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Municipal Electorate and Voter Turnout: Exploiting Differences in Council Size

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Abstract

Proportional representation (PR) systems are expected to attract more voters to the polls, as they increase the probability of a voter being decisive in the election. Using a panel of Portuguese local elections, between 2001 and 2017, we study how the number of representatives in Town Council affects turnout. We first compute a Local Voting Power Index and show that a higher ratio of Alderman per voter increases turnout. We then rely on the population-based rule that determines the size of Town Councils in Portugal to implement a Regression Discontinuity Design and estimate a causal (local) effect of Council size on voter turnout. We find that, in line with instrumental theories of voting, an increase of two local representatives is associated with a boost of between 2% and 4% in the number of votes.

Keywords: Turnout, Voting Power, PR Systems, Town Council, Regression Discontinuity Design, Local Elections, Portugal

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1 Introduction

The trend of general decline in turnout rates in most Western democracies has been highly addressed by political researchers and the press during the last decades. Participation levels in parliamentary elections across OECD countries, declined on average about 10 percentage points between the early 1990s and the late 2010s.[1] In times of peaking literacy and of high availability of information, one needs to ask what are the driving forces of such a decline. Tackling decreasing turnout protects democracy, as it enhances equitable weighing of individual preferences, but also because low turnout can bring about unequal turnout, often biased towards more privileged group of citizens as stated by Lijphart (1997).

At the same time voting is costly. Be it because of time spent travelling, queuing, or because of the costs of collecting information. Voting theories have been mostly focused on what encourages voters to bear this cost, distinguishing two types of utilitarian benefits derived from voting. *Expressive theories* see the voting act as a consumption one, assuming that voters inherently benefit from the action itself. *Instrumental theories*, on the other hand, argue that voting works as an investment. Voters weigh the expected benefits of casting a vote against its cost, with the expected benefit depending on the probability that they can influence the outcome of the election.[2]

The literature has shown that turnout is higher in proportional representation than in majoritarian systems, as the former are more suited to capture the preferences of the electorate as a whole. Although no system is able to ensure full proportionality, in theory increasing the number of representatives should enlarge the feeling of representation to a broader range of voters.

In this thesis, we take advantage of the particularities of the Portuguese system to assess how the number of representatives affects turnout in local elections. In Portugal, members of local governments are elected in a PR system, with the number of seats for

[1] IDEA - http://dx.doi.org/10.1787/888933939769

[2] See Fiorina (1976) for an overview on these two theories. See also Feddersen and Pesendorfer (1996) for information-based theories, a distinct theoretical branch from the two mentioned above.

the Town Council depending on pre-determined population thresholds of eligible voters. These features create a quasi-experiment environment that allow us to test if the number of seats in the Council affects turnout. We start by computing what we called the *local voting power index* (LVPI), a ratio between the number of Aldermen in the Town Council and the number of eligible voters. We show that a higher voting power, as measured in this way, is associated with higher participation rates. This finding is in line with instrumental theories as turnout increases when the expected benefit of electing their preferred representatives increases. Albeit this relationship is strong and robust, we cannot exclude that endogeneity may be present, as others effects (e.g network effects or lower information costs), which could also influence participation rates, are expected to be correlated with voting power.

To address these concerns we explore the sharp discontinuities in Council size by applying a Regression Disconitnuity Design (RDD) to obatin a (local) causal estimate of the impact of the number of representatives on turnout. Results show a positive effect of Council size when controlling for unobserved heterogeneity, which is in line with the preliminary findings. Across our specifications, we find that, two more Aldermen increases the number of votes by about 2% to 4% . We show that our strategy is valid as assignment to treatment seems to be exogenous and no other policies are changing for at least one of the thresholds. We also test the robustness of these findings and following Pettersson-Lidbom (2012), we estimate a non-local effect of Council size on turnout. This methodology combines an RD framework with a smooth function of the running variable. The estimates from this stage corroborate our previous findings as they remain unchanged.

This work is structured as follows. Section 2 summarizes the literature. Section 3 describes the Portuguese institutional framework. In Section 4 we describe the data sources, and provide descriptive evidence about turnout in Portuguese local elections. Section 5 presents the two methodological strategies. In Section 6 we present the results, and discuss their validity and robustness. Section 7 concludes.

2 Literature Review

Since the seminal work of Downs (1957), scholars have analysed turnout both from a theoretical and an empirical view point. In a meta-analysis Cancela and Geys (2016) group the determinants of turnout into 3 categories: socioeconomic, political and institutional. An important takeaway of this work is that the determinants of turnout vary with the level of government. As an example, campaign expenditures seem to have a stronger effect on participation rates at national elections, while the proportion of minorities in a jurisdiction has a bigger explanatory power on sub-national ones. Among the socioeconomic variables, population size is the element that more successfully explains turnout differences between national and sub-national elections. In Portugal, despite legislative elections being more participated overall, Cancela and Vicente (2019) verify that within most municipalities, turnout is actually higher in local ones, relating such an event to the small population levels in the majority of them. Freire et al. (2012) empirically confirm this relation between population size and turnout in local elections, using a multivariate model. Likewise, Tavares and Carr (2013) exploited a reform that merged civil parishes, and thus their electorates, with the results from a Difference in difference specification showing that electoral participation decreased more in amalgamated parishes when compared to non-amalgamated ones.[3]

Research also highlights some political determinants that influence turnout at sub-national level. In Portugal, both election closeness and the presence of independent candidates are shown to have a positive effect on participation levels (Freire et al., 2012). In turn, Veiga and Veiga (2018) demonstrate that a reform that introduced term limits for incumbent mayors had positive effects on turnout.

Analyzing which type of electoral system is more effective in driving voters to the ballots, and under what conditions, has also led to a vast and growing literature, both in theoretical grounds, (Herrera et al., 2014), but also in empirical terms as well.[4] The latter

[3] Portuguese municipalities are sub-divided in parishes. More on administrative divisions and Portuguese local governments will be described in Section 3.

[4] The literature has also inverstigated other institutional determinants (e.g compulsory voting laws, the settlement of concurrent elections) that we do not discuss here, as they do not apply in the Portuguese

branch usually shows that PR systems induce higher participation levels. Possible reasons include perceptions of a higher vote value, when representatives are elected proportionally, due to lower *vote wasting* (Ladner and Milner, 1999) Conversely, Eggers (2015) claims that PR systems generate incentives for higher party mobilization, a plausible mechanism for higher turnout.

By assessing how the numbers of representatives affects turnout, this thesis's research question is closely related with particular branches of turnout's theoretical literature. Rational voter models, early mentioned in the work of Downs (1957), assume that the decision to vote or abstain, is based on a classic individual cost-benefit analysis. As discussed previously, instrumental theories assume the benefit of voting is a function of the probability of the voter ending up being pivotal. However, since this probability is marginally zero, it has led to the classic voting paradoxes as mentioned in Dhillon and Peralta (2002), and to the emergence of other theoretical models such as the expressive ones (Fiorina, 1976). Nevertheless, some researchers have resorted to instrumental theories, when it comes to justify large participation level in low-level elections (Riker and Ordeshook, 1968), with Horiuchi (2005) arguing that participation is not only driven by "what is at stake", but also by "how much the vote counts".

As we resort to an RDD approach, this work is also related with literature, where discontinuities based on pre-determined population thresholds are exploited to identify causal effects in political and economic outcomes.[5] This methodology has been used to study the effects: of a mayor's wage on selection and performance, (Gagliarducci and Nannicini, 2009), of electoral rules on the validity of strategic voting models, (Fujiwara, 2011), of distinct electoral systems on voter turnout, (Eggers, 2015) and (Ladner and Milner, 1999) and the effect of Council size on the size governmental expenditures, (Pettersson-Lidbom, 2012). As discussed in Cancela and Geys (2016), cross countries studies about turnout are likely plagued with identification issues, given the differences in institutional characteristics across countries. Therefore, the authors suggest that this may be circumvented

case.

[5] Eggers et al. (2018) analyses this methodology. The authors discuss the limitations, as well as possible solutions to overcome them.

by focusing on single countries and by taking advantage of population discontinuities for causality.

3 Institutional Background

Portugal is subdivided in three different administrative layers. The first one distinguishes the continental territory from the two autonomous regions, the islands of Azores and Madeira. The second divides the entire territory into 308 Municipalities (278 in mainland Portugal, this work's level of analysis, and 30 on the islands), further subdivided in parishes, the third and smallest unit of local government in Portugal.[6] Furthermore, Portugal is divided in 18 mainland districts with no administrative competences, and like in other European countries in several layers of statistical units called NUTS.

Municipalities are governed by two local bodies: the Town Council – *Câmara Municipal* – the executive branch, and the Municipal Assembly, the deliberative one, whose representatives are elected through local democratic acts – *Eleições Autárquicas*. Elections for the local bodies, Town Council, Municipal Assembly, (and also Parish Assembly), are held simultaneously and in all the municipalities on the same Sunday, with no other electoral act occurring on that day. The voter receives three distinct ballots and chooses his preferred (closed) list for each body. As a consequence, turnout is the same for the three elections.[7]

The Town Council is led by the Mayor, the first candidate of the closed list who received more votes, and a group of Aldermen – *Vereadores*. In every municipality they are proportionally elected according to the method of D'Hondt.

Importantly, the number of Alderman seats in the Town Council varies across Municipalities. depending on a "population-based threshold rule", based on the number of

[6] In 2011, a territorial reform was implemented to reduce territorial fragmentation regarding Portuguese local governments. As a result, through several amalgamations, the number of parishes went from 4251 to 3092, in 2013.

[7] Technically, in a given jurisdiction, one can occasionally find marginal differences in the amount of votes for the Town Council and the Municipal Assembly. Nonetheless, we used the number of registered valid votes for the Town Council when computing turnout rates.

Table 1: Population-Based Rule - Council Size

Eligible Voters	Aldermen	Abs. Freq	Cum. Freq
< 10.000	4	493	35.47 %
10.000 - 50.000	6	677	84.17 %
50.000 - 100.000	8	115	92.45 %
> 100.000	10	95	99.28 %
Porto	12	5	99.64 %
Lisboa	16	5	100 %

Notes: As defined by Law 169/99, Article nº 57. Absolute frequencies were obtained after summing all observations across the 5 election years from 2001 to 2017.

eligible voters registered in each municipality.[8] In Table 1 we show the 4 different population thresholds, and the two exceptions, Lisboa and Porto, with 16 and 12 Aldermen, respectively. The number of representatives in Municipal Assemblies also derives from this rule as the number of directly elected members cannot be smaller than the triple of the Town Council size.[9]

The number of registered voters in a municipality is recorded by the Ministry of Internal Affairs before each election. In some cases, changes in the number of eligible voters leads to changes in Council size, as it happened in 28 municipalities (10%) between 2001 and 2017.[10] One additional institutional feature settled with resort to population thresholds is the salaries of Mayors and Aldermen. This time however, there are only two thresholds at 10.000 and 40.000 eligible voters.[11]

The geographic distribution of the Municipalities based on their Town Council size, for 2017 (the last election year) is shown in panel (a) of Figure 1. More than 80% of municipalities have less than 50.000 eligible voters and thus most commonly, Town Councils have 4 or 6 Aldermen. At the same time, the distribution of the number of seats in the Town Council is not geographically homogeneous as coastal areas and municipalities located in the two major metropolitan areas of Lisboa and Porto have generally a higher

[8] Law 169/99, Article nº 57.

