

## Legislative Expenditures and Competition for Seats: RDD Evidence for Brazilian Municipalities

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### Resumo

A relação entre gastos legislativos e grau de competição política para as câmaras legislativas tende a ser endógena: maiores despesas legislativas podem facilitar a permanência dos vereadores no poder por via do uso dos recursos públicos, mas por outro lado, uma maior taxa de reeleição pode garantir aos legisladores incumbentes maior facilidade para manipular os recursos públicos. Este artigo procura investigar a relação entre despesas legislativas e competição para o cargo de vereador considerando uma descontinuidade na proporção de gastos legislativos (como proporção da receita municipal) baseada no tamanho da população municipal como fonte exógena de variação. Os resultados obtidos por via do método de regressão descontínua provêm evidências de que um menor nível de despesas legislativas torna mais homogênea a distribuição de votos entre os candidatos, mas este efeito não é significativo o suficiente a ponto de diminuir a probabilidade de reeleição.

Palavras-chave: Municípios brasileiros, gastos legislativos, competição política, regressão descontínua

### Abstract

Legislative expenditures are likely to be endogenously correlated with legislative competition: higher legislative disbursement might make reelection of representatives easier but, on the other hand, higher legislative reelection may cause experienced legislators to manipulate public expenditures for their own benefits. This paper aims at investigating how legislative spending affect the competition for legislative seats in Brazilian municipalities by exploring a discontinuity in the amount of legislative expenditures (relative to total public revenues) based on their population size. Our regression discontinuity results provide evidence that lower legislative expenditures do not affect reelection rates, but do increase the dispersion of votes among the candidates.

Key words: Brazilian municipalities; legislative expenditures; political competition; regression discontinuity design

JEL Classification: H72; D72; C14

## **I - Introduction**

This paper aims at assessing how the amount of legislative expenditures (as a proportion of local public revenues) carried out by Brazilian municipalities affect the level of competition for their legislative seats. Examining this relationship is, however, complicated by a clear endogeneity problem. On the one hand, higher legislative disbursements are likely to benefit local council incumbents, given that they can make use of these resources for their own benefit, increasing the number of votes to be received in the following election. On the other hand, the causal relationship may work from political competition to expenditures, given that by means of an easier reelection, experienced legislators (who has been reelected many times, for instance) could be more able to manage fiscal indicators by means of the legislative institutional framework.

Most of the literature about the causal relationship from expenditures to political competition provides evidence that manipulation of fiscal variables previously to election is to affect the likelihood of staying in power. One of the main references is Peltzman (1992), whose empirical results suggest that American voters are averse to higher spending, and the nearer spending increases are to elections, the more they punish candidates by providing them a lower reelection probability. As a second reference, Brender (2003) examines reelection of mayors in Israeli cities and finds that voters are averse to deterioration in the public accounts during the term in office, with a particularly important result suggesting that fiscal deterioration in election years does not influence their chances of remaining in power. Finally, in a study evaluating local Russian governmental entities, Akhmedov & Zhuravskaya (2004) find that pre-electoral manipulation of fiscal instruments increases the incumbent's chances of getting reelected, while Veiga & Veiga (2007) use data from Portuguese municipalities to find that higher expenditures over the whole term (and specifically in election years) increase the chances of political success.

On the subject of the literature that investigates the causal relationship from political competition to expenditures, Rogers & Rogers (1999) examine whether competition among political candidates contributes to the growth of government budget by using American state-level data from 1950 to 1990. Their results highlight that greater political competition leads to smaller government, i.e., the smaller the margin of victory in the race for governor, the smaller expenditures and revenues are. For the case of Spanish municipalities, the investigation carried out by Solé-Ollé (2006) suggests that the effect of political competition on fiscal indicators varies across political parties: a higher electoral margin has a positive

effect on spending, own revenues and deficit only in the case of left governments. Conversely, right governments tend to decrease these three budget items when the electoral margin increases. More recently, Uppal (2010) examines the effect of legislative turnover (a proxy for political competition, measured as the proportion of legislative seats renewed in each election) on government expenditures in Indian state elections to find that a higher legislative turnover not only increases the size of government, but also alters the composition of government expenditures. Additionally, the effect of turnover on government expenditures, especially on disaggregated expenditures, is not linear. The incentives for distortion of government policy are high when the rate of turnover is either extremely low or extremely high. This suggests that there is an optimal rate of turnover where policy distortions are minimized.

The previously mentioned references, among many others, provide evidence that political competition and fiscal indicators do exert a mutual influence. Our main contribution to the literature comes from the methodological procedure used to break the endogeneity between legislative expenditures and legislative competition – a Regression Discontinuity Design (RDD) approach. Recently, Ferraz & Finan (2011) carried out a similar investigation regarding how legislative competition in Brazilian cities is associated with legislative expenditures. According to a Constitutional Amendment of the same year of 2000, the upper bound for local legislators wages (as a proportion of state deputies earnings) varies according to population size, which progressively increases from 20% for those cities with less than 10,000 inhabitants to 75% for municipalities above 500,000 inhabitants. By considering these discontinuities, they find that in municipalities that offered higher wages for representatives, there is a statistically significant increase in legislative re-election rates, and the effects are higher when conditioned on those legislators who ran for re-election.

