponding education level. The previous occupation is based on ISCO-08 codes. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

implementation, for instance, because less negotiation is needed. Then, the composition of the budget balance could be influenced.

As can be seen in Table 9, the (primary) budget balance is affected by the quota. More precisely, the quota increased the budget balance on average by 193.9% (+107.8 log points), which is statistically significant at the 5% level. This economically significant effect is also persistent through the three election years separately, although its magnitude differs. In contrast, the primary budget balance decreased on average by 63.1% (-99.8 log points) and is statistically significant at the 10% level. However, this effect is insignificant when considering all elections separately, and it is, therefore, unclear whether the quota actually decreased the primary budget balance. The budget balance is equal to the primary balance excluding the interest payments on debt. Therefore, it is expected that the divergence between the sign and magnitude of those budget variables is caused by a decrease in interest payments. However, the gross debt seems unaffected and there is only evidence for the presence of this effect in 2013 (diff-in-disc).

Table 9: General budget variables, 2006 quota

Variables	Estimate	SE	N	Bandwidth
Primary budget balance	-0.998*	(0.557)	454	6472
Budget balance	1.078**	(0.535)	402	6115
Gross debt	-0.274	(0.201)	552	5135

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota implementation on the budget. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. Dummies indicating the election year, passing the 10,000 threshold and a non-complying party are included. All variables are in logs, real euros, per capita and the average of the term the council is in office. The budget balance excludes financial assets and liabilities. The primary budget balance excludes financial assets and liabilities, and interest payments on debt. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

The effects on the composition are discussed by examining detailed expenditures and investments and are presented in Table 10. It needs to be noted that, as already mentioned in Section 6, the common trend assumption does not hold for half of the expenditure and investment variables. Further, since relatively a large amount of variables are tested, the results may suffer from multiple hypothesis testing.

The diff-in-disc estimates provide evidence for a decrease in expenditures with financial liabilities and the interest payments on debt, which is in line with the contradicting signs of the budget variables and could be related to a reduction in the gross debt ratios. For these variables, the common trend assumption holds and the diff-in-disc estimates are thus preferred. More specifically, the quota decreased debt repayment and interest payments on debt on average by respectively 33.4% (-40.6 log points, 10%

significance level) and 49.2% (-67.7 log points, 5% significance level). This effect is driven by the 2013 election. On average, the quota decreased the expenditures with financial liabilities and interest payments on debt by respectively 36.2% (-44.9 log points) and 52.6% (-74.6 log points) in 2013, which is statistically significant at the 10% and 5% levels.

This election is also characterized by the biggest increase in the share of female council members. This suggests that more women, in a setting with a societal expectation to reduce debt levels as described in Section 2, decrease expenditures with financial liabilities and interest payments. Three mechanisms could explain this phenomenon, women could be more risk averse, women could be stricter in following the law or fewer parties in the council could cause a decrease in expenditures with financial liabilities and interest payments. However, whether this effect is present is ambiguous given its insignificance in 2009 and 2017 and the insignificance of the gross debt.

Except for the above-mentioned effects, no other effects of the quota on expenditures are statistically significant in the pooled, 2013 and 2017 samples. Besides, in 2009 five estimates are significant. However, given the common trend assumption, the preferred methods provide no evidence for these effects.

For one of the expenditure categories, a detailed composition is studied; investments. Overall, the quota increased the machinery and equipment investments by 39.8% (+33.5 log points) on average in the RDD sample, which is the preferred method. However, the effect is only statistically significant at the 10% level. Further, the quota decreases the investments in water treatment and distribution (RDD) by 67% (-110.8 log points) and is significant at the 1% level. However, the preferred estimate is insignificant and, therefore, it is ambiguous whether this effect is present. For the 2013 election, the estimates provide evidence for the same effects to be present in the RDD sample and the same discussion as for the pooled sample holds. It increased machinery and equipment investments on average by 43.4% (+56.9 log points, significant at the 5% level) and decreased water treatment and distribution by 91.4% (-244.8 log points, significant at the 1% level).

In 2009, the quota did not affect any investment category, but the findings provide evidence for some significant effects in the 2013 diff-in-disc sample, which is the preferred method. More specifically, it increases the investments in the acquisition of land and the category other by respectively 168.3% (+98.7 log points, significant at the 10% level) and 164.9% (+97.4 log points, significant at the 5% level). Further, it decreases sewage investments by 73% (-130.8 log points), which is significant at the 10% level. The effect on housing is also significant for the elections of 2013 and 2017 in the diff-in-disc estimation, however, this is not the preferred method. However, in 2017, the effect on rural roads is significant at the 1% level with both methods. More specifically, the quota increases investments in rural roads on

average by 638-802% (+200-220 log points). Even though the gender effects are unaffected in 2017, the significant effects on rural road investments can still be driven by an increase in the council in 2017 since implementing investments in rural roads generally are time-intensive. It is, however, unclear why these effects are present. For instance, Bagues and Campa (2021) classify the category infrastructure and transport as a male expenditure in Spain, which would expect these investments to decrease instead of increase.

To summarize, most results on expenditures and investments are ambiguous. However, suggestive evidence is provided for decreases in interest payments and expenditures with financial expenditures due to more women and fewer parties in the council. Both can be explained via three mechanisms; women are more risk-averse or law-obeying, or fewer parties allow to decrease these expenditures more efficiently. Further, evidence is provided for an increase in machinery and equipment in the 2009 and 2013 elections. Moreover, in 2009, the investments in the acquisition of land increased and investments in sewage decreased. In 2017 rural road investments increased.

8 Sensitivity analysis

This section presents several adjustments to the estimations presented in the text and discusses their differences. It first reviews the differences between the diff-in-disc and RDD methods in Section 8.1 and analyses the sensitivity to the bandwidth in Section 8.2. Hereafter, the results without controlling for the 10,000 voters threshold and with controlling for the variables that significantly differ between the treatment and control groups are analysed in Section 8.3. Further, the sensitivity to excluding switchers is examined in Section 8.4. Lastly, a placebo test concerning the quota implementation is presented in Section 8.5. Note that the diff-in-disc estimates are discussed unless specified otherwise.

8.1 RDD versus diff-in-disc

As already argued, the diff-in-disc is preferred over the RDD method since it does not suffer from sorting and increases the sample size. As it is the best alternative, the RDD method is exploited when the diff-in-disc identifying assumption does not hold. Therefore, it is interesting to examine how the results are affected by the choice of method. It needs to be noted that when the common trend assumption does not hold, significant differences between the RDD and diff-in-disc estimates are uninformative, and are, therefore, not discussed. The results are shown in Section 7 and Appendix E.

Even though the estimates and their significance levels differ somewhat for the gender effects, they

Table 10: Expenditures and investments, 2006 quota

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
<i>Expenditures</i>								
Total	-0.00414	(0.0675)	490	7585	-0.123	(0.0989)	532	4756
Expenditures with financial liabilities (debt repayment)	-0.0347	(0.201)	508	9250	-0.406*	(0.206)	581	5922
Expenditures with financial assets	-0.239	(0.164)	415	9699	-0.158	(0.492)	467	6724
Interest payments on debt	-0.373	(0.312)	498	8264	-0.677**	(0.322)	560	5382
Effective	0.0104	(0.0687)	481	7298	-0.0902	(0.101)	514	4608
Total - current	0.0189	(0.0661)	501	8297	-0.0824	(0.0838)	549	5062
Personnel	0.0384	(0.0827)	499	8035	-0.0217	(0.105)	540	4898
Acquisition of goods and services	-0.000953	(0.0821)	501	8396	-0.0942	(0.0946)	556	5189
Total - capital	-0.0757	(0.107)	484	7421	-0.193	(0.169)	534	4773
Investments	0.0313	(0.180)	499	7961	-0.0625	(0.222)	546	5003
<i>Investment per category</i>								
Acquisition of Land	0.0175	(0.297)	457	10305	0.593	(0.507)	516	6088
Housing	0.334	(0.385)	360	9796	0.881	(0.563)	434	6294
Transportation material	-0.0308	(0.175)	495	9190	-0.272	(0.309)	570	5951
Machinery and equipment	0.335*	(0.178)	501	8517	0.189	(0.254)	548	5097
Other	0.223	(0.320)	452	8085	0.520	(0.468)	510	5373
<i>Investment-Other Buildings</i>								
Total	0.218	(0.214)	503	8902	0.418	(0.336)	580	5770
Sports, recreation and schooling facilities	0.424	(0.278)	466	7687	0.222	(0.418)	520	4962
Social equipment	-0.102	(0.516)	252	14030	0.713	(0.809)	295	8056
Other	0.0243	(0.228)	507	9822	0.429	(0.408)	573	6110
<i>Investment - Diverse Constructions</i>								
Total	-0.143	(0.373)	500	8929	-0.318	(0.452)	574	5709
Streets, overpasses and complementary works	0.603*	(0.365)	340	9807	0.133	(0.567)	415	6197
Water treatment and distribution	-1.108***	(0.416)	267	5210	-0.970	(0.596)	269	3809
Rural roads	0.158	(0.563)	236	6691	0.414	(0.566)	276	4511
Sewage	-0.128	(0.432)	312	10542	-0.590	(0.682)	363	6010
Other	-0.147	(0.293)	514	9748	0.0848	(0.382)	591	6232

Remarks: this table shows the estimation results of RDD (Equation 1) and difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota on the expenditures and investments. SEs is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SE are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. Dummies indicating the year, passing the 10,000 threshold an a non-complying party are included. All variables are in logs, real euros, per capita and the average of the term the council is in office. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

provide a consistent picture. For instance, with accounting for non-compliance in the pooled sample, the quota implementation increased the share of female council members, excluding the mayor, by 10.2 p.p. (1% significance level) in the RDD specification while it increased this share in the diff-in-disc specification by 10.4% (10% significance level). However, for the 2021 amendment, several significant effects turn insignificant when exploiting an RDD. Specifically, this is the case for the effects on the female list leader (+13.6 p.p., 10% significance level), the vote share of left-wing parties (-10.8 p.p., 10% significance level) and all significant diff-in-disc council effects (e.g. left-wing mayor probability -35.7%, 1% significance level; margin of victory 11.09 p.p., 5% significance level). Further, for the 2006 quota, this is the case for two estimations; the number of elected parties (-0.374, 1% significance level) and general budget effects (e.g. budget balance + 107.8 log points, 5% significance level). In contrast, the 2006 estimate for the vote share of the Left Bloc (BE) is significant in the RDD specification while it is insignificant for the diff-in-disc. However, the magnitude of the RDD effect is economically insignificant; the quota decreased the votes for BE by 0.04 p.p. on average.

Thus, the RDD estimates provide often less powerful estimates. This shows the importance of using the diff-in-disc when possible since the joint effect of a sorting bias and the smaller sample size significantly affect some estimates.

8.2 Bandwidth

The bandwidth choice affects the estimates. It is, therefore, important to examine how sensitive the findings are to another bandwidth. If they are sensitive, they should be interpreted carefully. This is analysed by comparing the main (MSE bandwidth) results to the CER bandwidth results. The latter are presented in Appendix F. It needs to be mentioned that MSE-bandwidth results with a different bandwidth at both sides are not presented. The resulting bandwidths were unrealistically large and could even be 100,000 on the right side of the cutoff.

Even though the sample size allows for a reduction in the bandwidth, the main bandwidth selector generally selects a bandwidth around 7,000 above and below the threshold for the diff-in-disc estimations. This bandwidth is relatively large due to the low number of Portuguese municipalities. Note that the bandwidth is always larger for the RDD estimations since the sample does not include observations before the implementation. Generally, the CER bandwidth provides smaller bandwidths. A smaller bandwidth implies a reduction in the bias and an increase in the variance. Thus, the CER bandwidth provides less biased estimates, but, consequently, the CER bandwidth increases the variance of the estimates.

The pooled RDD effect of the 2006 quota on the female council members without accounting for non-compliance turns insignificant with the smaller CER bandwidth. One explanation is that there are relatively more non-complying municipalities within a smaller bandwidth. This is confirmed by the significant findings with accounting for non-compliance. However, the power and estimates are slightly smaller than the main estimates. Furthermore, the magnitudes of the probability for a left-wing and right-wing mayor in 2006 turn significant when using a smaller bandwidth and are similar in magnitude to the main results for the 2021 amendment, but the signs are the opposite. Thus, the results suggest that the quota shifted the political ideology of mayors towards the left-wing, but this pattern was reversed by the amendment. This could be because of the relative change in party competition. Moreover, the implementation effect on the effective number of parties reduces from a decrease of 0.374 to 0.271 because of the smaller bandwidth, but the effect is still statistically and economically significant. Thus, the magnitude of this result should be interpreted carefully. Further, the previous occupation share in the council of not defined, retired, unemployed, student and domestic turns significant. However, it is unclear which specific occupation causes this significant decrease and is, therefore, uninformative. The effects on debt repayment and interest payments are insignificant with a smaller bandwidth and should, therefore, be interpreted carefully. Besides, the magnitude of the primary budget balance increases to on average 336.7% (147.4 log points). All other results are similar.

To summarize, the results are relatively robust to reducing the bandwidth. However, the results for the 2006 political ideology of the major, the 2006 effective number of parties in the council, the debt repayment and interest payments should be interpreted carefully.

8.3 Controls

This section discusses the sensitivity to excluding and including some control variables. Control variables increase the power of the estimation, which is especially relevant with the relatively small sample size. The results are shown in Appendix G.

In the main results, the control dummy of a municipality passing 10,000 registered voters is included, at which the mayors' and councils' salary increases. This also improves accuracy and power. Generally, the results are consistent when excluding this control. However, even though the overall picture is still similar, the effect on female council members including the mayor in the 2006 pooled sample (RDD) and 2013 estimation (diff-in-disc) is not significant anymore. Moreover, excluding the control improves the evidence of the negative effect on the probability of a female mayor in 2013 for both the diff-in-disc and RDD estimations, which is, thus, likely smaller close to the 7,500 threshold. Further, the effect of

the quota amendment on the number of running and elected parties turns significant when excluding this control. More precisely, the quota increases the number of running and elected parties, without controlling for the 10,000 threshold, on average by respectively 0.854 (significant at the 5% level) and 0.252 (significant at the 10% level). This suggests that the salary of the mayor influences the number of running and elected parties.

The balancing test in Section 6 showed that the education level of the population significantly differs between the treatment and control groups. Therefore, these are added as controls to the main estimation. It is expected that the results are similar since other characteristics are comparable and that the power increases as the variance decreases. This expectation is confirmed by the findings. For instance, the RDD effect on the female list leader, without accounting for non-compliance is significant in 2009, namely, the share decreases by 9 p.p. on average. The same holds for the significance level of the quota effect on debt repayment, it is now significant at the 5% level instead of the 10% level. Moreover, a significant effect at the 10% level is present for the acquisition of goods and services and sports, recreation and schooling facilities. The former decreases on average by 12.5% (-13.3 log points), while the latter increases by 60% (47 log points, RDD). Further, the diff-in-disc estimate of water treatment and distribution turns significant, hereby providing suggestive evidence for a negative effect of the quota on this expenditure type. In contrast, for the diff-in-disc estimate, the effect on female council members in the pooled sample and including the mayor in 2009 turns insignificant. However, the overall picture of the effect on female political representation is similar.

To conclude, this analysis shows that the results are robust to excluding the threshold control, except for the female mayor probability in 2013 and the number of running and elected parties. Moreover, adding controls that are significantly different between the treatment and control groups did not affect the findings significantly and improved the power.

8.4 Switchers

Some municipalities that are relatively close to the threshold switch from treatment during the sample period. This could affect the diff-in-disc results. Nevertheless, they are included in the main results to increase the sample size. To examine the effect of switchers, the results are presented without the switchers, with the same bandwidths as in the main specifications. Differences in the results can be explained by the switchers, fewer municipalities close to the threshold and sample size reduction.

The effects on female political representation for the 2006 quota are relatively similar, even though the magnitude increases for some variables. Further, the 2006 pooled diff-in-disc estimate without ac-

counting for non-compliance turns significant and thus provides further evidence for the findings. Also, a significant effect of the 2017 election is present on the female council members, excluding the mayor, which increases by 14.2 p.p. on average. Thus, among non-switching municipalities, the effect of a gender quota on female representation likely lasts longer. In contrast, for the 2021 quota amendment, the effect on the share of female list leaders turns insignificant when excluding switchers.

In 2021, the main results show a shift from left-wing towards right-wing mayors. When excluding switchers, the magnitude of the shift away from left-wing mayors reduces significantly by 12 p.p. on average and there is no evidence anymore for an effect on the probability of a right-wing mayor. This suggests that the effect is heterogeneous depending on the distance to the threshold and is sensitive to the exclusion of switchers and sample size. Similarly, the share of technicians in the council, primary budget balance, debt repayment and interest payments turn insignificant.

Moreover, the probability that the mayor's party had majorities in the Town Hall and Municipal Assembly turns significant, it decreases by on average 26% (10% significance level) due to the 2006 quota and could be related to the decrease in the number of elected parties. Besides, the effects on the total of other buildings and rural road turn significant. This implies that these outcome variables are sensitive to switchers or could suffer from multiple hypothesis testing and should be interpreted carefully.

In sum, excluding switchers increases the evidence for the presence and persistence of increases in political representation at the council level. Besides, some effects turn insignificant, which can be caused by the exclusion of switchers as well as the sample size reduction. In contrast, the probability of majorities, total investments in other buildings and rural road investments turn significant.

8.5 Placebo

It is expected that the estimated effects are caused by the quota. To test whether this expectation is valid, placebo tests regarding the policy change and threshold can be performed. However, no placebo threshold is examined. A placebo threshold before 7,500 registered voters would reduce the bandwidth on the left too much to provide interesting results, a placebo threshold between 7,500 and 10,000 eligible voters is too close to the 7,500 threshold and a placebo of 10,000 voters or higher likely measures the effect of the salary increase and is, therefore, uninformative. Thus, only a placebo test concerning the quota implementation year is performed. A placebo test is irrelevant for the RDD estimations due to data limitations and is uninformative for the amendment since it also measures the 2006 quota effects.

This placebo test estimates the diff-in-disc equation with the quota being implemented in the 2005 election. Thus, the elections of 2005, 2009 and 2013 are compared to the 2001 election. No significant

effect should be present; there should be no effect of a quota when it is not implemented yet. The results are presented in Appendix I. As expected, almost all effects are insignificant, which is a good sign. However, a significant effect is present of the (non-existent) quota on the probability of an independent mayor and the effective number of elected parties. The former could be explained by the low absolute number of independent mayors, which is around 1% in 2005 (see Table A2). In contrast to the main results, the sign of the effect on the effective number of parties is the opposite.

Thus, the placebo test provides evidence for the estimates to be internally valid. However, the effects of the quota on the probability of an independent mayor and the number of effective parties should be interpreted carefully.

9 Discussion

Female political representation in Portugal was relatively low in 2005, especially at the local level and in leadership positions. This thesis examines the causal effect of the Portuguese gender quota in 2006 and its recent amendment in 2021 at the municipality level on female political representation, voter behaviour, council quality and policies by employing a rich dataset and a difference-in-discontinuities (diff-in-disc) method. For some estimations, the identifying assumption does not hold and a Regression Discontinuity Design is examined instead.

The quota increased female political representation at the council level in three elections by on average 10 p.p. and was, thus, effective. In the first and second elections, the share of female council members increased on average by 9-12 and 15-19 p.p. respectively. However, no effect was present in the third election or after the amendment. Importantly, non-compliance significantly reduced the effectiveness of the quota, especially in the short run. Further, suggestive evidence shows a reduction in the probability of a female mayor in the second election by on average 10.3% and an increase in female list leaders due to the amendment by 13.6 p.p. on average. However, generally, no increase in the probability of a female mayor is observed, who is the most important decision-maker. The short and middle-term increase in female political representation at the council level is in line with the (diff-in-disc) literature (e.g. Bagues and Campa (2021) and Lassébie (2020)). Even though the diff-in-disc literature does not find an effect on the female list leaders, I find suggestive evidence for increases in the long run. This is in line with research by De Paola et al. (2010) and O'Brien and Rickne (2016).

These findings on political representation can be explained by several mechanisms. First, part of the increase is mechanical. Second, women are likely placed in second or third places, making them less

likely to become a mayor, especially in the short and middle-long run. Third and most importantly, parties - and potentially voters - require time to adjust to the quota. This adjustment theory is in line with the decrease in non-compliance over time and the increase in female political representation in the second election, as compared to the first. Fourth, the null effect in the third election after the implementation is explained by the increase in female political representation in municipalities below the threshold and could be related to time, spillover and anticipation effects.

As the amendment did not specify anything about the list leader, the increase in female list leaders is likely caused by a decrease in voter bias, party bias or supply-side factors. The findings show that a reduction in party bias is an important mechanism for explaining the gender effects. This explanation is supported by the adjustment theory, candidate placement on the list, long-term female list leader increase and slight voter behaviour findings. A reduction in party bias could go hand in hand with a reduction in voter bias. However, the findings only provide suggestive evidence for this effect. Since no data on candidate lists are available, the exact role of the supply-side factors is unknown.

The quota only slightly affected voter behaviour and council characteristics. To start, the quota reduced the votes for independent lists on average by 5.1 p.p. and is driven by the second (-7.1 p.p.) and third (-10.3 p.p.) elections. Also, evidence suggests that the quota caused a reduction in the number of elected parties by on average 0.271-0.374. Further, the amendment decreased the total vote share of left-wing parties by 10.8 p.p. on average. In line with this is a shift from left-wing to right-wing mayors of on average 25-35%, an increase in the margin of victory by on average 11.09 p.p. and a decrease in the probability that the national government is led by the mayor's party by on average 27.1%. Interestingly, the amendment did not affect the council's quality.

