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JEL Codes: D72, D79, C29.

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Abstract

This paper assesses how electoral institutions shape candidates' incentives about their political advertising strategies. Taking advantage of a discontinuity in the assigment of brazilian municipal election rules, we use a regression discontinuity design approach on an unique database about litigations involving mayor candidates in the elections of 2012 and 2016 to assess how the candidates campaign tone is affected by a shift from a single-ballot to a runoff system. Results show that 2nd and 3rd placed candidates in the first round of a runoff election have a probability more than 50 p.p. higher of being part in a litigation regarding negative advertising when compared to a single round election.

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I. Introduction

It is remarkable how, during political races all around the world, candidates devote a significant part of their advertising effort to attack opponents, the so-called negative advertising, instead of engaging in a more policy-oriented debate. The 2016 presidential race in the US was a clear example, given that in the last days of campaign *"only* 3% *[of television ads] focused on positive messages about Clinton, and* 5% *were built around positive messages about Trump"*[1]. Using data from the Wesleyan Media Project, Fowler et al. (2016) show that in spite of the 2016 presidential race being less negative than 2012, it was the second most negative election in the last decade and a half. Specifically in 2016, however, when considering television ads aired from June 8th to the election day, only one in four Clinton campaign ads focused on policies.

The political science and political economy literatures are not consensual about the effects of negative advertising on voters' behavior[2], but it is clear that the type of advertising candidates choose affects the set of information voters receive, with which they evaluate the elected candidate. In the case of most part of ads not talking about policy choices, this candidate becomes less accountable, which may constitute a problem to democracy and how it should behave.

In spite of the relevance of this type of advertising, little attention has been devoted to evaluating how electoral institutions shape the incentives behind candidates advertising choices and, specifically, candidates' decisions about the negativeness of their campaign. Nonetheless, the literature on how political and electoral institutions shape economic policy and outocomes is already extensive and influent, with Persson (2002) and Persson and Tabellini (2005) being clear examples on this matter.

In this paper our goal is to evaluate how the candidate's behavior regarding the campaign tone changes if we move from a simple majority single-ballot to a simple majority runoff system. As predicted by the well-known *Duverger's Law* (Duverger, 1954), single-ballot favors only the two better ranked candidates through strategic voting behavior of voters, while dual-ballot favors a multi-party system also as result of the voters' behavior. Candidates' choices, however, are taken for granted in this model. Could the observed voters' behavior in these two electoral systems also be result of a reaction to candidates advertising and not only strategic voting? With this question as background, our main

[1] http://edition.cnn.com/2016/11/08/politics/negative-ads-hillary-clinton-donald-trump/

[2] Just to illustrate, Kartik and McAfee (2007) set up a theoretical model, in which we should expect more turnout in an election with a more negative campaign, whereas Ansolabehere et al. (1999) shows empirically that negative advertising demobilizes voters, reducing turnout.

hypothesis about negative advertising is simple and intuitive. Given that in a simple majority dual-ballot system the second placed candidate in the first round may also have a chance to win the seat, we may observe more debate between candidates that are really disputing this second place, and, therefore, a higher probability of these candidates engaging in negative advertising against each other compared to a single-ballot system, which is predicted to does not have a third feasible candidate *a priori*.

We use data on brazilian municipal elections to test the validity of our hypothesis. Brazilian municipalities below $200,000$ voters use a single-ballot system in the mayors election, while municipalities above this threshold may have a second round if no candidate achieve the simple majority of votes in the first round, i.e., a runoff system. We use this discontinuity in the assignment of electoral rules to evaluate the relation between negative adverstising and candidates' behavior in both systems through (i) a simple linear probability model (LPM) as a first approach, and (ii) a sharp Regression Discontinuity Design (RDD), which allows for a *causal* interpretation given its less restrictive identification hypothesis.

Our first challenge, however, is to measure negativity. In order to do so, we use an institutional feature that is present in Brazil political races: the so-called requests of *direito de resposta* (DR henceforth), in which an electoral judge arbitrates a litigation among candidates and may give to the plaintiff the right to use the offender candidate's TV time (or another media) to reply "offensive" ads. In addition, we collect data on electorate composition, candidates and cities' charactheristics to create an unique database of pairs of candidates with information about negativity between each pair, and attributes about candidates and municipalities.

In accordance with the hypothesis we made, LPM results suggest that incentives on candidates campaign tone are different in these two electoral systems and this lead to more negativity on a runoff system. Furthermore, our RDD results suggest more negativity between second and third placed candidates in the first round of cities just above the $200,000$ voters threshold compared to cities just below, i.e., when we move from single-ballot system to a runoff one. This result is statistically and economically significant: the $2nd - 3rd$ pair in the first round of a runoff election has a probability more than 50 p.p. higher of being part in a DR when compared to an election of a single round only. Moreover, there is no statiscally significant impact over any other candidate pair. Robustness checks suggest that our findings are not the result of chance or any other discontinuity around the same $200,000$ voters threshold.