In our study, we use an alternative measure of expenditure, more specifically, the proportion of legislative expenditures relatively to total revenues. Although legislator wages is an important component of total legislative expenditures, it is not exclusive - the remaining share is composed by very important items such as staff maintenance and other facilities, which obviously enhance the political capital of Brazilian local legislators. We argue that our measure of legislative expenditure is a different measure from that considered by Ferraz & Finan (2011), in the sense that legislator wage itself is not a precise measure of how incumbents are benefited from public expenditures. In other words, legislator wage does not properly measure the influence of legislative expenditures, as a whole, on the level of political competition. When using this broad measure of expenditures for the 2004 local election, we concluded that although the distribution of votes among candidates becomes less

concentrated, higher legislative expenditures do not alter the reelection rates of Brazilian councilmen.

This paper aims at providing contribution to the debate over term limitation laws. Political representatives with longer tenure can increase their political power and hence, pursue expenditure-increasing policies (Hibbing (1991)). Additionally, a stronger political capital may also work as a barrier to entry by new political aspirants and would possibly allow incumbents to shirk (Dick & Lott (1993)). However, Reed et al. (1998) find no evidence of relationship between tenure and higher expenditures and note that tenure may be negatively related to spending. The empirical evidence found by Crain & Tollison (1993), in turn, shows that the volatility of fiscal policy is higher in states that have greater legislative turnover.

Additionally, this paper contributes to the topic of last term problem, which occurs when elected representatives face a reelection constraint. In a very traditional article, Besley & Case (1995) find that term limits create a cycle in fiscal variables in the last term of American governors. Johnson & Crain (2004) also find that chief executives in countries with term limitations spend and tax more compared to executives in countries with no term limit. For the Brazilian case, the empirical results provided by Ferraz & Finan (2009) show there is significantly less corruption in municipalities where mayors can get reelected, i.e., when mayors may run for a subsequent mandate. Mayors with reelection incentives misappropriate fewer resources than mayors without reelection incentives, and these effects are more pronounced among municipalities with less access to information and where the probability of judicial punishment is lower.

Besides this introduction, the paper contains the following sections: section II discusses the econometric methodology, presents some of Brazilian politics and describes the data. Section III presents the econometric results and finally, section IV presents the concluding remarks.

## **II – Method, Brazilian institutions and database**

This section presents the basics of the RDD methodology, following the discussion presented in Imbens & Lemieux (2008). According to these authors, the RDD approach is especially useful when one is interested in investigating the causal effect of an intervention (treatment) which is potentially heterogeneous across unities (municipalities, in our case). For a given section unit  $i$ , let  $Y_i(0)$  be the observed result when this unit is not exposed to the

treatment and  $Y_i(1)$  the observed result when this same unit receives the treatment. Let  $W_i$  be an indicator which assumes 0 if the unit was not submitted to the intervention and 1 if was. In this context, it is possible to define:

$$Y_i = (1 - W_i) \cdot Y_i(0) + W_i \cdot Y_i(1) = \begin{cases} Y_i(0) & \text{if } W_i = 0 \\ Y_i(1) & \text{if } W_i = 1 \end{cases}$$

Estimation of the treatment effect could only be performed if  $Y_i(0)$  and  $Y_i(1)$  were both observed at the same time, i.e., if the researcher could be able to observe the factual and the counterfactual, which is, in practice, impossible. In fact, most of the microeconomic procedures have the purpose of dealing with this issue. Assuming that  $Y$  is function of a set of exogenous covariates  $Z$ , the RDD approach assumes that the value assumed by a variable  $X$  around a threshold  $c$  defines the unities that are submitted and not submitted to the treatment<sup>1</sup>. According to the Sharp Regression Discontinuity Approach (SRD, henceforth), all unities with a value of  $X$  that exceed  $c$  are designated as treatment group, and all unities whose  $X$  is lower than  $c$  are members of the control group. In other words, the value of  $X$  around the threshold  $c$  defines, deterministically, the unities that are members of treated and control groups. This approach is different from the Fuzzy Regression Discontinuity Approach (FRD): for in this case, trespassing  $c$  increases the probability of becoming a member of the treated group. In other words, the SRD states that the variable  $W$  is a deterministic function of the variable  $X$ , that is to say, whenever  $X$  changes from  $X_i < c$  to  $X_i \geq c$ , the probability of transition from  $W_i = 0$  to  $W_i = 1$  is 100%. Therefore, we have the following notation:

$$W_i = 1 \{X_i \geq c\}$$

In the SRD approach, the main focus rests on the analysis of the discontinuity of the conditional mean of the variable  $Y$  around  $X = c$ , which can be interpreted as the average treatment effect around the discontinuity:

$$\lim_{x \downarrow c} E[Y_i | X_i = x] - \lim_{x \uparrow c} E[Y_i | X_i = x]$$