These voter behaviour effects, especially the decrease in votes for left-wing parties, are not found in the literature but were not unexpected. These are likely caused by relative changes in the candidate list, and, therefore by relative changes in the comparative advantage and campaigned policies. This mechanism is in line with research by Casas-Arce and Saiz (2015). Further, the exact mechanism underlying the increase in votes for the independent lists is unclear, but a decrease in comparative advantages because of there being no women on the smaller lists is hypothesised.

Furthermore, the null effect of the amendment on the council quality is in line with the diff-in-disc research by Bagues and Campa (2021) and Lassébie (2020) and is most likely caused by the null effect on the council. Additionally, the decrease in the number of elected parties is most likely explained by the decrease in vote share for independent lists, especially since no evidence suggests a decrease in the number of running parties. This finding is, to my best knowledge, not found in the literature.

The increase in the share of female council members affected the budget and its composition, even though not all effects are robust. The quota increased the budget balance by on average 193.9%. In line with this, debt repayments and interest payments on debt decreased, on average by respectively 33.4% and 49.2% and are both driven by the second election. However, there is no significant effect on gross debt, which implies that the budget effects are only suggestive. Further, the estimations suggest an increase of on average 39.8% in the machinery and equipment investments. Moreover, the quota affected the investments in the acquisition of land (+168.3%) and sewage (-73%) in the second election. In the third election, the quota increases rural road investments by 638-802% on average.

The change in the budget balance is not found in the literature studying developed countries but is potentially driven by Portuguese societal concerns regarding debt and the increase in debt repayment and interest payments. It can be caused by the findings in the literature that women are financially more risk averse (e.g. Eckel and Grossman, 2008; Suzuki and Avellaneda, 2018), follow the law more and an efficiency increase because of the fewer parties in the council (Grembi et al., 2016). Further, it is unclear why some budget items increased or decreased, but the relatively small effect on the composition is likely caused by the fact that the gender of the mayor - i.e. the most important decision-maker - is unaffected.

Since Rodrigues (2022) also studied the effect of the Portuguese quota implementation on female representation using time series, it is interesting to compare the findings. He finds that the quota increased the share of women in the council but created a glass ceiling around the legal threshold. The former is confirmed by the findings of this paper, however, the evidence does not point towards the latter. More precisely, the amendment lifted the legal threshold but neither increased the share of female council members significantly nor the mean of female council members above the legal threshold. It is most likely that the quota only significantly affected the council members in the short run, and potentially affected the time trend via stereotypes, rather than that the quota induced a glass ceiling. Moreover, he has not studied the effect on leadership positions and indirect effects, so these cannot be compared.

The analysis has three caveats. First, by design, the estimates represent the local average treatment effects for municipalities with around 7,500 eligible voters and do not necessarily apply to bigger municipalities. However, the share of studied municipalities is significant - more than 50% of the Portuguese municipalities are close to the threshold. Second, the bandwidth is relatively wide due to the small number of Portuguese municipalities. However, the results are generally not sensitive to reducing the bandwidth. Third, the data do not allow to study the effects of the implementation on the council quality and to study the effect on the candidate list. Therefore, not all mechanisms are examined precisely.

Several policy implications follow from these findings. First, stricter rules concerning non-compliance

are required when implementing a quota since it significantly decreased the quota's effect on female political representation, especially in the short run. Second, in line with the Portuguese policymakers, a quota should be revised after some elections to increase its effectiveness. In the case of Portugal, the quota only affected female political representation in the first two elections after the implementation. Thus, an adjustment should be designed carefully since the Portuguese quota amendment did not affect female political representation. Third, closely related, policies targeted at increasing women in power should be implemented at the local level, for instance, by incentivising parties to increase the share of women in leadership positions. The quota increased females in leadership positions only after three elections but did not affect the probability of a female mayor. In this way, policies can represent female preferences better since the increase in female councillors did not significantly affect policies.

10 Conclusion

In 2006, Portugal implemented a gender quota, requiring parties to include at least 33.3% female candidates on their list, complemented with a zipper requirement. This thesis studies the effect of this quota and its recent 2021 amendment on female political representation, voter behaviour, council quality and policies at the municipality level. The local level is especially interesting to study since female political representation is the lowest at this level of all government levels. To examine this, a rich dataset and a difference-in-discontinuity method are employed. The quota was effective in increasing the share of female council members in the short run but not in the longer run, it increased by on average 9-12 and 15-19 p.p. for respectively the first and second elections after the implementation. Importantly, non-compliance significantly reduced the magnitude of this effect. Further, evidence suggests that the share of female list leaders increased by on average 13.6 p.p. in the long run. However, no increase in the probability of the female mayor was observed. These results can be explained by a reduction in party bias and are also in line with the adjustment theory which implies that parties need time to adjust to the quota.

Interestingly, the amendment did not affect the quality of the council. Besides, voter behaviour and council characteristics are only affected slightly. More precisely, the quota decreased the vote share of independent lists and decreased the effective number of elected parties. Both are hypothesised to be caused by relative changes in the comparative advantages. Further, the amendment caused a shift from left-wing to right-wing mayors of around 25-35%, which can be explained by a decreased vote share of left-wing parties. The latter is also likely caused by the relative changes in the candidate lists.

The budget and its composition are only slightly affected and do not provide a consistent picture.

Suggested evidence is provided for an increase in the budget balance by on average 193.9%, caused by a reduction in debt repayments and interest payments. Furthermore, in some individual elections, an increase in investments in machinery and equipment and acquisition of land caused by the quota is present. In contrast, in some elections, sewage and rural road investments decreased significantly.

This thesis will be enhanced with various additional analyses. To start, the presented sensitivity analysis will be extended by examining not only the sensitivity of the pooled effects but also the elections separately. Further, where possible, additional sensitivity analysis and heterogeneous effects will be performed. For instance, heterogeneous effects for the mainland of Portugal and its autonomous regions can be studied. Moreover, to check whether there is truly no effect on the previous occupation of the council, some occupations will be combined. Furthermore, when possible, more data on detailed expenditures such as environmental expenditures will be collected as it is more straightforward to classify these expenditures as preferred by women. Closely related, in line with Bagues and Campa (2021), expenditures and investments are classified as preferred by women, neutral and men to examine whether pooled expenditures are more consistent and prevent multiple hypothesis testing concerns.

From these findings follow several interesting topics for future research. In line with the policy recommendations, other instruments to increase female political representation, especially targeted at leadership positions or increasing representation in the long run, should be studied in developed countries. Besides, the effects of the economic conditions such as the state of the female labour market on the effectiveness of a quota could be studied. For instance, a shortage in the labour market could induce fewer women to work in politics. Moreover, given the different findings between countries, future research ought to examine what drives these cross-country differences.

References

- Aidt, T. S., Veiga, F. J., & Veiga, L. G. (2011). Election results and opportunistic policies: A new test of the rational political business cycle model. *Public choice*, *148*, 21–44. <https://doi.org/10.1007/s11127-010-9644-3>
- Akhmedov, A., & Zhuravskaya, E. (2004). Opportunistic political cycles: Test in a young democracy setting. *The Quarterly Journal of Economics*, *119*(4), 1301–1338. Retrieved June 5, 2023, from <http://www.jstor.org/stable/25098719>
- Bagues, M., & Campa, P. (2020). Women and power: Unpopular, unwilling, or held back? a comment. *Journal of Political Economy*, *128*(5), 2010–2016.
- Bagues, M., & Campa, P. (2021). Can gender quotas in candidate lists empower women? evidence from a regression discontinuity design. *Journal of Public Economics*, *194*, 104315. <https://doi.org/10.1016/j.jpubeco.2020.104315>
- Baltrunaite, A., Bello, P., Casarico, A., & Profeta, P. (2014). Gender quotas and the quality of politicians. *Journal of Public Economics*, *118*, 62–74. <https://doi.org/10.1016/j.jpubeco.2014.06.008>
- Baltrunaite, A., Casarico, A., & Profeta, P. (2014). Affirmative Action and the Power of the Elderly. *CESifo Economic Studies*, *61*(1), 148–164. <https://doi.org/10.1093/cesifo/ifu032>
- Barnes, T. D., & Holman, M. R. (2020). Gender quotas, women's representation, and legislative diversity. *The Journal of Politics*, *82*(4), 1271–1286. <https://doi.org/10.1086/708336>
- Baskaran, T., & Hessami, Z. (2018). Does the election of a female leader clear the way for more women in politics? *American Economic Journal: Economic Policy*, *10*(3), 95–121. <https://doi.org/10.1257/pol.20170045>
- BBC News. (2018). Call for equal assembly member gender quota. <https://www.bbc.com/news/uk-wales-politics-42789478>
- Beaman, L., Chattopadhyay, R., Duflo, E., Pande, R., & Topalova, P. (2009). Powerful Women: Does Exposure Reduce Bias?*. *The Quarterly Journal of Economics*, *124*(4), 1497–1540. <https://doi.org/10.1162/qjec.2009.124.4.1497>
- Bertrand, M., & Duflo, E. (2017). Field experiments on discrimination. *Handbook of economic field experiments*, *1*, 309–393. <https://doi.org/10.1016/bs.hefe.2016.08.004>
- Besley, T., Folke, O., Persson, T., & Rickne, J. (2017). Gender quotas and the crisis of the mediocre man: Theory and evidence from sweden. *American Economic Review*, *107*(8), 2204–42. <https://doi.org/10.1257/aer.20160080>

- Bhavnani, R. (2009). Do electoral quotas work after they are withdrawn? evidence from a natural experiment in india. *American Political Science Review*, 103(1), 23–35. https://EconPapers.repec.org/RePEc:cup:apsrev:v:103:y:2009:i:01:p:23-35_09
- Bohn, F., & Veiga, F. J. (2021). Political forecast cycles. *European Journal of Political Economy*, 66, 101934. <https://doi.org/10.1016/j.ejpoleco.2020.101934>
- Broockman, D. E. (2014). Do female politicians empower women to vote or run for office? a regression discontinuity approach. *Electoral Studies*, 34, 190–204. <https://doi.org/10.1016/j.electstud.2013.10.002>
- Cabaleiro-Casal, R., & Buch-Gómez, E. J. (2020). Women in spanish municipal councils and budgetary policies. *Urban Affairs Review*, 56(6), 1715–1745. <https://doi.org/10.1177/1078087419869844>
- Calonico, S., Cattaneo, M. D., & Farrell, M. H. (2020). Optimal bandwidth choice for robust bias-corrected inference in regression discontinuity designs. *The Econometrics Journal*, 23(2), 192–210. <https://doi.org/10.1093/ectj/utz022>
- Calonico, S., Cattaneo, M. D., & Titiunik, R. (2014). Robust nonparametric confidence intervals for regression-discontinuity designs. *Econometrica*, 82(6), 2295–2326. <https://doi.org/10.3982/ECTA11757>
- Casal, R. C., & Gómez, E. B. (2018). Adjustments in municipal fiscal crises. are they different according to the gender of the mayor? *Local Government Studies*, 44(2), 255–274. <https://doi.org/10.1080/03003930.2017.1387538>
- Casarico, A., Lattanzio, S., & Profeta, P. (2022). Women and local public finance. *European Journal of Political Economy*, 72, 102096. <https://doi.org/10.1016/j.ejpoleco.2021.102096>
- Casas-Arce, P., & Saiz, A. (2015). Women and power: Unpopular, unwilling, or held back? *Journal of political Economy*, 123(3), 641–669. <https://doi.org/10.1086/680686>
- Castro, V., & Martins, R. (2013). Running for office again: Evidence from portuguese municipal elections. *Public Choice*, 156, 677–702. <https://doi.org/10.1007/s11127-012-9922-3>
- Cattaneo, M. D., Jansson, M., & Ma, X. (2018). Manipulation testing based on density discontinuity. *The Stata Journal*, 18(1), 234–261. <https://doi.org/10.1177/1536867X1801800115>
- Cattaneo, M. D., & Titiunik, R. (2022). Regression discontinuity designs. *Annual Review of Economics*, 14, 821–851. <https://doi.org/10.4135/9781526486387.n47>
- Chattopadhyay, R., & Duflo, E. (2004). Women as policy makers: Evidence from a randomized policy experiment in india. *Econometrica*, 72(5), 1409–1443. <https://doi.org/10.1111/j.1468-0262.2004.00539.x>

- Chortareas, G., Logothetis, V., & Papandreou, A. A. (2016). Political budget cycles and reelection prospects in Greece's municipalities. *European Journal of Political Economy*, 43(100), 1–13. <https://doi.org/10.1016/j.ejpoleco.2016.0>
- Clayton, A., & Zetterberg, P. (2018). Quota shocks: Electoral gender quotas and government spending priorities worldwide. *The Journal of Politics*, 80(3), 916–932. <https://doi.org/10.1086/697251>
- Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic literature*, 47(2), 448–474. <https://doi.org/10.1257/jel.47.2.448>
- Cunha, J. C., & Braz, C. R. (2007). Public expenditure and fiscal consolidation in Portugal. *OECD Journal on Budgeting*, 6(4), 103–121. <https://doi.org/10.1787/16812336>
- De Paola, M., Scoppa, V., & De Benedetto, M. A. (2014). The impact of gender quotas on electoral participation: Evidence from Italian municipalities. *European Journal of Political Economy*, 35, 141–157. <https://doi.org/10.1016/j.ejpoleco.2014.06.001>
- De Paola, M., Scoppa, V., & Lombardo, R. (2010). Can gender quotas break down negative stereotypes? Evidence from changes in electoral rules. *Journal of Public Economics*, 94(5), 344–353. <https://doi.org/10.1016/j.jpubeco.2010.02.004>
- Drazen, A., & Eslava, M. (2010). Electoral manipulation via voter-friendly spending: Theory and evidence. *Journal of Development Economics*, 92(1), 39–52. <https://doi.org/https://doi.org/10.1016/j.jdeveco.2009.01.001>
- Duflo, E. (2012). Women empowerment and economic development. *Journal of Economic literature*, 50(4), 1051–1079. <https://doi.org/10.1257/jel.50.4.1051>
- Eckel, C. C., & Grossman, P. J. (2008). Chapter 113 men, women and risk aversion: Experimental evidence. In C. R. Plott & V. L. Smith (Eds.). Elsevier. [https://doi.org/10.1016/S1574-0722\(07\)00113-8](https://doi.org/10.1016/S1574-0722(07)00113-8)
- Eggers, A. C., Freier, R., Grembi, V., & Nannicini, T. (2018). Regression discontinuity designs based on population thresholds: Pitfalls and solutions. *American Journal of Political Science*, 62(1), 210–229. <https://doi.org/10.1111/ajps.12332>
- Espirito-Santo, A. (2015). A long way to a still-imperfect parity. *EUI Department of Law Research Paper*, (2015/23). <https://doi.org/10.2139/ssrn.2614889>
- Esteve-Volart, B., & Bagues, M. (2012). Are women pawns in the political game? Evidence from elections to the Spanish Senate. *Journal of Public Economics*, 96(3), 387–399. <https://doi.org/https://doi.org/10.1016/j.jpubeco.2011.12.004>
- European Institute for Gender Equality. (2023). Gender Equality Index. <https://eige.europa.eu/gender-equality-index/2022/domain/power/PT>

- Eyméoud, J.-B., & Vertier, P. (2022). Gender biases: evidence from a natural experiment in French local elections. *Economic Policy*, 38(113), 3–56. <https://doi.org/10.1093/epolic/eiac067>
- Ferreira, F., & Gyourko, J. (2014). Does gender matter for political leadership? the case of u.s. mayors. *Journal of Public Economics*, 112, 24–39. <https://doi.org/10.1016/j.jpubeco.2014.01.006>
- Fox, R. L., & Lawless, J. L. (2004). Entering the arena? gender and the decision to run for office. *American Journal of Political Science*, 48(2), 264–280. <https://doi.org/10.1111/j.0092-5853.2004.00069.x>
- Fox, R. L., & Lawless, J. L. (2011). Gendered perceptions and political candidacies: A central barrier to women's equality in electoral politics. *American Journal of Political Science*, 55(1), 59–73. <https://doi.org/10.1111/j.1540-5907.2010.00484.x>
- Franceschet, S., Krook, M. L., & Piscopo, J. M. (2012). Conceptualizing the impact of gender quotas. *The impact of gender quotas*, 3–26.
- Funk, P., & Gathmann, C. (2015). Gender gaps in policy making: Evidence from direct democracy in switzerland. *Economic Policy*, 30(81), 141–181. <https://EconPapers.repec.org/RePEc:oup:ecpoli:v:30:y:2015:i:81:p:141-181>.
- Gagliarducci, S., & Nannicini, T. (2013). Do better paid politicians perform better? disentangling incentives from selection. *Journal of the European Economic Association*, 11(2), 369–398. <https://doi.org/10.1111/jeea.12002>
- Gagliarducci, S., & Paserman, M. D. (2011). Gender Interactions within Hierarchies: Evidence from the Political Arena. *The Review of Economic Studies*, 79(3), 1021–1052. <https://doi.org/10.1093/restud/rdr046>
- Gelman, A., & Imbens, G. (2019). Why high-order polynomials should not be used in regression discontinuity designs. *Journal of Business & Economic Statistics*, 37(3), 447–456. <https://doi.org/10.1080/07350015.2017.1366909>
- Geys, B., & Sørensen, R. J. (2019). The impact of women above the political glass ceiling: Evidence from a norwegian executive gender quota reform. *Electoral Studies*, 60, 102050. <https://doi.org/10.1016/j.electstud.2019.102050>
- Grembi, V., Nannicini, T., & Troiano, U. (2016). Do fiscal rules matter? *American Economic Journal: Applied Economics*, 1–30. <https://www.jstor.org/stable/24739127>
- Hahn, J., Todd, P., & der Klaauw, W. V. (2001). Identification and estimation of treatment effects with a regression-discontinuity design. *Econometrica*, 69(1), 201–209. <http://www.jstor.org/stable/2692190>

- Hogan, R. E. (2010). Candidate gender and voter support in state legislative elections. *Journal of Women, Politics & Policy*, 31(1), 44–66. <https://doi.org/10.1080/15544770903501400>
- Kanthak, K., & Woon, J. (2015). Women don't run? election aversion and candidate entry. *American journal of political science*, 59(3), 595–612. <https://doi.org/10.1111/ajps.12158>
- Kotakorpi, K., & Poutvaara, P. (2011). Pay for politicians and candidate selection: An empirical analysis. *Journal of Public Economics*, 95(7), 877–885. <https://doi.org/10.1016/j.jpubeco.2010.11.005>
- Krook, M. L. (2018). Electoral systems and women's representation. *The Oxford handbook of electoral systems*, 175.
- Ladam, C., Harden, J. J., & Windett, J. H. (2018). Prominent role models: High-profile female politicians and the emergence of women as candidates for public office. *American Journal of Political Science*, 62(2), 369–381. <https://doi.org/10.1111/ajps.12351>
- Lassébie, J. (2020). Gender quotas and the selection of local politicians: Evidence from french municipal elections. *European Journal of Political Economy*, 62, 101842. <https://doi.org/10.1016/j.ejpoleco.2019.101842>
- Lee, D. S., & Lemieux, T. (2010). Regression discontinuity designs in economics. *Journal of economic literature*, 48(2), 281–355.
- Lippmann, Q. (2022). Gender and lawmaking in times of quotas. *Journal of Public Economics*, 207, 104610. <https://doi.org/10.1016/j.jpubeco.2022.104610>
- Matland, R. E., & Studlar, D. T. (1996). The contagion of women candidates in single-member district and proportional representation electoral systems: Canada and Norway. *The journal of politics*, 58(3), 707–733. <https://doi.org/10.2307/2960439>
- Nayar, J. (2022). Equal Representation? The Debate Over Gender Quotas (Part 1). *Harvard International Review*. <https://hir.harvard.edu/equal-representation-the-debate-over-gender-quotas-part-1/>
- Niederle, M., & Vesterlund, L. (2007). Do Women Shy Away From Competition? Do Men Compete Too Much?*. *The Quarterly Journal of Economics*, 122(3), 1067–1101. <https://doi.org/10.1162/qjec.122.3.1067>
- O'Brien, D. Z., & Rickne, J. (2016). Gender quotas and women's political leadership. *American Political Science Review*, 110(1), 112–126. <https://doi.org/10.1017/S0003055415000611>
- OECD & UCLG. (2014). *PORTUGAL* (tech. rep.). OECD. <https://www.oecd.org/regional/regional-policy/profile-Portugal.pdf>

- Ordine, P., Rose, G., & Giacobbe, P. (2023). The effect of female representation on political budget cycle and public expenditure: Evidence from Italian municipalities. *Economics & Politics*, 35(1), 97–145. <https://doi.org/10.1111/ecpo.12211>
- Preece, J., & Stoddard, O. (2015). Why women don't run: Experimental evidence on gender differences in political competition aversion. *Journal of Economic Behavior & Organization*, 117, 296–308. <https://doi.org/10.1016/j.jebo.2015.04.019>
- Rigon, M., & Tanzi, G. M. (2012). *Does gender matter for public spending? empirical evidence from Italian municipalities* (Economic working papers No. 862). Bank of Italy, Economic Research and International Relations Area. https://EconPapers.repec.org/RePEc:bdi:wptemi:td_862_12
- Rodrigues, M. (2022). Can even still be uneven? the effect of quotas in Portuguese local governments. *Local Government Studies*, 1–27. <https://doi.org/10.1080/03003930.2022.2077729>
- Schmidt, G. D. (2009). The election of women in list PR systems: Testing the conventional wisdom. *Electoral studies*, 28(2), 190–203. <https://doi.org/10.1016/j.electstud.2008.08.002>
- Spaziani, S. (2022). Can gender quotas break the glass ceiling? evidence from Italian municipal elections. *European Journal of Political Economy*, 75, 102171. <https://doi.org/10.1016/j.ejpoleco.2021.102171>
- Suzuki, K., & Avellaneda, C. N. (2018). Women and risk-taking behaviour in local public finance. *Public Management Review*, 20(12), 1741–1767. <https://doi.org/10.1080/14719037.2017.1412118>
- Svaleryd, H. (2009). Women's representation and public spending. *European Journal of Political Economy*, 25(2), 186–198. <https://EconPapers.repec.org/RePEc:eee:poleco:v:25:y:2009:i:2:p:186-198>
- Thomas, M., & Bodet, M. A. (2013). Sacrificial lambs, women candidates, and district competitiveness in Canada. *Electoral Studies*, 32(1), 153–166. <https://doi.org/https://doi.org/10.1016/j.electstud.2012.12.001>
- United Nations Development Programme. (2023). 2023 gender social norms index (gsni). *UNDP (United Nations Development Programme)*.
- Valdini, M. E. (2012). A deterrent to diversity: The conditional effect of electoral rules on the nomination of women candidates. *Electoral Studies*, 31(4), 740–749. <https://doi.org/10.1016/j.electstud.2012.06.011>
- Veiga, L. G., & Pinho, M. M. (2007). The political economy of intergovernmental grants: Evidence from a maturing democracy. *Public Choice*, 133, 457–477. <https://doi.org/10.1007/s11127-007-9208-3>
- Veiga, L. G., & Veiga, F. J. (2007). Political business cycles at the municipal level. *Public Choice*, 131, 45–64. <https://doi.org/10.1007/s11127-006-9104-2>

- Veiga, L. G., & Veiga, F. J. (2019). The Effects of Electoral Incentives on Fiscal Policy: Evidence from a Legislative Change at the Local Government Level. *The Journal of Law, Economics, and Organization*, 35(2), 394–421. <https://doi.org/10.1093/jleo/ewy027>
- Weeks, A. C., & Baldez, L. (2015). Quotas and qualifications: The impact of gender quota laws on the qualifications of legislators in the italian parliament. *European Political Science Review*, 7(1), 119–144. <https://doi.org/10.1017/S1755773914000095>

Appendix A Descriptive statistics

Table A1: Female council members, excluding mayor

Eligible voters	2005	2009	2013	2017	2021
≤ 7,500	0.1349	0.1805	0.1732	0.2304	0.3292
7,500 - 15,000	0.1513	0.2547	0.2946	0.2952	0.3223

Remarks: This table shows the means of female council members excluding the mayor. The row header indicates which municipalities are included and the column header indicates the election year. The means are rounded.