Our paper is related to a literature that uses population thresholds as a main econometric identification strategy (see Eggers et al., 2015), but is closer to a proeminent literature that also uses electoral rules discontinuities to assess the impact of a dual-ballot

system over voters' behavior and political outcomes[3]. Bordignon et al. (2016) contrast runoff versus single round elections to assess how political extremism, measured by policy volatility, varies in these two systems. Using data on italian municipal elections, in which municipalities below $15,000$ inhabitants adopt a single-round system and a runoff system when above this threshold, it is shown that policy volatility is lower under runoff elections, which is viewed as this electoral system moderating political extremism. Fujiwara (2011) use data on brazilian municipal elections to assess changes in voter behavior around the $200,000$ threshold. Results present empirical evidence in favor of *Duverger's Law* predictions, i.e., that voters behave strategically and vote only for the two better ranked candidates in a single-ballot system (which is not true in a runoff system). Chamon et al. (2009) is another paper that use a RDD approach in brazilian municipal elections, but using a reduced form to evaluate how political competition affects fiscal outcomes.

The rest of this paper is organized as follows. Section 2 describes in detail our database and how the variables that we use in the regressions were built. Our empirical strategy, results and robustness checks are presented in section 3.We conclude in section 4.

II. Data description

Our data is from Brazil's 2012 and 2016 mayors election. To quantify advertising negativeness we use an institutional feature that is present (and heavily used) in Brazil political races: the so-called requests of *direito de resposta* (DR henceforth), in which an electoral judge arbitrates litigation among candidates and may give to plaintiff the right to use the offender candidate's TV time (or another media) to reply "offensive" ads[4]. In this environment, we measure negativity as a dummy variable that equals one if the candidate pair had at least one DR[5] involving this pair as plaintiff and defendant in the period of first round campaign. This approach is somewhat less subjective than evaluating each advertising by its "negativity tone", given that electoral rules in Brazil are defined by law[6], in which there is a clear definition of what is considered an attack

[3]Despite not adressing effects of different electoral rules on some outcome, Ghandi et al. (2016) share with our paper the goal of evaluating one possible determinant (political competition, measured by the number of candidates, in their case) of negative advertising.

[4]Silveira and De Mello (2011) use a similar approach to define negativity, despite using only the number of hits of a search for the expression *direito de resposta* in the *Tribunal Superior Eleitoral* website as their measure.

[5]Note that having a DR involving the candidate pair do not guarantee that the judge have considered the defendant guilty. To assess the litigation result is way more demanding and susceptible to measurement error, given that the result may be judicially reviewed several times.

[6]Available in Portuguese here: http://www.planalto.gov.br/ccivil_03/leis/L9504.htm

susceptible to DR and what is not. Moreover, we define negativity using "at least one DR" and not the absolute number of DR to avoid double counting of the same litigation in the database construction.

We also collect data on elections results, cities and candidates' attributes, which are publicly available in the brazilian federal electoral authority, the *Tribunal Superior Eleitoral* (TSE), website[7]. We use the final vote share in the first round of election and demographic information (e.g., gender and education) to define a profile for each candidate. Moreover, we compile data on electorate size, electorate education and turnout to assess some of the municipality caractheristics.

We collected this data on *direito de resposta* for over 23 brazilian states (from a total of 26) and matched with the TSE data, allowing us to identify the pair of candidates involved on each litigation. A city with three candidates will give rise to three observations regarding all possible pair of candidates, i.e., 1st-2nd, 1st-3rd, and 2nd-3rd, along with the pair characteristics and the city attributes, which constitutes an unique and valuable database about negative advertising in politics.

III. Methodology and results

Our database allows us to assess how electoral institutions shape candidates incentives about their campaign tone. Given that our unit of observation is the candidate pair, we are able to evaluate how these institutions change the composition of negativity between pairs, and not only negativity as a whole.

A. Linear Probability Model

To exploit the whole variation in the data, we first employ a simple linear probability model following the equation:

$$Y_{pcst} = \beta_0 + \sum_{i=1}^{3} \beta_i \cdot D_{icst} + R_{cst} \cdot \sum_{i=1}^{3} \alpha_i \cdot D_{icst} + \Gamma . X_{pjcs} + \epsilon_{pjcs} \tag{1}$$

where Y_{pcst} is our negativity dummy for candidate pair p in the city c of the state s in the year t. D_{1cst} is a dummy that equals one if the candidate pair is composed by the $1st$ and $2nd$ placed candidates, D_{2cst} is a dummy for the $1st - 3rd$ candidate pair, and D_{3cst} is a dummy for the $2nd - 3rd$ candidate pair. R_{cst} is also a dummy, which indicates that the city has more than $200,000$ registered voters, and X_{pjst} is a vector of control

[7]http://www.tse.jus.br/eleicoes/estatisticas/repositorio-de-dados-eleitorais

variables, which may also includes year and city (or state) fixed effects. Therefore, our main interest is on the interaction terms coefficients: α_1, α_2, and α_3.

