

Are Incumbents Advantaged? Evidences from Brazilian Municipalities using a Quasi-Experimental Approach¹

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Abstract

This paper examines the incumbency effect on mayoral elections in Brazil since executive officers were allowed the possibility to be reelected for one consecutive term. By adapting the regression discontinuity design of close electoral races to a multi-party system, it shows whether incumbent mayors and parties were advantaged in comparison to their challengers. The causal effects of being in office are estimated with the use of a repeated interaction in between the incumbent and one or more candidates (parties) in consecutive elections. In contrast with the incumbency advantages that have been largely documented for elections in the United States, in Brazil there were significant negative incumbency effects for the elections of 2000 and 2004, indicating that, when there was a strong alternative political force, citizens preferred to penalize incumbents. This phenomenon ceased in the 2008 elections but was not reversed into significantly positive effects.

Keywords: Incumbency Effect, Brazilian Politics, Regression Discontinuity Design, Party Incumbency, Reelection, Local Politics.

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1. Introduction

Every 4 years more than 100 million people in Brazil attend their pooling station to cast a vote in an individual who they prefer to be responsible for running their town. This happens exactly at the same time and follows the same rules throughout the more than 5,000 municipalities. The mayor, who is chosen following a majoritarian system, besides being responsible for education (specially primary education), health, infrastructure, and the management of the municipal budget (both taxation and spending), bargains for discretionary transfers coming from the state and the federal government. Mayors in Brazil enjoy a high visibility with constituents and this executive office is very attractive for successful political careers (Samuels, 2003).

During the 1980s and 1990s, mayors were not allowed to run for reelection since there was a concern that politicians in office would benefit excessively from this position. In 1997, largely as a result of a maneuver to reelect the President at the time, the Federal Congress passed an amendment to the Constitution allowing all individuals in executive offices to seek reelection for one consecutive term. From 2000 onwards, mayors in office could run the subsequent election to continue in office for one additional term.

Most analyses of reelection in Brazil have focused at understanding the strategies of deputies to maintain their seats at the Federal Congress (Leoni, Pereira and Renno, 2004; Pereira and Renno, 2003 and 2007). The issue of the effects of incumbency remains largely understudied because of methodological obstacles generated by the open-list proportional system through which legislators are elected. Incumbency effect can be defined in simple terms as the isolated consequence of being in office while running for reelection. The incumbency status is applicable to both the party and the candidate, and irrespective of their qualities, the partisan affiliation of the candidate, or any other characteristics of the politician that is running for reelection or of her challengers.

An early attempt has been that of Tikiunik (2009), who estimated the incumbency effect on the 2004 mayoral races in Brazil at the party level. In addition of focusing only on 2004, the main result of her paper may be open to criticism: the only three parties she takes into consideration (PFL, PMDB and PSDB) were part of a coalition which had lost the presidential elections two years before. Another issue is that mayoral elections in Brazil are largely centered on the individual candidates. In a parallel development to this work, Brambor and Ceneviva (2011) have recently applied a difference-in-difference approach to analyze the same elections studied here. Their results are compatible to what has been found here and provide a base of comparison.

Inspired by the identification strategy suggested by Lee (2008), I provide estimates of the incumbency effects for mayoral races in Brazil for the elections of 2000, 2004 and 2008. The use of a regression discontinuity design (RDD) in close electoral races allows disentangling the effect of being the incumbent under a relatively weak assumption: in elections decided by a marginal percentage of votes, candidates and their parties are assumed to be unable to manipulate precisely whether they win or lose the election. The analysis, both for candidates and parties, centers on subsequent races that were contended by the incumbent and at least one of the same challengers. This allows surpassing serious identification problems that have long been a concern in the literature on incumbency effects (Gelman and King, 1990) and, at the same time, to perform checks on the continuity of the baseline characteristics that might be behind or endogenous to the effects. Besides adapting RDD to a multi-party context, this paper contributes to the empirical literature on the incumbency effect by providing estimates for executive elections in one of the largest democracies in the world at both the candidate and the party level. By doing so, it allows for a better understanding of the impact of the possibility of reelection in Brazil on the ability of incumbents to remain in office.

The elections of 2000 and 2004 are characterized by negative incumbency effects, that is, incumbents were on average penalized because they were in office, irrespectively of their prior characteristics before entering government. Incumbency lowered the mayors' probability of victory by 18 and 31 percentage points in 2000 and 2004, respectively. Incumbent parties saw their chances of winning a consecutive election decreased by 24 and 30 percentage points correspondingly. These negative incumbency effects disappear in the 2008 elections.

Such findings may be a source of surprise when compared to the largely studied advantages of being the incumbent in the United States and to the anecdotal view on mayors in developing countries using their offices as political "machines" to stay in power. In line with the results presented here, Linden (2003) and Uppal (2009) have provided analogous evidences of negative effects of incumbency for legislative elections in India.

The relationship in between incumbency, accountability and political selection is described in the following section. Section 3 does a systematic examination of mayoral elections in Brazil, focusing on reelection. The research strategy undertaken is described in section 4 while the results of incumbency effects at the candidate and party level together with robustness checks are presented in section 5.

2. Incumbency, Political Selection and Accountability

Citizens use their votes both to sanction the incumbent and to select good policies and politicians. The electorate is not able to perfectly monitor politicians' behavior since they are unsure about the conditions under which policy decisions are taken and may disagree on the relationship between the decisions themselves and the outcomes (Manin, Przeworski and Stokes, 1999). These informational asymmetries in both ways make incumbents uncertain about which policy would please voters.

In executive elections like the ones in Brazilian municipalities, the mayor and his party are likely to be claimed responsible for the decisions undertaken and the policy outcomes. The *accountability* view of elections highlights their role as mechanisms of shaping politicians' incentives while in office and holding them responsible for past actions (Farejohn, 1986; Persson & Tabellini, 2002). Elections are understood as a device for sanctioning or rewarding the incumbent.

Voters have an incentive to follow the performance of the incumbent but are to a degree unable to motivate governments to act on their interests (Farejohn, 1986). The control performed by elections is contingent to a large extent on how much politicians value issues such as putting forward their own preferred policies, staying in office and benefiting from shirk. Once in government, politicians have to decide and implement policies, and that might be costly if a salient issue comes into the agenda. When this happens, they can choose a policy payoff that damages their probability of getting reelected depending on how policy-motivated are they while challengers can be immune from taking decisions (Aragones and Sanches-Pagés, 2010). This suggests that being in office may be costly for politicians when running a future election. On the other hand, politicians who do not participate on the next elections either because they cannot (e.g. term limit), wish to retire or have a high discount value over the future seem not to be threatened by the electoral mechanism. Recent findings demonstrate that in Brazilian municipalities, having the possibility of being reelected actually decreases corruption (Ferraz and Finan, 2011). Mayors in their first-term are less corrupt than those who cannot be reelected because of a term-limit.