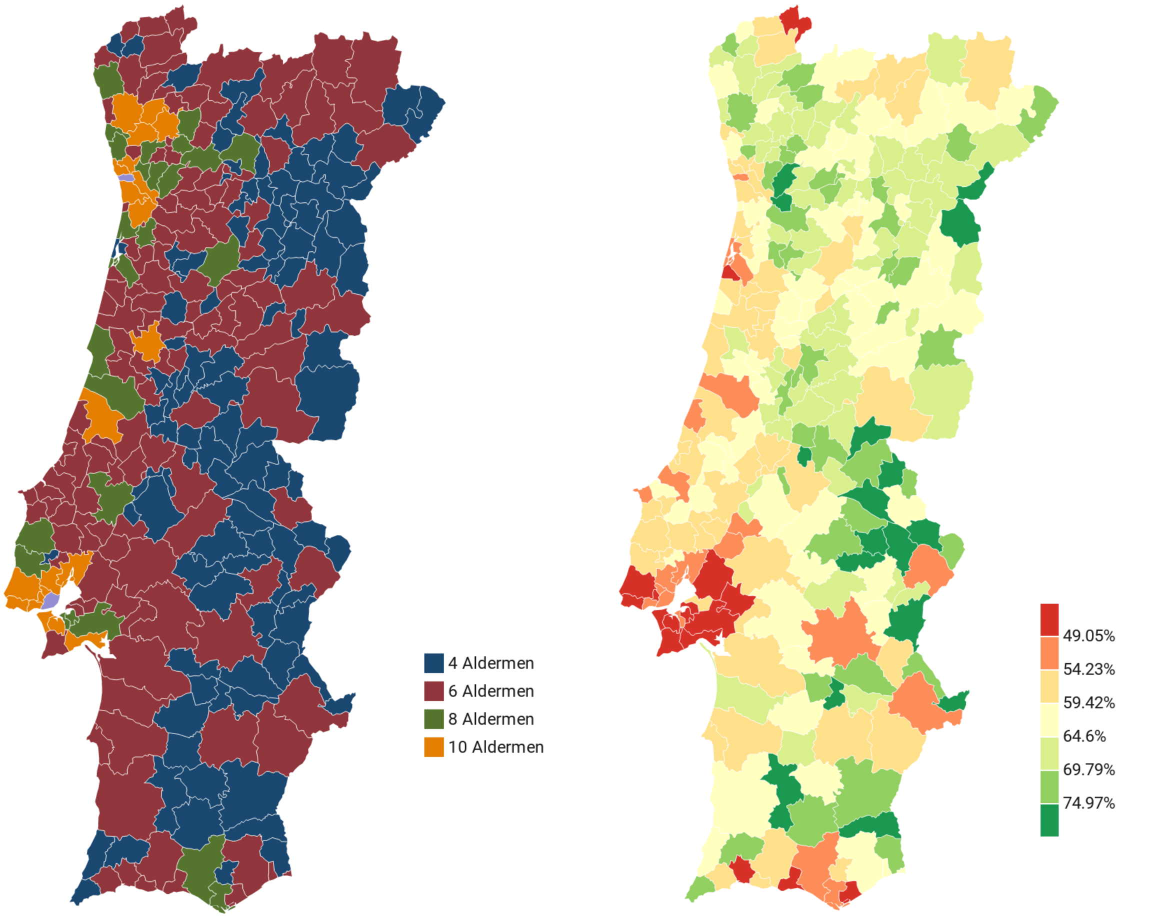
[9] Law 169/99, Article nº 42. The remaining seats of the Municipal Assembly are attributed to the presidents of the Parish Assemblies.

[10] In some municipalities, the Council changed more than once during our sample period (Murtosa, Castelo Branco, Covilhã, Mortágua and Carregal do Sal). See Table A.1 for the full list.

[11] Law 29/87 of June-30, Articles nº 6 and nº 10.

Figure 1: Mainland Portugal's Municipalities

(a) Town Council Sizes (b) Average Turnout



Notes: Built by the author. Left figure identifies each municipality according to number of Aldermen in their Town Council in 2017. Right figure illustrates the distribution of turnout rates, made available by SGMAI, across territory using an average of the recorded values between 2001 and 2017. Municipality identification can be done using - `https://www.anmp.pt/municipios/municipios/municipios-de-a-a-v/`

number of Aldermen. At last, panel (b) of Figure 1, illustrates the broad geographic variability on average turnout rates across Portuguese municipalities, ranging from a maximum of 80,16% in the municipality of Barrancos to 43,86% in Cascais.

4 Data and Descriptive Evidence

This work relies on a balanced panel dataset comprising 5 elections: (2001, 2005, 2009, 2013 and 2017),[12] and 278 municipalities, thus excluding the ones from the islands.[13] Besides turnout rates and the number of eligible voters, other political variables were generated from the online databases of CNE - (National Electoral Commission) and of SGMAI - (General-Secretary of Portuguese Internal Affairs Ministry). Controls include a set of demographic and socioeconomic variables retrieved from INE - (National Statistics Institute), PORDATA, DGAL - (General Directorate for Local Authorities), or from the *Marketest Sales Index* databases.

Turnout rates in local elections have been roughly stable since the late 1980s at about 60%. In fact, turnout in these elections has been the least consistent with the declining trend observed in other national elections, with the legislative ones already converging to the levels recorded in local elections.[14] The idea that local election are less important than national legislative elections as discussed in Section 2, is not reflected on turnout. In fact, participation rates in the former are actually higher in most municipalities, specially among the ones with a small electorate.[15] Figure A.1 shows how the gap in turnout between local and national elections is negative in large municipalities like Lisbon, and positive in the less populated regions on the border.

Population levels are negatively correlated with turnout in Portuguese local elections, as clearly illustrated in panel (a) of Figure 2. An attentive analysis also reveals a considerable variance for municipalities of comparable demographic dimension. This is partially due to an observable regional heterogeneity concerning turnout behaviour.[16] Panel (b) in Figure 2 plots the average turnout by Town Council size. Average turnout decreases with the size of the Council, which is consistent with the evidence in panel (a), as Council size is defined according to the number of eligible voters in the municipality. This relation is

[12] In 2005 and 2009 legislative elections ocurred before the local ones. In 2009 only two weeks in advance. The 2005 legislative election was anticipated, which also occurred in 2002 and in 2011.

[13] Excluded due to the existence of an intermediate level of (autonomous) Government.

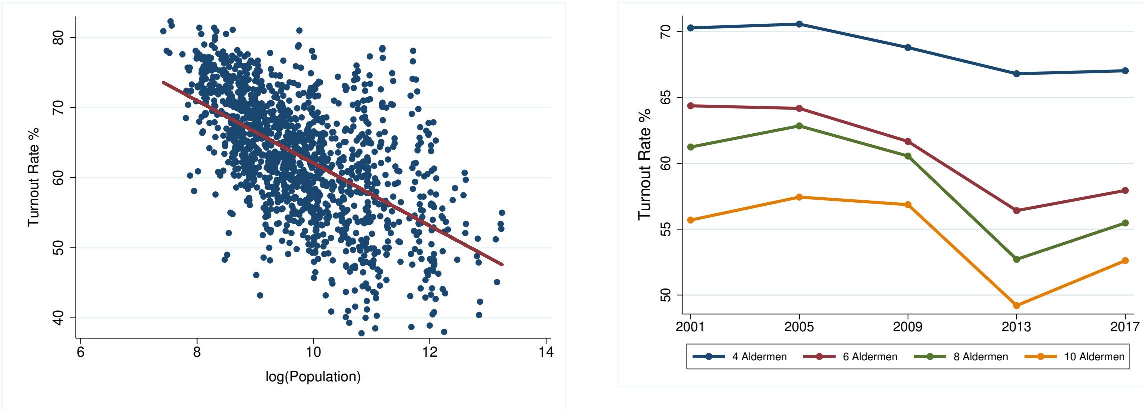
[14] See Figure A.2.

[15] Cancela and Vicente (2019).

[16] For a more detailed analysis of regional heterogeneity in turnout rates see Figures A.3, A.4 and A.5.

Figure 2: Population and Turnout in Local Elections

(a) Negative Correlation (b) Average Turnout by Council Size



Notes: Built by the author. Demographic data retreived from "Estimativas Anuais da População Residente" by INE. Data on turnout rates made available by SGMAI. Averages on panel (b) were computed weighing each municipality equally within their group, irrespective of their electorate size. Period of analysis: 2001 - 2017.

persistent and well-behaved over the sample period as the trend lines never cross.

At last, in Table 2 we show summary statistics, by Council size, for turnout rates and the respective political and socioeconomic variables, used as controls in several specifications in this work. We can see that more populous municipalities with bigger Councils, are on average richer and younger, with political data revealing closer elections and a bigger number of parties and independent candidates running for Council.[17]

5 Methodology

In this section we discuss the methodology. First we compute a local voting power index to assess if a higher number of representatives (per voter) increases turnout, in consistency with instrumental voting theories in local elections. Then, we explore exogenous variations in Council size to estimate its causal effect on turnout.

5.1 Local Voting Power Index

To assess if the behaviour of voters in Portuguese local elections is consistent with instrumental theories of turnout we built the *local voting power index*, LVPI henceforth.

[17]The changes in mean values of the covariates over the sample period is shown in Figure A.6

Table 2: Descriptive Statistics - Average Values by Council Size

	Number of Aldermen						
	4	6	8	10	Porto	Lisboa	Full Sample
Turnout Rate %	68.70	61.00	58.28	54.13	53.98	51.48	62.98
LVPI	76.43	32.48	12.75	7.30	5.24	3.05	44.51
Political Controls							
Number of Candidates	3.67	4.29	5.14	6.25	7.20	9.20	4.30
Mayor's Margin of Vict. %	21.32	20.35	18.50	17.22	11.89	14.42	20.28
Same Party	0.81	0.79	0.84	0.77	0.60	0.6	0.80
Incumbent Running	0.76	0.75	0.71	0.73	0.8	0.4	0.75
Punished Gov.	0.08	0.10	0.11	0.05	0.2	0.00	0.09
Left Winner	0.56	0.54	0.49	0.60	0	0.6	0.54
Independent Candidate	0.14	0.17	0.24	0.25	0.4	0.00	0.17
Socioeconomic Controls							
log(Population)	8.68	10.01	11.21	12.04	12.38	13.20	9.80
Share 65+ %	27.86	21.76	16.83	15.93	23.44	25.96	23.14
Parishes	7.53	14.37	19.56	20.52	11.80	41.40	12.88
Unemp. Rate %	7.13	6.81	7.34	7.16	10.85	7.60	7.01
Avg. Wage €	771.14	817.06	885.17	1020.07	1213.50	1477.88	824.77
Total Capital Exp. M€	3.99	8.61	20.08	33.85	76.24	237.68	10.72

Notes: Averages were computed weighing each municipality equally, irrespective of their electorate size. Political variables constructed using documents published by CNE and SGMAI regarding election results by jurisdiction. *Same Party* equals 1 if the winner party was in power before. *Punished Gov.* takes the value 1 if a municipality did not elected a Mayor from the incumbent party, with that party being the one who leads the national government. *Incumbent Running, Left Winner* and *Independent Candidate* are dummy variables. Demographic variables retrived from "Estimativas Anuais da População Residente" by INE. The number of parishes was collected from PORDATA. *Unemployment rate* and *Average wage* retrieved from PORDATA, and unavailable for the year of 2005. Proxied by the number of registered unemployed in the local employment centres as a percentage of the local population between 15 and 64 years of age, and the average monthly income of employees, respectively. Capital expenditures are recorded and available in the DGAL website.