Table 1 suggests more negativity between $1st - 2nd$, $1st - 3rd$ and $2nd - 3rd$ pairs in cities with more than $200,000$ voters when compared to cities below this threshold. Estimated α_1, α_2, and α_3 are statistically significant in all OLS specifications, even when controling for city fixed effects and candidates' characteristics. Moreover, coefficients are stable across specifications and also economically significant, given their magnitude relative to estimated values for β_1, β_2, and β_3. Column (6) present results for a conditional logistic regression, which also shows statistically significant estimates for α_1, α_2, and α_3.

Results of column (5), our preferred specification, show that cities in which a second round in the election is feasible has a 29% absolute higher probability of having a DR involving the $1st - 2nd$ pair and a 20% absolute higher probability of having a DR involving the $2nd - 3rd$ pair during the first round campaign period. Furthermore, our regressors account for a sizable fraction of the variation in the negative advertising dummy, with an adjusted R^2 of 0.27 without any control at the candidate pair level in column (2) and an adjusted R^2 of 0.40 in column (5).

However, the discontinuity in the assignment of electoral rules (single-ballot *vs* runoff system) in the brazilian municipal elections also allow us to employ a regression discontinuity design, which brings us closer to a *causal* identification given its quasi-experiment nature.

Table 1: Negative advertising and electoral rules

	Dependent variable: Y = 1 if there is a litigation involving the candidate pair					
	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) Logit
1st vs 2nd	0.46	0.45	0.45	0.43	0.38	3.22
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.14)
1st vs 3rd	0.10	0.09	0.08	0.07	0.07	1.35
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.17)
2nd vs 3rd	0.04	0.03	0.02	0.01	0.01	0.64
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.18)
(1st vs 2nd) × Runoff		0.20	0.20	0.21	0.26	1.13
		(0.04)	(0.04)	(0.04)	(0.04)	(0.28)
(1st vs 3rd) × Runoff		0.12	0.12	0.13	0.13	0.78
		(0.04)	(0.04)	(0.04)	(0.04)	(0.31)
(2nd vs 3rd) × Runoff		0.18	0.19	0.19	0.19	1.59
		(0.04)	(0.04)	(0.04)	(0.04)	(0.33)
Constant	0.03	0.03	0.04	0.04	0.07	
	(0.00)	(0.00)	(0.02)	(0.02)	(0.02)	
City fixed effects	No	No	No	No	Yes	Yes
State fixed effects	No	No	No	Yes	No	No
Year effects	No	No	Yes	Yes	Yes	Yes
Additional controls	No	No	Yes	Yes	Yes	Yes
Number of pairs	10674	10674	10670	10670	10670	7383
Adj. R-squared	0.26	0.27	0.28	0.28	0.40	

Notes: In parenthesis, standard errors are clustered at the city level. Additional controls are characteristics of the candidate pair: distance in final vote share between candidates, distance squared, a dummy indicating if both candidates are men, a dummy indicating if one candidate is a man and the other is a woman, and a dummy indicating if both candidates have a college degree.

B. Regression Discontinuity Design

The idea to use the $200,000$ brazilian municipal elections voters threshold in a RDD is not new, and have been used by Fujiwara (2011) when searching for evidences of strategic voting. Bordignon et al. (2016) is also a reference, but using a $15,000$ inhabitants threshold in the italian municipal elections to assess how the possibility of a second round affects the policy volatility, a measure of political extremism. Eggers et al. (2015) is a survey of recent studies using a regression discontinuity approach on population thresholds, where authors also discuss the pitfalls and shortcomings of this identification

strategy.

Just as before, let Y_{pcst} be our negativity dummy for candidate pair p in the city c of the state s in the year t, and R_{cst} be a dummy variable that takes value one if the city has more than $200,000$ registered voters. Additionally, let V_{cst} be the number of voters minus the $200,000$ threshold, and X_{pjcs} a vector of covariates. Therefore, we can implement the RDD through a simple OLS estimation of the equation below in which we use only observations that belong to a certain window h around the threshold.

$$Y_{pcst} = \sum_{k=0}^{j} \lambda_k \cdot (V_{cst})^k + R_{cst} \cdot \sum_{k=0}^{j} \gamma_k \cdot (V_{cst})^k + \Pi.X_{pjcs} + \mu_{pcst} \tag{2}$$

For a sufficiently narrow bandwidth h, the local average treatment effect is consistently estimated by $\hat{\gamma_0}$, just as presented in Imbens and Lemieux (2008). We are cautious about the choice h and the polynomial order j which better fits the underlying data around the threshold, and present results for different choices of h and j.

Table 2 summarizes the estimations of γ_0 for $h \in \{25000, 50000, 75000\}$ and $j \in \{1, 2\}$ with and without the inclusion of covariates (namely, city proportion of people with some education but without college degree, and a dummy to account for year effects)[8]. Results suggest there is a positive effect of runoff on the probability of the $2nd-3rd$ candidate pair having a DR, which shows that our hypothesis regarding the incentives that candidates are subject to in a single-ballot *versus* in a runoff system may be correct: the 2nd place in the first round of the election is of great value for candidates, which translates into more negativity between those that are disputing this place, mainly 2nd and 3rd placed candidates. There is statistical significance at the 10% level in most specifications and even at the 5% level in the regression with covariates for $h = 25,000$.