An emerging literature emphasizes elections as a *selection* device of politicians by acknowledging that citizens use them to sort among types of politicians (Besley, 2005). Fearon (1999) offers compelling arguments about the importance of the quality of candidates and of their proposals and calls for an understanding of elections as forward-looking voters whose chief aim is to choose the best possible policies and politicians. The selection is affected by the possibility of reelection: if the mayor decides to run again, citizens have to decide in between a candidate who has just been in office and challengers, whose actions and behavior are likely to have been less visible for the constituency at least in the previous

years. Before reelection was allowed, the pool of candidates on which to select from lacked the exact individual who had been selected by citizens in the election 4 years before.

Issues such as why individuals enter the political market and participate on elections are usually captured under models of citizen-candidate (Osborne and Slivinski, 1996; Galasso and Nannicini, 2010). Whether the incumbent has a disproportional advantage or disadvantage affects the incentives to enter politics, run an election and the propensity of a party of launching a candidate. Political selection is also related to incumbency in the sense that if incumbents obtain an excessive advantage over their competitors irrespective of their quality, this might be worrisome for the level of responsiveness to the electorate and the attraction of the most talented people to office. A large positive incumbency effect can influence the quality of elected politicians by promoting inertia and leading to the election of worse politicians than if there were no incumbency effects. If, on the contrary, incumbents are always punished irrespective of the quality of the policies they implement the selection of leaders who put forward the interests of citizens might be at threat. In this context, good incumbents might have a hard time to get reelected, what can result in costs both directly (quality of policies and of newly elected politicians) and in terms of incentives for the future. The reelection of an incumbent politician might for example mitigate adverse selection by allowing voters to choose a mayor from whom they already know what to expect. This would diminish the uncertainty inherent to politicians' behavior in office.

Many policy decisions taken by the incumbent can be contingent on their likeliness to stay in office. Such decisions made by an incumbent policymaker can influence the rewards and the quality of future ones (Caselli and Morelli, 2004, Acemoglu et al., 2010). Low rewards from being in office, for example, might be due to the behavior of the incumbent mayor (e.g. corruption, downgrade the visibility of the office, hiring less able civil servants). In such context, high-quality candidates are likely to be discouraged to run, creating a path dependence of low-quality candidates.

3. Mayoral Elections and Reelection in Brazil

Municipalities in Brazil hold substantial autonomy not only in the decision of important policies (primary education, health, housing, infrastructure and local transportation) but also in taxation and fiscal policy-making (Arretche, 2000)². Since the 1988 Constitution, the power transferred to its 5,564 municipalities has been enhanced (Souza, 2004). By 2000,

² The taxation ability is, nevertheless, relatively concentrated in larger municipalities. In municipalities whose population is below 50,000 inhabitants, revenues from local taxes represent only 6% of the municipalities' budget (Brollo & Nannicini, 2010:18).

municipalities ran 80% of public primary schools and were responsible for 50% of the subnational expenditures in health (Falleti, 2010). Despite being the smallest political-administrative units, municipalities have an independent status in the composition of the federation. There is no equivalent to the county level nor there is a distinction in between cities and towns. Although 87% of Brazilians live in urban areas, the population of the median municipality is relatively small: 10,418 inhabitants³.

Local elections, in which the mayor (*prefeito*) and the members of the city council (*câmara municipal*) are elected, happen simultaneously, every four years. The mayor (together with a vice-mayor) is elected following a single-ballot plurality rule while the council is elected under a one-district proportional system.⁴ Due to electoral laws that incentivize voting, the turnout has been consistently high: since the 2000 elections, more than 85% of all eligible citizens attended the polls to cast a vote on their preferred candidate every 4 years. The voting procedure is conducted through a reliable and user-friendly electronic device in which the voter has to type-in the number of the candidate, confirm the details and picture and ratify the vote⁵.

This study considers the elections of 1996, 2000, 2004 and 2008. Considering the elections altogether, in less than 3% of them a unique candidate received all votes. 49% of the mayoral races were contested by 2 candidates, 30% of the races where competed by 3 candidates, 12% were disputed by 4 candidates and 12% were disputed by 5 candidates or more. The single-ballot plurality rule incentivizes coordination among parties before the elections and also strategic voting by citizens, making the effective numbers of parties participating in executive elections significantly smaller than in those for the city council (Cox, 1997).

There is no intrinsic guarantee in the system that the mayor will have a majority in the City Council. Due to the high party fragmentation in the legislative, in order to get bills approved, the mayor has either to construct a majority, negotiate case-by-case or will be faced with a deadlock. Mayors and parties have, therefore, an incentive to organize coalitions in which the position of vice-mayor and the participation in the future administration are clear bargaining chips. The participation of a party in a coalition generally involves the future appointment of secretaries for the municipalities and increases the nomination of its members for public employment. Candidates running for the office of mayor are also prone to

³ Data used come from sources explained in section 5, unless directly referenced.

⁴ In municipalities in which the electorate is composed of more than 200,000 voters, there can be a runoff between the two most voted candidates if the candidate in the first place does not obtain 50%+1 of the votes. In 2008, for example, only 1.4% of the municipalities could have a runoff (77 out of 5541), what effectively happened only in 30 (0.54% of the total).

⁵ For more details on the voting procedure, see Fujiwara (2010).

build coalitions because of the distribution of time in public-funded campaign advertisement on the radio and television⁶.

A recent survey indicated that more than 20% of the current federal deputies intend to run the next mayoral elections, which will happen in October 2012 (FSP, 2012). Not only becoming a mayor but also participating in the municipal race is important in terms of visibility due to an electoral system in which voters directly choose individuals even in legislative elections (Ames, 2001). Mayors also exert a pivotal role in the relationship with the state and federal level by demanding funds and projects for the municipality. Since competition for both Federal Chamber of Deputies and the State Assemblies happens on a statewide district, running for mayor at a middle-sized city can be decisive on a politician's attempt to become a state, a federal deputy or to become a secretary at the state executive (Ames, 1995).