Table 3: Changes in Council Size

	01-05	05-09	09-13	13-17
10.000	1	3	4	6
50.000	1	8	3	2
100.000	0	5	0	0

Notes: Built by the author, using data available in SGMAI concerning the number of eligible voters. Table A.1 lists these changes by municipality. Left column represents the thresholds of eligible voters where the size of the Town Council changes.

This index is obtained by dividing the number of Aldermen in each Town Council, by the number of eligible voters in that municipality, as shown in equation (1).

$$LVPI_{it} = \frac{N^{o}\ of\ Aldermen}{Eligible\ Voters} * 100.000 \tag{1}$$

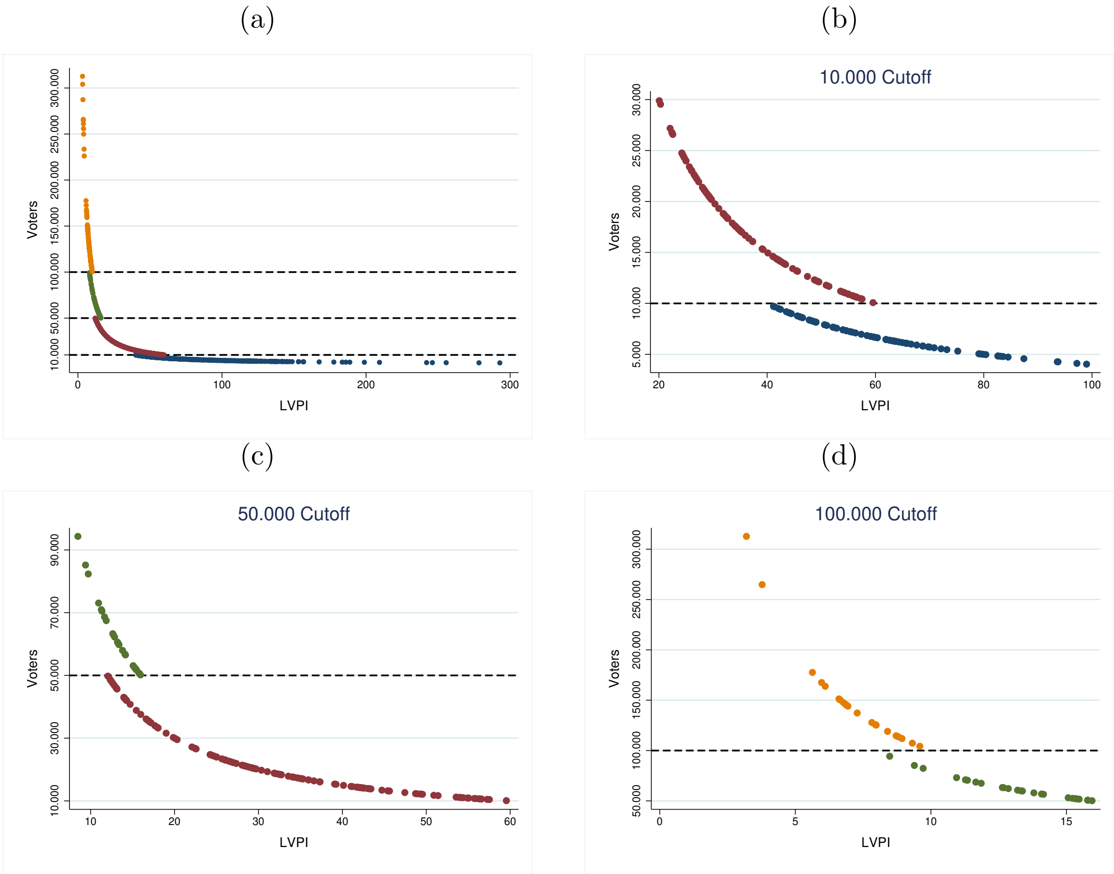
The goal is to proxy voting power in each municipality since, the larger the ratio, the larger the probability that a voter will be decisive (pivotal) in the election of an Alderman from his preferred list to the Town Council.

Figure 3 shows how LVPI varies as the number of eligible voter increases. Dashed horizontal lines represent the population cutoffs that define the number of seats in the Council. Each dot represents the municipalities' LVPI on one of the sample years. The first graph, for the whole sample, shows that overall, there is a negative relationship between the number of voters and LVPI. This occurs not only because the number of Aldermen does not grow proportionally, but also because the relationship is not linear at the thresholds.[18] The remaining graphs highlight the relationship around the thresholds. Importantly, the discontinuities lead to abrupt changes in voting power. This means that two municipalities with similar number of registered voters may have very different LVPI. For instance, in 2005 Óbidos which had an electorate of 9974 voters in comparison to Torre de Moncorvo's 10.050 voters, had a substantially smaller LVPI, 40.10, as opposed to 59.70 in the latter. In practise, as the LVPI indicates the number of Alderman per 100.000 voters, this means that in Torre de Moncorvo, less votes would be required to elect one Alderman than in Óbidos, indicating that voters are more likely to be pivotal in the former.

We implement a fixed effects panel estimation to estimate the effect of LVPI on turnout *rates*, by exploiting the variation across time, within each jurisdiction, while also controlling for the effects of other covariates, and for arbitrary correlations between unobserved time-invariant effects and the control variables. Specifically, we estimate the model:

[18] Municipalities marginally above the 10.000 voters threshold have 6 Aldermen in their Council, whereas municipalities slightly above the 100.000 voters threshold have 10 and not 60.

Figure 3: LVPI: Behaviour and Discontinuities



Notes: Built by the author. Electoral data retrieved from CNE and SGMAI. Data pooled from 2001 to 2017. Panel (a) includes all observations from our sample except the ones relative to Lisboa and Porto. Municipalities with 4 Aldermen are represented by the the blue markers. Red markers stand for the municipalities with 6 Aldermen, with green and dark yellow for the ones with 8 and 10 respectively. Dashed horizontal lines represent the respective thresholds in Panels (b) (c) and (d). Vertical and horizontal axis change between panels as to make discontinuities more visible.

$$y_{it} = \beta_1 LVPI_{it} + \delta' X_{it} + \sum_{\tau=2}^{T} \lambda_t 1_{\tau t} + c_i + \epsilon_{it} \tag{2}$$

The dependent variable y_{it} stands for the turnout rate recorded in municipality i in period t, with $LVPI_{it}$ representing the power of a vote recorded in period t, for voters registered in jurisdiction i. Depending on the specification, we included a vector of controls X_{it}, which comprises the political and socioeconomic controls listed in Table 2. Additionally, we also included election year dummies, to account for any type of time-specific events that have affected all municipalities (e.g institutional reforms), and municipality fixed effects, c_i, to control for unobserved time invariant characteristics. If the coefficient of interest, β_1, is positive, an increase in the LVPI is positively correlated with turnout. This would provide empirical support to instrumental theories of turnout, since when voters become (analytically) more pivotal, participation levels tend to increase accordingly.

This approach, however, has three caveats worth discussing. First, since both the outcome variable and the independent variable of interest are ratios involving the number of eligible voters, there is inherent endogeneity between the dependent and independent variables. Second, simultaneity bias is rather unlikely since the number of Aldermen is exogenously defined in the law and the number of registered voters is determined by central authorities. However, omitted variable bias may still be a source of endogeneity. At last, population levels might influence turnout for channels other than the number of Aldermen (e.g lower information costs, network effects, coordination behaviors).

5.2 Discontinuities in Council Size

To assess the causal impact of Council size on turnout, we explore the population-based policy displayed in Table 1. As explained before, the Portuguese law establishes that the size of the Town Council is a function of the number of registered voters in the municipality. This law creates sharp discontinuities around the cutoffs of 10.000, 50.000 and 100.000 eligible voters, setting up a quasi-experimental framework that could be exploited using a sharp Regression Discontinuity Design (RDD). We focus on the first two thresholds to evaluate the effect of an increase in the number of seats in Town Council on voter turnout.[19]

This approach is only valid if a set of continuity assumptions holds. That is, if the conditional regressions of turnout (now defined as the log of the absolute number of votes) on the number of eligible voters V_{it}, are continuous for both the treated and control groups at the thresholds. In our set-up, these assumptions can be formalized as:

Assumption 1 $\mathbb{E}[Y_{it}(1)|V_{it} = v]$ *is continuous in* $v \in \{10.000, 50.000\}$

Assumption 2 $\mathbb{E}[Y_{it}(0)|V_{it} = v]$ *is continuous in* $v \in \{10.000, 50.000\}$

where $Y_{it}(1)$ and $Y_{it}(0)$ are the outcomes of interest for the treatment and control group, respectively. These conditions guarantee that the observations immediately before the cutoff would be a valid (local) counterfactual for the units situated above it. The treatment effect, τ_{RD} can be defined as:

$$\tau_{RD} = \mathbb{E}[Y_{it}(1) - Y_{it}(0)|V_{it} = v] = \lim_{V \to v^+} Y - \lim_{V \to v^-} Y \tag{3}$$

This effect can be estimated by the following model:

$$y_{it} = \sum_{k=0}^{p}(\beta_k V_{it}^k) + \gamma D_{it} + \sum_{\tau=2}^{T} \lambda_t 1_{\tau t} + c_i + \delta' X_{it} + \epsilon_{it} \tag{4}$$

where y_{it} stands for the logarithm of the number of votes in municipality i in the year t, and V_{it} for the number of eligible voters. Since D_{it} is a dummy variable distinguishing whether an observation belongs to the treated or control group (above and below the cutoff, respectively), γ will equal τ_{RD} as defined in equation (3). We expect a positive estimate, consistent with the predictions that a higher number of representatives per voter, would increase the instrumental incentives described in the beginning of this section, thus leading to a higher turnout. We further included fixed effects c_i at municipal level, to control for unobserved heterogeneity between municipalities. This means that the

[19] We do not exploit the 100.000 threshold discontinuity, due to a reduced number of municipalities in its vicinity

estimator only captures within variation. Although treated and control groups will be directly comparable in terms of their observable and unobserved characteristics, since Council size is predominately a time-invariant variable (see Table 3), this is not a preferred specification given the low amount of within variation. Year dummies and the covariates used in the model of equation (2) are also added depending on the specification. Data is pooled irrespective the election year, and we fit both a local linear regression ($p = 1$), as proposed by Imbens and Lemieux (2008), for both treated and control groups, and a quadratic one ($p = 2$) to further test the sensitivity of our first estimates to the functional form of the fitted regression. At last, to increase the precision of our estimates, we restrict the sample within a fixed bandwidth around the threshold (cutoff).