Results on the $1st - 2nd$ pair are not clear. Despite estimated average treatment effect being always positive, it is statistically significant at the 10% level only in some specifications when we add covariates. On the other hand, there is no robust evidence of the $1st - 3rd$ pair being affected by the change of electoral rules, from single-ballot to runoff system. Finally, as being a compound of the estimated effect on all subsamples, the absence of a statistically robust effect on the entire sample shows that the change from single-ballot to a runoff system seems to affect the incentives about the choices on campaign tone only for the candidates that are really disputing the $2nd$ place in the first

[8]Despite not playing an important role in the identification hypothesis of the RDD, covariates can be important to improve the precision of estimates, specially when we have few observations around the threshold.

round of election[9].

Table 2: Negative advertising and electoral rules

bandwidth	Polynomial order = 1			Polynomial order = 2			Single-ballot mean
	25,000	50,000	75,000	25,000	50,000	75,000	
	(1)	(2)	(3)	(4)	(5)	(6)	
Panel A: Estimations without covariates							
Sample: 1st-2nd	0.176	0.323	0.308	0.586	0.130	0.263	0.483
	(0.328)	(0.237)	(0.19)	(0.526)	(0.361)	(0.302)	
	37	87	139	37	87	139	
Sample: 1st-3rd	0.008	-0.252	-0.312	-0.1	0.05	-0.161	0.117
	(0.319)	(0.207)	(0.143)	(0.518)	(0.326)	(0.226)	
	37	87	138	37	87	138	
Sample: 2nd-3rd	0.548	0.299	0.174	0.784	0.65	0.365	0.057
	(0.286)	(0.181)	(0.137)	(0.463)	(0.283)	(0.217)	
	37	87	138	37	87	138	
Sample: All	0.097	-0.024	-0.024	0.051	0.121	0.014	0.161
	(0.055)	(0.039)	(0.03)	(0.098)	(0.061)	(0.049)	
	546	1184	1774	546	1184	1774	
Panel B: Estimations with covariates							
Sample: 1st-2nd	0.315	0.409	0.331	0.846	0.238	0.318	0.483
	(0.321)	(0.237)	(0.191)	(0.514)	(0.353)	(0.304)	
	37	87	139	37	87	139	
Sample: 1st-3rd	0.116	-0.168	-0.282	0.023	0.127	-0.098	0.117
	(0.319)	(0.202)	(0.141)	(0.522)	(0.316)	(0.223)	
	37	87	138	37	87	138	
Sample: 2nd-3rd	0.649	0.338	0.201	0.93	0.681	0.414	0.057
	(0.285)	(0.181)	(0.136)	(0.464)	(0.281)	(0.215)	
	37	87	138	37	87	138	
Sample: All	0.142	0.011	0.001	0.118	0.149	0.033	0.161
	(0.056)	(0.04)	(0.03)	(0.099)	(0.061)	(0.048)	
	546	1184	1774	546	1184	1774	

As before, the dependent variable is the negativity dummy. Each table cell consists of the estimated $\hat{\gamma}_0$, its standard error in parenthesis and the size of the sample used in estimation. Single-ballot mean column shows the probability of the dependent variable being equal to one in each subsample for cities from 0 to 200,000 registered voters.

Figures 1 and 2 provide the graphical version of estimations without covariates for the $2nd-3rd$ pair. Each point in the scatterplot is the average of our negativity dummy for municipalities in a 6,250 registered voters interval, which translates into 32 bins if we consider $h = 100,000$. There is a clear discontinuity around the threshold, with statistical significance at the 10% level on smaller bandwidths, just as showed in table 2. Despite

[9]Despite not being presented in the table, results on others pairs (e.g., $1st-4th$ and $3rd-4th$) shows indeed no discontinuity around the threshold.