Over the past decades, one of the main concerns of experts on local politics in Brazil was still that political elites tended to perpetuate in government even with the introduction of democracy (Hagopian, 1996). Differently from when an executive officers tries to be elected for other offices, while running for the same office mayors do not have to face the cost of resigning and of leaving the administration for the vice-mayor. If, on the opposite, a mayor decides to run for state assembly or to the federal chamber of deputies she has to resign six months before those elections, which happen before the middle of the mandate, and cannot reoccupy the post if not elected.

An incumbent mayor in order to run for reelection has either to be nominated from the original party or get support from another one in case she has changed party affiliation at least six months before the municipal elections. The candidacy process involves a strategic calculation that, besides political support and the building of a coalition, includes the ability of that candidacy to collect resources for the campaign⁷. It is possible to distinguish elections among the following: (i) the mayor decided not to run or her party decided not to support her again even if she theoretically could participate, (ii) the incumbent effectively runs for reelection and (iii) the incumbent who has already been reelected faces a term-limit.

The panorama of reelection across municipalities is heterogeneous: a quarter of them has not reelected any mayor at all while 59% of them have reelected one mayor and 16% have reelected two mayors. The proportion of incumbent mayors who ran in the subsequent election has remained relatively stable across the three elections (table 1). Among those who

⁶ The time is determined by the following rule: one-third is equally divided among all candidates and two-thirds are distributed proportionally to the share of seats held by the members of the coalition at the Federal Chamber of Deputies. For the effects of campaign advertising on electoral results in Brazil, see Silveira and Mello (2011). There are, however, limits to this effect on the municipal elections since almost half of the municipalities do not have a local radio station.

⁷ The electoral rules allow for a mixture of public and private contributions. For details on campaign financing, see Portugal and Bugarin (2007).

decided to run for reelection around 58% of the incumbent mayors were successful in 2000 and 2004 while in the 2008 elections, this proportion increased to 69%. Consequently, the proportion of mayors who were able to remain in office has increased from around 37% in 2000 and 2004 to approximately 46% in 2008.

Table 1 - Incumbent Mayors:
Probability of Running for Reelection and Reelection Success

	2000	2004	2008
Proportion of incumbent mayors who decided to run for reelection	64.77% (3,468)	63.46% (2,241)	66.45% (2,882)
Proportion of incumbent mayors who were successfully reelected - among those who ran	57.90% (2,008)	58.01% (1,300)	69.01% (1,989)
Proportion of incumbent mayors who were reelected - among those who were not subject to a term-limit	37.5%	36.82%	45.88%

Source: own calculations based on electoral data from TSE. The numbers in parenthesis in the first row represent the total number of incumbent mayors who decided to run for reelection while in the second row the absolute number of candidates who were successfully reelected.

In a bipartisan system, both parties will probably nominate candidates on the following elections. In a multi-party system like that of Brazil⁸, the strategy of parties might be subject to different arrangements and to a wider set of possibilities. Before every election, each party decides whether to appoint one of its affiliates, formally endorse a candidate from another party or not to endorse anyone. Parties in office do not necessarily back the incumbent mayor for reelection. They may choose to support another candidate who has higher chances of winning or who will be more loyal to the party's interests. Party switching of the incumbent mayor and members of the local government can weaken the party that has won the previous elections. The period before municipal elections is characterized by an intense pre-electoral coordination among parties.

Table 2 demonstrates that in 2000 around two-thirds of the incumbent parties decided to run the consecutive election with an own affiliate. In 2004 and 2008, this proportion has slightly declined to 59%. In comparison to 2004, incumbent parties were more successful in 2000 and especially in 2008, when more than 60% of the ones that decided to rerun were reelected. Overtime, approximately one-third of the municipalities remained governed by the same party on the consecutive term. The general picture of re-electoral success of incumbent mayors and parties demonstrates that in 2008, incumbent mayors and parties were more successful than in previous elections.

⁸ See map in page 34. For more on the characteristics of the Brazilian multi-party system, see Mainwaring (1999).

Table 2 - Incumbent Parties: Probability of Running Again and Reelection Success

	2000	2004	2008
Proportion of incumbent parties that decided to run in the following election	66.53 % (3,591)	58.58 % (3,136)	59.38 % (3,290)
Proportion of incumbent parties that were elected in the following election - among those that ran	55.20 % (1,932)	50.19 % (1,574)	60.82 % (2,001)
Proportion of incumbent parties that won the following election	36.72 %	29.40 %	36.11 %

Source: own calculations based on electoral data from TSE. The numbers in parenthesis on the first row represent the absolute numbers of incumbent parties running in the following election while those on the second row represent the number of parties that were successfully reelected.

4. Econometric Strategy

Most of the literature on the incumbency effect has focused on examining U.S. legislative elections⁹. Incumbent politicians were able to get reelected because of the benefits from being in office (e.g. name recognition, provision of targeted public goods, use of “constituency service” in their favor, benefits from a higher media coverage and higher campaign contributions), because of the higher quality of the incumbents themselves and because of the deterrence of high-quality challengers (Hirano and Snyder, 2009). Executive elections, in which the visibility of individuals is believed to have a significant role, have however been comparatively disregarded by the literature. Studies on U.S. executive officeholders at the state and federal level have reached largely the same results as the ones for legislative offices. During the 1980s and 1990s, the incumbency advantage translated in vote share was in between 7 and 10 percentage points (Ansolabehere, Snyder and Stewart, 2000).

In a multi-party contest like the one in Brazilian municipalities, the margin of victory is the pertinent variable for contenders. The margin of victory $MV_{i,t}$ of a candidate (party) i for the election happening in period t can be defined by¹⁰:

$$MV_{i,t} = \begin{cases} V_{i,t} - V_{W-1,t} & \text{if } V_{i,t} = V_{W,t} \\ V_{i,t} - V_{W,t} & \text{otherwise} \end{cases} \quad (1)$$

⁹ For a review of the literature, see Stonecash (2008). The main papers are: Erikson (1971), Gelman and King (1990), Cox and Katz (1996), and Ansolabehere and Snyder (2000).