To ensure the validity of the previous model, it is crucial that two properties are verified in our framework. First, no other policies should be changing simultaneously at the same thresholds. Otherwise, it is not possible to isolate the effect of a Council size change, due to the presence of *confounding treatments*. Second, the distribution of the running variable around the cutoffs should display a roughly symmetrical pattern across both sides of the thresholds. If this is not the case, we could be in the presence of *manipulative nonrandom sorting*, which would evidence an endogenous assignment to treatment.[20]

To the best of our knowledge, besides the number of seats in the Town Council, the only policy that is based on pre-determined thresholds of registered voters in a given jurisdiction, is the one that defines the remuneration criteria for Mayors and Aldermen (as already mentioned in Section 3).[21] Some distortionary effects on politicians' incentives arising from this policy (e.g how much effort to exert in mobilization matters, candidate quality) could potentially affect turnout.[22] However, and particularly given that the wage increases are small, we argue these are second order mechanisms that do not affect

[20]See Eggers et al. (2015) for a discussion about identification in RDD approaches exploiting population thresholds, its limitations and possible solutions to mitigate them.

[21]In reality, the size of the Municipal Assembly and of the Town Council follows the same threshold rule. However, as the distinction of turnout for the two municipal bodies is not clear-cut, we focus on the size of the Town Council only.

[22]See Gagliarducci and Nannicini (2009) for the effects of politicians's wage on selection and performance.

turnout.[23] Although both the representatives' wage, and the number of Aldermen change at the 10.000 cutoff, the second cutoff for wages is at 40.000 (not 50.000 as for Council size). Thus we can test for confounding treatments by assessing if the increase in the wage of representatives at the 40.000 cutoff leads to increases in turnout.

According to Eggers et al. (2018), *manipulative sorting* is more likely in thresholds where local politicians may benefit from manipulating treatment assignment, as when the size of bodies of government and the remuneration of their elected representatives change together. Although the number of registered voters is not easily manipulated by local authorities, as it is defined centrally by the Ministry of Internal Affairs, strategic recruitment through fiscal and housing policies, or selective precision proceedings can still do the trick for local policy makers.[24] Similarly to Gagliarducci and Nannicini (2009), we assess for signs of *manipulative sorting* by performing a visual analysis on the distribution of eligible voters.

Although the RDD methodology addresses the endogeneity concerns, restricting the sample within a bandwidth interval, and thus assessing average effects around a threshold, provides a local estimate which may raise issues of external validity. We address this by implementing the methodology proposed in Pettersson-Lidbom (2012). Contrary to a Sharp RDD set up, this method uses the entire pooled sample by regressing the number of votes against a categorical variable for the size of the Town Counicl, both in logarithmic form. Using all thresholds simultaneously helps us overcome efficiency concerns related with our limited sample size in the cutoffs' neighborhood. Moreover, we add a smooth function of the running variable, V_{it} and the fixed effects and covariates from equation (4)

$$y_{it} = \beta_1 \log(CouncilSize_{it}) + f(V_{it}) + \delta' X_{it} + \sum_{\tau=2}^{T} \lambda_t 1_{\tau t} + c_i + \epsilon_{it} \qquad (5)$$

[23]As defined in Law 29/87 of June-30, Articles nº 6 and nº 10, above the 10.000 registered voters threshold, Mayors would earn (gross wage) between 362.44 and 181.22 euros more, and Aldermen between 289.95 and 144.98 euros more.

[24]Law 13/99 defines how the institutional management of voter registrations takes place in Portugal. See also De Witte and Geys (2015) for an example of strategic housing policy in Belgium, such that local officials could sort themselves above a certain population threshold.

where all variables are defined as before and $f(V_{it})$ is a polynomial function of the running variable. We run 5 specifications where we progressively increase the degree of $f(V_{it})$ up to 5. This allows to check the sensitivity of the estimates across different functional forms. In this case, β_1 is a non-local estimate of the effect of Council size on turnout.

6 Empirical Results

6.1 Evidence of Instrumental Voting

As shown in Table 4, our estimates from the model in equation (2), suggest a positive relation between vote power and turnout rates. Column (1) shows the results of a Pooled OLS regression with year fixed effects, while in the remaining columns we controlled for unobserved heterogeneity, by including municipal fixed effects. Table B.1 in appendix, reports the point estimates for all the covariates included in the model.

The estimated coefficients for our variable of interest are always statistical significant at 1% level, with point estimates ranging from 0.241 to 0.229, when using the entire sample together with municipal fixed effects - columns (2) to (4). This means that turnout rates increase on average 1 percentage point when the LVPI increases by 4.15 to 4.37 units, which would require an increase of two Aldermen in the Town Council when the number of eligible voters is 50.000. In columnns (5) to (7) we replicate the specification in column (4) but exclude the observations *i)* from 2005, *ii)* from the metropolitan areas of Lisboa and Porto, and *iii)* from the district capitals.[25] This does not change the sign, nor the significance of the point estimates. In Table B.1 standard errors were clustered at municipal level to test the robustness of the estimates reported in Table 4 (where we report robust standard errors). Results reported in the first row show that the significance was kept unchanged. These findings provide empirical evidence in favour of instrumental theories, as turnout seems to be positively affected by voting power, as proxied by our ratio, even after controlling for a variety of other possible determinants.

[25]The exclusion of the 2005 observations, derives from the fact that we are missing that year's values for the variables *unemp. rate* and *avg. wage* which were interpolated in the remaining specifications.

Table 4: Fixed Effects - LVPI

	Turnout Rate %						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LVPI	0.142***	0.241***	0.248***	0.229***	0.226***	0.215***	0.226***
	(0.006)	(0.022)	(0.022)	(0.032)	(0.038)	(0.033)	(0.033)
Year F.E	x	x	x	x	x	x	x
Municipal F.E	-	x	x	x	x	x	x
Political C.	-	-	x	x	x	x	x
Socioeconomic C.	-	-	-	x	x	x	x
Observations	1390	1390	1390	1390	1112	1215	1300
R^2	0.426	0.932	0.939	0.941	0.941	0.930	0.941

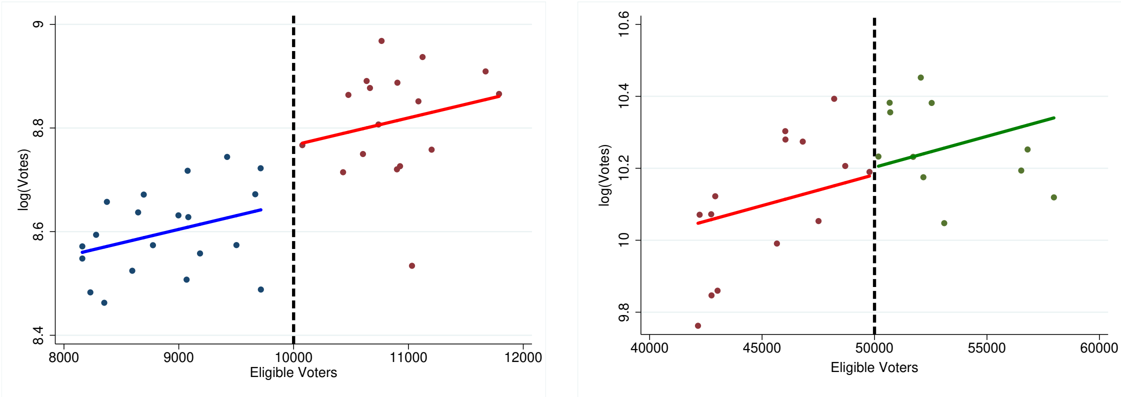
Notes: From Column (1) to Column (4) we used the entire the sample in accordance with the specifications defined in the table. In Column (4) we used a linear interpolation to obtain a value for the *unemp. rate* and the *avg. wage* variables in 2005, while in Column (5) we discarded them, which naturally decreased the number of observations. Columns (6) and (7) are identical to the one in (4) but we excluded the municipalities from the Metropolitan Areas of Lisbon and Porto, and the 18 district capitals, respectively. We further included a squared version of *ln_pop* in the socioeconomic controls. Heteroskedasticity-robust standard errors are reported in parenthesis. Significance levels are respectively: 10% *, 5% **, 1% ***.

6.2 Effects of Council Size on Turnout

Before presenting the results of our RDD approach, we perform a visual analysis on the distribution of the running variable, shown in Figures C.1 and C.2, to investigate if there is any evidence of *manipulative sorting* as discussed in Section 5. In the 10.000 voters threshold (Figure C.1), the distribution seems roughly symmetric around the cutoff. The evidence in Figure C.2 is even more encouraging. First , there is no bunching neither below or above the 50.000 cutoff: if anything, the density decreases after 52.000 voters. Second, there is no evidence of sorting *after* 40.000 (the cutoff above which the wage of representatives increase), as the density is higher before this value. This evidence suggests that treatment assignment is exogenous.

In Figure 4 we plot the number of votes (in logarithmic form) against the number of eligible voters in the last election year – 2017, around the two cutoffs of interest, where the number of Aldermen in the Town Council increases by two. This variation is associated with a discontinuous increase in turnout, illustrated by vertical jumps in the fitted lines. Although this evidence is encouraging, since each marker corresponds to one observation, it is also apparent that there is a low number of observations in one election around each cutoff, which may raise efficiency concern in the identification of the treatment effect. Therefore, we repeated the same graphical procedure in Figure 5 but this time pooling

Figure 4: Discontinuities in Council Size - 2017 Election



Notes: Built by the author. Both figures relative to the last election year - 2017. The left figure illustrates the discontinuity in the 10.000 cutoff while the right one corresponds to the 50.000 one. Each marker represents one municipality, and each straight line is a fitted linear regression for each side of the thresholds. For the first threshold the bandwidth chosen had a radius of 2.000 eligible voters around the threshold while for the right figure the radius is of 8.000 eligible voters.