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<sup>1</sup> According to Lee (2008) the variable  $X$  may be called *score*.

$$\tau_{SRD} = E[Y_i(1) - Y_i(0) | X_i = c]$$

The RDD approach was used for the first time by Thistlewaite & Campbell (1960), but applications in economics are more recent, starting in 1990's - Imbens & Lemieux (2008) and Lee & Lemieux (2010) present a detailed survey about this econometric procedure as well as an extensive list of papers adopting this approach.

Specifically in the area of political economy, one of the first applications of RDD is Lee (2008), whose purpose is to measure the incumbency effect on the perspective of reelection of American legislators. More specifically, the author try to quantify the benefits of being a incumbent vis-à-vis a new competitor when they are both running for a legislative seat in the USA. The basic idea is that in very close races, i.e., when the winner takes the position by a very small difference of votes from the second place, the differences between these two candidates are likely to be small. In this case, the candidate that lost the election could be considered as a control group for the winner, who will be able to explore the incumbency benefits in the next voting. By investigating the electoral results for the American Congress between 1946 and 1998, the author finds evidence that the incumbency effect is significant, given that it not only increases the likelihood of being appointed by the party to the election, but also increases the chances of remaining in power. Regarding RDD applications for the Brazilian case, Chamon, Melo & Firpo (2009) investigate how the existence of second round in elections affects the level of competition to become mayor in Brazilian cities. The reason to apply the RDD design in this case comes from an electoral rule (applied to all Brazilian municipalities) which states that cities with more than 200,000 voters have a second round for mayoral elections, pairing the two most voted on the first round. In other words, municipalities with population slightly below 200.000 voters can be considered as a control group for those with population slightly above this threshold (subject to two electoral rounds), given they are likely to have similar traits. After investigating the municipal elections of 1996, 2000 and 2004, the evidence found by the authors suggest that municipalities with second round are likely to face a higher competition for the Executive position, and this effect is stronger when the mayor is able to be stay in power for a new term of office<sup>2</sup>. Additionally,

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<sup>2</sup> Since 2000, Brazilian executive chiefs (for all three government levels, namely, president, state governor and local mayor) face a different term limit, in which they are allowed to stay two subsequent mandates (eight years) in office at most. Previously, they were not able to get reelected.

they find evidence that cities subject to having a second round tend to present higher levels of public investments and lower levels of current expenditures (mainly personnel outlays).

Focusing on the main purpose of this paper, the recent literature on new political economy has devoted special attention to the local governmental unities of developing countries, where the democratic regime is relatively recent. This is the case of Brazil, which had a military government from 1964 to 1984. The most recent Federal Constitution, enacted in 1988, states that voting is mandatory for all Brazilian citizens over 18 year of age<sup>3</sup> and that elections are to be held every four years in pre-scheduled date. In fact, this means that the electoral calendar is rigorously exogenous and that voters and candidates are both perfectly aware of the timing of the election cycle. The chief executives of the three government levels (Federal, State and City level governments) are chosen by a majority rule and the Legislative council members by a proportional rule.

Specifically concerning the municipal elections, in the smaller cities (less than 200,000 voters) there is only one round, whereas in the larger cities there is an additional election round, pairing the two candidates with the most first-round votes. The second round is not held, however, if one of the candidates achieves an absolute majority of votes in the first round of the elections. Although this rule applies to all the Brazilian states in a similar way, the electoral calendar is not synchronized. In fact, the local and state level elections are perfectly staggered, so that every two years Brazilian voters are requested to choose their political representatives. In the years of state-level elections, the President, the senators and the member of the Federal Legislative Council are also chosen.

As previously discussed, the main idea of this study is to investigate the causal effect of legislative expenditures on the level of competition for legislative seats. In order to achieve its main objective, this paper considers a relatively recent amendment to the Brazilian Constitution - enacted in 2000, this new rule stated that, from 2001 onwards, the amount of legislative expenditures carried out by Brazilian Municipalities (as a proportion of local revenues) should comply with the following limits:

- i) eight percent for those municipalities with less than 100.000 inhabitants;
- ii) seven percent for those municipalities with population between 100.001 and 300.000 inhabitants;

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<sup>3</sup> Optional for those between 16 and 18 and over 70 years old.