¹⁰ The definitions and arguments presented on this section are all directly analogous if, instead of a candidate, applied to the party under consideration. For simplicity, I refer only to candidates for the rest of this section.

where $V_{i,t}$ defines candidate i 's vote share in elections happening in year t , $V_{it,W}$ is the winner's vote share and $V_{it,W-1}$ is the share of votes of the candidate who came in second. The vote share and the margin of victory are both continuous variables¹¹. The rules state that a candidate is elected if her vote share is larger than that of the any other candidate, i.e. if her margin of victory is positive. The incumbency status is therefore defined by having a margin of victory above or below the zero threshold:

$$I_{i,t} = \begin{cases} 1, & \text{if } MV_{i,t} > 0 \\ 0, & \text{if } MV_{i,t} < 0 \end{cases} \quad (2)$$

Incumbency is a clear deterministic function of an observable variable (the candidate's margin of victory). An ideal context on which to measure the incumbency effect on an outcome Y_i in the subsequent elections would be estimate the following quantity:

$$\tau_i = [Y_{i,t+1}|I_{i,t} = 1] - [Y_{i,t+1}|I_{i,t} = 0] \quad (3)$$

where τ_i estimates the true causal effect of being incumbent for candidate i on an outcome in the next elections ($Y_{i,t+1}$). In this case, being an incumbent is analogous to receive a treatment in the literature on causal and treatment effects (Hahn, Todd and Klaauw, 2001). The problem of estimating equation (3) is that no candidate simultaneously wins and loses the election in t so that τ_i is impossible to obtain. Letting $Y_i(1)$ and $Y_i(0)$ be the outcomes for the incumbent and the non-incumbent candidates respectively, the observed outcome can be written as the following:

$$Y_i = (1 - I_i)Y_i(0) + I_i.Y_i(1) \quad (4)$$

Since it is impossible to simultaneously observe $Y_i(0)$ and $Y_i(1)$ for each candidate, a way of estimating the causal effect of incumbency could be to get the average incumbency effect across a sample of candidates (ATE)¹². Logically, it is impossible to observe the outcome of a winning candidate that has not received the treatment by becoming the incumbent. Under a strong assumption of mean independence of $Y_i(0)$, i.e. $E[Y_i(0)|I_i] = E[Y_i(0)]$, an estimate of the ATT would be obtainable. If we assume the mean independence also for $Y_i(1)$, an estimate of the ATE equals the one for the ATT. This would be the case if incumbency status were randomly distributed across the observations. In our context, that would mean randomly selecting among the candidates who becomes the mayor and then measuring the effects of incumbency on the outcomes of the subsequent election. Such randomness is very far from the reality of a democratic system.

¹¹ Because of the lack of a better name, the term margin of victory applies in all situations: in the case of defeat the margin of victory is negative.

¹² To be coherent with the literature on treatment effects the common terminologies are maintained: ATE and ATT.

Issues of selection have been a major challenge to understand the incumbency advantage and to uncover its different sources. Better candidates (e.g. due to charisma, competence, experience) are more likely to become incumbents while weak candidates who won are less likely to run again and strong incumbents are likely to deter the entrance of qualified challengers (Cox and Katz, 1996). Another major problem is how to plausibly measure the quality (or strength) of candidates and avoid an omitted variable bias while estimating the incumbency effect. If there were convincing measures of politicians' quality, a possible strategy would be to model the relationship between quality and incumbency.

If a large set of observable variables (a vector X_i) on the candidate, party and municipality characteristics are available it would be possible to estimate the effect by relying on an assumption of conditional mean independence, that is: $E[Y_i(0)|X_i, I_i] = E[Y_i(0)|X_i]$. Such an assumption is also unreliable to estimate the incumbency effects since most of the variables that explain why a candidate is elected are unobservable or very difficult to measure. For example, the outcome in election $t+1$ depends directly on the candidate's effort while campaigning, and individuals are understandably able to influence whether they receive the treatment or not. If we consider that the outcomes of elections in $t+1$ might depend also on the margin of victory in the preceding election, the dependence among the variables could be represented by the following equation:

$$Y_{i,t+1} = \theta X_i + \beta I_{i,t} + \rho MV_{i,t} + \varepsilon_{i,t+1} \quad (5)$$

An ordinary least squares estimation of (5) would lead to an estimate of the incumbency effect (β) that suffers from omitted variable bias. A clear peril of doing that is the inability to effectively measure the differences in quality between incumbents and challengers. This reason also makes the use of a matching technique (in which selection is based on observables) problematic since the "unconfoundedness" assumption is not maintained. Moreover, the definition of incumbency itself questions the assumption of a common support necessary for matching since it is not possible to observe candidates (parties) who won and candidates who lost at a given level of the margin of victory (Lee and Lemieux, 2010).

Combining the observable characteristics (X_i) with a set of unobservables (Z_i) that are inherent to the candidate, municipality and party nominated her in a vector W_i . Assuming that the covariates present in W_i precede the incumbency status, the components of W_i might be related to both the outcome Y_i and the incumbency I_i . A component of W is, for example, the candidate's previous political experience, which can affect both her performance in elections in t and her probability to win in $t+1$. Nevertheless, the fact that the politician has won in t trivially does not affect her previous political experience. Hence, the

conditional expectation of the outcome Y on the pre-treatment covariates can be represented by the following expression (as in Imbens and Lemieux, 2008):

$$E[Y|W = w] = E[Y|I = 0, W = w].Pr(I = 0|W = w) + E[Y|I = 1, W = w].Pr(I = 1|W = w) \quad (6)$$

A series of other approaches have also been used to identify incumbency effects: redistricting (Ansolabehere, Snyder and Stewart, 2000), multi-member districts (Hirano and Snyder, 2009) and term-limits as instrumental variables (Ansolabehere and Snyder, 2004)

Lee (2008) has proposed an identification strategy based on a sharp regression discontinuity design (RDD) that allows circumventing the dependence of both incumbency and the outcome on unobserved characteristics of candidates and parties. Instead of relying on strong assumptions such as conditional mean independence or on selection on observables, the hypothesis behind his strategy is that in very close elections, individuals, despite being able to influence their vote shares, are unable to precisely manipulate whether they win or lose¹³. That is, near the cutoff ($MV = 0$), both X and Z , determined prior to the assignment, are independent of the incumbency status. This local randomization allows for a “near-experimental” estimate of incumbency effect (Lee, 2008). Despite not being crucial, the context of “nearly mandatory voting” in Brazil suits well this sort of randomization, since the motivations for registration and the attendance to the polls do not play such a bigger role as in elections in which there less strict rules on electoral participation¹⁴.

The incumbency effect can be estimated by the average causal effect at the discontinuity point:

$$\tau_{RD} = E[Y_i(1) - Y_i(0)|MV_{i,t} = 0] = E[Y_i(1)|MV_{i,t} = 0] - E[Y_i(0)|MV_{i,t} = 0] \quad (7)$$

Letting $mv_{i,t}$ represent the actual margin of votes for each individual, in order for (7) to be estimated, the conditional distribution functions of $Y_i(1)$ and $Y_i(0)$ on $MV_{i,t}$ has to be continuous in $mv_{i,t}$ for all outcomes, or, more simply, $E[Y_i(1)|MV_{i,t}]$ and $E[Y_i(0)|MV_{i,t}]$ has to be continuous in $mv_{i,t}$ (Imbens and Lemieux, 2008).