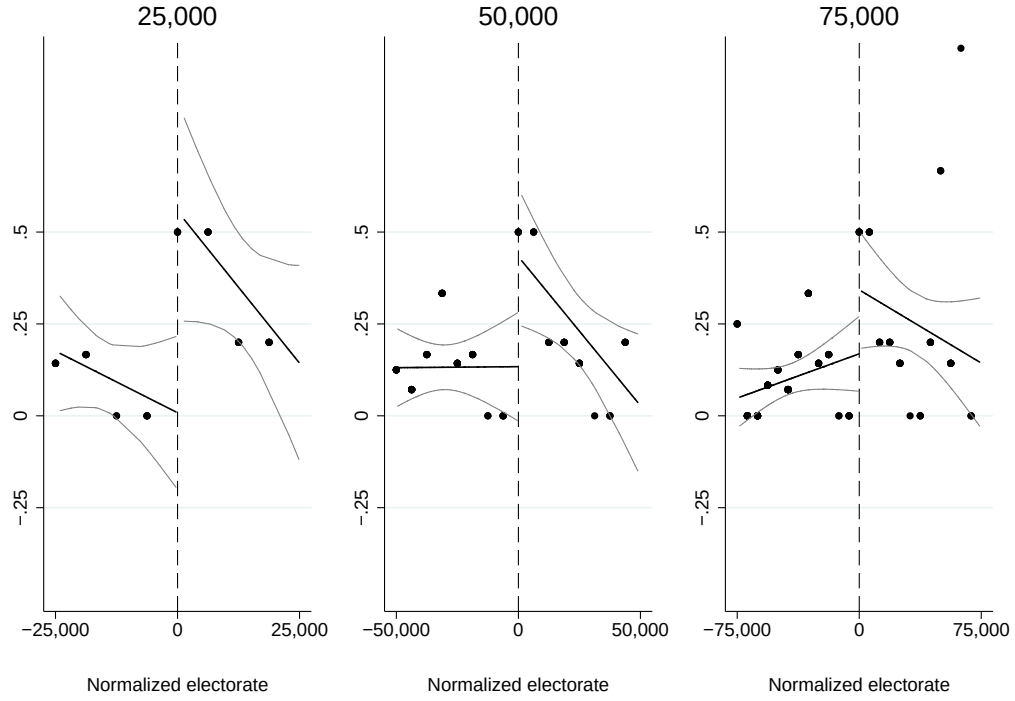

Figure 1: Effect of runoff system on negativity between 2nd and 3rd placed candidates on some bandwidth choices - $1st$ order polynomial fit.

confidence intervals being considerably wide given the reduced number of observations around the threshold, the effect of runoff on negativity is very large and suggest an statistically significant increase of more than 50 p.p. (for $h = 25,000$) in the probability of $2nd - 3rd$ pair having a DR involving them (from a single-ballot probability of only 5.7%).

C. McCrary test and robustness checks

Despite the less restrictive hypothesis behind identification on RDD, in order to advocate in favor of a *causal* relation between electoral rules and negativity, we need to guarantee that there is no manipulation on the running variable around threshold (McCrary, 2008), and also that the only discontinuity around threshold is observed in negativity, i.e., covariates should not "jump" when comparing cities at the left to cities at the right of the 200,000 voters threshold.

Figure 3 suggests that in our database, similar to Fujiwara (2011), there is no sign of strategic manipulation ocurring around the threshold. Moreover, table 3 shows that cities just above and just below the threshold are very similar, without much statistical significance at the 5% level. The exception is the negativity involving $1st - 2nd$ and

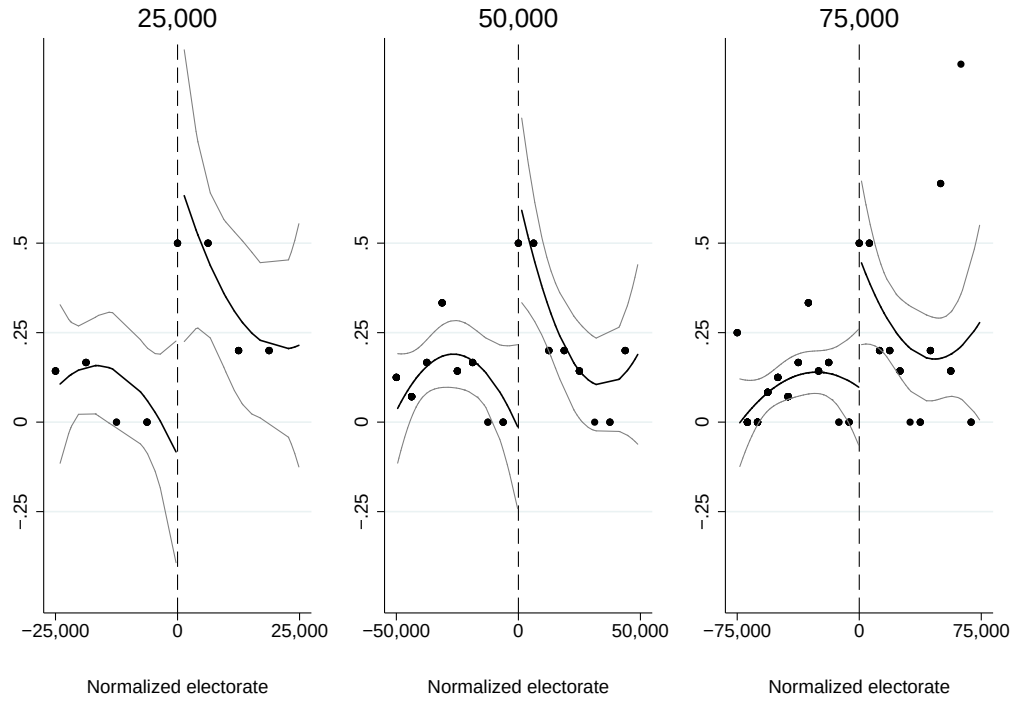

Figure 2: Effect of runoff system on negativity between 2nd and 3rd placed candidates on some bandwidth choices - 2*nd* order polynomial fit.