Table A2: Descriptive statistics variables of interest 2006 quota

Variable	No quota						Quota					
	Control			Treatment			Control			Treatment		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
<i>Gender</i>												
Female list leader(%)	83	0.112	0.172	110	0.0897	0.144	259	0.158	0.193	297	0.136	0.177
Female mayor	83	0.0482	0.215	110	0.0545	0.228	257	0.0895	0.286	294	0.0527	0.222
Female council members, including mayor (%)	83	0.135	0.144	110	0.154	0.121	257	0.196	0.168	294	0.279	0.114
Female council members, excluding mayor (%)	83	0.157	0.178	110	0.173	0.143	257	0.222	0.198	293	0.324	0.134
<i>Voter behaviour</i>												
Voter turnout(%)	83	71.50	5.545	110	66.20	5.821	259	68.86	6.194	297	60.78	5.945
Votes PSD (%)	83	0.379	0.217	110	0.404	0.168	259	0.336	0.204	297	0.351	0.186
Votes PS (%)	83	0.399	0.138	110	0.408	0.136	259	0.414	0.158	297	0.435	0.157
Votes CDS (%)	83	0.0139	0.0336	110	0.0330	0.0597	259	0.0249	0.0635	297	0.0308	0.0646
Votes PCP (%)	83	0.128	0.191	110	0.0985	0.156	259	0.124	0.182	297	0.0858	0.133
Votes BE (%)	83	0.00308	0.0118	110	0.00963	0.0488	259	0.00320	0.0126	297	0.0121	0.0381
Votes independent list (%)	83	0.0358	0.104	110	0.00733	0.0433	259	0.0545	0.136	297	0.0331	0.0998
Votes left-wing(%)	83	0.393	0.228	110	0.437	0.188	259	0.361	0.216	297	0.382	0.200
Votes right-wing (%)	83	0.530	0.217	110	0.516	0.188	259	0.542	0.228	297	0.533	0.197

Table A2: (continued)

Variable	No quota						Quota					
	Control			Treatment			Control			Treatment		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
<i>Council characteristics - Mayor</i>												
Left-wing	83	0.458	0.501	110	0.491	0.502	259	0.533	0.500	297	0.566	0.497
Independent	83	0.0120	0.110	110	0.00909	0.0953	259	0.0386	0.193	297	0.0168	0.129
Right-wing	83	0.530	0.502	110	0.500	0.502	259	0.429	0.496	297	0.418	0.494
Runs for reelection	83	0.855	0.354	110	0.809	0.395	259	0.745	0.437	297	0.727	0.446
Changes	83	0.229	0.423	110	0.273	0.447	259	0.394	0.490	297	0.343	0.476
Supported by coalition	83	0.0120	0.110	110	0.0364	0.188	259	0.0154	0.124	297	0.0640	0.245
Majorities in TH and MA	83	0.843	0.366	110	0.755	0.432	259	0.853	0.355	297	0.855	0.352
Margin of victory	83	19.61	14.99	110	18.76	13.83	259	21.23	15.09	297	22.33	15.50
National government is led by mayor's party	83	0.337	0.476	110	0.373	0.486	259	0.409	0.493	297	0.465	0.500
Vote share incumbent mayor's party	83	51.91	12.18	110	51.36	10.05	259	51.37	11.88	297	52.05	11.15
<i>Council characteristics - Parties</i>												
Number running	83	3.554	0.753	110	3.936	0.745	259	3.595	0.868	297	4.044	0.894
Effective number elected	83	1.909	0.359	110	2.024	0.426	259	1.924	0.384	297	1.942	0.347
<i>General budget</i>												
Primary budget balance	41	3.892	1.273	40	3.452	0.979	216	4.558	0.973	253	3.979	0.939
Budget balance	26	3.827	1.106	31	3.077	0.957	211	4.401	1.054	235	3.886	0.904
Gross debt	83	7.069	0.819	110	6.626	0.635	259	6.709	0.850	297	6.339	0.803
<i>Expenditures</i>												
Total	83	7.446	0.297	110	7.037	0.304	259	7.465	0.301	297	7.029	0.305
Expenditures with financial liabilities (debt re-payment)	82	4.203	0.738	110	3.776	0.728	256	4.564	0.861	295	4.113	0.878
Expenditures with financial assets	50	1.643	1.574	70	1.256	2.192	201	2.216	0.871	244	1.519	0.875
Interest payments on debt	82	3.395	0.941	110	2.956	0.754	256	2.221	1.456	295	1.920	1.326

Table A2: (continued)

Variable	No quota						Quota					
	Control			Treatment			Control			Treatment		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Effective	83	7.393	0.303	110	6.986	0.304	259	7.375	0.314	297	6.947	0.310
Total - current	83	6.884	0.307	110	6.488	0.310	259	7.051	0.316	297	6.620	0.313
Personnel	83	6.218	0.365	110	5.711	0.339	259	6.307	0.375	297	5.798	0.342
Acquisition of goods and services	83	5.771	0.357	110	5.483	0.374	259	6.044	0.389	297	5.702	0.361
Total - capital	83	6.566	0.392	110	6.137	0.409	259	6.314	0.450	297	5.886	0.433
Investments	83	6.022	0.630	110	5.633	0.544	259	5.584	0.726	297	5.173	0.666
<i>Investments per category</i>												
Acquisition of Land	74	2.516	1.039	106	1.986	1.097	216	1.845	1.330	263	1.510	1.298
Housing	68	2.159	1.749	89	1.207	1.726	182	1.755	1.797	204	1.088	1.677
Transportation material	79	2.293	0.872	108	1.640	0.920	251	2.438	0.893	287	1.555	0.961
Machinery and equipment	82	3.457	0.618	109	3.056	0.531	259	3.457	0.723	297	2.908	0.678
Other	73	2.329	1.551	103	1.448	1.431	227	2.334	1.388	278	1.695	1.345
<i>Investments - Other buildings</i>												
Total	83	4.475	0.927	110	4.066	0.847	257	4.095	1.085	297	3.806	0.964
Sports, recreation and schooling facilities	79	3.654	1.123	109	3.273	0.936	238	3.010	1.459	293	2.977	1.370
Social equipment	37	1.320	1.671	65	0.390	1.916	95	1.558	2.097	137	0.591	1.980
Other	83	3.613	1.173	108	3.140	0.994	245	3.460	1.105	292	2.709	1.197
<i>Investments - Diverse constructions</i>												
Total	83	5.110	1.187	109	4.892	0.981	259	4.368	1.373	292	4.026	1.427
Streets, overpasses and complementary work	64	3.681	1.612	87	3.550	1.451	180	3.486	1.395	181	3.433	1.236
Water treatment and distribution	62	2.558	1.196	92	1.973	1.478	164	2.125	1.437	188	1.266	1.458
Rural roads	55	3.663	1.641	77	3.427	1.603	134	2.968	1.794	150	2.972	1.609
Sewage	56	2.396	1.526	88	2.753	1.199	140	1.936	1.534	187	2.035	1.444
Other	83	4.232	1.042	109	3.723	0.910	257	3.537	1.297	291	3.041	1.261

Table A2: (continued)

Variable	No quota						Quota					
	Control			Treatment			Control			Treatment		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
<i>Remarks:</i> this table shows the descriptive statistics of all outcome variables for four distinct samples used in the main analysis. No quota refers to the 2005 election(diff-in-disc). The quota refers to the pooled elections in 2009, 2013 and 2017 (RDD and Diff-in-disc). The control group contains all municipalities with less than 7,500 eligible voters, the treatment group all municipalities with 7,500-19,000 eligible voters. The latter is the maximum bandwidth used in the diff-in-disc design. N indicates the number of observations and SD indicates the standard deviation. All means and standard deviations are rounded. Female mayor is a dummy indicating whether the mayor is female. All voting variables are in shares. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). TH implies town hall (council) and MA implies municipal assembly. All budget, expenditure and investment variables are in logs, real euros, per capita and the average of the term the council is in office. The budget balance excludes financial assets and liabilities. The primary budget balance excludes financial assets and liabilities, and interest payments on debt.												

Table A3: Descriptive statistics variables of interest 2021 quota

Variable	No quota						Quota					
	Control			Treatment			Control			Treatment		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
<i>Gender</i>												
Female list leader(%)	216	0.180	0.198	92	0.176	0.210	210	0.168	0.157	99	0.215	0.211
Female mayor	211	0.107	0.307	92	0.0978	0.299	209	0.0981	0.296	99	0.121	0.328
Female council members, including mayor (%)	211	0.307	0.109	92	0.230	0.175	209	0.332	0.127	99	0.326	0.151
Female council members, excluding mayor (%)	210	0.342	0.121	92	0.263	0.203	207	0.374	0.142	98	0.386	0.193
<i>Voter behaviour</i>												
Voter turnout (%)	216	57.20	7.237	92	68.32	6.276	210	56.58	7.912	99	67.88	5.816
Votes PSD (%)	216	0.329	0.182	92	0.304	0.208	210	0.338	0.179	99	0.343	0.216
Votes PS (%)	216	0.401	0.169	92	0.421	0.184	210	0.382	0.149	99	0.392	0.176
Votes BE (%)	216	0.0222	0.0312	92	0.00567	0.0190	210	0.0181	0.0227	99	0.00259	0.0107
Votes PCP (%)	216	0.0874	0.120	92	0.120	0.173	210	0.0769	0.107	99	0.0979	0.155
Votes CDS (%)	216	0.0447	0.0951	92	0.0256	0.0711	210	0.0245	0.0791	99	0.0225	0.0957

Table A3: (continued)

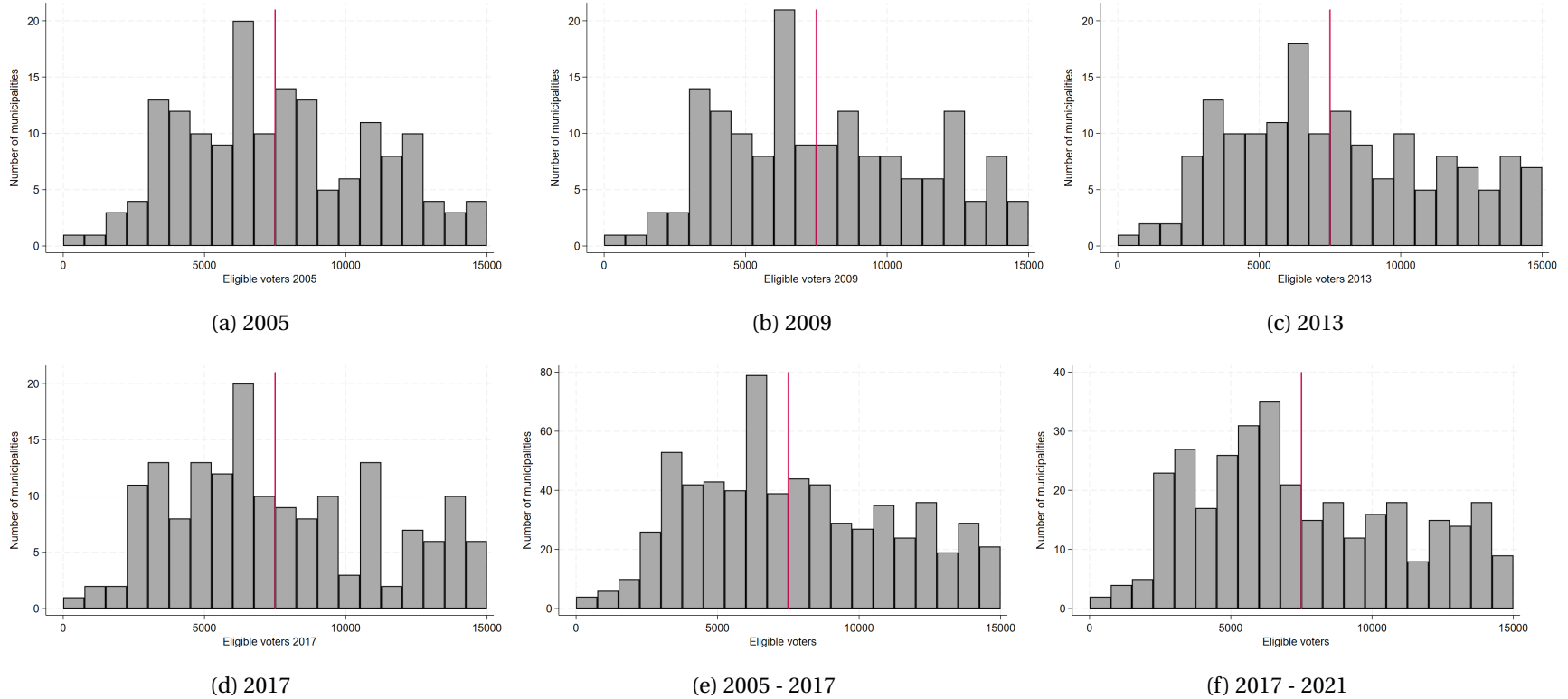
Variable	No quota						Quota					
	Control			Treatment			Control			Treatment		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Votes independent list (%)	216	0.0496	0.119	92	0.0779	0.161	210	0.0535	0.123	99	0.0783	0.151
Votes left-wing (%)	216	0.374	0.197	92	0.330	0.220	210	0.362	0.189	99	0.366	0.218
Votes right-wing (%)	216	0.510	0.208	92	0.547	0.249	210	0.477	0.183	99	0.493	0.235
<i>Council characteristics- Mayor</i>												
Left-wing	216	0.588	0.493	92	0.620	0.488	210	0.614	0.488	99	0.596	0.493
Independent	216	0.0370	0.189	92	0.0543	0.228	210	0.0524	0.223	99	0.0606	0.240
Right-wing	216	0.375	0.485	92	0.326	0.471	210	0.333	0.473	99	0.343	0.477
Runs for reelection	216	0.843	0.365	92	0.859	0.350	210	0.771	0.421	99	0.697	0.462
Changes	216	0.194	0.397	92	0.217	0.415	210	0.343	0.476	99	0.414	0.495
Supported by a coalition	216	0.0787	0.270	92	0.0217	0.147	210	0.0619	0.242	99	0.0101	0.101
Majorities in the TH and MA	216	0.773	0.420	92	0.880	0.326	210	0.814	0.390	99	0.848	0.360
Margin of victory	216	23.46	14.40	92	24.32	16.48	210	19.51	13.88	99	21.88	14.83
National government is led by the mayor's party	216	0.491	0.501	92	0.478	0.502	210	0.529	0.500	99	0.505	0.503
Vote share incumbent mayor's party	216	50.73	11.35	92	53.50	11.78	209	47.20	12.33	99	49.72	13.43
<i>Council characteristics- Parties</i>												
Number running	216	4.935	1.708	92	3.674	0.866	210	5.738	1.859	99	3.899	1.005
Effective number elected	216	2.147	0.472	92	1.966	0.395	210	1.979	0.444	99	1.884	0.461
<i>Council characteristics- General</i>												
Born in municipality (%)	211	0.587	0.244	92	0.607	0.242	209	0.610	0.247	99	0.562	0.278
Average age council	211	48.26	3.635	92	48.07	4.545	209	49.06	3.614	99	48.15	4.574
Residence in municipality (%)	211	0.924	0.106	92	0.943	0.112	209	0.923	0.100	99	0.936	0.117
<i>Council characteristics- Education level</i>												
Basic schooling (%)	211	0.0134	0.0516	92	0.0261	0.0797	209	0.0193	0.0576	99	0.0364	0.0920
Secondary schooling (%)	211	0.0525	0.100	92	0.157	0.199	209	0.0953	0.120	99	0.215	0.198

Table A3: (continued)

Variable	No quota						Quota					
	Control			Treatment			Control			Treatment		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Undergraduate university degree (%)	211	0.408	0.357	92	0.459	0.332	209	0.650	0.234	99	0.628	0.234
Post-graduate (master or PhD) (%)	211	0.0623	0.130	92	0.0413	0.0963	209	0.182	0.199	99	0.0943	0.140
<i>Council characteristics- Previous occupation</i>												
Not defined, retired, unemployed, students, domestic(%)	211	0.148	0.221	92	0.154	0.210	209	0.106	0.183	99	0.132	0.235
Administrative workers (%)	211	0.0228	0.0613	92	0.0565	0.0998	209	0.0192	0.0535	99	0.0610	0.122
Teaching professionals (%)	211	0.214	0.144	92	0.143	0.155	209	0.190	0.158	99	0.149	0.166
Small business owners (%)	211	0.0324	0.0731	92	0.0391	0.0851	209	0.0256	0.0708	99	0.0354	0.125
Technicians (intermediate level) (%)	211	0.0331	0.0955	92	0.0761	0.135	209	0.0435	0.102	99	0.0522	0.105
Service and sales workers (%)	211	0.0374	0.0790	92	0.122	0.162	209	0.0426	0.0821	99	0.0929	0.151
Managers and senior staff (%)	211	0.105	0.147	92	0.0645	0.131	209	0.164	0.221	99	0.102	0.166
Intellectual and scientific professionals (%)	211	0.398	0.221	92	0.317	0.269	209	0.393	0.226	99	0.350	0.265

Remarks: this table shows the descriptive statistics for four distinct samples that are used in the main analysis. No amendment refers to the election in 2017, which is used for the diff-in-disc design. The amendment refers to the 2021 election, which is used for both the RDD and diff-in-disc designs. The control group contains all municipalities with 7,500-19,000 eligible voters while the treatment group contains all municipalities with less than 7,500 eligible voters. The control bandwidth is the maximum bandwidth used in the diff-in-disc design. N indicates the number of observations and SD indicates the standard deviation. All means and standard deviations are rounded. Female mayor is a dummy indicating whether the mayor is female. All voting variables are in shares. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). TH implies town hall (council) and Ma implies municipal assembly. Born in the municipality is the percentage of council members that are born in the municipality, residence is defined in a similar fashion. The education level is the share of council members with the corresponding education level. The previous occupation is based on ISCO-08 codes.

Figure A1: Histogram municipalities with less than 15.000 eligible voters, per election year



Remarks: these histograms show the Portuguese municipality distribution regarding the number of eligible voters, in bins of 750 voters, with a maximum of 15,000 eligible voters for each election in the period 2005-2021, as well as for the diff-in-disc samples. The y-axis shows the number of municipalities(frequency) and the x-axis the number of eligible voters. The red line represents the gender quota threshold of 7,500 eligible voters.

Appendix B Identifying assumptions

B.1 Density test (RDD)

Table B1: P-values density test

Sample	Bandwidth					
	Minimum	5000	6000	7000	Maximum	Full
<i>2006 quota</i>						
RDD	0.1763	-	0.1671	0.2022	0.1700	0.5953
Diff-in-disc	0.7337	0.5332	0.4614	0.4061	0.4042	0.8145
<i>2021 amendment</i>						
RDD	0.2317	-	-	-	-	0.2368
Diff-in-disc	0.1880	-	0.1331	0.1129	0.1160	0.1175

Remarks: this table shows the p-values of the density test by Cattaneo et al. (2018) for various samples and bandwidths. The p-value indicates the probability of no manipulation of the number of eligible voters. The 2006 quota RDD sample consists of the 2009, 2013 and 2017 elections, the 2006 quota diff-in-disc sample also includes the election of 2005. The 2021 amendment RDD sample consists of the 2021 election and the diff-in-disc sample also includes the 2017 election. The minimum and maximum bandwidths from the main analysis are presented. For the RDD 2006 quota these are respectively 5,210 and 14,030. For the diff-in-disc 2006 quota these are respectively 3,809 and 8,056. For the RDD 2021 amendment these are respectively 7,457 and 15,047. For the diff-in-disc 2021 amendment these are respectively 5,481 and 8,392.