This continuity assumption is considered much weaker than assumptions required by the other identification strategies and applies well to the context of close elections. As a result, all predetermined observable (X_i) and unobservable characteristics (Z_i) will have identical distributions on either side of the cutoff point as we examine smaller neighborhoods to the right and to the left of $MV_{i,t} = 0$. Since there is no points from which the margin of

¹³ For a detailed explanation of the econometric strategy, see section 4. For criticisms of the use of close elections, see Snyder, Folke and Hirano (2011).

¹⁴ For more on the rules of electoral participation and the reliability of the electoral process, see section 3 and Fujiwara (2011).

victory is exactly zero, under these assumptions we can argue that $E[Y_i(1) | MV_{i,t} = 0] = \lim_{mv \downarrow 0} E[Y_{i,t+1} | MV_{i,t} = mv]$ and $E[Y_i(0) | MV_{i,t} = 0] = \lim_{mv \uparrow 0} E[Y_{i,t+1} | MV_{i,t} = mv]$.

Therefore, (7) becomes:

$$\tau_{RD} = \lim_{mv \downarrow 0} E[Y_{i,t+1} | MV_{i,t} = mv] - \lim_{mv \uparrow 0} E[Y_{i,t+1} | MV_{i,t} = mv] \quad (8)$$

where τ_{RD} is a local average treatment effect which represents the incumbency effect. The effect is measured by the difference of two regression functions at the point $MV_{i,t} = 0$. Another advantage of this estimation is that it does not require a particularly strong functional form for these regressions. In order to estimate the regressions on each side of the threshold two different techniques are claimed to be the most correct and adapted to empirical work: a parametric (usually low order polynomial regressions) and a non-parametric (local linear regression) specification. Estimates of incumbency effects using both methods will be presented over the next section for both candidates and party. As suggested by Lee and Lemieux (2010), that helps to verify the robustness of the estimates.

For the purpose of consistency, all estimates based on the parametric specification follow a regression of the outcome on a 4th order polynomial on the margin of victory in each side of the threshold. Similarly to what is done by Lee (2008), they include all observations whose margins of victory are inside the interval $(-25, 25)$, guaranteeing that elections decided by larger margins are not the driving factor of the discontinuities.

Local linear regressions are used because of their attractive bias properties when the estimation point of interest is at the boundary (Imbens and Lemieux, 2006). Local linear regressions are constructed by fitting linear regression functions to the observations within a distance h of the threshold, $MV_{i,t} = 0$, in order to estimate a regression function on both sides of the threshold. It is possible to express the estimated regression functions following Imbens and Kalyanaraman (2009):

$$\widehat{C}_h = \begin{cases} \widehat{C}_+ = \widehat{\alpha}_+(mv), & \text{if } mv_{i,t} > 0 \\ \widehat{C}_- = \widehat{\alpha}_-(mv), & \text{if } mv_{i,t} < 0 \end{cases} \quad (9)$$

where $\widehat{\alpha}_+$ and $\widehat{\alpha}_-$ are obtained by the following expressions:

$$(\widehat{\alpha}_+(mv), \widehat{\beta}_+(mv)) = \underset{\alpha, \beta}{\operatorname{argmin}} \sum_{i=1}^n 1_{MV_i > 0} \cdot [Y_i - \alpha - \beta(MV_i)]^2 \cdot K\left(\frac{MV_i}{h}\right) \quad (10)$$

$$(\widehat{\alpha}_-(mv), \widehat{\beta}_-(mv)) = \underset{\alpha, \beta}{\operatorname{argmin}} \sum_{i=1}^n 1_{MV_i < 0} \cdot [Y_i - \alpha - \beta(MV_i)]^2 \cdot K\left(\frac{MV_i}{h}\right) \quad (11)$$

and K is a kernel density and h , the bandwidth.

A key concern of using such non-parametric estimates is the sensitivity on the choice of bandwidths (i.e. the choice of h) on which these regressions are based. This is the reason why all non-parametric specifications presented in section 5 use the choice of optimal bandwidths proposed by Imbens and Kalyanaraman (2009). This is a fully-data driven

construction that is specifically suited for regression discontinuity design. Using the optimal bandwidth (h^*) equation (12) becomes¹⁵:

$$\widehat{\tau}_{RD} = \lim_{mv \downarrow 0} \widehat{C}_{h^*}(mv) - \lim_{mv \uparrow 0} \widehat{C}_{h^*}(mv) \quad (12)$$

where \widehat{C}_{h^*} are coefficients obtained by the system of equations (9-11) when h^* substitutes h . The RDD estimates using local linear regressions presented below are all based on different estimates of $\widehat{\tau}_{RD}$ for the outcomes Y_i . The results obtained based on this specification are largely consistent with those obtained based on parametric specifications.

A major advantage of RDD is that the assumption of independence or endogeneity of observable covariates relatively to the incumbency status can be tested like in randomized experiments. This is done by testing for discontinuity at the cutoff point using a regression discontinuity design (similarly to what has been done by Bordignon, Nannicini and Tabellini, 2011)), that is, by estimating $\widehat{\tau}_{RD}$ for different covariates.

5. Incumbency Effects in Brazilian Mayoral Elections

Records on all candidates and parties participating in municipal elections from 1996 to 2008 were collected to construct two different databases, encompassing 42,987 candidates and 37,806 observations at the party level. Data for the Brazilian municipal elections from 1996 to 2008 was obtained from the archives of the Federal Electoral Court (*Tribunal Superior Eleitoral* - TSE in the Portuguese acronym), which contains complete results of each of election: the municipality, names of the candidates, their party affiliation, number of votes obtained by each of the candidates, and their final status (e.g. elected, not elected). Voting records coming from elections at the state and federal level are also incorporated in addition to a set of municipal characteristics, which come from data obtained from national Census and from *Perfil* (a survey which contains detailed institutional data on municipalities)¹⁶.