- iii) six percent for those municipalities with population between 300.001 and 500.000 inhabitants;
- iv) five percent for those municipalities with population above 500.001 inhabitants

It is possible to observe that this amendment defines upper bounds for the municipalities' legislative expenses depending on their respective population size. In this context, this paper explores the potential discontinuity around these population thresholds, by means of the Regression Discontinuity Design, as an exogenous source of variation to explain competition for legislative council, which allows us to overcome the potential endogeneity between competition and expenditures. However, given that the majority of Brazilian cities have a small population size, this paper will assess only those local unities around the first of those cutoffs – out of more than 5,500 municipalities, our sample is composed of those unities between 50,000 and 150,000 inhabitants, which represents a interval of 50,000 around the first of the five thresholds defined by the Constitutional Amendment.

Regarding the source of the data, fiscal variables were provided by Secretaria do Tesouro Nacional (Secretary of National Treasure), the official institute in charge of collecting fiscal information regarding Brazilian municipalities and states. Demographic variables, in turn, were provided by the Brazilian Institute of Geography and Statistics. Finally, political variables were obtained from the Superior Electoral Tribunal. The descriptive statistics of these variables are presented in the appendix.

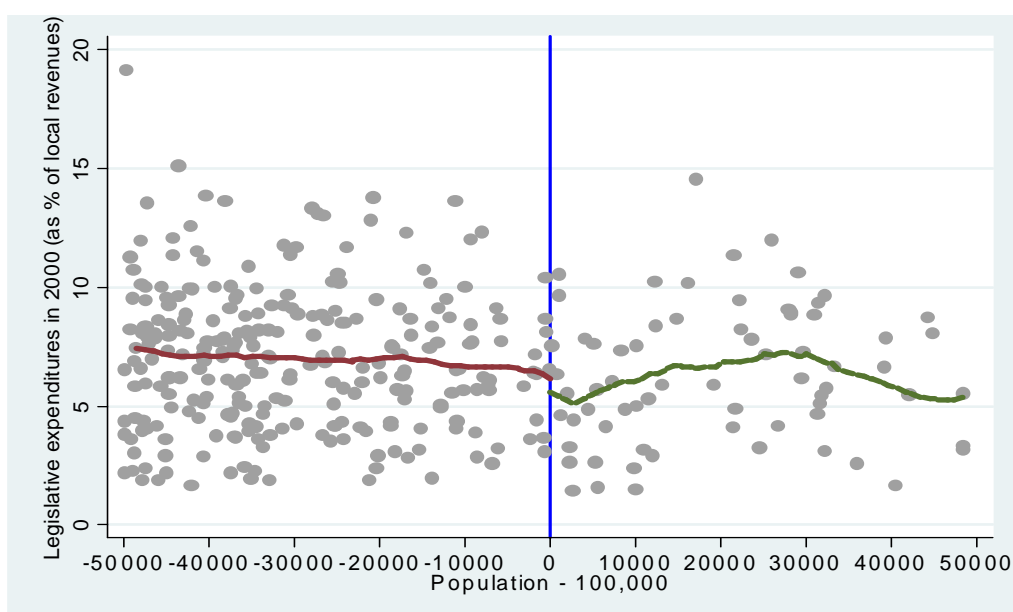
### **III - Results**

The basic motivation of the paper comes from figures 1 and 2. Legislative expenditures of Brazilian municipalities (as a proportion of total public revenues) are represented on axis Y and the population size (minus 100,000, the threshold of interest) is represented on axis X. The red and green curves, which represent the estimates on each side of the threshold (blue line), were obtained by means of a polynomial fit using the habitual rectangle kernel (other kernels provide similar results). According to these graphics, it is possible to observe a discontinuity in the distribution of expenditures around those cities with population equal to 100,000 inhabitants in 2004 (graphic 2). However, in 2000 (graphic 1), the discontinuity is statistically null.