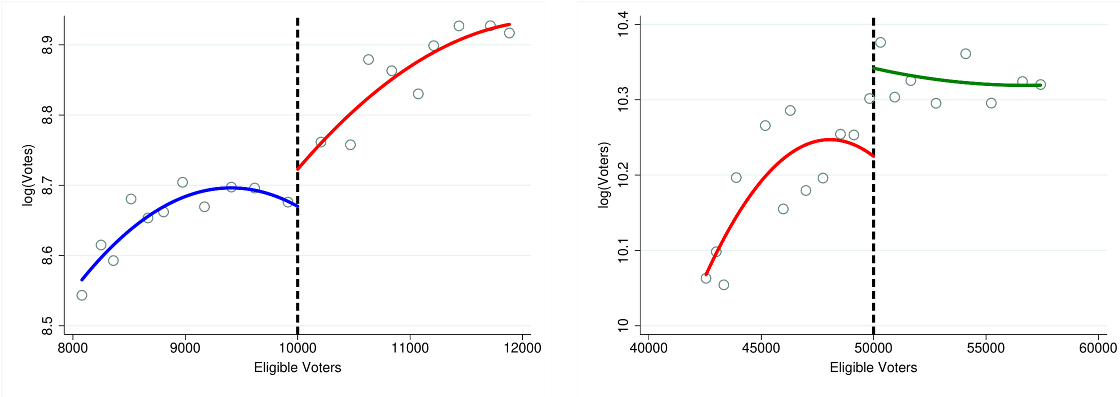
the data from all the 5 elections into equal-sized bins. We absorbed year fixed effects to account for nationwide shocks. Still, the discontinuities remain evident at both cutoffs.[26]

Table 5 presents the results from the model in equation 4 for the 50.000 voters threshold, where the only policy changing is the size of the Town Council. The coefficients of interest are positive across all specifications, with similar magnitudes regardless of the functional form chosen. In columns (1) and (4) where we controlled only for year fixed effects, the treatment effect on the number of votes cast is between 8% and 10%, in accordance with the graphical analysis in Figure 5. Adding municipal fixed effects, columns (2) and (5) reduces point estimates to between 1.9% to 2.6%. Statistical significance, however, remains unchanged, which is particularly reassuring, given the low levels of within variation in council size (see Section 5.2). The magnitude of these estimates is closer to the effects from the LVPI (Section 6.1) which predicted that an increase from 6 to 8 Aldermen would lead to an increase of about 1 percentage point in the turnout rates. Including political and socioeconomic controls, columns (3) and (6), increased the significance and magnitude of our estimate in the linear specification, but reduced it in the quadratic one, as well as the point estimate.

The estimates obtained for the 10.000 cutoff are shown in Table 6. Once again, all

[26] In Figure C.3 we replicated Figure 5, but we fitted linear regressions instead of quadratic ones. Nevertheless, the discontinuities remain clear in both panels.

Figure 5: Discontinuities in Council Size - Pooled



Notes: Built by the author. Data was pooled across the last 5 election years, from 2001 to 2017. Year fixed effects were absorbed before binning and plotting. 20 equal-sized bins were created in both figures as well as a quadratic fit line. The left figure illustrates the discontinuity in the 10.000 cutoff while the right one corresponds to the 50.000 one. For the first threshold the bandwidth chosen had a radius of 2.000 eligible voters around the threshold while for the right figure the radius is of 8.000 eligible voters.

the estimated treatment effects have the expected sign. The point estimates in columns (1) and (4), despite statistically insignificant, are smaller than the comparable estimates for the 50.000 threshold, consistent with the graphical evidence. In columns (2) and (5), focusing only on within municipal variation, reduces standard errors and increases point estimates, leading to statistically significant results, between 3% and 4%, again close to the results from (Section 6.1).[27] Nevertheless, when we added the remaining controls, the estimates and the statistical significance decreased considerably, contrary to what happened in Table 5.

Table C.3 in appendix, estimated the same model for the 40.000 threshold to check for any effect at the cutoff that uniquely identifies a wage increase. All the statistically significant estimates reported were negative. As we showed in Figure C.2, the distribution of the running variable is not symmetrical around this cutoff, which means the coefficients cannot be interpreted as causal effects of the local discontinuity. However, if we assume the wage increase in the 10.000 threshold has an effect in the same direction, the estimates of the increase in Council size on Table 6 might be downward biased by the existence of the confounding policy (with a negative effect on turnout).

[27]Changing from 4 to 6 Aldermen in the Town Council, when a jurisdiction has 10.000 eligible voters, causes a change of 20 units in the LVPI. Multiplying this change by the coefficient reported in Column (4) of Table 4 makes us expect and increase of about 4.58 p.p in the turnout rate.

Table 5: Pooled RDD - 50.000

	log(Votes)					
	Linear Fit			Quadratic Fit		
	(1)	(2)	(3)	(4)	(5)	(6)
T.E est.	0.081**	0.019**	0.020***	0.100**	0.026***	0.016
	(0.041)	(0.008)	(0.007)	(0.051)	(0.009)	(0.010)
Year F.E	x	x	x	x	x	x
Municipal F.E	-	x	x	-	x	x
Controls	-	-	x	-	-	x
Obs. Left	45			59		
Obs. Right	32			41		

Notes: In all specifications we pooled the data from the 5 election years, from 2001 up to 2017. In Columns (3) and (6) we controlled for the political and socioeconomic covariates used in model written in equation (2) except for *ln_pop* and *ln_pop* squared. For the linear fit the bandwidth chosen had a radius of 5.500 eligible voters, while for the quadratic fit we opted for a fixed bandwidth of 7.000 units. Among the observations located in this interval, we recorded Council changes in 12 municipalities: Amarante, Castelo Branco, Covilhã, Fafe, Faro, Felgueiras, Loulé, Mafra, Ovar, Palmela, Pombal and Vila Real. A Kernel triangular function was employed to weight the observations as a function of their distance to the cutoff. Heteroskedasticity-robust standard errors are reported in parenthesis. Significance levels are respectively: 10% *, 5% **, 1% ***.

An important feature of RDD designs is the choice of the bandwidth around the threshold. Any choice involves a trade-off between bias and variance. Although a bigger "neighborhood" will include more observations and thus reduce the variance of our estimates, it will also increase the misspecification error.[28] The method proposed by Calonico et al. (2014) uses a *data-driven* bandwidth that minimizes the mean squared error of the estimator in equation (3). To have the same observations across all specifications we fixed a bandwidth, whose value was based on the optimal bandwidths from Calonico et al. (2014) method. Table C.1, C.2 and C.3 in appendix, show the (optimal) variable bandwidths and the respective point estimates for each specification. Our results remain qualitatively similar. In Figure C.4 we performed an additional sensitivity test, regarding the length of the bandwidths for the estimates reported in columns (2) of Tables 5 and 6. We first halved the length of the bandwidth and then doubled it. Both figures reveal that the magnitude and the significance of the point estimates decreases as the bandwidth gets larger, which may be the result of an increased misspecification error, as mentioned above.

[28] In this case related with the choice of an inappropriate functional form for the model to estimate the treatment effect.

Table 6: Pooled RDD - 10.000

	log(Votes)					
	Linear Fit			Quadratic Fit		
	(1)	(2)	(3)	(4)	(5)	(6)
T.E est.	0.021	0.041***	0.002	0.028	0.031**	0.010
	(0.045)	(0.014)	(0.011)	(0.041)	(0.015)	(0.014)
Year F.E	x	x	x	x	x	x
Municipal F.E	-	x	x	-	x	x
Controls	-	-	x	-	-	x
Obs. Left		51			163	
Obs. Right		57			133	

Notes: In all specifications we pooled the data from the 5 election years, from 2001 up to 2017. In Columns (3) and (6) we controlled for the political and socioeconomic covariates used in model written in equation (2) except for *ln_pop* and *ln_pop* squared. For the linear fit the bandwidth chosen had a radius of 1.200 eligible voters, while for the quadratic fit we opted for a fixed bandwidth of 2.700 units. Among the observations located in this interval, we recorded Council changes in 11 municipalities: Arruda dos Vinhos, Carregal do Sal, Idanha-a-Nova, Mortágua, Murtosa, Nelas, Pinhel, Torre de Moncorvo, Trancoso, Vouzela and Óbidos. A Kernel triangular function was employed to weight the observations as a function of their distance to the cutoff. Heteroskedasticity-robust standard errors are reported in parenthesis. Significance levels are respectively: 10% *, 5% **, 1% ***.

Lastly, we present the results from the method proposed in Pettersson-Lidbom (2012), in Table 7. Firstly, all the coefficients have a positive sign and are significant at least at a 10% level. This is once more consistent with the idea that a larger Council size induces higher turnout. Additionally, the fact that we obtained a very similar point estimate in the last two columns suggests that the smooth function is well specified. A point estimate of 0.066 predicts a variation of approximately 3.3% and 2.2% at the thresholds of 10.000 and 50.000, respectively.[29] The similarity of the these estimates with those reported in Column (2) and (5) of Table 5 and Table 6, corroborates our previous findings concerning the positive causal effect that Council size has on turnout, after controlling for the size of the municipal electorate.

7 Conclusion

One of the puzzles in the political economy's literature is what motivates voters to turn out. Scholars have claimed that population levels have a significant explanatory power,

[29] A change from 4 to 6 Aldermen (10.000 cutoff) represents a 50% increase, while a change from 6 to 8 Aldermen (50.000 cutoff) a variation of 33.(3)%.

Table 7: Smooth Function - Robustness

	log(Votes)				
	(1)	(2)	(3)	(4)	(5)
log(CouncilSize)	0.208***	0.137***	0.082**	0.066*	0.066**
	(0.038)	(0.037)	(0.036)	(0.034)	(0.033)
S.F degree	First	Second	Third	Forth	Fifth
N	1390	1390	1390	1390	1390

Notes: In all specifications we pooled the data from the 5 election years, from 2001 up to 2017. In addition, we controlled for the political and socioeconomic covariates used in model written in equation (2) except for *ln_pop* and *ln_pop* squared. Standard errors are heteroskedasticity-robust. Significance levels are respectively: 10% *, 5% **, 1% ***.

particularly in sub-national election, but also that voters are driven by the probability that their vote is pivotal. To jointly study both statements, we focused on the context of Portuguese local elections. Panel (a) of Figure 2 immediately revealed the negative correlation between turnout and population. However, exploiting the existence of a population-based rule defining the number of Aldermen in the Town Council (as a function of the number of eligible voters), allowed to test if this negative correlation could be locally counteracted by an increase in the number of representatives, and we did this in two ways.

Firstly, we computed the *local voting power index* to evaluate if a higher number of representatives (per voter) increased turnout. Our results revealed a positive and statistically significant relation between voting power and turnout rates found in a fixed effects panel estimation. Such a result is consistent with instrumental theories of turnout in the sense that a higher number of representatives increases the likelihood that a voter will be decisive in the election of an Aldermen of their preferred list. We then explored exogenous variations in Council size, using a Regression Disconitnuity Design (RDD) at two different thresholds. In the threshold that uniquely identifies an increase of 2 Aldermen (50.000 voters), we have estimated an increase of about 2% in turnout. This result was statistical significant, close to the magnitude expected in Section 6.1, robust to the addition of controls, and corroborated in a methodology followed by Pettersson-Lidbom (2012). In the 10.000 threshold, the point estimates were between 3% and 4%, and statistically significant when controlling for unobserved heterogeneity. Although the magnitudes were again close to the results from Section 6.1, and aligned with the magnitude found in Table

7, the estimates were not robust to the addition of controls and the identification could be possibly confounded by secondary policies.

In this way, we show that increases in the number of representatives is associated with higher turnout using the natural quasi-experiment environment of sub-national elections as proposed in Cancela and Geys (2016), and that the local increases (at the thresholds) in voting power, unveiled in Figure 3, were hidden by the strong negative correlation between population and turnout in panel (a) of Figure 2.

Nevertheless, the results obtained should be carefully interpreted. The estimates from the RDD set-up lack robust external validity, since their are local in nature. Even so, the positive and significant coefficients from the methodologies that used the entire sample: LVPI - Section 6.1, Smooth Function - Section 6.2, leave less room to doubt about the sign of the estimates. To control for unobserved heterogeneity we included municipal fixed effects, meaning that we were exclusively capturing within variations in our data. Since the size of the Council is predominately a time-invariant characteristic in the Portuguese framework, the only way to improve on this matter is to increase the size of the sample on future research. Nonetheless, the statistical significant estimates recorded in these specification, were particularly encouraging given the low within variation in our panel.