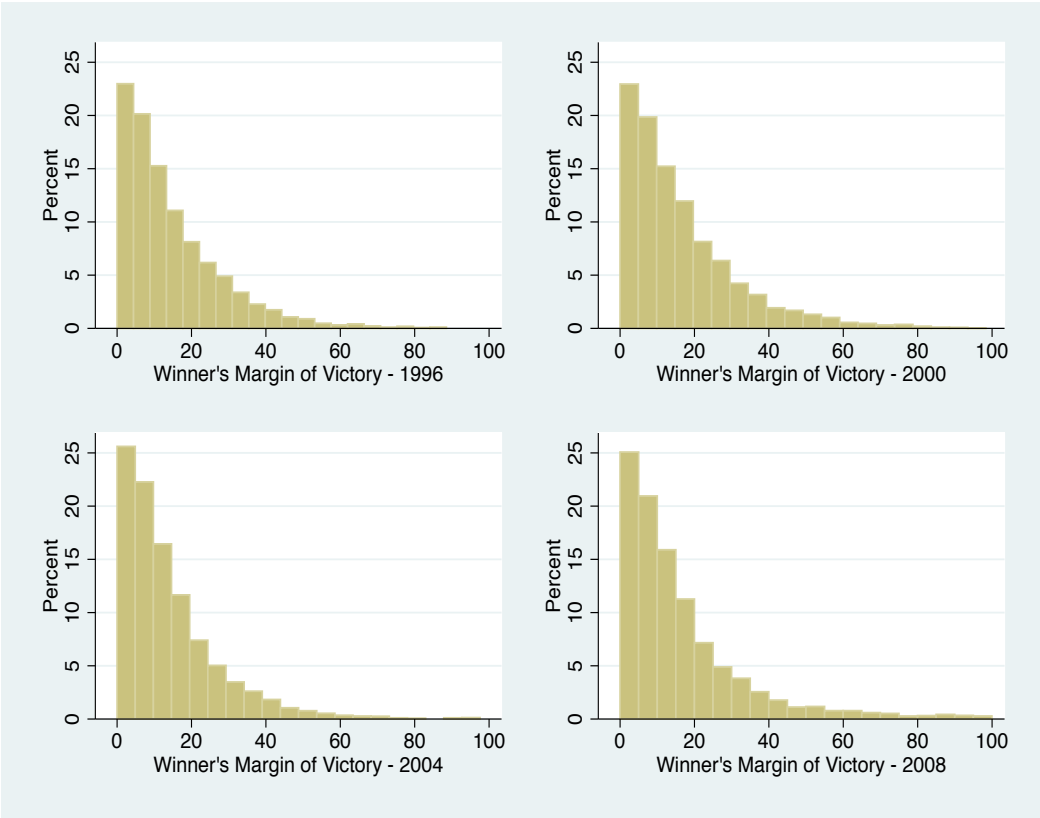
The external validity of the analysis is supported by the fact that close elections characterize a large proportion of the municipal elections in Brazil. Figure 1 demonstrates that from 1996 to 2008, approximately two-thirds of elections were decided by less than 20% of the votes. A much lower fraction of races were decided by more than 40%. In order to implement a RDD to estimate incumbency effects, a careful consideration of the sample is necessary. Lee (2008:685), while explaining why he focuses only on party incumbency

¹⁵ For the exact formula used for the optimal bandwidth is obtained, see equation 4.9 in Imbens and Kalyanaraman (2009). It is not presented here to avoid another investment in notation.

¹⁶ These government databases have a strong reputation for completion and accuracy, and are the standard sources for quantitative analysis of Brazilian politics and economics.

effects, has argued that estimating the incumbency effect for at the individual level is problematic due to a selective drop-out since incumbent candidates are not required to participate of the next elections. Table 1 (section 3) indicates that a significant proportion of incumbent candidates choose not to run or are not nominated by their parties to run again. To take this into consideration, the incumbency effect is estimated for elections in which the winner and at least one of the losers at election in t face each other again in the following election. By using repeated candidates and parties on estimating the effect of incumbency, it is possible enhance the control over differences that are inherent to the candidates such as their quality¹⁷. These sample corrections expand the internal validity of my estimates. I have also performed the same exercises for a larger sample, that is, all candidates who have run in two consecutive elections. A similar strategy has been used by Uppal (2009) to measure candidate incumbency effects in India. The results under this broader sample are compatible and similar to what has been obtained under the more restrictive sample on which the results presented here are based¹⁸.

Figure 1 - The Prevalence of Close Races



Source: own calculations for all mayoral races based on electoral data from TSE.

¹⁷ For more on the reasons to use repeated candidates and parties, see Levitt (1994).

¹⁸ I would be glad to provide results upon request.

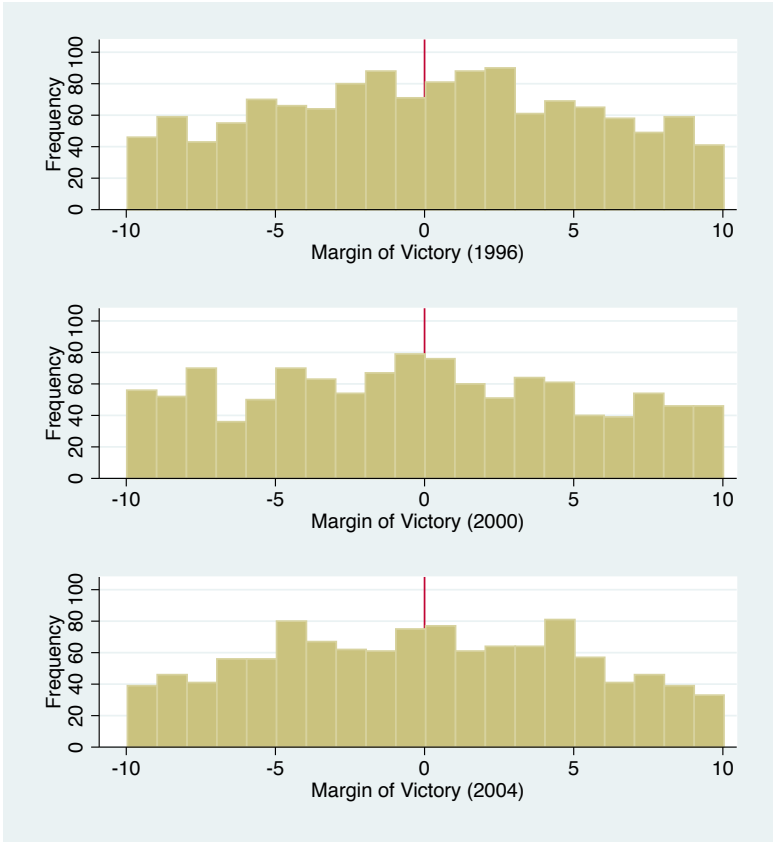
The selective dropout phenomena suggested above claims that candidates who have won are more likely to run again on the next elections than otherwise. Because the conditions pointed out in section 4 hold, it is feasible to apply a regression discontinuity design and see what is the effect of becoming an incumbent on the probability to re-run. Even though on average candidates who have won have a higher probability of running the next election, such propensity cannot be attributed to incumbency (table 3).