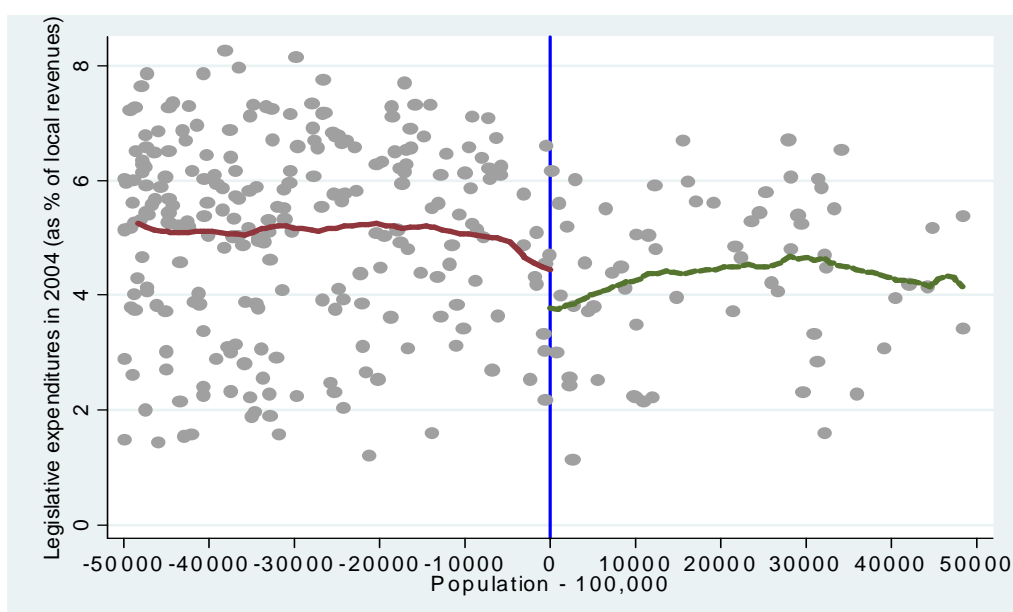
In order to provide a more rigorous evaluation, Tables 1 and 2 present OLS results of estimations in which the proportion of legislative expenditures in 2000 and 2004 are separately regressed on: (i) a dummy variable that assumes 1 if the city's population exceeds 100,000, (ii) the difference of each municipality population from 100,000 and (iii) the interaction of (i) and (ii). Additionally, we have the following set of control variables: number of legislators elected in the previous (2000 and 1996) elections; the proportion of young (individuals between 0 and 14 years); the proportion of elderly (proportion of individuals over 65 years old) and finally, the rate of urbanization<sup>4</sup>. It is important to emphasize that none of these control variables exhibits significant discontinuity around the cutoff of 100,000 inhabitants in 2000 and 2004 (see appendix).

**Figure 1: Proportion of legislative expenditures – 2000**



Source: authors

<sup>4</sup> As the literature suggest, it would be possible to include the interaction of (i) and (ii) as an additional regressor given that the distribution of points below and above the threshold could follow different trends. However, as figure 1 suggest, the adjustment curves do not seem to have relevant different paths.

**Figure 2: Proportion of legislative expenditures – 2004**

Source: authors

**Table 1: OLS estimates - dependent variable:  
Share of Legislative Expenditures in 2000**

Coefficient (Standard-deviation)	(A)	(B)	(C)
<b>Dummy 100,000 (a)</b>	<b>-0,261</b> <b>(0,613)</b>	<b>-0,159</b> <b>(0,648)</b>	<b>0,112</b> <b>(0,669)</b>
(Population - 100,000) (b)	-1,4E-06 (1,1E-05)	1,0E-06 (1,2E-05)	-6,0E-05 (4,6E-05)
Linear interaction [(a).(b)]		-1,1E-05 (2,4E-05)	9,9E-05 (8,4E-05)
(Population - 100,000) <sup>2</sup> (c)			-1,1E-09 (8,5E-10)
Young	0,417*** (0,064)	0,421*** (0,064)	0,423*** (0,064)
Elderly	0,357** (0,181)	0,361** (0,181)	0,367** (0,182)
Urbanization rate	0,027* (0,014)	0,027* (0,014)	0,028* (0,014)
Number of counselors elected in 1996	0,057 (0,076)	0,057 (0,076)	0,055 (0,075)
Constant	-10,597*** (3,823)	-10,673*** (3,813)	-11,350*** (3,867)
Number of observations	303	303	303
Observations below 100.000 inhabitants	240	240	240
Observations above 100.000 inhabitants	63	63	63
R <sup>2</sup>	0.2046	0.2050	0.2097

Notes: \* statistically significant at 10%, \*\* statistically significant at 5%, \*\*\* statistically significant at 1%.  
Standard errors in parenthesis

**Table 2: OLS estimates - dependent variable:  
Share of Legislative Expenditures in 2004**

Coefficient (Standard-deviation)	(A)	(B)	(C)
<b>Dummy 100,000 (a)</b>	<b>-0.680** (0.303)</b>	<b>-0.655** (0.313)</b>	<b>-0.502* (0.309)</b>
(Population - 100,000) (b)	-9.88E-07 (5.48E-06)	-4.50E-08 (6.48E-06)	-3.29E-06 (2.15E-06)
Linear interaction [(a).(b)]		-2.48E-06 (1.19E-05)	5.77E-06 4.04E-06
(Population - 100,000) <sup>2</sup> (c)			-6.20E-10 (4.03E-10)
Young	0.244*** (0.037)	0.245*** (0.037)	0.246*** (0.037)
Elderly	0.168** (0.095)	0.169** (0.097)	0.172** (0.097)
Urbanization rate	0.011** (0.007)	0.011** (0.007)	0.012** (0.006)
Number of counselors elected in 2000	0.100*** (0.037)	0.099** (0.038)	0.097** (0.037)
Constant	-5.633*** (1.974)	-5.625*** (1.973)	-5.940*** (1.917)
Total number of observations	303	303	303
Observations below 100.000 inhabitants	240	240	240
Observations above 100.000 inhabitants	63	63	63
R <sup>2</sup>	0.2876	0.2887	0.2927