B.2 Balance test (RDD)

Table B2: Balance test

Variables	2005	2009	2013	2017	2021
Identifying code	1.44e-05 (5.96e-05)	-2.46e-05 (5.75e-05)	2.88e-05 (5.57e-05)	4.22e-05 (4.98e-05)	-2.27e-05 (4.84e-05)
Area (km ²)	0.000103 (0.000160)	-0.000178 (0.000170)	-0.000117 (0.000151)	-8.92e-05 (0.000143)	-0.000113 (0.000149)
Urban area (%)	0.00581 (0.00995)	0.0110 (0.0112)	0.0121 (0.0102)	0.0147 (0.0112)	-0.0178* (0.0104)
Population density	-0.000149 (0.000249)	-0.00156 (0.00128)	-0.00109 (0.00111)	-0.000433 (0.00113)	-0.000121 (0.000959)
Unemployment rate	-0.00530 (0.0128)	-0.0207 (0.0161)	-0.00505 (0.0142)	0.00337 (0.0140)	0.00215 (0.0140)
Municipal Purchasing Power	-0.000880 (0.00371)	0.00272 (0.00410)	0.00529 (0.00461)	0.00405 (0.00353)	- -
Average wage private sector	5.35e-05 (0.000368)	-5.46e-05 (0.000312)	-0.000175 (0.000286)	-0.000225 (0.000155)	- -
Employment rate - private sector	-0.000285 (0.00361)	0.000336 (0.000319)	0.00284 (0.00322)	0.00226 (0.00223)	- -
<i>Population age (%)</i>					
< 15 years	-1.739 (3.127)	0.642 (2.633)	- -	3.231 (3.863)	- -
15 - 24 years	1.185 (3.040)	0.131 (2.843)	2.412 (4.273)	0.281 (4.248)	5.671 (6.149)
25 - 64 years	-0.312 (1.322)	0.693 (1.046)	-0.130 (2.954)	2.078 (2.701)	4.576 (3.251)
≤ 65 years	-0.774 (1.371)	-2.314** (1.165)	-0.315 (2.072)	1.842 (2.655)	4.118 (3.042)
<i>Education level population (%)</i>					
No formal education completed	0.000441*** (4.35e-05)	0.000453*** (4.06e-05)	0.000476*** (3.80e-05)	0.000559*** (4.20e-05)	-0.000600*** (6.33e-05)
≤ complete secondary education	-0.0383*** (0.0120)	-0.0273* (0.0151)	-0.0329** (0.0139)	-0.0249** (0.0126)	0.0430*** (0.0138)
Complete secondary education	-0.0939*** (0.0264)	-0.0529* (0.0272)	-0.0467* (0.0240)	-0.0499** (0.0218)	0.0561*** (0.0209)
3rd cycle of basic education	0.0550* (0.0301)	-0.0288 (0.0248)	-0.00390 (0.0252)	-9.28e-05 (0.0244)	-0.0161 (0.0211)
Complete university education	0.0525** (0.0228)	0.00823 (0.0216)	-0.00432 (0.0184)	0.00883 (0.0151)	0.00895 (0.0125)
Observations	149	141	142	145	149
R-squared	0.664	0.687	0.675	0.708	0.706

Remarks: this table shows the results of a regression of various municipality characteristics on a dummy indicating whether the municipality passed the threshold per election for all municipalities with fewer than 16,500 eligible voters. A municipality passed this threshold if it had more than 7,500 eligible voters (2005-2017) or less than 7,500 voters (2021). The robust standard errors are in between brackets. The estimates and SEs are rounded. The education levels are the percentage of the population older than 14 years old. Portugal is considered the base level (100) in the municipal purchasing power index. The unemployment rate is the percentage of unemployed individuals in the population aged 15-65. The employment rate is defined in a similar fashion. The average wage is in real euros and the population density in inhabitants per km². The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

B.3 Parallel trend (diff-in-disc)

Table B3: Common trend regression 2006 quota

Variable	β	S.E.	N
<i>Voter behaviour</i>			
Voter turnout	0.275	(0.499)	903
Votes PS (%)	-0.0103	(0.0191)	893
Votes PSD (%)	-0.0156	(0.0188)	884
Votes BE (%)	0.000818	(0.00131)	887
Votes PCP (%)	-0.0127	(0.00920)	861
Votes CDS (%)	-0.00367	(0.00906)	936
Votes independent list (%)	0.0249*	(0.0149)	959
Votes left-wing (%)	-0.0207	(0.0208)	897
Votes right-wing (%)	-0.0208	(0.0211)	890
<i>Council characteristics - mayor</i>			
Left-wing	0.0749	(0.0676)	891
Independent	-0.00132	(0.0182)	944
Right-wing	-0.0728	(0.0653)	890
Runs for reelection	-0.0205	(0.0873)	830
Changes	0.0338	(0.107)	844
Supported by coalition	-.0007723	.0176334	981
Majorities in TH and MA	0.0874	(0.0824)	775
Margin of victory	-2.440	(2.540)	888
National government is led by mayor's party	0.124	(0.0788)	892
Vote share incumbent mayor's party	-2.814	(2.003)	873
<i>Council characteristics - parties</i>			
Running			698
Effective number elected	-0.0959	(0.0735)	884
<i>General budget</i>			
Primary budget balance	0.0661	(0.404)	552
Budget balance	0.548	(0.492)	471
Gross debt	0.253	(0.162)	696
<i>Expenditures</i>			
Total	0.206***	(0.0705)	799
Expenditures with financial liabilities (debt repayment)	0.131	(0.174)	881
Expenditures with financial assets	-0.529	(0.486)	680
Interest payments on debt	0.206	(0.198)	851
Effective	0.198***	(0.0724)	776
Total - current	0.166**	(0.0689)	833
Personnel	0.234***	(0.0815)	814
Acquisition of goods and services	0.107	(0.0789)	845

Table B3: (continued)

Variable	β	S.E.	N
Total - capital	0.232***	(0.0881)	801
Investments	0.291**	(0.127)	826
<i>Investment per category</i>			
Acquisition of Land	1.026***	(0.252)	808
Housing	0.920**	(0.379)	701
Transportation material	0.164	(0.202)	868
Machinery and equipment	0.250**	(0.123)	833
Other	0.715**	(0.333)	751
<i>Investment - Other buildings</i>			
Total	0.187	(0.194)	882
Sports, recreation and schooling facilities	-0.105	(0.243)	789
Social equipment	0.953*	(0.543)	569
Other	0.399	(0.249)	878
<i>Investment - Diverse constructions</i>			
Total	0.155	(0.197)	876
Streets, overpasses and complementary workse	0.105	(0.298)	711
Water treatment and distribution	0.623	(0.382)	474
Rural roads	0.0492	(0.389)	516
Sewage	-0.0733	(0.345)	648
Other	0.430**	(0.209)	900

Remarks: this table presents the estimations of the regressions as described in Section 6.2 for the 2006 quota. The bandwidth is the same as in the main analysis. Beta is the estimate of the interaction term of passing the threshold and 2001, in which 2005 is the base year. S.E. indicates the standard error and is clustered at the municipality level. All estimates and standard errors are rounded. N indicates the number of observations, which is higher than in the main analysis due to including more elections. Female mayor is a dummy indicating whether the mayor is female. All voting variables are in shares. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). TH implies town hall (council) and MA implies municipal assembly. All budget, expenditure and investment variables are in logs, real euros, per capita and the average of the term the council is in office. The budget balance excludes financial assets and liabilities. The primary budget balance excludes financial assets and liabilities, and interest payments on debt. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table B4: Common trend regression 2021 amendment

Variable	2005		2009		2013		N
	β	S.E.	β	S.E.	β	S.E.	
<i>Gender</i>							
Female list leader (%)	0.0291	(0.0405)	0.0670	(0.0414)	-0.00851	(0.0377)	755
Female mayor	-0.0450	(0.0557)	-0.0340	(0.0476)	0.0428	(0.0364)	793

Table B4: (continued)

Variable	2005		2009		2013		N
	β	S.E.	β	S.E.	β	S.E.	
Female council members, including mayor (%)	0.0492	(0.0316)	-0.0122	(0.0278)	-0.0679**	(0.0272)	757
Female council members, excluding mayor (%)	0.0738**	(0.0366)	-0.00417	(0.0330)	-0.0895***	(0.0329)	760
<i>Voter behaviour</i>							
Voter turnout	-3.577***	(0.793)	-1.197*	(0.654)	-0.129	(0.531)	976
Votes PS (%)	0.00114	(0.0307)	0.00555	(0.0288)	-0.0113	(0.0223)	961
Votes PSD (%)	0.0223	(0.0320)	0.0563*	(0.0297)	0.0354	(0.0238)	957
Votes BE (%)	-0.000113	(0.00293)	-0.00340	(0.00284)	-0.00499*	(0.00274)	969
Votes PCP (%)	-0.00752	(0.0243)	-0.00629	(0.0177)	-0.00124	(0.0116)	926
Votes CDS (%)	0.00260	(0.0148)	0.00817	(0.0137)	0.0174*	(0.00915)	885
Votes independent lists (%)	-0.0109	(0.0270)	-0.0538**	(0.0255)	-0.0119	(0.0201)	919
Votes left-wing (%)	-0.00864	(0.0358)	-0.00687	(0.0318)	-0.0104	(0.0230)	974
Votes right-wing (%)	0.0208	(0.0318)	0.0563*	(0.0302)	0.0453*	(0.0246)	960
<i>Council characteristics - Mayor</i>							
Left-wing	-0.0462	(0.0964)	-0.116	(0.0958)	-0.0173	(0.0828)	968
Independent	-0.0273	(0.0348)	-0.00335	(0.0358)	-0.0289	(0.0307)	1,016
Right-wing	0.0739	(0.0926)	0.120	(0.0924)	0.0466	(0.0796)	970
Runs for reelection	0.0495	(0.0768)	0.0460	(0.0887)	0.0506	(0.112)	909
Changes	-0.105	(0.0842)	0.0282	(0.103)	0.00989	(0.115)	916
Supported by coalition	0.0311	(0.0352)	-0.0331	(0.0416)	-0.0176	(0.0457)	993
Has majorities in TH and MA	0.0589	(0.0817)	-0.0363	(0.0736)	0.00603	(0.0788)	931
Margin of victory	0.425	(3.002)	-3.884	(3.284)	-1.280	(2.815)	981
National government led by mayor's party	0.0253	(0.103)	-0.0692	(0.105)	0.0384	(0.126)	957
Vote share incumbent mayor's party	1.463	(2.199)	-1.832	(2.475)	1.377	(2.238)	955
<i>Council characteristics - Parties</i>							
Number running	-0.0170	(0.166)	-0.111	(0.168)	-0.212	(0.152)	742
Effective number elected	-0.126	(0.0799)	-0.0344	(0.0722)	0.0413	(0.0707)	948
<i>Council characteristics - General</i>							
Born in municipality (%)					0.00199	(0.0421)	462
Average age council					-0.211	(0.731)	474
Residence in municipality (%)					-0.119**	(0.0566)	483
<i>Council characteristics - Education level</i>							
Basic schooling					-0.0136	(0.0176)	442

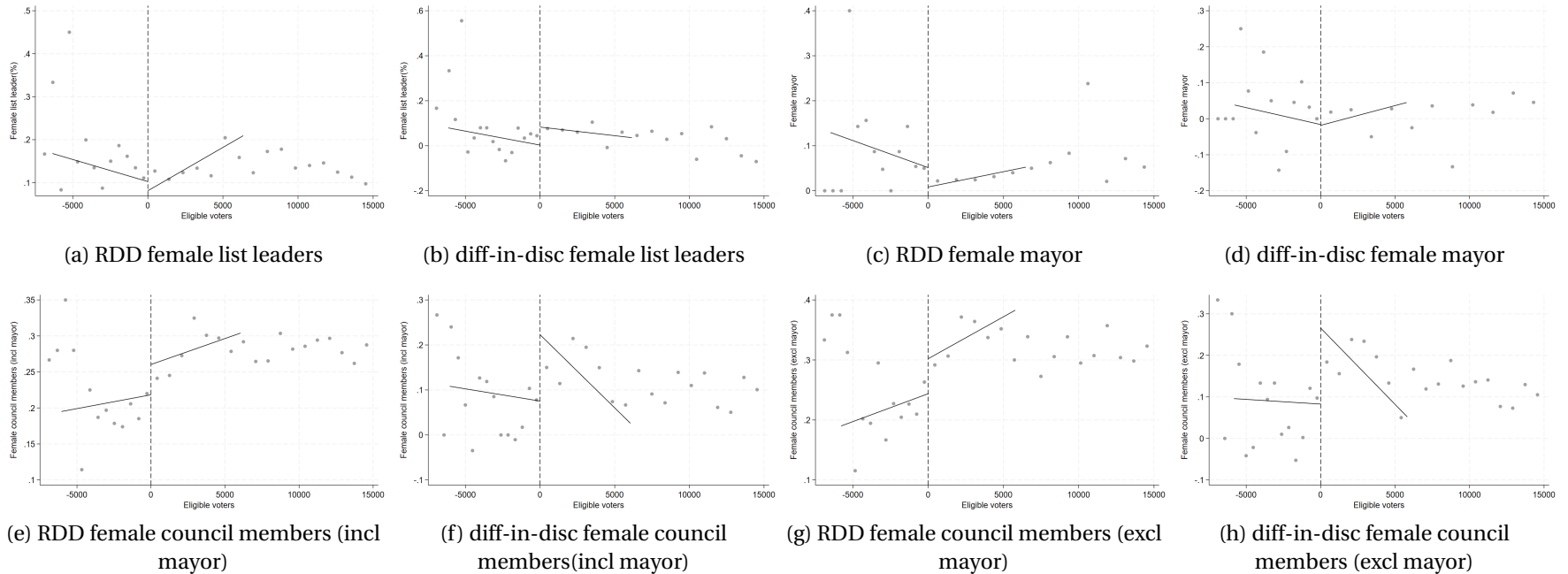
Table B4: (continued)

Variable	2005		2009		2013		N
	β	S.E.	β	S.E.	β	S.E.	
Secondary schooling					-0.0119	(0.0293)	456
Undergraduate university degree					-0.0699	(0.0628)	456
Post-graduate (master or PhD)					-0.0341*	(0.0193)	479
<i>Council characteristics - Previous occupation</i>							
Not defined, retired, unemployed, students, domestic					0.0698*	(0.0419)	406
Administrative workers					0.0149	(0.0260)	438
Teaching professionals					-0.00436	(0.0265)	500
Small business owners					-0.0121	(0.0168)	435
Technicians (intermediate level)					-0.00158	(0.0269)	499
Service and sales workers					-0.0728***	(0.0219)	420
Managers and senior staff					0.00923	(0.0323)	483
Intellectual and scientific professionals					0.00700	(0.0481)	485

Remarks: this table presents the estimations of the regressions as described in Section 6.2 for the 2021 quota amendment. The bandwidth is the same as in the main analysis. Beta is the estimate of the interaction term of passing the threshold and the year indicated in the column header, in which 2017 is the base year. S.E. indicates the standard error and is clustered at the municipality level. All estimates and standard errors are rounded. N indicates the number of observations, which is higher than in the main analysis due to including more elections. No estimate is provided if data was unavailable. Female mayor is a dummy indicating whether the mayor is female. All voting variables are in shares. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). TH implies town hall (council) and Ma implies municipal assembly. Born in the municipality is the percentage of council members that are born in the municipality, residence is defined in a similar fashion. The education level is the share of council members with the corresponding education level. The previous occupation is based on ISCO-08 codes. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

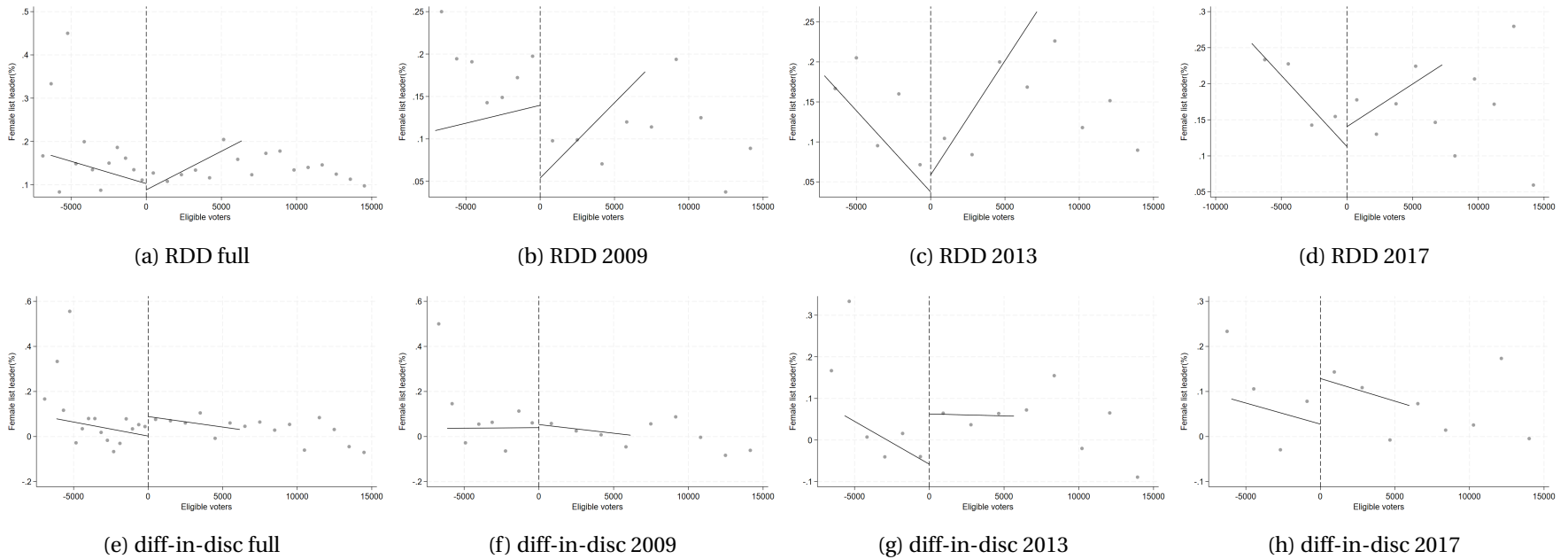
Appendix C Graphical main results gender effects

Figure C1: Gender effects without accounting for non-compliance



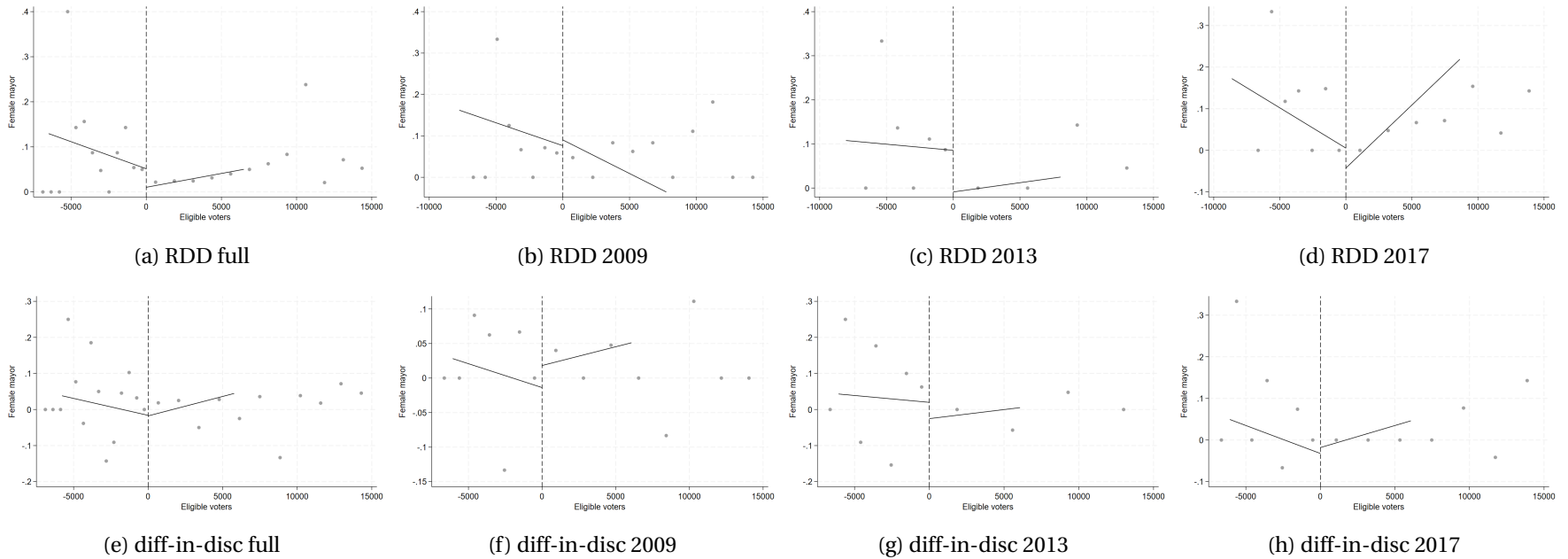
Remarks: the figures show the RDD and diff-in-disc results for all gender variables for the 2006 quota. For the latter, the outcome variables are in differences, which is not the case in the tables. In the regressions, non-compliance is not accounted for. The female list leader is the share of female list leaders in the election, the female mayor dummy indicates whether the (probability of) mayor is female and the female council members are in percentages of the council. The dashed line represents crossing the centre normalized number of eligible voters. The right side of this threshold is the treatment group. The dots represent data bins (local averages). The number of bins is selected with a mimicking variance evenly-spaces method.