Table 3 - The Impact of Incumbency on the Probability of Rerunning, RDD estimates

Election Year	2000	2004	2008
Impact of Incumbency on the Probability of Running	0.062 (0.063)	0.048 (0.061)	0.006 (0.063)
Bandwidth	2.148	2.725	2.279
Observations	14,950	12,748	13,919

Source: own calculations based on electoral data from TSE. Results for RDD estimates are obtained through local linear regressions using all observations and optimal bandwidths specified in section 4. Robust standard errors are in parenthesis. Significance at the 10% level is represented by *, at the 5% level by ** and at the 1% level by ***.

Figure 2 - Histogram of Close Races



Source: own calculations based on electoral data from TSE. Only candidates whose margin of victory is greater than -10% and smaller than 10% are represented. The bin is the same for all graphs: one percentage point.

A preliminary check on the validity of our sampling strategies is to inspect the distribution of the margin of votes around the zero thresholds. This allows testing the basic assumption that candidates are unable to influence races decided at the margin. The importance of doing such inspection was emphasized in McCrary (2008). A visual inspection on the distribution tells that even though candidates have incentives to be on the right-hand side of the distribution, i.e. to win the election, they are not able to manipulate their margin of victory. We can therefore rule-out clear electoral manipulation of votes close to the thresholds.

5.1 Candidate Incumbency Effects

In candidate-centric elections such as the ones in Brazil, an “individual” effect is likely to be the most important component of the incumbency effect. Table 4 suggests that, conditional on rerunning, candidates who were elected in 1996, 2000 and 2004 have obtained a higher margin of victory and have a higher probability of victory in the subsequent election. In 2000, incumbents are 14% more likely to be elected than non-incumbents and their margin of victory is approximately 11 percentage points higher. That is consistent with the belief that candidates who were elected are likely to be of a better quality (e.g. political ability, have more political connections, belong to bigger parties). The picture is reversed if we look at candidates who have won or lost by smaller margins. Both in 2000 and 2004, at the 5% and at the 1% margin, a candidate who has won the previous elections gets fewer votes in comparison to challengers and a reduced probability of winning the subsequent election.

Table 4 - Comparison of Means Between Incumbents and Challengers

	All	Margin <25%	Margin <5%	Margin <1%
Margin of Victory in 2000 (%)	10.895*** (0.666)	4.091*** (0.666)	-1.781** (1.089)	-9.249*** (2.246)
Probability of Winning in 2000	0.140*** (0.014)	0.039*** (0.016)	-0.085*** (0.027)	-0.482*** (.066)
Observations	5,340	4,342	1,426	271
Margin of Victory in 2004 (%)	8.602*** (0.608)	2.205*** (0.605)	-5.064*** (0.995)	-6.781*** (2.157)
Probability of Winning in 2004	0.153*** (0.021)	0.063*** (0.023)	-0.103*** (0.039)	-0.168*** (0.080)
Observations	4,942	3,979	1,247	273
Margin of Victory in 2008 (%)	17.943*** (0.676)	11.415*** (0.683)	4.750*** (1.101)	-2.38 (2.243)
Probability of Winning in 2008	0.284*** (0.013)	0.203*** (0.015)	0.056** (0.027)	0.019 (0.057)
Observations	4,886	4,075	1,396	297

Source: own calculations based on electoral data from TSE. All comparisons are conditional on running again. |Margin| refers to the modulus of margin of victory in the previous election. Significance at the 10% level is represented by *, at the 5% level by ** and at the 1% level by *** for two-sided tests.

Table 4 also suggests that the 2008 elections display different features. Incumbents obtained a significantly higher margin of victory than their challengers: almost 18 percentage points. For candidates whose modulus of margin of victory was less than 5%, the signs are now reversed, meaning that incumbents had a higher margin of victory and probability of winning in comparison to challengers. Nonetheless, in 2008 the difference at the 1% modulus of margin of victory is not statistically significant. The observable and unobservable differences in between the candidates at who have high shares of vote tend to be larger than in those elections decided by a small margin of victory.

Following the econometric strategy described in section 4, table 5 provides evidences that in the elections in 2000 and 2004, there are negative causal effects of incumbency on margin of victory, vote share and probability of victory. Incumbency has decreased by approximately 18 and 31 percentage points the probability of victory in 2000 and 2004, respectively. Incumbency also reduces margin of victory by 8.5 percentage points in 2000 and 6 percentage points in 2004. The impact on the candidates' vote share is 5.2 (2000) and -3.5 (2004) percentage points. In 2008, however, this negative effect of incumbency disappears. These results are in line to that obtained in a completely different identification strategy by Brambor and Ceneviva (2011). They also find negative effects of incumbency on vote shares and probabilities of victory in 2000 and 2004.

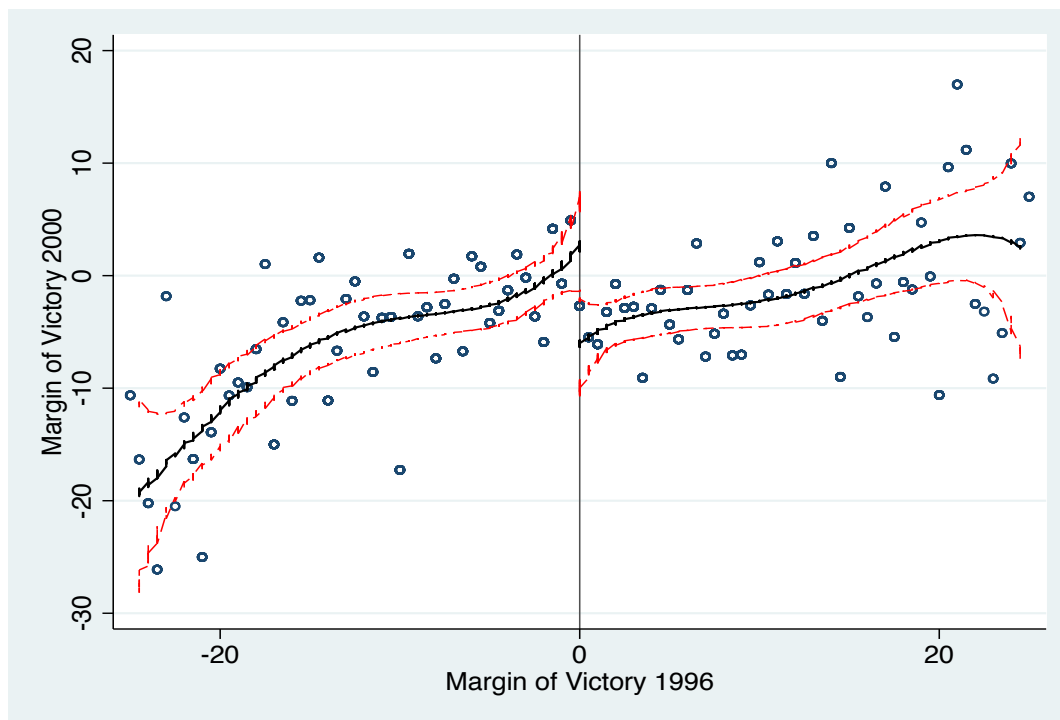
Table 5 - The Impact of Candidate Incumbency on Margin of Victory, Vote Share and Probability of Victory, RDD Estimates