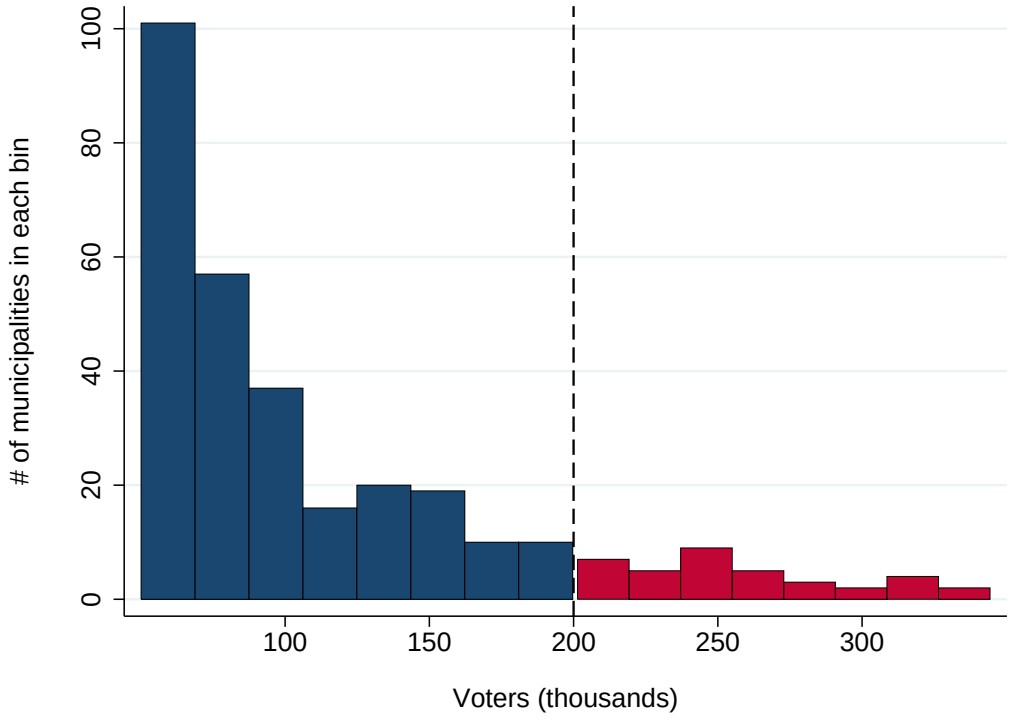

Figure 3: Distribution of electorate size.

Table 3: T-test on some covariates for different bandwidths around the threshold

	25,000	50,000	75,000
Electorate composition			
Number of registered voters	27930.231	54670.256	77980.204
	(2508.230)	(3088.222)	(3597.121)
Turnout	-0.000	0.004	0.001
	(0.014)	(0.009)	(0.007)
Electorate education			
College (% electorate)	0.019	0.007	0.016
	(0.012)	(0.010)	(0.008)
Illiteracy (% electorate)	-0.001	0.001	-0.002
	(0.006)	(0.004)	(0.003)
Low education (% electorate)	-0.041	-0.011	-0.029
	(0.021)	(0.016)	(0.013)
Negativity			
DR involving $1st-2nd$ pair	0.298	0.259	0.239
	(0.161)	(0.108)	(0.087)
DR involving $1st-3rd$ pair	-0.254	-0.174	-0.086
	(0.147)	(0.089)	(0.065)
DR involving $2nd-3rd$ pair	0.228	0.103	0.150
	(0.135)	(0.088)	(0.071)
Negativity index	-0.071	-0.038	-0.031
	(0.053)	(0.032)	(0.027)
Observations	37	87	139

$2nd-3rd$ pairs, which is exactly where we found some impact of moving from a single-ballot to a runoff system in table 2.

These evidences show that our RDD approach is suitable for this environment, but could our findings be just the result of chance? As another robustness test on the results for the $2nd-3rd$ pair subsample, we present (i) the distribution of $2,000$ γ_0 estimations at false population thresholds, and (ii) the treatment effect sensitivity to bandwidth choice.

In the first case we should expect little evidence of impact on negativity, or at least little evidence of an impact as big as the real one, if we believe in a *causal* relation between negativity and electoral institutions. In order to assess this question, we calculate the kernel density of the modulus of estimated coefficients at false population thresholds, ranging from $100,000$ to $300,000$ at a pace of 100, i.e., $cutoff \in \{100000, 100100, 100200, ..., 299800, 299900, 300000\}$. Figure 4 reports the results of this