Figure C2: Female list leader



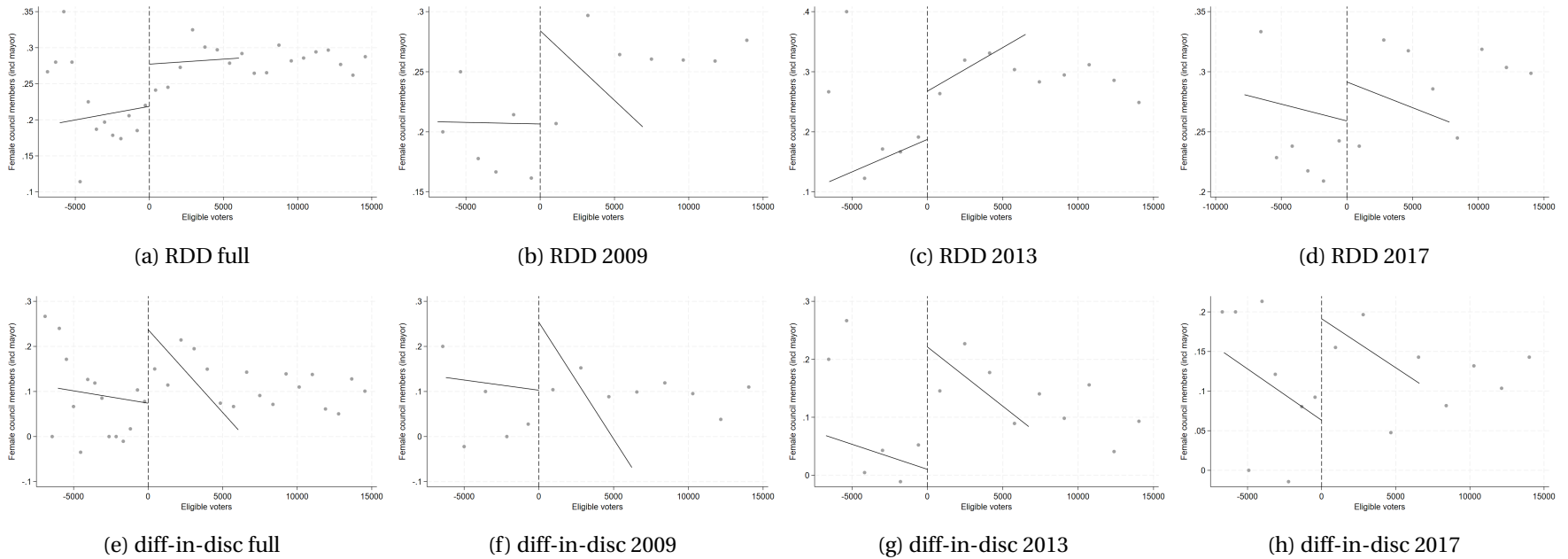
Remarks: the figures show the RDD and diff-in-disc results for the effect of the quota on the female list leader (in shares) for the 2006 quota for several samples. For the latter, the outcome variables are in differences, which is not the case in the tables. In the regressions, non-compliance is accounted for. The dashed line represents crossing the centre normalized number of eligible voters. The right side of this threshold is the treatment group. The dots represent data bins (local averages). The number of bins is selected with a mimicking variance evenly-spaces method.

Figure C3: Female mayor



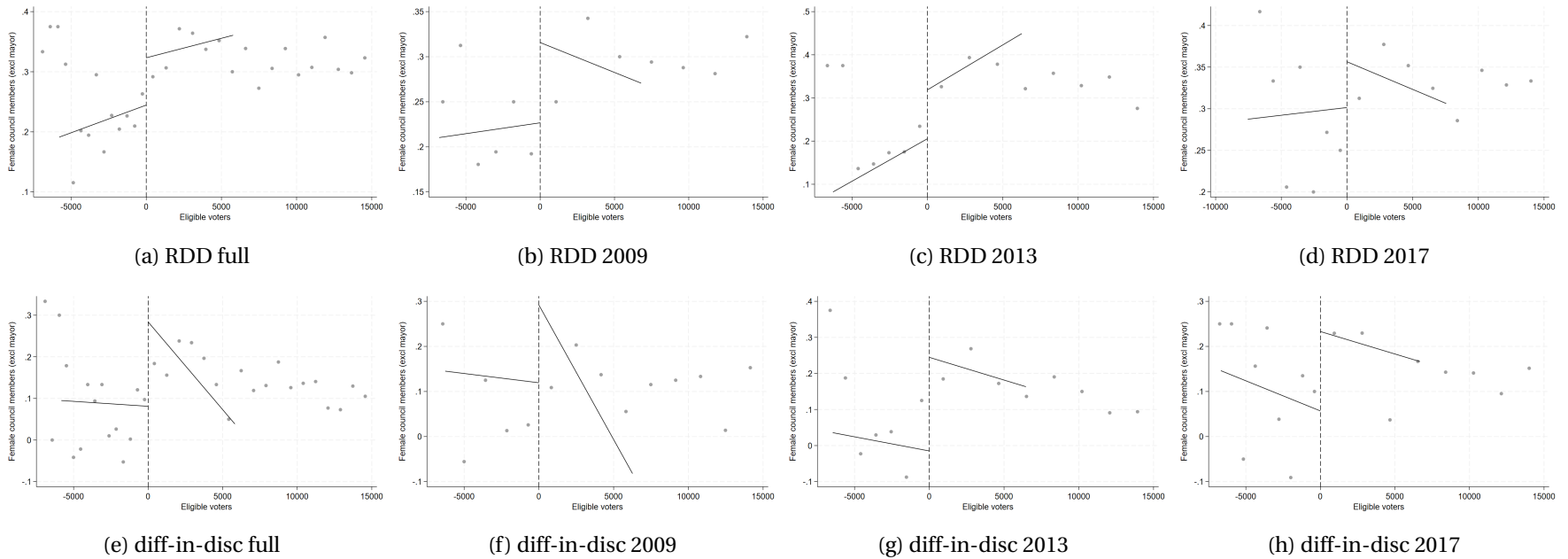
Remarks: the figures show the RDD and diff-in-disc results for the effect of the quota on the probability of a female mayor (female mayor is a dummy equaling one when the mayor is female) for the 2006 quota for several samples. For the latter, the outcome variables are in differences, which is not the case in the tables. In the regressions, non-compliance is accounted for. The dashed line represents crossing the centre normalized number of eligible voters. The right side of this threshold is the treatment group. The dots represent data bins (local averages). The number of bins is selected with a mimicking variance evenly-spaces method.

Figure C4: Female council members (incl mayor)



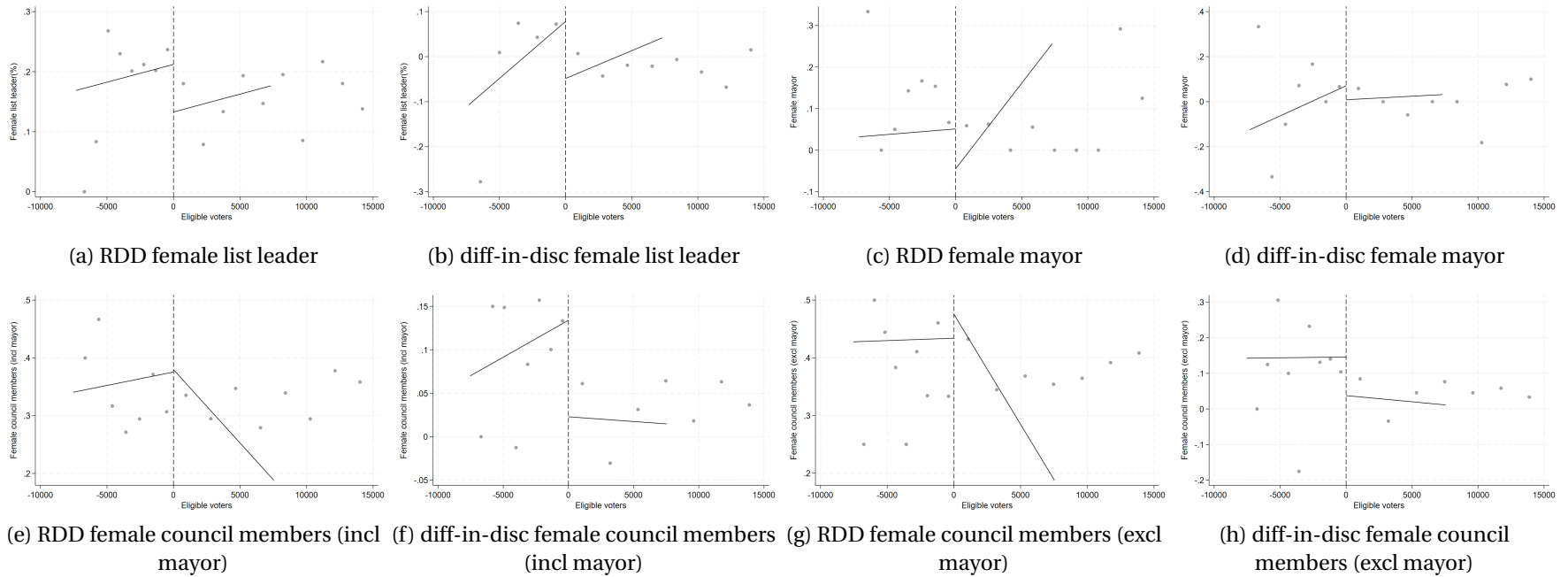
Remarks: the figures show the RDD and diff-in-disc results for the effect of the quota on the share of female council members (including the mayor) for the 2006 quota for several samples. For the latter, the outcome variables are in differences, which is not the case in the tables. In the regressions, non-compliance is accounted for. The dashed line represents crossing the centre normalized number of eligible voters. The right side of this threshold is the treatment group. The dots represent data bins (local averages). The number of bins is selected with a mimicking variance evenly-spaces method

Figure C5: Female council members (excl mayor)



Remarks: the figures show the RDD and diff-in-disc results for the effect of the quota on the share of female council members (excluding the mayor) for the 2006 quota for several samples. For the latter, the outcome variables are in differences, which is not the case in the tables. In the regressions, non-compliance is accounted for. The dashed line represents crossing the centre normalized number of eligible voters. The right side of this threshold is the treatment group. The dots represent data bins (local averages). The number of bins is selected with a mimicking variance evenly-spaces method

Figure C6: 2021 amendment



Remarks: the figures show the RDD and diff-in-disc results for all gender variables for the 2021 amendment. For the latter, the outcome variables are in differences, which is not the case in the tables. The female list leader is the share of female list leaders in the election, the female mayor dummy indicates whether the (probability of) mayor is female and the female council members are in percentages of the council. The dashed line represents crossing the centre normalized number of eligible voters. The left side of this threshold is the treatment group. The dots represent data bins (local averages). The number of bins is selected with a mimicking variance evenly-spaces method.

Appendix D Main results 2006 quota per year

D.1 Non-compliance

Table D1: Non-compliance

Municipality	Party	Eligible voters
<i>2009</i>		
Ferreira do Alentejo	PS	7,798
Almeida	PS	8,698
Almeida	PPD/PSD.CDS-PP	8,698
Vila Nova de Foz Côa	PS	8,793
Alijó	PS	14,014
Trancoso	PPD/PSD	11,102
Arganil	PPD/PSD	11,859
Coruche	Independent list	18,771
Mafra	PPD/PSD	51,622
Póvoa de Varzim	PCP-PEV	57,547
<i>2013</i>		
Campo Maior	B.E.	7,540
Almeida	PPD/PSD.CDS-PP	7,899
Castro Daire	PS	16,462
<i>2017</i>		
Castro Daire	PS	15,355
Castro Daire	PPD/PSD.CDS-PP	15,355
Tavira	CDS-PP	22,440
Paços de Ferreira	PTP	48,214

Remarks: This table shows per municipalities which parties (or coalitions) did not comply with the quota per election. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE).

D.2 Voter behaviour

Table D2: Voter behaviour

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
2009					
Voter turnout (%)	Yes	-1.704	(1.982)	463	6825
Votes PS (%)	Yes	-0.0113	(0.0490)	456	6314
Votes PSD (%)	Yes	-0.0353	(0.0754)	453	6046
Votes BE (%)	Yes	0.00114	(0.00346)	463	6871
Votes PCP (%)	Yes	0.0497	(0.0686)	455	6212
Votes CDS (%)	Yes	-0.00816	(0.0132)	460	6560
Votes independent list (%)	No	0.0139	(0.0261)	206	14831
Votes left-wing (%)	Yes	0.0252	(0.0646)	462	6714
Votes right-wing (%)	Yes	-0.0577	(0.0780)	456	6223
2013					
Voter turnout (%)	Yes	0.157	(1.848)	461	6670
Votes PS (%)	Yes	0.0575	(0.0523)	460	6489
Votes PSD (%)	Yes	0.0770	(0.0665)	452	5889
Votes BE (%)	Yes	0.00206	(0.00417)	464	7036
Votes PCP (%)	Yes	-0.0274	(0.0584)	452	5924
Votes CDS (%)	Yes	-0.0333	(0.0240)	464	7063
Votes independent list (%)	No	-0.0711*	(0.0390)	192	12785
Votes left-wing (%)	Yes	0.0212	(0.0713)	460	6525
Votes right-wing (%)	Yes	0.0520	(0.0737)	452	5968
2017					
Voter turnout (%)	Yes	-1.229	(1.927)	469	6873
Votes PS (%)	Yes	0.0656	(0.0721)	460	6391
Votes PSD (%)	Yes	0.0234	(0.0776)	455	6067
Votes BE (%)	Yes	-0.00492	(0.00513)	451	5644
Votes CDS (%)	Yes	0.0172	(0.0291)	473	7345
Votes PCP (%)	Yes	0.00838	(0.0610)	455	6058
Votes independent list (%)	No	-0.103**	(0.0425)	191	12265
Votes left-wing (%)	Yes	0.102	(0.0860)	466	6732
Votes right-wing (%)	Yes	0.0459	(0.0786)	457	6184

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota on voting behaviour for the election years separately. The second column indicates whether the diff-in-disc (when common trend holds) or RDD method is employed. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. Dummies indicating passing the 10,000 threshold an a non-complying party are included. All variables are in shares. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

D.3 Council characteristics

Table D3: Council characteristics, per year

Variables	Estimate	SE	N	Bandwidth
2009				
<i>Mayor</i>				
Left-wing	0.256	(0.163)	461	6673
Independent	-0.0445	(0.0736)	451	5710
Right-wing	-0.261	(0.165)	456	6413
Runs for reelection	-0.207	(0.158)	456	6339
Changes	0.176	(0.200)	451	5745
Supported by a coalition	0.0926*	(0.0498)	495	11996
Has majorities in TH and MA	0.135	(0.138)	449	5537
Margin of victory	5.994	(5.819)	460	6538
National government led by mayor's party	0.130	(0.156)	463	6850
Vote share incumbent mayor's party	4.417	(4.968)	453	6060
<i>Parties</i>				
Number running (RDD)	0.104	(0.243)	178	10947
Number running	0.336	(0.285)	452	5839
Effective number elected	-0.325**	(0.142)	451	5667
2013				
<i>Mayor</i>				
Left-wing	0.118	(0.179)	457	6406
Independent	-0.00986	(0.0452)	466	7323
Right-wing	-0.0760	(0.171)	460	6519
Runs for reelection	-0.134	(0.196)	460	6512
Changes	-0.0204	(0.219)	449	5661
Supported by a coalition	0.0310	(0.0588)	475	8247
Has majorities in TH and MA	0.0226	(0.172)	445	5224
Margin of victory	4.684	(5.945)	453	6141
National government led by mayor's party	0.107	(0.223)	453	6095
Vote share incumbent mayor's party	5.807	(5.306)	455	6324
<i>Parties</i>				
Number of parties running (RDD)	0.00475	(0.248)	182	11221
Number of parties running	0.291	(0.326)	448	5571
Effective number elected	-0.421***	(0.152)	453	6099
2017				
Left-wing	0.188	(0.193)	458	6284
Independent	-0.0252	(0.0685)	476	8280
Right-wing	-0.219	(0.183)	461	6416
Runs for reelection	0.0254	(0.151)	462	6451
Changes	-0.143	(0.163)	455	5976

Table D3: (continued)

Variables	Estimate	SE	N	Bandwidth
Supported by a coalition	-0.0336	(0.0752)	473	7242
Has majorities in TH and MA	0.0737	(0.160)	448	5463
Margin of victory	6.210	(5.858)	464	6649
National government led by mayor's party	0.199	(0.194)	462	6564
Vote share incumbent mayor's party	3.036	(4.116)	469	6856
<i>Parties</i>				
Number of parties running (RDD)	0.0634	(0.285)	180	10255
Number of parties running	0.361	(0.352)	448	5464
Effective number elected	-0.353**	(0.140)	462	6475

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota implementation on council characteristics for the election years separately, with accounting for non-compliance. For the number of running variables, also the RDD regression (Equation 1) is presented, which is indicated between brackets. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. Dummies indicating the election year, passing the 10,000 threshold and a non-complying party are included. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). TH implies town hall (council) and MA implies municipal assembly. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

D.4 Municipality budget

Table D4: General budget effects

Variables	Estimate	SE	N	Bandwidth
2009				
Primary budget balance	-0.516	(0.601)	265	10261
Budget balance	1.580***	(0.597)	209	10249
Gross debt	-0.266	(0.208)	452	5814
2013				
Primary budget balance	-0.423	(0.548)	296	7881
Budget balance	0.999*	(0.517)	235	6570
Gross debt	-0.172	(0.187)	447	5530
2017				
Primary budget balance	-0.213	(0.543)	278	7632
Budget balance	1.284**	(0.529)	233	7525
Gross debt	-0.248	(0.272)	448	5400

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota implementation on the budget for the separate elections. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. Dummies indicating the election year, passing the 10,000 threshold and a non-complying party are included. All variables are in logs, real euros, per capita and the average of the term the council is in office. The budget balance excludes financial assets and liabilities. The primary budget balance excludes financial assets and liabilities, and interest payments on debt. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table D5: Expenditures and investments, per year

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
2009								
<i>Expenditures</i>								
Total	-0.0721	(0.0715)	166	8270	-0.214**	(0.107)	441	4955
Expenditures with financial liabilities (debt repayment)	-0.0274	(0.206)	181	11465	-0.218	(0.234)	458	6554
Expenditures with financial assets	-1.299*	(0.730)	95	16369	-1.094	(0.782)	284	8956
Interest payments on debt	-0.203	(0.233)	183	11608	-0.347	(0.268)	457	6495
Effective	-0.0617	(0.0721)	165	8130	-0.202*	(0.108)	440	4897
Total - current	-0.0353	(0.0678)	171	9583	-0.102	(0.0909)	446	5318
Personnel	0.00461	(0.0906)	171	9431	-0.0393	(0.116)	445	5222
Acquisition of goods and services	-0.0542	(0.0847)	172	9836	-0.110	(0.101)	450	5557
Total - capital	-0.188	(0.125)	166	8513	-0.359*	(0.183)	445	5210
Investments	-0.227	(0.167)	169	9134	-0.412**	(0.206)	447	5468
<i>Investment per category</i>								
Acquisition of Land	-0.369	(0.398)	161	11233	0.264	(0.550)	429	6545
Housing	-0.349	(0.493)	139	13020	0.174	(0.676)	376	7249
Transportation material	0.0120	(0.258)	180	12328	-0.276	(0.321)	449	7049
Machinery and equipment	0.171	(0.196)	177	10868	0.00205	(0.254)	449	5691
Other	0.221	(0.408)	164	11118	0.476	(0.497)	413	5918
<i>Investment-Other Buildings</i>								
Total	-0.192	(0.253)	173	10025	0.0731	(0.342)	455	6331
Sports, recreation and schooling facilities	0.0372	(0.359)	163	9167	-0.0575	(0.451)	440	5705
Social equipment	-0.211	(0.990)	89	17087	0.847	(1.117)	249	8544
Other	-0.283	(0.291)	169	10415	0.130	(0.434)	449	6447
<i>Investment-Diverse Constructions</i>								
Total	-0.354	(0.403)	176	10832	-0.617	(0.463)	453	6324
Streets, overpasses and complementary works	0.462	(0.465)	126	11958	-0.0586	(0.617)	334	6087
Sewage	-0.198	(0.482)	128	13502	-0.835	(0.653)	308	6017
Water treatment and distribution	-0.842	(0.570)	87	4584	-0.693	(0.593)	302	4720
Rural roads	-0.326	(0.564)	71	4527	0.350	(0.692)	242	3719
Other	-0.454	(0.340)	180	11383	-0.273	(0.413)	451	6175
2013								
<i>Expenditures Total</i>	0.00483	(0.0698)	173	9684	-0.0869	(0.0968)	446	5458

Table D5: (continued)

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
Expenditures with financial liabilities (debt repayment)	-0.234	(0.224)	180	10895	-0.449*	(0.232)	458	6591
Expenditures with financial assets	-0.00680	(0.113)	173	10099	0.0945	(0.423)	368	6868
Interest payments on debt	-0.391	(0.333)	169	9466	-0.746**	(0.327)	451	6148
Effective	0.0541	(0.0727)	170	9404	-0.0211	(0.101)	446	5318
Total - current	0.0334	(0.0682)	177	10546	-0.0502	(0.0884)	448	5612
Personnel	0.0315	(0.0858)	175	9923	0.00832	(0.116)	446	5369
Acquisition of goods and services	0.0377	(0.0905)	175	9926	-0.0681	(0.0954)	451	5744
Total - capital	-0.0575	(0.120)	168	8995	-0.188	(0.170)	446	5462
Investments	0.245	(0.260)	175	10054	0.216	(0.301)	452	5853
<i>Investments per category</i>								
Acquisition of Land	0.372	(0.377)	143	9330	0.987*	(0.544)	409	5473
Housing	0.508	(0.601)	139	13787	1.368*	(0.787)	372	7242
Transportation material	0.214	(0.260)	167	9810	-0.0660	(0.359)	444	6355
Machinery and equipment	0.569**	(0.252)	177	10224	0.338	(0.320)	450	5839
Other	0.709*	(0.428)	157	10312	0.974**	(0.494)	410	5845
<i>Investments-Other Buildings</i>								
Total	0.494	(0.318)	187	11895	0.480	(0.431)	463	7098
Sports, recreation and schooling facilities	0.760	(0.472)	173	10910	0.586	(0.588)	448	6613
Social equipment	-0.121	(0.991)	80	14548	1.035	(1.360)	243	6965
Other	0.419	(0.355)	170	10447	0.573	(0.517)	445	6299
<i>Investments-Diverse Constructions</i>								
Total	-0.0832	(0.448)	173	9844	-0.107	(0.550)	448	5916
Streets, overpasses and complementary works	1.025*	(0.524)	125	12023	0.236	(0.780)	332	5979
Sewage	-0.518	(0.507)	103	10790	-1.308*	(0.708)	303	6785
Water treatment and distribution	-2.448***	(0.532)	68	4276	-0.938	(0.693)	293	4785
Rural roads	-0.653	(0.902)	68	5075	-0.620	(1.044)	241	3884
Other	0.0124	(0.383)	170	9762	0.697	(0.496)	449	6255
2017								
<i>Expenditures</i>								
Total	0.0552	(0.0762)	180	10339	-0.0167	(0.110)	448	5425