Lastly, the aggregate nature of our data allowed us to create the LVPI to measure the power of a vote in a given jurisdiction. However, it is reasonable to assume that there are other factors varying, when we change the number of eligible voters, or the number of Aldermen, which might influence voter participation as well (i.e information costs, bigger proximity between voter and candidates, rent seeking). Although we do not ignore nor neglect the influence they might have, or the presence of their effect in the previous estimates, we argue that this does not invalidate the sign and the magnitude of the effects found in this work. It simply means that we cannot disentangle if the mechanism is due to changes in perceptions of being decisive, or via one of the others above mentioned events. This type of question would be better answered with survey based studies, using individual-level data.

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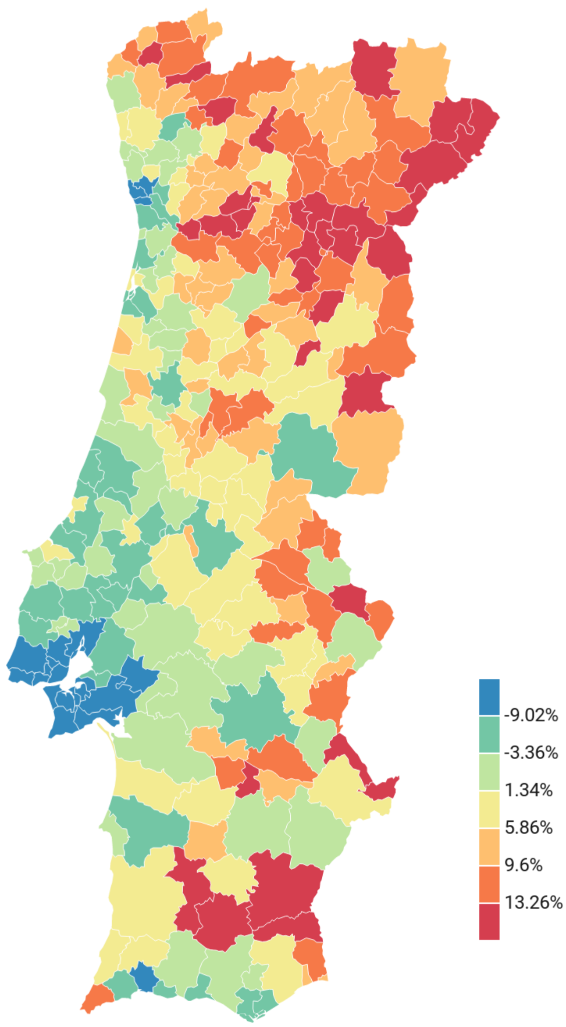
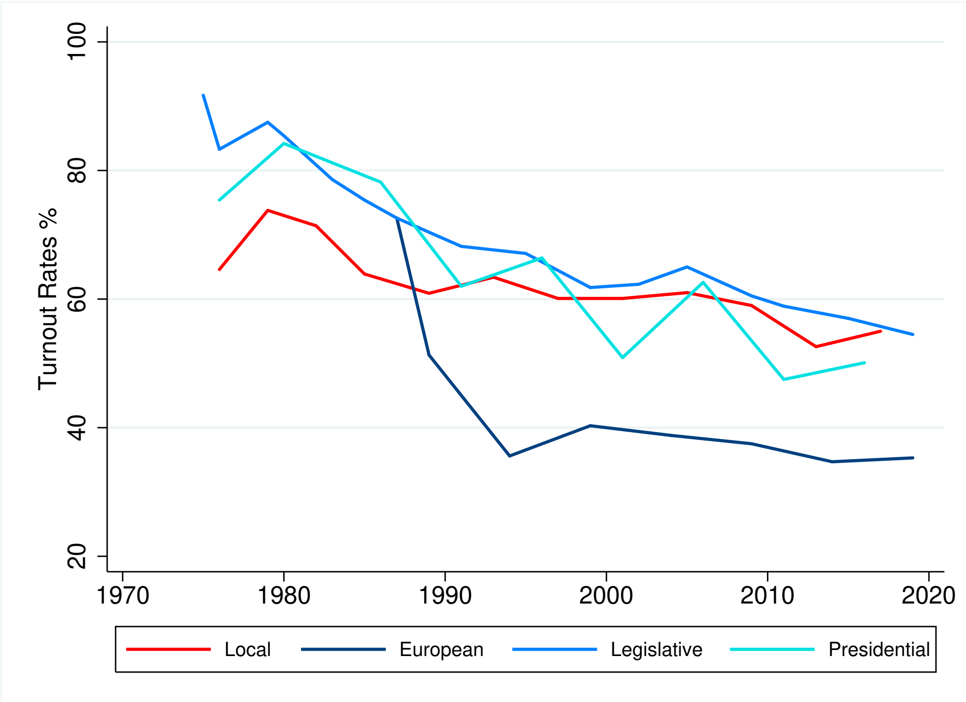
A Descriptive Figures

Figure A.1: Average difference between Turnout in Local and Legislative Elections



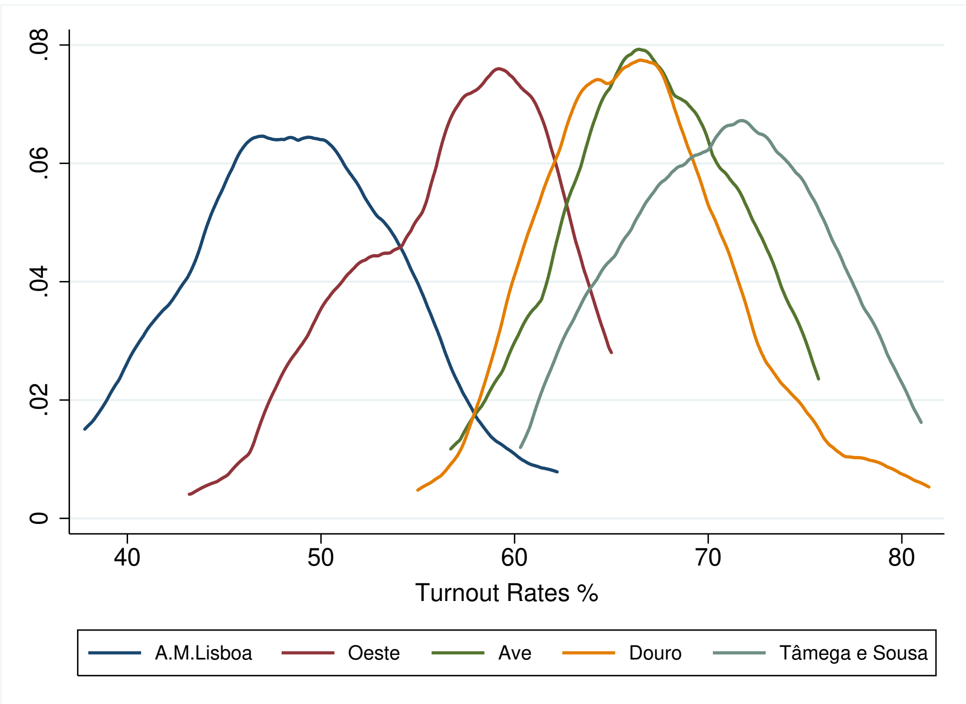
Notes: Built by the author. Turnout rates retrieved from SGMAI. For each municipality we took the turnout rate in local elections and subtracted the turnout rate in national elections. Positive values indicate higher participation in local elections. We paired the election years as follows (local-national): 2001-2002; 2005-2005; 2009-2009; 2013-2011; 2017-2015. Lastly, we took the average from the 5 pairs.

Figure A.2: National Turnout Rates - Trends by Election



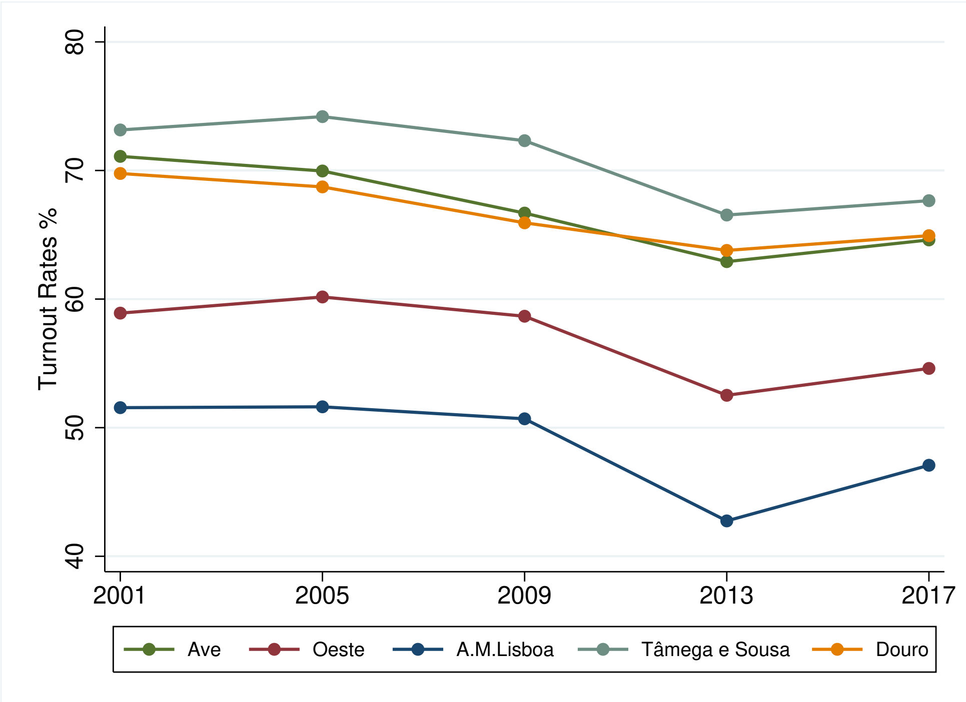
Notes: Built by the author. Turnout rates retrieved from PORDATA. Period of analysis: 1975-2019