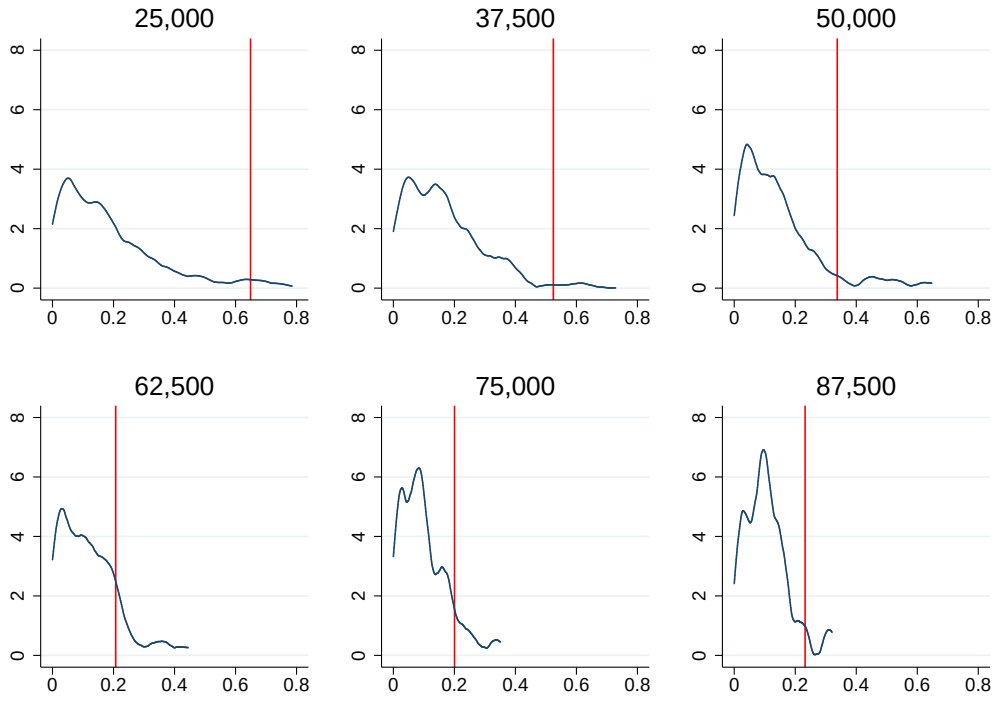

Figure 4: Kernel density of average treatment effect estimations for placebo thresholds.

The figure depicts the kernel density of all 2,000 coefficients estimated on placebo cutoffs and the coefficient estimated on the real 200,000 threshold for various bandwidth choices. All coefficients are in modulus, and the red line is the right coefficient.

exercise for different bandwidth choices. It is clear that the modulus of the coefficient estimated over the real 200,000 threshold is bigger than most of placebo estimations, being smaller than only 3.2%, 1.5%, and 7.7% of placebo ones in the 25000, 37500, and 50000 bandwidth, respectively.

For the second exercise we should expect a higher estimator bias and lower variance as the bandwidth increases, which is result of a bigger sample but with more observations not so close to the threshold. Figure 5 reports the treatment effect and the 90% confidence interval (CI) over each estimation for some bandwidth choices. As expected, CI is narrower as we choose a larger bandwidth. Moreover, estimated coefficient seems to converge monotonically to 0.2, which suggest that the variability in estimations for smaller bandwidths may be result of bias being added as we move farther from the threshold and not result of lack of robustness of the *causal* relation.

D. Compound treatment

Another threat to the results validity could be the so-called *compound treatment*, in which the same running variable threshold defines more than one policy change. Eggers et al.

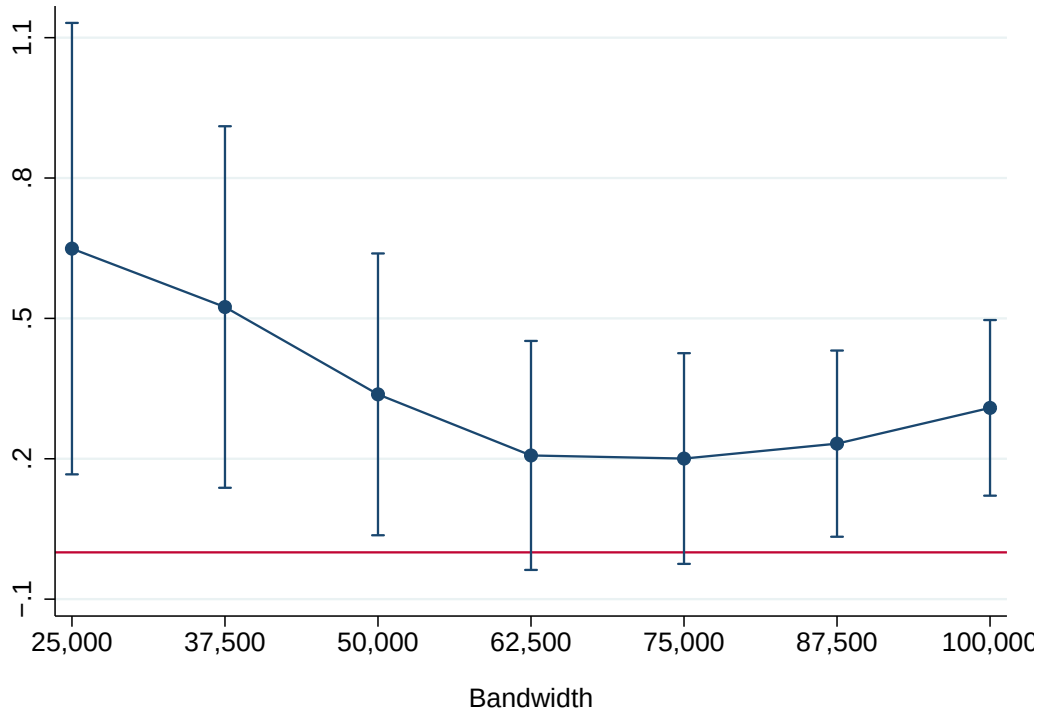

Figure 5: Estimation sensitivity to bandwidth choice for the $2nd - 3rd$ pair subsample.