Table D5: (continued)

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
Expenditures with financial liabilities (debt repayment)	0.226	(0.264)	178	10128	-0.0422	(0.288)	453	6052
Expenditures with financial assets	-0.0921	(0.117)	173	9573	-0.0290	(0.424)	380	7555
Interest payments on debt	-0.475	(0.549)	172	9455	-0.886	(0.628)	449	5616
Effective	0.0411	(0.0772)	177	9752	-0.0499	(0.110)	447	5269
Total - current	0.0277	(0.0762)	180	10311	-0.0289	(0.103)	448	5402
Personnel	0.0395	(0.0853)	180	10178	0.0311	(0.126)	448	5325
Acquisition of goods and services	0.00410	(0.0943)	181	10391	-0.0596	(0.119)	450	5603
Total - capital	0.0818	(0.118)	181	10459	0.00247	(0.172)	454	5778
Investments	0.109	(0.194)	179	10028	0.0504	(0.268)	450	5594
<i>Investment per category</i>								
Acquisition of Land	0.0548	(0.505)	160	11904	0.622	(0.698)	419	6397
Housing	0.810	(0.550)	128	12084	1.315*	(0.721)	365	6595
Transportation material	-0.262	(0.203)	187	11301	-0.294	(0.322)	453	6477
Machinery and equipment	0.170	(0.213)	173	9280	-0.130	(0.295)	443	4980
Other	-0.240	(0.425)	162	9491	0.415	(0.584)	420	5992
<i>Investment-Other Buildings</i>								
Total	0.377	(0.277)	181	10421	0.408	(0.359)	459	6349
Sports, recreation and schooling facilities	0.530	(0.394)	171	10440	0.304	(0.529)	440	6109
Social equipment	0.172	(0.657)	101	18302	0.699	(0.940)	260	8374
Other	0.00415	(0.269)	184	11465	0.137	(0.444)	457	6608
<i>Investment-Diverse Constructions</i>								
Total	0.107	(0.415)	181	10845	-0.0206	(0.513)	458	6510
Streets, overpasses and complementary works	0.389	(0.480)	115	11087	-0.116	(0.744)	329	6094
Sewage	0.714	(0.623)	98	10661	-0.0410	(0.960)	297	5446
Water treatment and distribution	-0.113	(0.660)	64	3896	-0.459	(0.673)	286	4632
Rural roads	2.201***	(0.745)	62	5077	2.022***	(0.756)	245	4559
Other	0.0347	(0.383)	173	9629	0.895*	(0.496)	445	5560

Remarks: this table shows the estimation results of RDD (Equation 1) and difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota on the expenditures and investments for the separate elections. SEs is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SE are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. Dummies indicating the year, passing the 10,000 threshold an a non-complying party are included. All variables are in logs, real euros, per capita and the average of the term the council is in office. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Appendix E Rdd versus diff-in-disc

Table E1: Gender effects, 2021 quota

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
Female list leader (%)	No	-0.0802	(0.0543)	187	10636
Female mayor	No	-0.0694	(0.0795)	185	10414
Female council members, including mayor (%)	Yes	0.0179	(0.0641)	461	6385
Female council members, excluding mayor(%)	Yes	-0.00738	(0.0731)	459	6460

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2021 gender quota amendment on the gender of the council. The second column indicates whether the diff-in-disc or RDD method is employed and is the other method than presented in the main text. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. Included is a dummy indicating passing the 10,000 threshold. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Table E2: Voter behaviour

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
<i>2006 quota</i>					
Voter turnout (%)	No	-0.621	(1.448)	525	98292
Votes PS (%)	No	0.0504	(0.0432)	525	9825
Votes PSD (%)	No	0.0226	(0.0514)	520	9655
Votes BE (%)	No	-0.00374*	(0.00193)	535	10594
Votes PCP (%)	No	-0.0349	(0.0448)	503	8693
Votes CDS (%)	No	0.00701	(0.0192)	535	10682
Votes independent list (%)	Yes	-0.0216	(0.0388)	634	7080
Votes left-wing	No	0.0131	(0.0594)	526	9875
Votes right-wing	No	0.0266	(0.0570)	527	10001
<i>2021 amendment</i>					
Voter turnout (%)	Yes	-2.432	(1.943)	476	7457
Votes PSD (%)	Yes	0.0684	(0.0585)	474	6991
Votes BE (%)	Yes	0.00351	(0.00510)	475	7302
Votes CDS (%)	Yes	0.0579	(0.0447)	460	5773
Votes PCP (%)	No	0.0201	(0.0397)	187	10860
Votes independent list (%)	Yes	-0.0774*	(0.0402)	467	6437
Votes left-wing	No	0.0835	(0.0660)	196	12423
Votes right-wing	Yes	0.126*	(0.0655)	187	10884

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota or 2021 gender quota amendment on voting variables. The second column indicates whether the diff-in-disc or RDD method is employed and is the other method than presented in the main text. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. Dummies indicating passing the 10,000 threshold on a non-complying (only 2006 quota) party are included. All variables are in shares. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table E3: Council characteristics, 2006 quota, RDD

Variables	Estimate	SE	N	Bandwidth
<i>Mayor</i>				
Left-wing	0.0734	(0.116)	512	9349
Independent	-0.0508	(0.0341)	545	10975
Right-wing	-0.0183	(0.117)	511	9268
Runs for reelection	-0.0459	(0.0548)	480	7239
Changes	0.0218	(0.0534)	504	8877
Supported by a coalition	0.0337	(0.0401)	547	11082
Has majorities in TH and MA	0.0911	(0.0714)	482	7360
Margin of victory	2.655	(3.368)	516	9561
National government led by mayor's party	0.0576	(0.0633)	502	8602
Vote share incumbent mayor's party	3.576	(2.269)	503	8767
<i>Elected parties</i>				
Number running	0.0141	(0.199)	501	8517
Effective number elected	-0.0668	(0.0755)	507	9069

Remarks: this table shows the estimation results of RDD (Equation 1) regressions to examine the effects of the 2006 gender quota implementation on council characteristics. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. Dummies indicating the election year, passing the 10,000 threshold and a non-complying party are included. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). TH implies town hall (council) and MA implies municipal assembly. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Table E4: Council characteristics, 2021 amendment

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
<i>Mayor</i>					
Left-wing	No	0.227	(0.139)	196	12341
Independent	No	-0.0609	(0.0653)	203	13469
Right-wing	No	-0.169	(0.134)	194	12285
Runs for reelection	No	0.173	(0.132)	189	11471
Changes	No	-0.0373	(0.144)	189	11463
Supported by a coalition	No	0.0362	(0.0473)	199	12966
Has majorities in TH and MA	No	0.0580	(0.0745)	187	10857
Margin of victory	No	-2.870	(4.161)	193	12074
National government led by mayor's party	No	0.174	(0.145)	193	11871
Vote share incumbent mayor's party	No	-1.523	(4.014)	195	12317
<i>Parties</i>					
Number running	No	-0.227	(0.259)	185	10301
<i>Council Characteristics</i>					
Born in municipality (%)	No	0.0569	(0.0718)	186	10592
Average age council	No	-1.008	(1.191)	187	11319
Members residenting in municipality (%)	Yes	-0.00775	(0.0422)	469	7188
<i>Education level council</i>					
Basic schooling	No	-0.00783	(0.0155)	173	8770
Secondary schooling	No	-0.0475	(0.0459)	183	10235
Undergraduate university degree	No	-0.0524	(0.0662)	182	10144
Post-graduate (master or PhD)	Yes	-0.0667	(0.0545)	468	7103
<i>Previous occupation council</i>					
Not defined, retired, unemployed, students, domestic	Yes	0.169**	(0.0781)	442	4989
Administrative workers	No	-0.0180	(0.0240)	174	9330
Teaching professionals	No	-0.0273	(0.0508)	199	13107
Small business owners	No	0.00683	(0.0207)	172	8631
Technicians (intermediate level)	No	0.0583*	(0.0300)	189	11554
Service and sales workers	Yes	-0.104**	(0.0412)	449	5390
Managers and senior staff	No	0.0754	(0.0568)	202	13472
Intellectual and scientific professionals	No	-0.101	(0.0637)	190	11804

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2021 gender quota amendment on the council characteristics. The second column indicates whether the diff-in-disc or RDD method is employed and is the other method than presented in the main text. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. A dummy indicating passing the 10,000 threshold is included. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. TH implies town hall (council) and Ma implies municipal assembly. Born in the municipality is the percentage of council members that are born in the municipality, residence is defined in a similar fashion. The education level is the share of council members with the corresponding education level. The previous occupation is based on ISCO-08 codes. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Table E5: General budget variables, 2006 quota, RDD

Variables	Estimate	SE	N	Bandwidth
Primary budget balance	-0.176	(0.205)	425	8895
Budget balance	0.141	(0.226)	408	9184
Gross debt	-0.263	(0.177)	500	8162

Remarks: this table shows the estimation results of the RDD (Equation 1) regressions to examine the effects of the 2006 gender quota implementation on the budget. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. Dummies indicating the election year, passing the 10,000 threshold an a non-complying party are included. All variables are in logs, real euros, per capita and the average of the term the council is in office. The budget balance excludes financial assets and liabilities. The primary budget balance excludes financial assets and liabilities, and interest payments on debt. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Appendix F Bandwidth

Table F1: Gender effects without accounting for non-compliance, 2006 quota, CER Bandwidth

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
<i>Pooled sample</i>								
Female list leader (%)	-0.0188	(0.0385)	474	7025	-0.00747	(0.0568)	514	4605
Female mayor	-0.0447	(0.0534)	475	7230	-0.133	(0.106)	482	4322
Female council members, including mayor (%)	0.0486	(0.0371)	462	6741	0.0259	(0.0596)	499	4529
Female council members, excluding mayor(%)	0.0661	(0.0423)	445	6427	0.0673	(0.0662)	487	4357
<i>2009</i>								
Female list leader (%)	-0.0883	(0.0586)	160	7843	-0.0348	(0.0652)	454	4601
Female mayor	0.00316	(0.0771)	166	8696	-0.0242	(0.104)	453	4549
Female council members, including mayor (%)	0.0566	(0.0456)	159	7654	0.0696	(0.0566)	456	4665
Female council members, excluding mayor(%)	0.0663	(0.0510)	159	7488	0.0921	(0.0639)	456	4698
<i>2013</i>								
Female list leader (%)	0.0127	(0.0479)	166	7690	0.0499	(0.0618)	449	4244
Female mayor	-0.0974	(0.0633)	165	8686	-0.113	(0.0846)	451	4551
Female council members, including mayor (%)	0.0684	(0.0497)	154	7138	0.123**	(0.0563)	460	5039
Female council members, excluding mayor(%)	0.0980	(0.0598)	152	6849	0.168**	(0.0656)	458	4844
<i>2017</i>								
Female list leader (%)	0.0319	(0.0598)	167	7798	0.0631	(0.0736)	455	4471
Female mayor	-0.0427	(0.0561)	170	9228	-0.0619	(0.0819)	452	4547
Female council members, including mayor (%)	0.0379	(0.0472)	165	8528	0.0616	(0.0587)	460	4940
Female council members, excluding mayor(%)	0.0618	(0.0554)	164	8272	0.0924	(0.0681)	461	5002

Remarks: this table shows the estimation results of RDD (Equation 1) and difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota on the gender of the council for the pooled sample as well as for all elections separately, without accounting for non-compliance. An CER-bandwidth selector is used instead of a MSE-bandwidth. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. For the RDD, a triangular kernel is employed. A year dummy as well as a dummy for passing the 10,000 threshold are added as controls. No dummy for non-compliance is included. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table F2: Gender effects with accounting for non-compliance, 2006 quota, CER Bandwidth

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
<i>Pooled sample</i>								
Female list leader (%)	-0.0124	(0.0383)	474	7017	-0.000959	(0.0571)	514	4605
Female mayor	-0.0430	(0.0534)	475	7230	-0.131	(0.106)	482	4322
Female council members, including mayor (%)	0.0635*	(0.0367)	461	6721	0.0380	(0.0605)	499	4529
Female council members, excluding mayor(%)	0.0852**	(0.0418)	444	6404	0.0848	(0.0676)	487	4357
<i>2009</i>								
Female list leader (%)	-0.0837	(0.0588)	161	7846	-0.0275	(0.0662)	454	4601
Female mayor	0.00896	(0.0770)	166	8692	-0.0180	(0.106)	453	4549
Female council members, including mayor (%)	0.0758*	(0.0432)	159	7578	0.0905	(0.0553)	456	4665
Female council members, excluding mayor(%)	0.0888*	(0.0480)	158	7410	0.116*	(0.0624)	456	4698
<i>2013</i>								
Female list leader (%)	0.0240	(0.0472)	165	7670	0.0603	(0.0637)	449	4244
Female mayor	-0.0980	(0.0633)	165	8686	-0.112	(0.0848)	451	4551
Female council members, including mayor (%)	0.0905*	(0.0482)	154	7088	0.141**	(0.0578)	460	5039
Female council members, excluding mayor(%)	0.126**	(0.0579)	152	6796	0.190***	(0.0676)	458	4844

Remarks: this table shows the estimation results of RDD (Equation 1) and difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota on the gender of the council for the pooled sample as well as for all elections separately, with accounting for non-compliance. An CER-bandwidth selector is used instead of a MSE-bandwidth. SEs is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SE are rounded. For the RDD, a triangular kernel is employed. Dummies indicating the year, passing the 10,000 threshold an a non-complying party are included. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Table F3: Gender effects, 2021 amendment, CER Bandwidth

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
Female list leader (%)	Yes	0.136*	(0.0786)	464	4711
Female mayor	Yes	0.106	(0.0899)	468	5268
Female council members, including mayor (%)	No	0.00226	(0.0506)	170	8157
Female council members, excluding mayor(%)	No	0.0376	(0.0608)	168	8208

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2021 gender quota amendment on the gender of the council. An CER-bandwidth selector is used instead of a MSE-bandwidth. The second column indicates whether the diff-in-disc (when common trend holds) or RDD method is employed. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. For the RDD, a triangular kernel is employed. A dummy indicating passing the 10,000 threshold is included. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table F4: Voter behaviour, CER Bandwidth

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
<i>2006 quota</i>					
Voter turnout (%)	Yes	-1.976	(2.123)	516	4637
Votes PS (%)	Yes	0.00874	(0.0563)	497	4481
Votes PSD (%)	Yes	-0.0612	(0.0796)	483	4303
Votes BE (%)	Yes	0.00268	(0.00327)	490	4371
Votes PCP (%)	Yes	0.0479	(0.0777)	455	4105
Votes CDS (%)	Yes	0.00531	(0.0234)	546	4985
Votes independent list (%)	No	-0.0538*	(0.0294)	499	8090
Votes left-wing (%)	Yes	0.0106	(0.0808)	509	4583
Votes right-wing (%)	Yes	-0.0583	(0.0820)	493	4423
<i>2021 amendment</i>					
Voter turnout (%)	No	0.304	(1.835)	175	9075
Votes PS (%)	No	0.0767	(0.0592)	175	8921
Votes PS (%)	Yes	-0.0663	(0.0537)	474	5347
Votes PSD (%)	No	-0.0541	(0.0710)	171	8242
Votes BE (%)	No	-0.00638**	(0.00305)	188	11298
Votes CDS (%)	No	-0.0312	(0.0315)	160	6470
Votes PCP (%)	No	0.0249	(0.0441)	171	8155
Votes PCP (%)	Yes	-0.0462	(0.0317)	468	4866
Votes independent list (%)	No	-0.00270	(0.0468)	166	7149
Votes left-wing (%)	Yes	-0.109*	(0.0595)	476	5579
Votes right-wing (%)	No	-0.0825	(0.0746)	171	8172

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota or 2021 gender quota amendment on voting variables. A CER-bandwidth selector is used instead of a MSE-bandwidth as used in the main analysis. The second column indicates whether the diff-in-disc (when common trend holds) or RDD method is employed. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. For the RDD, a triangular kernel is employed. Dummies indicating passing the 10,000 threshold and a non-complying (only 2006 quota) party are included. All variables are in shares. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01. .

Table F5: Council characteristics, 2006 quota, CER Bandwidth

Variables	Estimate	SE	N	Bandwidth
<i>Mayor</i>				
Left-wing	0.370**	(0.178)	495	4434
Independent	-0.0262	(0.0587)	549	5063
Right-wing	-0.338*	(0.175)	492	4408
Runs for reelection	0.00675	(0.153)	421	3768
Changes	0.0596	(0.173)	433	3874
Supported by coalition	0.0380	(0.0487)	575	5623
Has majorities in TH and MA	-0.0105	(0.178)	387	3442
Margin of victory	6.788	(5.908)	491	4387
National government led by mayor's party	0.218	(0.161)	495	4453
Vote share incumbent mayor's party	3.835	(4.555)	469	4199
<i>Parties</i>				
Number of parties running (RDD)	0.0137	(0.212)	449	
Number of parties running	0.362	(0.288)	434	3877
Effective number of elected parties	-0.271*	(0.156)	480	4289

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota implementation on council characteristics, with accounting for non-compliance. An CER-bandwidth selector is used instead of a MSE-bandwidth as used in the main analysis. For the number of running variables, also the RDD regression (Equation 1) is presented, which is indicated between brackets. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. Dummies indicating the election year, passing the 10,000 threshold and a non-complying party are included. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). TH implies town hall (council) and MA implies municipal assembly. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01. .

Table F6: Council characteristics, 2021 amendment, CER Bandwidth

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
<i>Mayor</i>					
Left-wing	Yes	-0.358***	(0.137)	475	5430
Independent	Yes	0.00287	(0.0449)	480	6294
Right-wing	Yes	0.344**	(0.140)	475	5496
Runs for reelection	Yes	-0.237	(0.198)	464	4667
Changes	Yes	0.0138	(0.204)	467	4777
Supported by coalition	Yes	-0.00179	(0.0564)	478	5836
Has majorities in TH and MA	Yes	-0.0323	(0.103)	471	4917
Margin of victory	Yes	11.08**	(5.332)	476	5683
National government led by mayor's party	Yes	-0.273*	(0.146)	474	5239
Vote share incumbent mayor's party	Yes	4.497	(4.651)	473	5233
<i>Parties</i>					
Number of parties running	Yes	0.708	(0.447)	462	4502
Effective number of elected parties	No	-0.134	(0.135)	171	8292
Effective number of elected parties	Yes	0.0519	(0.126)	473	5165
<i>Council Characteristics</i>					
Members born in municipality (%)	Yes	0.0119	(0.0891)	464	4900
Average age council	Yes	-0.488	(1.477)	467	5148
Members resident in municipality (%)	No	0.0282	(0.0300)	173	8842
<i>Education level council</i>					
Basic schooling	Yes	0.00380	(0.0258)	456	4642
Secondary schooling	Yes	0.0111	(0.0578)	461	4830
Undergraduate university degree	Yes	0.00721	(0.117)	461	4822
Post-graduate (master or PhD)	No	0.0387	(0.0450)	174	8973
<i>Previous occupation council</i>					
Not defined, retired, unemployed, students, domestic	No	-0.0868*	(0.0493)	155	6245
Administrative workers	Yes	0.0141	(0.0323)	456	4422
Teaching professionals	Yes	0.0351	(0.0556)	473	6071
Small business owners	Yes	-0.00158	(0.0312)	454	4325
Technicians (intermediate level)	Yes	-0.0790*	(0.0437)	473	5853
Service and sales workers	No	0.0327	(0.0357)	162	6583
Managers and senior staff	Yes	-0.0296	(0.0769)	469	5406
Intellectual and scientific professionals	Yes	0.110	(0.0856)	469	5502

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2021 gender quota amendment on the council characteristics. An CER-bandwidth selector is used instead of a MSE-bandwidth. The second column indicates whether the diff-in-disc (when common trend holds) or RDD method is employed. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. For the RDD, a triangular kernel is employed. A dummy indicating passing the 10,000 threshold is included. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. TH implies town hall (council) and Ma implies municipal assembly. Born in the municipality is the percentage of council members that are born in the municipality, residence is defined in a similar fashion. The education level is the share of council members with the corresponding education level. The previous occupation is based on ISCO-08 codes. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Table F7: General budget variables, 2006 quota, CER Bandwidth

Variables	Estimate	SE	N	Bandwidth
Primary budget balance	-1.474**	(0.594)	400	4850
Budget balance	1.079*	(0.600)	348	4585
Gross debt	-0.00480	(0.239)	431	3845

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota implementation on the budget. An CER-bandwidth selector is used instead of a MSE-bandwidth. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. Dummies indicating the election year, passing the 10,000 threshold and a non-complying party are included. All variables are in logs, real euros, per capita and the average of the term the council is in office. The budget balance excludes financial assets and liabilities. The primary budget balance excludes financial assets and liabilities, and interest payments on debt. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table F8: Expenditures and investments, 2006 quota, CER Bandwidth