Figure A.3: Density Distribution of Turnout Rates



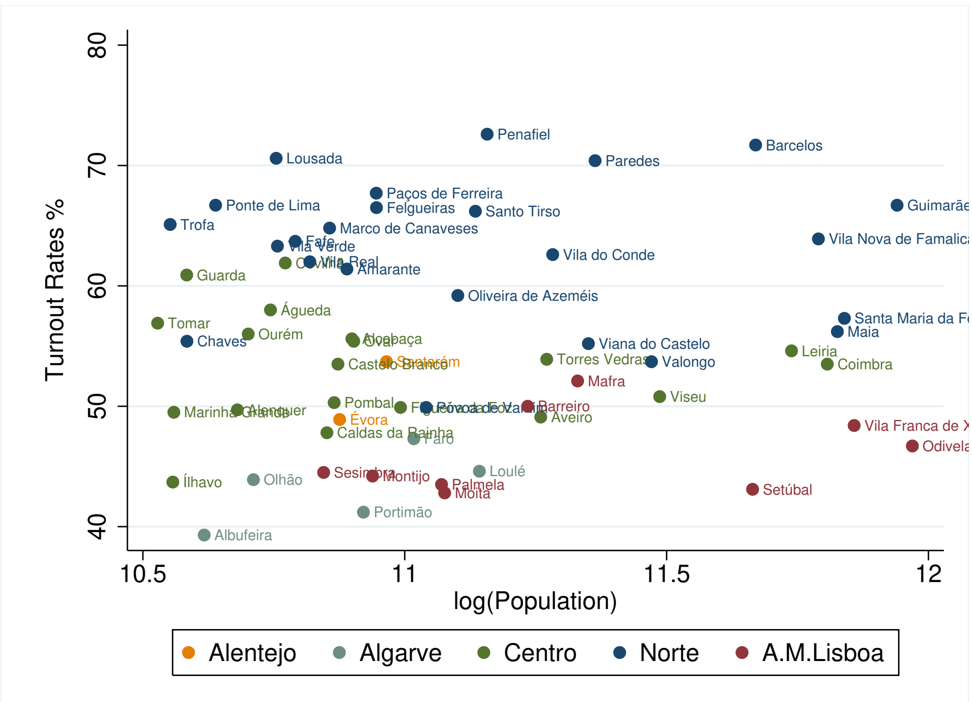
Notes: Built by the author. Turnout rates retrieved from SGMAI. In the figure we have represented Kernel density estimation curves for turnout rates for 5 NUT 3 regions. Period of analysis: 2001-2017

Figure A.4: Turnout Rate Trends by Region



Notes: Built by the author. Turnout rates retrieved from SGMAI. Averages were computed weighing each municipality equally within each NUT 3, irrespective of their electorate size. Period of analysis: 2001 - 2017.

Figure A.5: Regional Heterogeneity - 2017



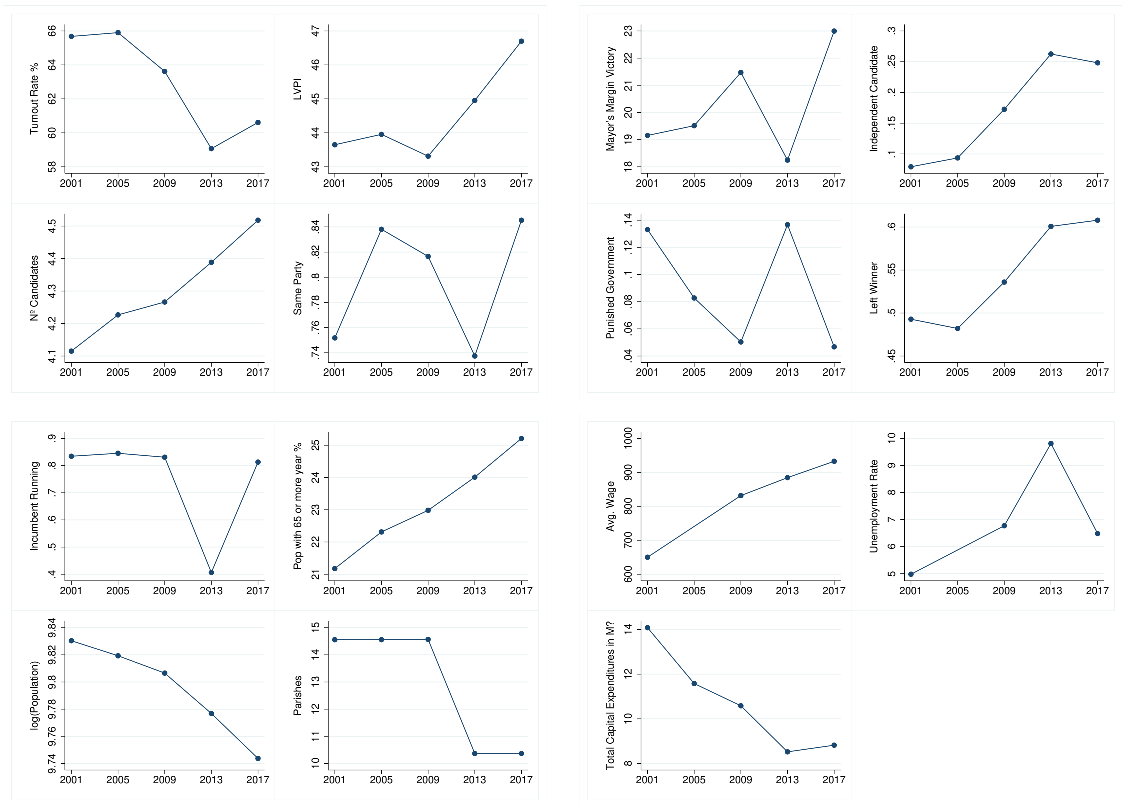
Notes: Built by the author. Turnout rates retrieved from SGMAI. Municipalities were grouped according to their NUT 2. Sample was restricted to municipalities with a population (in log form) between 10.5 and 12. Data corresponds to the values recorded in the last local election – 2017.

Table A.1: Changes in Aldermen

INE Code	Municipality	2001	2005	2009	2013	2017	NUT 3
112	Murtosa	4	4	4	6	4	R. Aveiro
409	Torre de Moncorvo	6	6	6	4	4	Douro
505	Idanha-a-Nova	6	6	6	4	4	Beira Baixa
910	Pinhel	6	6	6	6	4	B. Serra da Estrela
913	Trancoso	6	6	6	6	4	B. Serra da Estrela
1012	Óbidos	4	4	6	6	6	Oeste
1102	Arruda dos Vinhos	4	4	4	6	6	Oeste
1802	Carregal do Sal	4	4	6	6	4	Viseu D.L
1808	Mortágua	4	4	6	6	4	R. Coimbra
1809	Nelas	4	6	6	6	6	Viseu D.L
1824	Vouzela	6	6	6	6	4	Viseu D.L
115	Ovar	6	6	6	6	8	R. Aveiro
307	Fafe	6	6	8	8	8	Ave
502	Castelo Branco	6	6	8	8	6	Beira Baixa
503	Covilhã	6	6	8	6	6	B. Serra da Estrela
805	Faro	6	6	8	8	8	Algarve
808	Loulé	6	6	8	8	8	Algarve
1015	Pombal	6	6	8	8	8	R. Leiria
1109	Mafra	6	6	8	8	8	A.M.Lisboa
1301	Amarante	6	8	8	8	8	T. Sousa
1303	Felgueiras	6	6	8	8	8	T. Sousa
1508	Palmela	6	6	6	8	8	A.M.Lisboa
1714	Vila Real	6	6	6	8	8	Douro
302	Barcelos	8	8	10	10	10	Cávado
1009	Leiria	8	8	10	10	10	R. Leiria
1114	Vila Franca de Xira	8	8	10	10	10	A.M.Lisboa
1306	Maia	8	8	10	10	10	A.M.Porto
1512	Setúbal	8	8	10	10	10	A.M.Lisboa

Notes: Built by the author, using the data available in SGMAI concerning the number of eligible voters. The municipalities listed correspond to the ones where a change in the number of Aldermen in the Town Council was recorded at least once between 2001 and 2017.

Figure A.6: Average Values of Covariates - Time Series



Notes: Built by the author. Data collected from miscellaneous sources mentioned in Section 4 and in the notes of Table 2. Averages were computed weighing each municipality equally, irrespective of their electorate size. *Unemp. rate* and *avg. wage* unavailable for the year of 2005. Period of analysis: 2001 - 2017.

B Local Voting Power Index

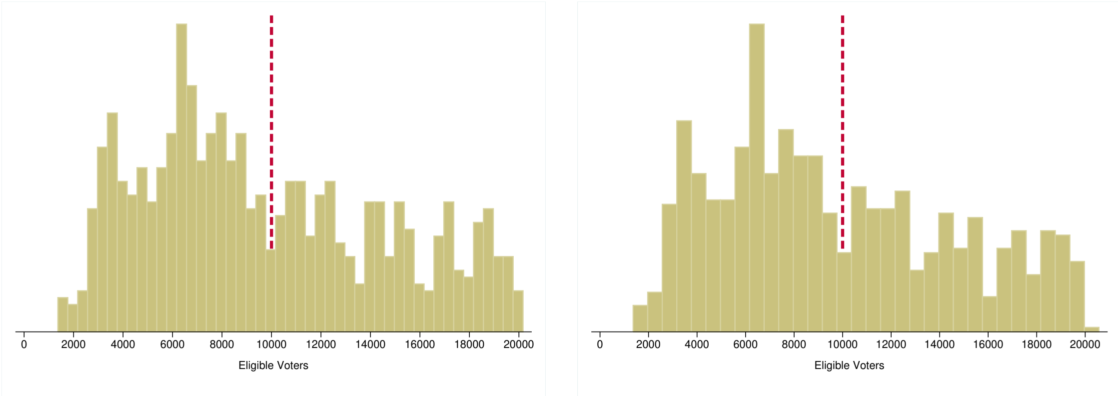
Table B.1: Fixed Effects - LVPI Full Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LVPI	0.142***	0.241***	0.248***	0.229***	0.226***	0.215***	0.226***
	(0.014)	(0.033)	(0.032)	(0.049)	(0.051)	(0.051)	(0.051)
y.2005	0.179	0.149	0.195	-0.105	0.000	-0.203	-0.122
	(0.171)	(0.192)	(0.183)	(0.309)	(.)	(0.390)	(0.318)
y.2009	-2.013***	-1.980***	-1.941***	-2.622***	-2.679***	-2.903***	-2.585***
	(0.241)	(0.267)	(0.253)	(0.557)	(0.578)	(0.713)	(0.571)
y.2013	-6.799***	-6.928***	-7.064***	-7.400***	-7.533***	-7.136***	-7.266***
	(0.264)	(0.290)	(0.305)	(0.849)	(0.867)	(1.042)	(0.881)
y.2017	-5.504***	-5.804***	-5.736***	-6.475***	-6.624***	-6.637***	-6.437***
	(0.259)	(0.308)	(0.309)	(0.902)	(0.931)	(1.132)	(0.927)
Number of Candidates			0.082	0.153	0.142	0.001	0.111
			(0.125)	(0.125)	(0.146)	(0.135)	(0.132)
Same Party			-1.175***	-1.089***	-1.033***	-1.088***	-1.022***
			(0.252)	(0.243)	(0.286)	(0.252)	(0.257)
Left Winner			-0.795***	-0.725***	-0.782***	-0.717**	-0.804***
			(0.274)	(0.270)	(0.291)	(0.291)	(0.290)
Incumbent Run.			0.069	0.094	0.104	0.101	0.077
			(0.190)	(0.188)	(0.220)	(0.209)	(0.197)
Mayor's Margin of Victory			-0.036***	-0.038***	-0.036***	-0.041***	-0.041***
			(0.009)	(0.009)	(0.010)	(0.009)	(0.009)
Punished Gov.			-0.666**	-0.574*	-0.388	-0.537	-0.548
			(0.336)	(0.332)	(0.390)	(0.345)	(0.338)
Indp. Candidate			0.949***	0.938***	0.985***	0.969***	0.886***
			(0.266)	(0.261)	(0.292)	(0.275)	(0.278)
log(Population)				19.686	20.342	18.030	12.775
				(21.727)	(23.468)	(27.303)	(22.256)
log(Population)^2				-1.233	-1.249	-1.214	-0.845
				(1.070)	(1.170)	(1.416)	(1.087)
Share 65+				-0.166*	-0.148	-0.228**	-0.153*
				(0.086)	(0.093)	(0.100)	(0.087)
Parishes				0.082**	0.067*	0.091**	0.078*
				(0.037)	(0.038)	(0.039)	(0.043)
Unemp. Rate				-0.073	-0.073	-0.107	-0.085
				(0.081)	(0.082)	(0.090)	(0.084)
Avg. Wage				0.006***	0.006***	0.007**	0.006***
				(0.002)	(0.002)	(0.003)	(0.002)
Tot. Capital Exp.				-0.004	-0.003	0.013	-0.007
				(0.009)	(0.009)	(0.015)	(0.014)
Municipal F.E	-	x	x	x	x	x	x
Observations	1390	1390	1390	1390	1112	1215	1300
R^2	0.426	0.932	0.939	0.941	0.941	0.930	0.941

Notes: This table an extension of Table 4 as it shows the estimates for all the main variable of interest but also for the controls used in the diverse specifications. Details about the variables are available in the notes of Table 2. Details about the specifications are available in Table 4. Standard errors were clustered at municipal level. Significance levels are respectively: 10% *, 5% **, 1% ***.