Notes: \* statistically significant at 10%, \*\* statistically significant at 5%, \*\*\* statistically significant at 1%.  
Standard errors in parenthesis

Column A of Tables 1 and 2 present the OLS results considering the dummy indicator for those unities with a population over 100,000 residents (a), the difference between total population and 100,000 (b). Column B considers the same set of regressors, but includes the interaction between (a) and (b) and finally, column C includes the quadratic value of the population difference (c) - all estimates include the same set of control variables. Essentially, OLS results confirm the information provided by Figures 1 and 2: municipalities whose number of habitants is higher than the threshold tend to exhibit a lower proportion of legislative expenditures that varies from 0.502 to 0.680 relatively to those cities with lower population size, in 2004. In 2000, however, this difference is statistically null. In a nutshell, both the polynomial fit and OLS estimates confirm the discontinuity of legislative outlays according to the institutional rule of interest in 2004, but not in 2000.

Given that the basic goal of the paper is to investigate the influence of legislative expenditures on the competition for legislative seats in Brazilian municipalities, our second step considers the discontinuity of legislative disbursements as an exogenous source of variation, which allows us to avoid the potential endogeneity between expenditures and competition. More specifically, this study considers the 2004 municipal election and two different measures of legislative competition: the first of them is the very traditional index

“effective number of candidates”<sup>5</sup>, which measures the distribution of votes among candidates. Computed according to  $\frac{1}{\sum_n x_{ni}^2}$ , where x is the proportion (0 ≤ x ≤ 1) of votes

received by each candidate n in a given municipality, it is possible to observe that this index increases as the distribution of votes among candidates becomes more homogeneous, i.e., when the competition for seats is higher. The second measure of political competition is the proportion of councilmen elected in 2000 who got reelected in 2004. For each of these two measures of competition, the basic equation to be estimated is the same of that presented in table 1, yet they include the proportional change in the number of seats between 2000 and 2004<sup>6</sup>. Results are presented in table 3 (effective number of candidates) and table 4 (rate of reelection) - for each of these tables, column A refers to the estimation which includes the dummy indicator for cities with population higher than 100,000 and population size minus 100,000. Column B includes their interaction and finally, column C includes the quadratic value of the difference between population size and 100,000.

**Table 3: Competition for legislative seats in 2004 municipal elections**  
**Dependent variable: Effective Number of Candidates**

Coefficient (Standard-deviation)	(A)	(B)	(C)
<b>Dummy 100,000 (a)</b>	<b>8,424**</b> <b>(3,833)</b>	<b>12,949***</b> <b>(4,025)</b>	<b>13,253***</b> <b>(4,024)</b>
(Population - 100,000) (b)	7,61E-05 (6,66E-05)	1,80E-04** (7,53E-05)	1,13E-04 (2,70E-04)
Linear interaction [(a).(b)]		-4,84E-04*** (1,46E-04)	-3,63E-04 (5,05E-04)
(Population - 100,000) <sup>2</sup> (c)			-1,25E-09 (4,78E-09)
Change of seats (%) - 2000 x 2004	0,018 (0,093)	0,067 (0,093)	0,070 (0,095)
Young	-1,116*** (0,389)	-1,009*** (0,386)	-1,008*** (0,385)
Elderly	-4,574*** (1,093)	-4,294*** (1,085)	-4,282*** (1,087)
Urbanization rate	0,219** (0,103)	0,218** (0,102)	0,218** (0,102)
Constant	95,406*** (24,822)	95,759*** (24,457)	95,111*** (24,233)

<sup>5</sup> See, for instance, Ordeshook & Shvetsova (1994) and Amarin Neto & Cox (1997)

<sup>6</sup> In some Brazilian cities, the number of legislative seats changed between the 2000 and 2004 elections. This modification obviously changes the level of competition given that, relatively to 2000, getting reelected in 2004 would be easier or harder, depending on whether the number of seats increased or decreased. It is important to emphasize that this proportional change in the number of seats between 2000 and 2004 does not present any significant discontinuity around the threshold of 100,000 inhabitants as well (see appendix).

R <sup>2</sup>	0,2957	0,3175	0,3176
Number of observations	303	303	303

Source: authors

Notes: \* = statistically significant at 10%, \*\* = statistically significant at 5%, \*\*\* = statistically significant at 1%. Standard errors in parenthesis