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
<i>Expenditures</i>								
Total	-0.0186	(0.0718)	430	5686	-0.149	(0.123)	392	3562
Expenditures with financial liabilities (debt repayment)	-0.0996	(0.210)	468	6936	-0.253	(0.232)	491	4436
Expenditures with financial assets	-0.248	(0.174)	380	7272	-0.252	(0.506)	410	5036
Interest payments on debt	-0.437	(0.332)	438	6196	-0.480	(0.385)	446	4031
Effective	-0.00318	(0.0736)	417	5471	-0.113	(0.124)	387	3451
Total - current	0.0361	(0.0681)	444	6220	-0.0598	(0.103)	423	3790
Personnel	0.0521	(0.0877)	436	6023	0.0468	(0.129)	406	3668
Acquisition of goods and services	0.00194	(0.0845)	444	6294	-0.133	(0.117)	435	3886
Total - capital	-0.135	(0.117)	423	5563	-0.287	(0.213)	394	3574
Investments	0.0131	(0.199)	436	5968	0.0123	(0.270)	420	3747
<i>Investment per category</i>								
Acquisition of Land	0.0395	(0.323)	422	7735	0.657	(0.556)	448	4562
Housing	0.453	(0.410)	329	7389	0.812	(0.616)	384	4730
Transportation material	-0.0209	(0.187)	457	6890	-0.131	(0.333)	482	4457
Machinery and equipment	0.410**	(0.197)	449	6385	0.249	(0.303)	423	3817
Other	0.391	(0.343)	392	6071	0.742	(0.472)	410	4027
<i>Investment-Other Buildings</i>								
Total	0.261	(0.229)	462	6674	0.411	(0.389)	481	4321
Sports, recreation and schooling facilities	0.414	(0.306)	414	5764	0.124	(0.476)	400	3716
Social equipment	-0.162	(0.552)	226	10731	0.695	(0.863)	268	6130
Other	0.0605	(0.240)	465	7364	0.449	(0.461)	489	4576
<i>Investment - Diverse Constructions</i>								
Total	-0.262	(0.409)	460	6695	-0.610	(0.512)	471	4276
Streets, overpasses and complementary works	0.621	(0.391)	317	7467	-0.380	(0.617)	363	4694
Water treatment and distribution	-1.003**	(0.433)	195	3993	-0.696	(0.785)	204	2899
Rural roads	-0.0255	(0.583)	210	5174	0.569	(0.668)	206	3452
Sewage	-0.264	(0.467)	293	8073	-0.651	(0.739)	318	4571
Other	-0.0542	(0.317)	473	7309	-0.0474	(0.403)	514	4668

Remarks: this table shows the estimation results of RDD (Equation 1) and difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota on the expenditures and investments. An CER-bandwidth selector is used instead of a MSE-bandwidth. SEs is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SE are rounded. For the RDD, a triangular kernel is employed. Dummies indicating the year, passing the 10,000 threshold an a non-complying party are included. All variables are in logs, real euros, per capita and the average of the term the council is in office. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Appendix G Controls

Table G1: Gender effects, 2006 quota without accounting for non-compliance ,different controls

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
Not controlling for 10,000 threshold								
<i>Pooled sample</i>								
Female list leader (%)	-0.00745	(0.0367)	514	9374	0.0368	(0.0533)	593	6150
Female mayor	-0.0458	(0.0512)	515	9645	-0.0788	(0.0960)	577	5772
Female council members, including mayor (%)	0.0569	(0.0348)	502	9015	0.0484	(0.0546)	583	6048
Female council members, excluding mayor(%)	0.0830**	(0.0395)	496	8588	0.0900	(0.0615)	576	5818
<i>2009</i>								
Female list leader (%)	-0.0758	(0.0555)	176	10450	-0.0639	(0.0627)	454	6137
Female mayor	-0.0137	(0.0698)	184	11577	-0.0622	(0.0826)	453	6066
Female council members, including mayor (%)	0.0527	(0.0431)	175	10201	0.0195	(0.0487)	456	6221
Female council members, excluding mayor(%)	0.0676	(0.0485)	174	9976	0.0488	(0.0564)	456	6266
<i>2013</i>								
Female list leader (%)	0.0200	(0.0460)	177	10238	0.0215	(0.0594)	449	5662
Female mayor	-0.105*	(0.0624)	184	11565	-0.142**	(0.0711)	451	6070
Female council members, including mayor (%)	0.0898*	(0.0468)	168	9511	0.0839	(0.0530)	460	6722
Female council members, excluding mayor(%)	0.132**	(0.0564)	166	9122	0.137**	(0.0635)	458	6462
<i>2017</i>								
Female list leader (%)	0.0387	(0.0580)	181	10384	0.0275	(0.0734)	455	5968
Female mayor	-0.0399	(0.0574)	189	12283	-0.0793	(0.0718)	452	6069
Female council members, including mayor (%)	0.0394	(0.0453)	186	11385	0.0118	(0.0535)	460	6595
Female council members, excluding mayor(%)	0.0645	(0.0528)	181	11030	0.0498	(0.0636)	461	6678
Extra controls								
<i>Pooled sample</i>								
Female list leader (%)	-0.00731	(0.0360)	512	9347	0.0311	(0.0544)	593	6150
Female mayor	-0.0365	(0.0501)	521	9899	-0.0730	(0.0895)	577	5772
Female council members, including mayor (%)	0.0772**	(0.0339)	498	8809	0.0564	(0.0554)	583	6048
Female council members, excluding mayor(%)	0.106***	(0.0382)	495	8503	0.0997	(0.0639)	576	5818
<i>2009</i>								

Table G1: (continued)

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
Female list leader (%)	-0.0906*	(0.0549)	177	10809	-0.0469	(0.0651)	454	6137
Female mayor	-0.0174	(0.0686)	183	11555	-0.0237	(0.0991)	453	6066
Female council members, including mayor (%)	0.0505	(0.0425)	176	10409	0.0655	(0.0577)	456	6221
Female council members, excluding mayor(%)	0.0637	(0.0474)	175	10212	0.0872	(0.0655)	456	6266
<i>2013</i>								
Female list leader (%)	0.0163	(0.0450)	175	10012	0.0408	(0.0613)	449	5662
Female mayor	-0.101	(0.0623)	184	11682	-0.112	(0.0862)	451	6070
Female council members, including mayor (%)	0.0913**	(0.0465)	168	9452	0.132**	(0.0583)	460	6722
Female council members, excluding mayor(%)	0.134**	(0.0556)	166	9111	0.178***	(0.0682)	458	6462
<i>2017</i>								
Female list leader (%)	0.0404	(0.0579)	181	10397	0.0606	(0.0748)	455	5968
Female mayor	-0.0397	(0.0572)	189	12619	-0.0588	(0.0862)	452	6069
Female council members, including mayor (%)	0.0352	(0.0450)	183	11189	0.0662	(0.0606)	460	6595
Female council members, excluding mayor(%)	0.0662	(0.0523)	177	10804	0.101	(0.0701)	461	6678

Remarks: this table shows the estimation results of RDD (Equation 1) and difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota on the gender of the council for the pooled sample as well as for all elections separately, without accounting for non-compliance. All control for year. The upper panel controls not for passing the 10,000 eligible voters threshold. The bottom panel extends the controls with the significant variables from the balance test in Table B2. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. No dummy for non-compliance is included. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table G2: Gender effects, 2006 quota with accounting for non-compliance , different controls

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
Not controlling for 10,000 threshold								
<i>Pooled sample</i>								
Female list leader (%)	-0.00164	(0.0365)	513	9363	0.0431	(0.0537)	593	6150
Female mayor	-0.0442	(0.0512)	515	9644	-0.0772	(0.0963)	577	5772
Female council members, including mayor (%)	0.0683**	(0.0346)	501	8988	0.0608	(0.0555)	583	6048
Female council members, excluding mayor(%)	0.0972**	(0.0391)	495	8557	0.105*	(0.0626)	576	5818
<i>2009</i>								

Table G2: (continued)

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
Female list leader (%)	-0.0703	(0.0557)	176	10454	-0.0572	(0.0634)	454	6137
Female mayor	-0.00819	(0.0697)	184	11573	-0.0566	(0.0843)	453	6066
Female council members, including mayor (%)	0.0693*	(0.0414)	175	10100	0.0387	(0.0476)	456	6221
Female council members, excluding mayor(%)	0.0869*	(0.0464)	173	9871	0.0712	(0.0550)	456	6266
<i>2013</i>								
Female list leader (%)	0.0279	(0.0455)	177	10210	0.0311	(0.0614)	449	5662
Female mayor	-0.105*	(0.0624)	184	11565	-0.142**	(0.0712)	451	6070
Female council members, including mayor (%)	0.107**	(0.0455)	168	9439	0.102*	(0.0541)	460	6722
Female council members, excluding mayor(%)	0.155***	(0.0547)	166	9049	0.159**	(0.0648)	458	6462
Extra controls								
<i>Pooled sample</i>								
Female list leader (%)	-0.00731	(0.0360)	512	9347	0.0311	(0.0544)	593	6150
Female mayor	-0.0365	(0.0501)	521	9899	-0.0730	(0.0895)	577	5772
Female council members, including mayor (%)	0.0772**	(0.0339)	498	8809	0.0564	(0.0554)	583	6048
Female council members, excluding mayor(%)	0.106***	(0.0382)	495	8503	0.0997	(0.0639)	576	5818
<i>2009</i>								
Female list leader (%)	-0.0843	(0.0550)	177	10810	-0.0403	(0.0660)	454	6137
Female mayor	-0.00984	(0.0684)	183	11545	-0.0140	(0.101)	453	6066
Female council members, including mayor (%)	0.0665	(0.0410)	176	10298	0.0872	(0.0566)	456	6221
Female council members, excluding mayor(%)	0.0816*	(0.0456)	175	10102	0.112*	(0.0643)	456	6266
<i>2013</i>								
Female list leader (%)	0.0253	(0.0445)	175	9985	0.0514	(0.0628)	449	5662
Female mayor	-0.100	(0.0623)	184	11682	-0.110	(0.0865)	451	6070
Female council members, including mayor (%)	0.111**	(0.0450)	168	9383	0.152**	(0.0601)	460	6722
Female council members, excluding mayor(%)	0.159***	(0.0536)	166	9039	0.203***	(0.0707)	458	6462

Remarks: this table shows the estimation results of RDD (Equation 1) and difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota on the gender of the council for the pooled sample as well as for all elections separately, with accounting for non-compliance. All control for year and non-compliance. The upper panel controls not for passing the 10,000 eligible voters threshold. The bottom panel extends the controls with the significant variables from the balance test in Table B2. SEs is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SE are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table G3: Gender effects, 2021 amendment, different controls

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
Not controlling for 10,000 threshold					
Female list leader (%)	Yes	0.136**	(0.0668)	464	6281
Female mayor	Yes	0.128	(0.0947)	468	7022
Female council members, including mayor (%)	No	-0.00373	(0.0462)	186	10862
Female council members, excluding mayor (%)	No	0.0255	(0.0553)	184	10922
Extra controls					
Female list leader (%)	Yes	0.135*	(0.0792)	464	6281
Female mayor	Yes	0.111	(0.0906)	468	7022
Female council members, including mayor (%)	No	-0.00446	(0.0431)	186	10438
Female council members, excluding mayor (%)	No	0.0200	(0.0514)	184	10644

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2021 gender quota amendment on the gender of the council. The upper panel controls not for passing the 10,000 eligible voters threshold. The bottom panel extends the controls with the significant variables from the balance test in Table B2. The second column indicates whether the diff-in-disc (when common trend holds) or RDD method is employed. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table G4: Voter behaviour, different controls

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
Not controlling for 10,000 threshold					
<i>2006 quota</i>					
Voter turnout (%)	Yes	-1.696	(1.882)	596	6192
Votes PS (%)	Yes	0.0129	(0.0506)	587	5983
Votes BE (%)	Yes	0.00101	(0.00307)	583	5837
Votes PSD (%)	Yes	-0.00505	(0.0690)	581	5746
Votes PCP (%)	Yes	0.00543	(0.0637)	564	5481
Votes CDS (%)	Yes	-0.00586	(0.0201)	618	6657
Votes independent list (%)	No	-0.0512*	(0.0279)	538	10791
Votes left-wing (%)	Yes	0.0221	(0.0728)	591	6120
Votes right-wing (%)	Yes	0.0140	(0.0731)	584	5906
<i>2021 amendment</i>					
Voter turnout (%)	No	-0.0485	(1.687)	193	12087

Table G4: (continued)

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
Votes PS (%)	No	0.0721	(0.0532)	193	11884
Votes PS (%)	Yes	-0.0684	(0.0531)	474	7129
Votes PSD (%)	No	-0.0395	(0.0632)	187	10986
Votes BE (%)	No	-0.00692**	(0.00308)	210	15055
Votes CDS (%)	No	-0.0275	(0.0283)	172	8617
Votes PCP (%)	No	0.0208	(0.0397)	187	10859
Votes PCP (%)	Yes	-0.0320	(0.0374)	468	6488
Votes independent list (%)	No	-0.0169	(0.0435)	179	9545
Votes left-wing (%)	Yes	-0.0874	(0.0610)	476	7439
Votes right-wing (%)	No	-0.0619	(0.0666)	187	10891
Extra controls					
<i>2006 quota</i>					
Voter turnout (%)	Yes	-1.101	(1.542)	596	6192
Votes PS (%)	Yes	0.0299	(0.0496)	587	5983
Votes PSD (%)	Yes	-0.0108	(0.0563)	581	5746
Votes BE (%)	Yes	0.000111	(0.00320)	583	5837
Votes CDS (%)	Yes	-0.00982	(0.0180)	618	6657
Votes PCP (%)	Yes	0.0110	(0.0557)	564	5481
Votes independent list (%)	No	-0.0538**	(0.0271)	534	10442
Votes left-wing (%)	Yes	0.0356	(0.0641)	591	6120
Votes right-wing (%)	Yes-	0.00164	(0.0579)	584	5906
<i>2021 amendment</i>					
Voter turnout (%)	No	-0.0532	(1.689)	191	11812
Votes PS (%)	No	0.0655	(0.0514)	196	12316
Votes PS (%)	Yes	-0.0590	(0.0550)	474	7129
Votes PSD (%)	No	-0.0316	(0.0564)	187	10792
Votes BE (%)	No	-0.00722**	(0.00294)	209	14945
Votes CDS (%)	No	-0.0261	(0.0282)	173	8663
Votes PCP (%)	No	0.0154	(0.0335)	187	11108
Votes PCP (%)	Yes	-0.0315	(0.0295)	468	6488
Votes independent list (%)	No	-0.0151	(0.0427)	179	9788
Votes left-wing (%)	Yes	-0.0810	(0.0618)	476	7439
Votes right-wing (%)	No	-0.0532	(0.0593)	187	10714

Table G4: (continued)

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
<i>Remarks:</i> this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota or 2021 gender quota amendment on voting variables. All 2006 quota regressions control for non-compliance and year. The upper panel controls not for passing the 10,000 eligible voters threshold. The bottom panel extends the controls with the significant variables from the balance test in Table B2. The second column indicates whether the diff-in-disc (when common trend holds) or RDD method is employed. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. All variables are in shares. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.					

Table G5: Council characteristics, 2006 quota, different controls

Variables	Estimate	SE	N	Bandwidth
Not controlling for 10,000 threshold				
<i>Mayor</i>				
Left-wing	0.152	(0.160)	585	5921
Independent	-0.0123	(0.0491)	624	6760
Right-wing	-0.125	(0.155)	584	5886
Runs for reelection	-0.101	(0.138)	547	5032
Changes	0.135	(0.157)	555	5173
Supported by coalition	0.0276	(0.0457)	649	7508
Majorities in TH and MA	0.0153	(0.153)	512	4596
Margin of victory	6.334	(5.318)	583	5859
National government led by mayor's party	0.0863	(0.150)	586	5946
Vote share incumbent mayor's party	2.747	(4.126)	574	5607
<i>Parties</i>				
Number running	0.349	(0.250)	555	5177
Effective number elected	-0.374***	(0.138)	581	5727
Extra controls				
<i>Mayor</i>				
Left-wing	0.184	(0.151)	585	5921
Independent	-0.0204	(0.0519)	624	6760
Right-wing	-0.151	(0.144)	584	5886
Runs for reelection	-0.108	(0.139)	547	5032
Changes	0.128	(0.159)	555	5173
Supported by coalition	0.0379	(0.0455)	649	7508
Has majorities in TH and MA	-0.0134	(0.147)	512	4596
Margin of victory	5.915	(5.364)	583	5859
National government led by mayor's party	0.0913	(0.151)	586	5946
Vote share incumbent mayor's party	2.359	(4.051)	574	5607

Table G5: (continued)

Variables	Estimate	SE	N	Bandwidth
<i>Parties</i>				
Number running	0.203	(0.253)	555	5177
Effective number elected	-0.349***	(0.130)	581	5727

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota implementation on council characteristics, with accounting for non-compliance. For the number of running variables, also the RDD regression (Equation 1) is presented, which is indicated between brackets. All control for year and non-compliance. The upper panel controls not for passing the 10,000 eligible voters threshold. The bottom panel extends the controls with the significant variables from the balance test in Table B2. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). TH implies town hall (council) and MA implies municipal assembly. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Table G6: Council characteristics, 2021 amendment, different controls

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
Not controlling for 10,000 threshold					
<i>Mayor</i>					
Left-wing	Yes	-0.314**	(0.136)	475	7239
Independent	Yes	-0.00863	(0.0540)	480	8392
Right-wing	Yes	0.315**	(0.137)	475	7327
Runs for reelection	Yes	-0.268	(0.182)	464	6222
Changes	Yes	0.0673	(0.195)	467	6369
Supported by coalition	Yes	-0.0149	(0.0638)	478	7781
Has majorities in TH and MA	Yes	-0.131	(0.0968)	471	6556
Margin of victory	Yes	5.664	(5.188)	476	7576
National government led by mayor's party	Yes	-0.270*	(0.147)	474	6985
Vote share incumbent mayor's party	Yes	0.356	(4.879)	473	6977
<i>Parties</i>					
Number running	Yes	0.854**	(0.363)	462	6002
Effective number elected	No	-0.137	(0.124)	187	11072
Effective number elected	Yes	0.251*	(0.140)	473	6886
<i>Council Characteristics</i>					
Members born in municipality (%)	Yes	-0.0744	(0.0810)	464	6532
Average age council	Yes	0.242	(1.374)	467	6863
Members resident in municipality (%)	No	0.0186	(0.0280)	190	11812
<i>Education level council</i>					
Basic schooling	Yes	0.0108	(0.0216)	456	6188
Secondary schooling	Yes	0.0295	(0.0537)	461	6439
Undergraduate university degree	Yes	-0.0979	(0.103)	461	6428
Post-graduate (master or PhD)	No	0.0422	(0.0422)	192	12011

Table G6: (continued)

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
<i>Previous occupation council</i>					
Not defined, retired, unemployed, students, domestic	No	-0.0583	(0.0491)	170	8315
Administrative workers	Yes	-0.00335	(0.0289)	456	5895
Teaching professionals	Yes	0.0674	(0.0554)	473	8092
Small business owners	Yes	0.00474	(0.0277)	454	5765
Technicians (intermediate level)	Yes	-0.0982**	(0.0382)	473	7803
Service and sales workers	No	0.0148	(0.0336)	173	8767
Managers and senior staff	Yes	-0.0215	(0.0747)	469	7207
Intellectual and scientific professionals	Yes	0.0824	(0.0773)	469	7334
Extra controls					
<i>Mayor</i>					
Left-wing	Yes	-0.318**	(0.142)	475	7239
Independent	Yes	-0.00129	(0.0469)	480	8392
Right-wing	Yes	0.307**	(0.142)	475	7327
Runs for reelection	Yes	-0.232	(0.198)	464	6222
Changes	Yes	0.00319	(0.203)	467	6369
Supported by coalition	Yes	-0.00874	(0.0574)	478	7781
Has majorities in TH and MA	Yes	-0.0354	(0.104)	471	6556
Margin of victory	Yes	11.48**	(5.394)	476	7576
National government led by mayor's party	Yes	-0.257*	(0.148)	474	6985
Vote share incumbent mayor's party	Yes	4.833	(4.586)	473	6977
<i>Parties</i>					
Number running	Yes	0.694	(0.454)	462	6002
Effective number elected	No	-0.120	(0.121)	187	10804
Effective number elected	Yes	0.0578	(0.126)	473	6886
<i>Council Characteristics</i>					
Members born in municipality (%)	Yes	0.00969	(0.0889)	464	6532
Average age council	Yes	-0.541	(1.502)	467	6863
Members resident in municipality (%)	No	0.0199	(0.0274)	192	12009
<i>Education level council</i>					
Basic schooling	Yes	0.00674	(0.0254)	456	6188
Secondary schooling	Yes	0.0192	(0.0574)	461	6439
Undergraduate university degree	Yes	0.00849	(0.118)	461	6428
Post-graduate (master or PhD)	No	0.0526	(0.0418)	193	12299
<i>Previous occupation council</i>					
Not defined, retired, unemployed, students, domestic	No	-0.0597	(0.0507)	173	8743

Table G6: (continued)

Variables	Diff-in-disc	Estimate	SE	N	Bandwidth
Administrative workers	Yes	0.0189	(0.0324)	456	5895
Teaching professionals	Yes	0.0369	(0.0561)	473	8092
Small business owners	Yes	0.00348	(0.0317)	454	5765
Technicians (intermediate level)	Yes	-0.0771*	(0.0433)	473	7803
Service and sales workers	No	0.0139	(0.0338)	174	8933
Managers and senior staff	Yes	-0.0306	(0.0776)	469	7207
Intellectual and scientific professionals	Yes	0.104	(0.0864)	469	7334