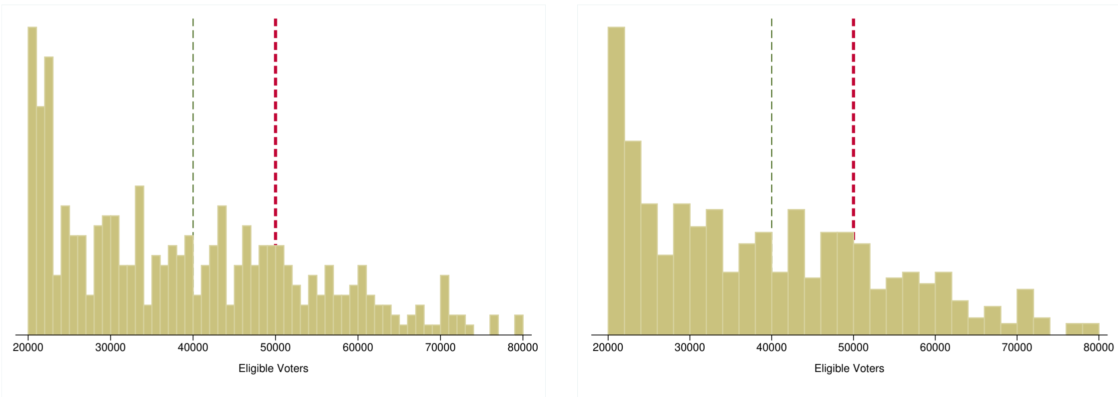
C Regression Discontinuity Design

Figure C.1: Density of Running Variable - Cutoff: 10.000



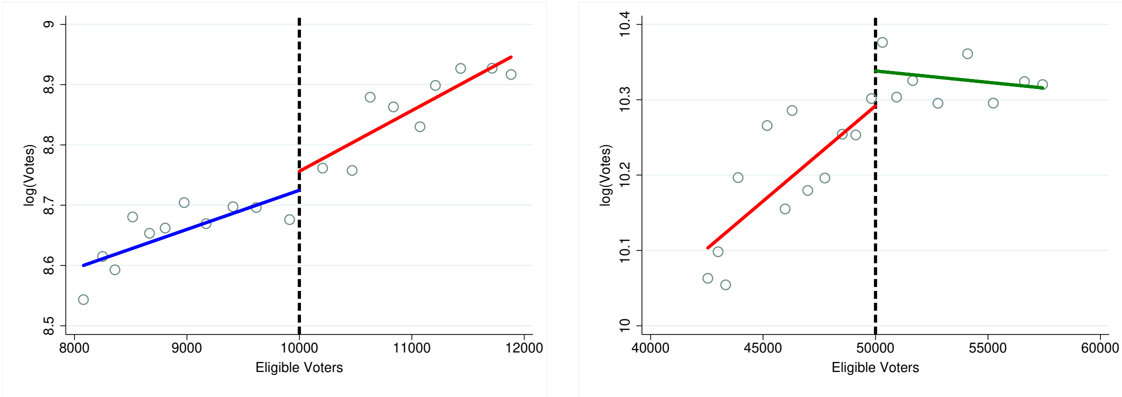
Notes: The two histograms presented in this Figure differ on their bar width: 400 units for the left graph, and 600 for the one on the right. The red dashed line is located at the 10.000 voters cutoff. Observations were pooled from 2001 up to 2017.

Figure C.2: Density of Running Variable - Cutoff: 50.000



Notes: The two histograms presented in this Figure differ on their bar width: 1000 units for the left graph, and 2000 for the one on the right. The red dashed line is located at the 50.000 voters cutoff, whereas the green dashed one indicates the 40.000 threshold. Observations were pooled from 2001 up to 2017.

Figure C.3: Discontinuities in Council Size - Pooled - Linear Fit



Notes: Built by the author. Data was pooled across the last 5 election years, from 2001 to 2017. Year fixed effects were absorbed before binning and plotting. 20 equal-sized bins were created in both figures as well as a linear fit line. The left figure illustrates the discontinuity in the 10.000 cutoff while the right one corresponds to the 50.000 one. For the first threshold the bandwidth chosen had a radius of 2.000 eligible voters around the threshold while for the right figure the radius is of 8.000 eligible voters.

Table C.1: Pooled RDD - 10.000 - Optimal Bandwidth

	log(Votes)					
	Linear Fit			Quadratic Fit		
	(1)	(2)	(3)	(4)	(5)	(6)
TE est	0.021	0.040***	-0.001	0.028	0.032**	0.013
	(0.032)	(0.014)	(0.011)	(0.042)	(0.016)	(0.014)
Year F.E	x	x	x	x	x	x
Municipal F.E	-	x	x	-	x	x
Controls	-	-	x	-	-	x
Bandwidth	1944	1224	1408	2666	2606	2985
Obs. Left	104	54	70	160	157	178
Obs. Right	93	61	70	131	125	138

Notes: In all specifications we pooled the data from the 5 election years, 2001 to 2017. In Columns (3) and (6) we controlled for the political and socioeconomic covariates used in Table 4 except for *ln_pop* and *ln_pop* squared. Bandwidths optimally chosen to minimize the MSE of the treatment effect estimator. A Kernel triangular function was employed to weight the observations as a function of their distance to the cutoff. Heteroskedasticity-robust standard errors are reported in parenthesis. Significance levels are respectively: 10% *, 5% **, 1% ***.

Table C.2: Pooled RDD - 50.000 - Optimal Bandwidth

	log(Votes)					
	Linear Fit			Quadratic Fit		
	(1)	(2)	(3)	(4)	(5)	(6)
TE est	0.081**	0.019**	0.020***	0.104**	0.028***	0.020**
	(0.039)	(0.008)	(0.007)	(0.043)	(0.009)	(0.010)
Year F.E	x	x	x	x	x	x
Municipal F.E	-	x	x	-	x	x
Controls	-	-	x	-	-	x
Bandwidth	6978	5352	5556	12260	6792	6420
Obs. Left	58	44	45	99	55	50
Obs. Right	41	32	32	66	40	36

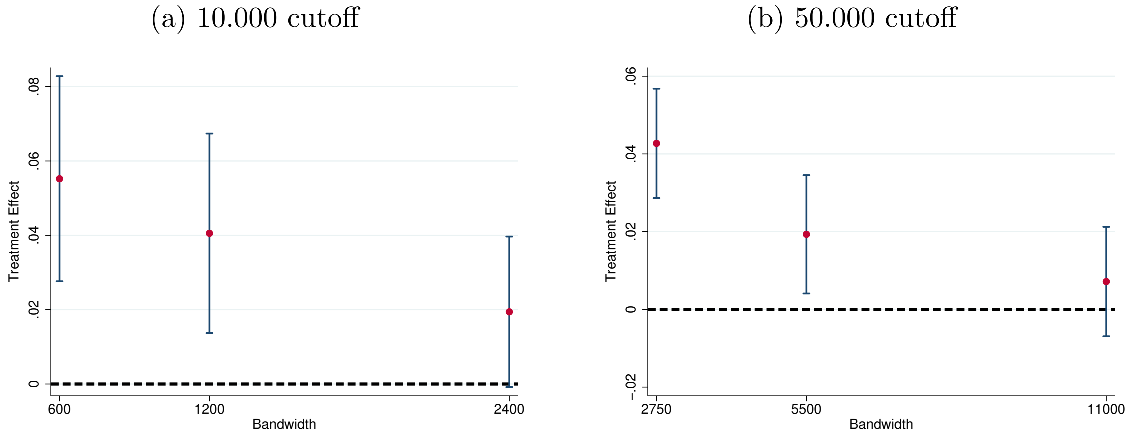
Notes: In all specifications we pooled the data from the 5 election years, 2001 to 2017. In Columns (3) and (6) we controlled for the political and socioeconomic covariates used in Table 4 except for *ln_pop* and *ln_pop* squared. Bandwidths optimally chosen to minimize the MSE of the treatment effect estimator. A Kernel triangular function was employed to weight the observations as a function of their distance to the cutoff. Heteroskedasticity-robust standard errors are reported in parenthesis. Significance levels are respectively: 10% *, 5% **, 1% ***.

Table C.3: Pooled RDD - 40.000 - Optimal Bandwidth

	log(Votes)					
	Linear Fit			Quadratic Fit		
	(1)	(2)	(3)	(4)	(5)	(6)
TE est	-0.109	-0.032***	-0.036***	-0.130	-0.036**	-0.019*
	(0.097)	(0.012)	(0.008)	(0.102)	(0.015)	(0.010)
Year F.E	x	x	x	x	x	x
Municipal F.E	-	x	x	-	x	x
Controls	-	-	x	-	-	x
Bandwidth	5235	4687	3235	9890	7789	5450
Obs. Left	43	40	28	86	66	44
Obs. Right	36	36	24	79	58	36

Notes: In all specifications we pooled the data from the 5 election years, 2001 to 2017. In Columns (3) and (6) we controlled for the political and socioeconomic covariates used in Table 4 except for *ln_pop* and *ln_pop* squared. Bandwidths optimally chosen to minimize the MSE of the treatment effect estimator. A Kernel triangular function was employed to weight the observations as a function of their distance to the cutoff.Heteroskedasticity-robust satandard errors are reported in parenthesis. Significance levels are respectively: 10% *, 5% **, 1% ***.

Figure C.4: Bandwidth Sensitivity Test



Notes: Sensitivity test was performed on the estimates from columns (2) of Table 6 panel(a) and Table 5 panel(b). We repeated the estimation using a bandwidth whose lengths were the double, and half the length of the original one. We selected 95% confidence intervals to assess the statistical significance of the point estimates.