**Table 4: Competition for legislative seats in 2004 municipal elections**  
**Dependent variable: Rate of Reelection**

Coefficient (Standard-deviation)	(A)	(B)	(C)
<b>Dummy 100,000 (a)</b>	<b>-1,008</b> <b>(3,956)</b>	<b>-4,084</b> <b>(3,923)</b>	<b>-6,346</b> <b>(4,265)</b>
(Population - 100,000) (b)	7,55E-05 (7,02E-05)	4,19E-06 (8,28E-05)	5,04E-04 (3,24E-04)
Linear interaction [(a).(b)]		3,30E-04** (1,43E-04)	-5,69E-04 (5,68E-04)
(Population - 100,000) <sup>2</sup> (c)			9,31E-09* (5,41E-09)
Change of seats (%) - 2000 x 2004	-0,256*** (0,096)	-0,290*** (0,096)	-0,312*** (0,095)
Young	-0,518 (0,328)	-0,592* (0,323)	-0,604* (0,315)
Elderly	0,585 (1,076)	0,388 (1,053)	0,296 (1,042)
Urbanization rate	-0,185** (0,087)	-0,185** (0,086)	-0,186** (0,085)
Constant	67,487*** (19,860)	67,314*** (19,504)	72,161*** (19,233)
R <sup>2</sup>	0,0796	0,0921	0,1033
Number of observations	303	303	303

Source: authors

Notes: \* statistically significant at 10%, \*\* statistically significant at 5%, \*\*\* statistically significant at 1%. Standard errors in parenthesis

According to our results, the coefficients of the variable indicating municipalities with population higher than 100,000 are positive and statistically significant in Table 3, which means that a lower level of legislative outlays tends the distribution of votes among aspirants to become more homogeneous. However, these same coefficients are not statistically significant in Table 4, suggesting that a lower level of legislative expenditures does not increase neither decrease the rate of legislative reelection.

#### IV – Concluding remarks

This paper presented results regarding how the level of legislative expenditures carried out by Brazilian municipalities influence the competition for legislative seats. However, legislative expenditures and competition for lawmaking position are likely to be endogenously

correlated, given that, on the one hand, higher expenditures are likely to increase the chances of counselors reelection but, on the other hand, experienced (reelected) legislators can use the institutional framework to increase expenditures for their own benefit. In order to achieve its aim, this paper considered a relatively recent amendment to the Brazilian Constitution that established limits for the amount of legislative expenditures (as a proportion of local public revenues) according to the population size of Brazilian cities. By using this discontinuity as an exogenous source of variation to establish a causal relationship from expenditures to competition, our Regression Discontinuity Design results for the 2004 election indicate that lower expenses do not influence the rate of councilmen reelection. However, our most important result suggests that lower legislative disbursements tend to increase the dispersion of votes among candidates.

In a general overview, our results indicate that although the distribution of votes becomes more homogeneous as legislative expenditures decreases, this effect is not significant enough to decrease the reelection rates of Brazilian local counselors. In other words, this result possibly means that legislative incumbents in Brazilian municipalities are in some way protected from external competitors. In this context, would it be reasonable to adopt term limitations for local legislators, as it already happens to Brazilian executive chiefs (President, Governors and local mayors)?

Given this inquiry, this paper provides additional contribution to the debate over term limitation laws. Political representatives with longer tenure may not only increase their political power and manipulate the public budget for their own benefits: a stronger political capital may also work as a barrier to entry by new political aspirants. On the other hand, it can be argued that higher turnover rates may result in shortening a legislator's political horizon, which may reduce the value he or she places on holding office in the future. As a consequence, representatives could increase spending on programs that show immediate results while still in office rather than undertake investment that will take longer to show results.

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## Appendix

### Appendix 1 – Descriptive statistics – 50,000 – 150,000 population interval

Variable	Observations	Mean	Standard Deviation	Min	Max
Proportion of legislative expenditures in 2000	303	6,80	3,01	3,04	19,18
Proportion of legislative expenditures in 2004	303	4,97	1,62	3,14	8,27
Reelection rate in 2004	303	46,00	16,23	9,09	100,00
Effective number of candidates in 2004	303	58,95	18,01	22,97	119,58
Number of seats in 1996	303	15,93	2,63	9,00	21,00
Number of seats in 2000	303	16,10	2,51	9,00	21,00
Number of seats in 2004	303	10,37	0,59	10,00	12,00
Urbanization rate in 2000	303	84,18	16,13	12,87	100,00
Urbanization rate in 2004	303	84,90	14,74	12,87	100,00
Young in 2000	303	30,17	4,56	17,88	46,45
Young in 2004	303	29,93	4,34	17,88	44,99
Elderly in 2000	303	4,60	1,33	1,23	9,52
Elderly in 2004	303	4,65	1,31	1,30	9,52