Remarks: this table shows the estimation results of RDD (Equation 1) or difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2021 gender quota amendment on the council characteristics. The second column indicates whether the diff-in-disc (when common trend holds) or RDD method is employed. The upper panel controls not for passing the 10,000 eligible voters threshold. The bottom panel extends the controls with the significant variables from the balance test in Table B2. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. TH implies town hall (council) and Ma implies municipal assembly. Born in the municipality is the percentage of council members that are born in the municipality, residence is defined in a similar fashion. The education level is the share of council members with the corresponding education level. The previous occupation is based on ISCO-08 codes. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Table G7: General budget variables, 2006 quota,different controls

Variables	Estimate	SE	N	Bandwidth
Not controlling for 10,000 threshold				
Primary budget balance	-0.984*	(0.556)	454	6472
Budget balance	1.083**	(0.531)	402	6115
Gross debt	-0.274	(0.200)	552	5135
Extra controls				
Primary budget balance	-0.989*	(0.566)	454	6472
Budget balance	1.070*	(0.542)	402	6115
Gross debt	-0.205	(0.193)	552	5135

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota implementation on the budget. All control for year and non-compliance. The upper panel controls not for passing the 10,000 eligible voters threshold. The bottom panel extends the controls with the significant variables from the balance test in Table B2. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. Dummies indicating the election year, passing the 10,000 threshold an a non-complying party are included. All variables are in logs, real euros, per capita and the average of the term the council is in office. The budget balance excludes financial assets and liabilities. The primary budget balance excludes financial assets and liabilities, and interest payments on debt. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Table G8: Expenditures and investments, 2006 quota, different controls

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
Not controlling for 10,000 threshold								
<i>Expenditures</i>								
Total	0.00727	(0.0676)	490	7607	-0.121	(0.0986)	532	4756
Expenditures with financial liabilities (debt repayment)	-0.0281	(0.201)	508	9251	-0.409**	(0.206)	581	5922
Expenditures with financial assets	-0.242	(0.164)	415	9699	-0.163	(0.492)	467	6724
Interest payments on debt	-0.380	(0.312)	498	8267	-0.678**	(0.321)	560	5382
Effective	0.0206	(0.0687)	481	7322	-0.0897	(0.100)	514	4608
Total - current	0.0227	(0.0662)	501	8315	-0.0829	(0.0839)	549	5062
Personnel	0.0326	(0.0827)	499	8042	-0.0243	(0.107)	540	4898
Acquisition of goods and services	0.00988	(0.0822)	501	8411	-0.0939	(0.0944)	556	5189
Total - capital	-0.0459	(0.108)	484	7435	-0.186	(0.169)	534	4773
Investments	0.0328	(0.180)	499	7961	-0.0615	(0.222)	546	5003
<i>Investment per category</i>								
Acquisition of Land	0.0127	(0.297)	457	10302	0.595	(0.506)	516	6088
Housing	0.389	(0.385)	362	9825	0.864	(0.560)	434	6294
Transportation material	-0.00205	(0.176)	496	9211	-0.280	(0.306)	570	5951
Machinery and equipment	0.347*	(0.178)	501	8535	0.189	(0.254)	548	5097
Other	0.253	(0.320)	452	8088	0.517	(0.469)	510	5373
<i>Investment-Other Buildings</i>								
Total	0.214	(0.214)	503	8905	0.420	(0.336)	580	5770
Sports, recreation and schooling facilities	0.422	(0.278)	466	7690	0.227	(0.418)	520	4962
Social equipment	-0.230	(0.521)	252	14091	0.676	(0.805)	295	8056
Other	0.0471	(0.229)	508	9861	0.431	(0.408)	573	6110
<i>Investment - Diverse Constructions</i>								
Total	-0.173	(0.373)	500	8941	-0.316	(0.450)	574	5709
Streets, overpasses and complementary works	0.606*	(0.366)	341	9826	0.139	(0.565)	415	6197
Water treatment and distribution	-0.918**	(0.424)	267	5208	-0.946	(0.597)	269	3809
Rural roads	0.247	(0.565)	236	6698	0.402	(0.563)	276	4511
Sewage	-0.125	(0.431)	312	10546	-0.592	(0.682)	363	6010
Other	-0.144	(0.293)	514	9746	0.0836	(0.381)	591	6232
Extra controls								
<i>Expenditures</i>								
Total	0.00114	(0.0532)	458	6574	-0.114	(0.0687)	532	4756

Table G8: (continued)

Variables	RDD				Diff-in-disc			
	Estimate	SE	N	Bandwidth	Estimate	SE	N	Bandwidth
Expenditures with financial liabilities (debt repayment)	-0.0785	(0.192)	509	9334	-0.410**	(0.198)	581	5922
Expenditures with financial assets	-0.223	(0.146)	403	9140	-0.109	(0.488)	467	6724
Interest payments on debt	-0.445	(0.311)	493	7883	-0.691**	(0.317)	560	5382
Effective	0.0232	(0.0531)	444	6221	-0.0710	(0.0660)	514	4608
Total - current	0.0609	(0.0545)	474	7042	-0.0958*	(0.0557)	549	5062
Personnel	0.0947	(0.0772)	475	7073	-0.00513	(0.0867)	540	4898
Acquisition of goods and services	0.0264	(0.0673)	480	7215	-0.133*	(0.0724)	556	5189
Total - capital	-0.107	(0.0847)	474	7058	-0.167	(0.129)	534	4773
Investments	0.00746	(0.161)	484	7433	-0.120	(0.188)	546	5003
<i>Investment per category</i>								
Acquisition of Land	0.0161	(0.293)	456	10202	0.575	(0.494)	516	6088
Housing	0.242	(0.378)	362	9851	0.907	(0.570)	434	6294
Transportation material	-0.0231	(0.173)	489	8760	-0.291	(0.295)	570	5951
Machinery and equipment	0.423**	(0.173)	492	7714	0.186	(0.218)	548	5097
Other	0.179	(0.305)	452	8081	0.405	(0.468)	510	5373
<i>Investment-Other Buildings</i>								
Total	0.302	(0.204)	499	8291	0.473	(0.322)	580	5770
Sports, recreation and schooling facilities	0.470*	(0.271)	466	7697	0.294	(0.410)	520	4962
Social equipment	-0.164	(0.499)	253	14161	0.818	(0.820)	295	8056
Other	0.0591	(0.213)	494	9254	0.462	(0.383)	573	6110
<i>Investment - Diverse Constructions</i>								
Total s	-0.215	(0.347)	498	8780	-0.447	(0.424)	574	5709
Streets, overpasses and complementary works	0.557	(0.352)	330	9125	0.0764	(0.548)	415	6197
Water treatment and distribution	-1.119***	(0.396)	267	5283	-1.014*	(0.566)	269	3809
Rural roads	-0.123	(0.483)	218	6065	0.296	(0.547)	276	4511
Sewage	-0.163	(0.426)	311	10343	-0.591	(0.692)	363	6010
Other	-0.136	(0.264)	510	9611	0.0377	(0.371)	591	6232

Remarks: this table shows the estimation results of RDD (Equation 1) and difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota on the expenditures and investments. All control for year and non-compliance. The upper panel controls not for passing the 10,000 eligible voters threshold. The bottom panel extends the controls with the significant variables from the balance test in Table B2. SEs is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SE are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. All variables are in logs, real euros, per capita and the average of the term the council is in office. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Appendix H Switchers

Table H1: Gender effects, without switchers

Variables	Estimate	SE	N	Bandwidth
Without accounting for non-compliance				
<i>Pooled sample</i>				
Female list leader (%)	0.0873	(0.0594)	525	6150
Female mayor	-0.0287	(0.0708)	509	5772
Female council members, including mayor (%)	0.0979*	(0.0581)	515	6048
Female council members, excluding mayor(%)	0.145**	(0.0714)	508	5818
<i>2009</i>				
Female list leader (%)	0.0195	(0.0604)	281	6137
Female mayor	0.0543	(0.0884)	279	6066
Female council members, including mayor (%)	0.0750	(0.0528)	285	6221
Female council members, excluding mayor(%)	0.0797	(0.0659)	285	6266
<i>2013</i>				
Female list leader (%)	0.0975	(0.0722)	270	5662
Female mayor	-0.0643	(0.0774)	275	6070
Female council members, including mayor (%)	0.154**	(0.0664)	288	6722
Female council members, excluding mayor(%)	0.193**	(0.0832)	285	6462
<i>2017</i>				
Female list leader (%)	0.117	(0.0879)	268	5968
Female mayor	-0.00693	(0.0978)	266	6069
Female council members, including mayor (%)	0.0996	(0.0719)	277	6595
Female council members, excluding mayor(%)	0.142*	(0.0807)	279	6678
With accounting for non-compliance				
<i>Pooled sample</i>				
Female list leader (%)	0.0906	(0.0596)	525	6150
Female mayor	-0.0282	(0.0708)	509	5772
Female council members, including mayor (%)	0.101*	(0.0583)	515	6048
Female council members, excluding mayor(%)	0.148**	(0.0716)	508	5818
<i>2009</i>				
Female list leader (%)	0.0296	(0.0616)	281	6137
Female mayor	0.0637	(0.0926)	279	6066
Female council members, including mayor (%)	0.100**	(0.0504)	285	6221
Female council members, excluding mayor(%)	0.109*	(0.0635)	285	6266
<i>2013</i>				
Female list leader (%)	0.103	(0.0734)	270	5662
Female mayor	-0.0643	(0.0775)	275	6070
Female council members, including mayor (%)	0.170**	(0.0668)	288	6722
Female council members, excluding mayor(%)	0.212**	(0.0836)	285	6462
2021 amendment				
Female list leader (%)	0.0803	(0.0872)	292	6281

Table H1: (continued)

Variables	Estimate	SE	N	Bandwidth
Female mayor	0.0360	(0.101)	310	7022

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects on the gender of the council for the pooled sample as well as for all elections separately. The panel header indicates whether a dummy is included accounting for non compliance for the 2006 quota. Non-compliance was not present in the 2021 amendment. Municipalities switching from treatment status in the sample are excluded. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. A year dummy as well as a dummy for passing the 10,000 threshold are added as controls. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table H2: Voter behaviour, without switchers

Variables	Estimate	SE	N	Bandwidth
<i>2006 quota</i>				
Voter turnout (%)	2.546	(1.619)	528	6192
Votes PS (%)	0.0266	(0.0571)	519	5983
Votes PSD (%)	-0.000128	(0.0495)	513	5746
Votes BE (%)	0.00125	(0.00370)	515	5837
Votes CDS (%)	-0.000547	(0.0275)	550	6657
Votes PCP (%)	-0.00263	(0.0203)	496	5481
Votes left-wing (%)	0.0341	(0.0602)	523	6120
Votes right-wing (%)	0.0334	(0.0556)	516	5906
<i>2021 amendment</i>				
Votes PS (%)	-0.000385	(0.0402)	316	7129
Votes PCP (%)	0.0132	(0.0225)	300	6488
Votes left-wing (%)	-0.00582	(0.0419)	319	7439

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota or 2021 gender quota amendment on voting variables. Municipalities switching from treatment status in the sample are excluded. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. For the RDD, a triangular kernel is employed. Dummies indicating passing the 10,000 threshold and a non-complying (only 2006 quota) party are included. All variables are in shares. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table H3: Council characteristics, without switchers

Variables	Estimate	SE	N	Bandwidth
2006 quota				
<i>Mayor</i>				
Left-wing	0.0510	(0.143)	517	5921

Table H3: (continued)

Variables	Estimate	SE	N	Bandwidth
Independent	-0.0248	(0.0658)	556	6760
Right-wing	-0.00291	(0.129)	516	5886
Changes	0.259	(0.201)	487	5173
Runs for reelection	-0.229	(0.181)	479	5032
Supported by coalition	0.0626	(0.0605)	581	7508
Has majorities in TH and MA	-0.260*	(0.153)	444	4596
Margin of victory	4.075	(6.055)	515	5859
National government led by mayor's party	0.125	(0.171)	518	5946
Vote share incumbent mayor's party	0.275	(5.064)	506	5607
<i>Parties</i>				
Number running	0.473	(0.313)	487	5177
Effective number elected	-0.345**	(0.149)	513	5727
2021 amendment				
<i>Mayor</i>				
Left-wing	-0.237**	(0.0962)	318	7239
Independent	0.0680	(0.0412)	326	8392
Right-wing	0.162	(0.106)	318	7327
Runs for reelection	-0.224	(0.224)	292	6222
Changes	-0.0532	(0.234)	296	6369
Supported by a coalition	-0.0155	(0.0665)	323	7781
Has majorities in TH and MA	-0.0895	(0.141)	303	6556
Margin of victory	9.781*	(5.733)	320	7576
National government led by mayor's party	-0.150	(0.0970)	314	6985
Vote share incumbent mayor's party	4.549	(5.147)	313	6977
<i>Parties</i>				
Number running	0.0120	(0.416)	287	6002
Effective number elected	0.0907	(0.146)	312	6886
<i>Council Characteristics</i>				
Members born in municipality (%)	-0.0399	(0.0959)	298	6532
Average age council	0.170	(1.511)	308	6863
<i>Education level council</i>				
Basic schooling	0.0123	(0.0241)	285	6188
Secondary schooling	-0.00501	(0.0615)	294	6439
Undergraduate university degree	0.00140	(0.152)	294	6428
<i>Previous occupation council</i>				
Administrative workers	-0.0429	(0.0340)	282	5895
Teaching professionals	0.0341	(0.0591)	321	8092
Small business owners	0.0117	(0.0388)	280	5765

Table H3: (continued)

Variables	Estimate	SE	N	Bandwidth
Technicians (intermediate level)	-0.0675	(0.0534)	320	7803
Managers and senior staff	-0.0505	(0.0803)	314	7207
Intellectual and scientific professionals	0.146	(0.0971)	314	7334

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota implementation and its 2021 amendment on council characteristics. Municipalities switching from treatment status in the sample are excluded. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. Dummies indicating the election yeemployed. A dummy indicating passing the 10,000 threshold is included. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. TH implies town hall (council) and Ma implies municipal assembly. Born in the municipality is the percentage of council members that are born in the municipality. The education level is the share of council members with the corresponding education level. The previous occupation is based on ISCO-08 codes. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Table H4: Expenditures and investments, 2006 quota, without switchers

Variables	Estimate	SE	N	Bandwidth
<i>General budget</i>				
Primary budget balance	-0.708	(0.612)	401	6472
Budget balance	1.028*	(0.589)	354	6115
Gross debt	-0.318	(0.212)	484	5135
<i>Expenditures</i>				
Expenditures with financial liabilities (debt re- payment)	-0.228	(0.221)	513	5922
Expenditures with financial assets	0.469	(0.756)	411	6724
Acquisition of goods and services	0.0988	(0.102)	488	5189
Investments	0.162	(0.237)	478	5003
<i>Investment per category</i>				
Transportation material	-0.106	(0.365)	502	5951
Other	0.429	(0.514)	445	5373
<i>Investment-Other Buildings</i>				
Total	0.911**	(0.424)	512	5770
Sports, recreation and schooling facilities	0.566	(0.519)	454	4962
Other	0.550	(0.475)	506	6110
<i>Investment - Diverse Constructions</i>				
Total	-0.157	(0.437)	506	5709
Streets, overpasses and complementary works	1.003	(0.609)	376	6197
Water treatment and distribution	-0.598	(0.693)	229	3809
Rural roads	1.436*	(0.728)	242	4511
Sewage	0.217	(0.641)	313	6010

Remarks: this table shows the estimation results of difference-in-discontinuities (diff-in-disc, Equation 2) regressions to examine the effects of the 2006 gender quota and its 2021 amendment on the expenditures and investments. Municipalities switching from treatment status in the sample are excluded. SEs is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SE are rounded. An MSE-bandwidth selector is used. Dummies indicating the year, passing the 10,000 threshold and a non-complying party are included. All variables are in logs, real euros, per capita and the average of the term the council is in office. The budget balance excludes financial assets and liabilities. The primary budget balance excludes financial assets and liabilities, and interest payments on debt. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Appendix I Placebo

Table II: Gender effects, 2006 quota, placebo year

Variables	Estimate	SE	N	Bandwidth
Without accounting for non-compliance				
Female list leader (%)	0.0749	(0.598)	452	6351
Female mayor	-0.207	(0.150)	436	5882
Female council members, including mayor (%)	0.119	(0.236)	442	6123
Female council members, excluding mayor(%)	-0.462	(0.295)	437	5958
With accounting for non-compliance				
Female list leader (%)	-0.0299	(0.165)	452	6351
Female mayor	0.0259	(0.0435)	436	5882
Female council members, including mayor (%)	0.0259	(0.0435)	442	6123
Female council members, excluding mayor(%)	-0.0745	(0.151)	437	5958

Remarks: this table shows the estimation results of a placebo difference-in-discontinuities (diff-in-disc, Equation 2) regressions on the gender of the council for the pooled sample. It estimates the effect of the quota one election before the actual implementation. The panel header indicated whether non-compliance is accounted for using a dummy variable. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. A year dummy as well as a dummy for passing the 10,000 threshold are added as controls. No dummy for non-compliance is included. Female mayor is a dummy variable indicating whether the mayor is female, the other variables are shares of the number of lists or council size. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.

Table I2: Voter behaviour, 2006 quota, placebo year

Variables	Estimate	SE	N	Bandwidth
Voter turnout (%)	-0.653	(1.431)	589	5858
Votes PS (%)	0.0561	(0.0477)	590	5918
Votes PSD (%)	-0.0470	(0.0593)	566	5237
Votes BE (%)	-0.000297	(0.00184)	614	6520
Votes CDS (%)	-0.0109	(0.0174)	527	4601
Votes PCP (%)	0.0259	(0.0435)	567	5289
Votes left-wing (%)	0.0941	(0.0644)	587	5804
Votes right-wing (%)	-0.0697	(0.0630)	582	5611

Remarks: this table shows the estimation results of placebo difference-in-discontinuities (diff-in-disc, Equation 2) regressions on voting variables. It estimates the effect of the quota one election before the actual implementation. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. Dummies indicating passing the 10,000 threshold an a non-complying (only 2006 quota) party are included. All variables are in shares. The parties are Social Democratic Party (PPD/PSD), Socialist Party (PS), Social Democratic Centre - People's Party (CDS), Portuguese Communist Party (PCP) and Left Bloc (BE). All parties could also be part of a coalition. Left-wing contains the parties PS, PCP, or BE and right-wing contains the parties PPD-PSD or CDS-PP. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Table I3: Council characteristics, 2006 quota, placebo year

Variables	Estimate	SE	N	Bandwidth
<i>Mayor</i>				
Left-wing	0.133	(0.151)	588	5832
Independent	-0.0657**	(0.0325)	582	5600
Right-wing	-0.0745	(0.151)	587	5772
Runs for reelection	0.151	(0.134)	522	4571
Changes	-0.0299	(0.165)	519	4554
Supported by coalition	0.0315	(0.0422)	677	8596
Has majorities in TH and MA	-0.0119	(0.141)	507	4429
Margin of victory	4.555	(5.582)	586	5747
National government led by mayor's party	0.00758	(0.130)	593	5997
Vote share incumbent mayor's party	2.050	(3.764)	555	5068
<i>Parties</i>				
Number running	0.0941	(0.0644)	426	5500
Effective number elected	0.220*	(0.123)	545	4939

Remarks: this table shows the estimation results of placebo difference-in-discontinuities (diff-in-disc, Equation 2) regressions on council characteristics. It estimates the effect of the quota one election before the actual implementation. SE is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SEs are rounded. An MSE-bandwidth selector is used. Dummies indicating the election year, passing the 10,000 threshold an a non-complying party are included. All mayor variables are dummies, except for the margin of victory (p.p.) and vote share incumbent mayor's party(%). TH implies town hall (council) and MA implies municipal assembly. The stars indicate the significance level with *: p<0.10, **: p<0.05, ***: p<0.01.

Table I4: Expenditures and investments, 2006 quota, placebo year

Variables	Estimate	SE	N	Bandwidth
<i>General budget</i>				
Primary budget balance	0.279	(0.467)	393	7181
Budget balance	0.794	(0.635)	327	6605
Gross debt	-0.386	(0.272)	563	5194
<i>Expenditures</i>				
Expenditures with financial liabilities (debt re-payment)	-0.462	(0.295)	585	5888
Expenditures with financial assets	0.876	(0.627)	439	7021
Interest payments on debt	-0.391	(0.359)	582	5820
Acquisition of goods and services	-0.0196	(0.143)	564	5187
<i>Investment per category</i>				
Transportation material	-0.0842	(0.344)	569	5741
<i>Investment-Other Buildings</i>				
Total	0.132	(0.310)	568	5355
Sports, recreation and schooling facilities	0.591	(0.428)	531	4897
Other	-0.286	(0.369)	553	5310
<i>Investment - Diverse Constructions</i>				
Total	0.132	(0.310)	568	5355
Streets, overpasses and complementary works	0.623	(0.506)	455	5605
Water treatment and distribution	-0.797	(0.581)	317	3921
Rural roads	-0.958	(0.672)	306	4129
Sewage	-0.724	(0.509)	434	6670

Remarks: this table shows the estimation results of placebo difference-in-discontinuities (diff-in-disc, Equation 2) regressions on the budget, expenditures and investments. SEs is the standard error and N is the number of observations. The standard errors are clustered at the municipality level. All estimates and SE are rounded. An MSE-bandwidth selector is used. Dummies indicating the year, passing the 10,000 threshold an a non-complying party are included. All variables are in logs, real euros, per capita and the average of the term the council is in office. he budget balance excludes financial assets and liabilities. The primary budget balance excludes financial assets and liabilities, and interest payments on debt. The stars indicate the significance level with *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$.