(2015) show some recent studies that use brazilian data and population thresholds as the main source of econometric identification. With what could be the closest threshold to ours, Ferraz and Finan (2009) use municipal population thresholds, introduced by a constitutional amendment in 2000, to assess how monetary incentives impact quality and performance of politicians. This amendment introduced a cap on the maximum salary that local legislators could receive. However, the relation between legislators' salary and campaign of mayors candidates are far from clear. Furthermore, this amendment imposed a population threshold and not a voters threshold, with the latter being the one that we use.

Therefore, just as in Fujiwara (2011), our findings are result of only one institutional change: from an electoral single-ballot system to a runoff system.

IV. Concluding remarks

This papers assesses how electoral institutions shape candidates incentives to engage in a more negative campaign. Using data on Brazil's mayors elections of 2012 and 2016, we tested how the change from a single-ballot to a runoff system affected the probability of candidates being part in a litigation about negative advertising, being part in a request of *direito de resposta*.

We proposed a simple and intuitive mechanism through which candidates that are disputing the second place in the first round of a runoff election should engage in a more fierce debate when compared to a single-ballot election, where the second place in the first round has no value to candidates. Our results showed that second and third placed candidates engage much more in negative advertising in the first round of a runoff election: they have a probability more than 50 p.p. higher of being part in a DR in this system. RDD findings are robust to bandwidth choices and other falsification tests. Besides, the lack of evidence of manipulation on the running variable around the threshold suggests that these findings are indeed result of a *causal* relation between electoral rules and negative advertising.

By evaluating how electoral institutions relate to candidates incentives on their campaign's tone, this paper sheds some light on mechanisms through which negativity shows up. Evidences presented here may be helpful to policymakers who aim to promote a more policy-oriented political campaign, reducing situations like the one we witnessed in the last US presidential race.

References

Ansolabehere, S., S. Iyengar, and A. Simon (1999, December). Replicating experiments using aggregate and survey data: The case of negative advertising and turnout. *The American Political Science Review Vol. 93*(No. 4), pp. 901–909.

Bordignon, M., T. Nannicini, and G. Tabellini (2016, August). Moderating political extremism: Single round versus runoff elections under plurality rule. *The American Economic Review Vol. 106*(No. 8), pp. 2349–2370.

Chamon, M., J. M. P. de Mello, and S. Firpo (2009, December). Electoral rules, political competition and fiscal expenditures: Regression discontinuity evidence from brazilian municipalities. IZA Discussion Papers 4658, Institute for the Study of Labor (IZA).

Duverger, M. (1954). *Political Parties: Their Organization and Activity in the Modern State*. Methuen; Wiley.

Eggers, A. C., R. Freier, V. Grembi, and T. Nannicini (2015, Dec). Regression Discontinuity Designs Based on Population Thresholds: Pitfalls and Solutions. IZA Discussion Papers 9553, Institute for the Study of Labor (IZA).

Ferraz, C. and F. Finan (2009, April). Motivating politicians: The impacts of monetary incentives on quality and performance. Working Paper 14906, National Bureau of Economic Research.

Fowler, E. F., T. N. Ridout, and M. M. Franz (2016, Dec). Political advertising in 2016: The presidential election as outlier? In *The Forum*, Volume Vol. 14, pp. pp. 445–469.

Fujiwara, T. (2011). A regression discontinuity test of strategic voting and duverger's law. *Quarterly Journal of Political Science Vol. 6*(No. 3-4), pp. 197–233.

Ghandi, A., D. Iorio, and C. Urban (2016, August). Negative advertising and political competition. *The Journal of Law, Economics and Organization Vol. 32*(No. 3), pp. 433–477.

Imbens, G. W. and T. Lemieux (2008, February). Regression discontinuity designs: A guide to practice. *Journal of Econometrics Vol. 142*(No. 2), pp. 615–635.

Kartik, N. and R. P. McAfee (2007, June). Signalling character in electoral competition. *American Economic Review Vol. 97*(No. 3), pp. 852–870.

McCrary, J. (2008, February). Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics Vol. 142*(No. 2), pp. 698–714.

Persson, T. (2002, May). Do political institutions shape economic policy? *Econometrica Vol. 70*(No. 3), pp. 883–905.

Persson, T. and G. E. Tabellini (2005). *The economic effects of constitutions*. MIT press.

Silveira, B. S. and J. M. P. De Mello (2011, February). Campaign advertising and election outcomes: Quasi-natural experiment evidence from gubernatorial elections in brazil. *Review of Economics Studies Vol. 78*(No. 2), pp. 590–612.