**Appendix 2 – Graphics of (no) discontinuity – control variables**

Figure A1: Number of elected legislators in 2000

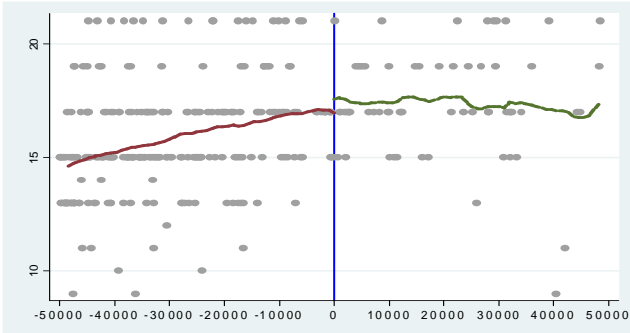


Figure A4: Proportion of young - 2004

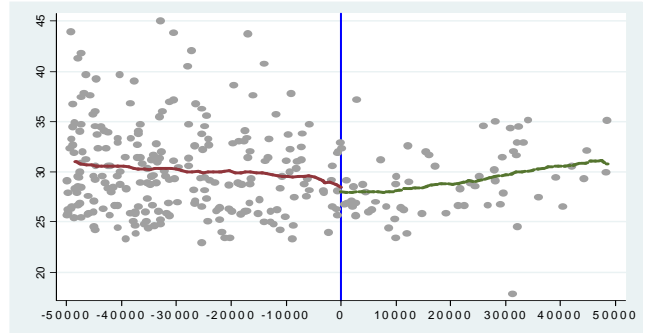


Figure A2: Proportional change of seats between 2000 and 2004

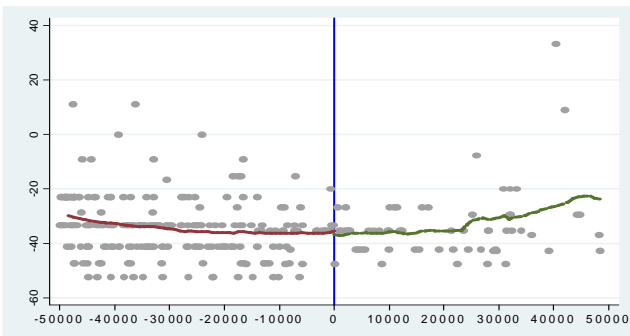


Figure A5: Urbanization rate - 2004

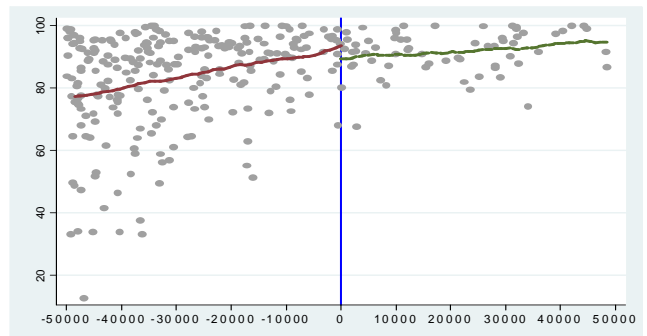


Figure A3: Proportion of elderly - 2004

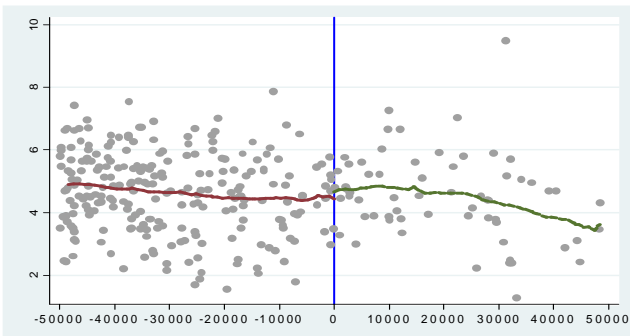


Figure A6: Proportion of elderly - 2000

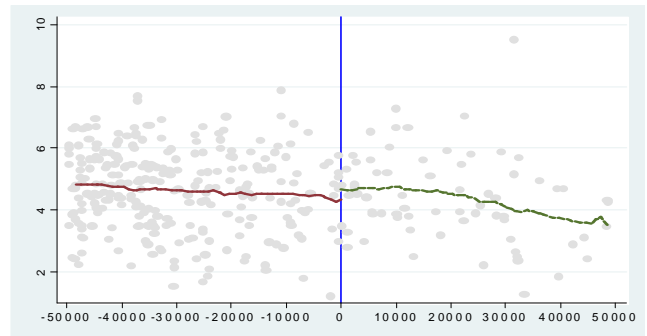


Figure A7: Proportion of young - 2000

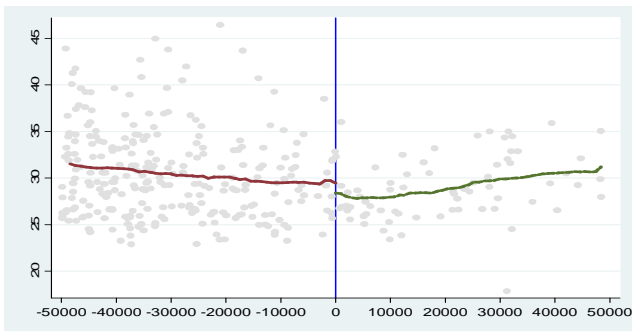


Figure A8: Urbanization rate – 2000