	2000	2004	2008
Margin of Victory	-8.505*** (2.325)	-6.036*** (2.257)	3.390 (2.698)
Vote Share	-5.210*** (1.709)	-3.526*** (1.643)	1.860 (1.779)
Probability of Winning	-0.184* (0.096)	-0.309*** (0.114)	0.183* (0.106)
Observations	2,361	2,266	2,104

Source: own calculations based on electoral data from TSE. Margins of victory are in percentage points while the probability of victory ranges from 0 to 1. The results are obtained under a local linear regression using the optimal bandwidths technique as in Imbens and Kalyanaraman (2009). Robust standard errors are in parenthesis. Significance at the 10% level is represented by *, at the 5% level by ** and at the 1% level by ***.

Figure 4 (below) demonstrates the impact of incumbency on the margin of victory in 2000 under a parametric specification. It can be easily noticed that incumbents (right-hand side of the zero threshold) who had won by a low margin in 1996, had smaller margins of victory than their opponents in 2000.

Figure 3 - Incumbency Effect on the Margin of Victory in 2000



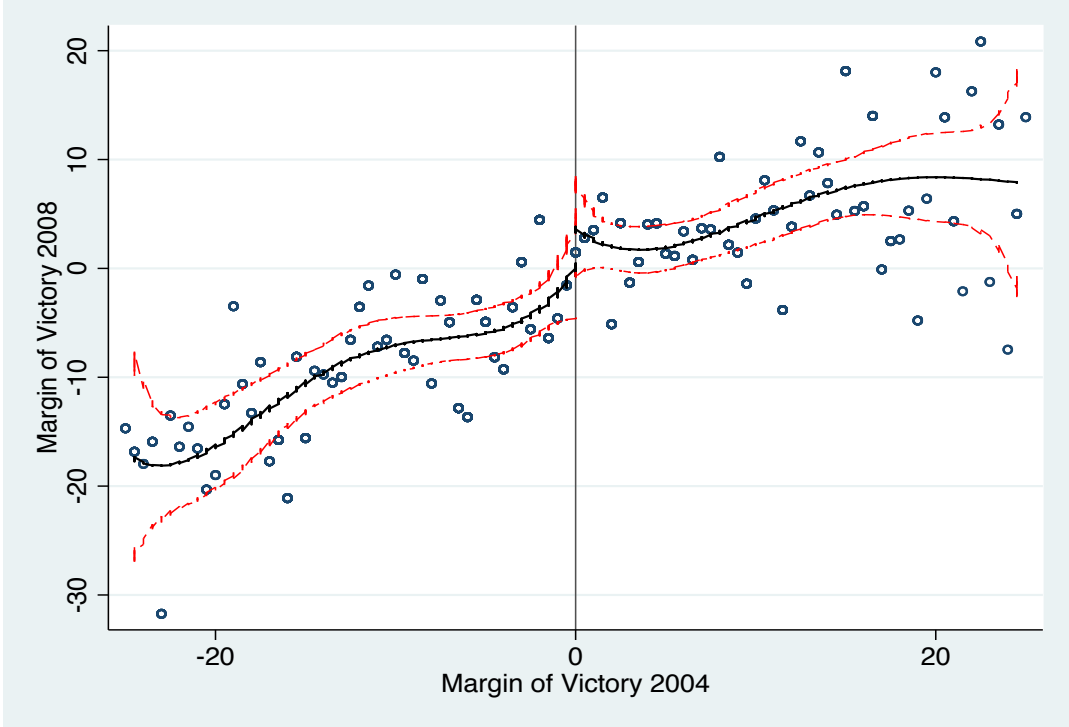
Source: own calculations based on electoral data from TSE. The points are local averages taken over a 0.5% interval of the margin of victory. The black lines are fitted values of 4th-order polynomial regressions in each side of the threshold. The red (dashed) lines represent confidence intervals for the fitted values calculated at the 95% level.

Because of the econometric strategy, these results hold especially for close races. Estimating incumbency effects on close races if anything would tend to bias the incumbency upwards since according to Hirano and Snyder (2009), incumbents tend to exert more effort instead of less when faced with more electoral competition. Brollo and Nannicini (2010) have demonstrated that the federal government “ties the hands” of competitors in municipalities where the mayor belongs to the president’s coalition and has won by a close margin. Following the same logic, incumbents (both candidate and party) tend to work more and use more the advantages from being in office (e.g. public employment, marketing of the administration) to try to get reelected. The findings suggested by Boas and Hidalgo (2012) would also bias incumbency effect upwards: incumbent mayors are more successful in getting a license for a community radio and how having a radio station affects positively their prospects in the next elections. When faced with stiff competition, they would have greater incentives to use them.

The results concerning the election of 2008 suggest that this election was disputed in a different scenario, in which incumbent mayors were more likely to be reelected (see table 1, above). Figure 4 confirms the disappearance of the negative incumbency effect in 2008. This probably has to do with a period of optimism and economic growth after 2005. According to my calculations based on data from IBGE: for mayors who were elected in

1996, the country’s mean yearly economic growth was 0.62%, for those who were elected in 2000 was 2.19% while for those who were elected in 2004 it was 4.46%. Despite such higher levels of growth, mayors in that period were not able to benefit substantially from it, that is, the incumbency disadvantage did not turn into an advantage. Even though it is a subject that requires further investigation, wellbeing seems to be the driving force making citizens stop punishing incumbent politicians.

Figure 4 - Incumbency Effect on the Margin of Victory in 2008



Source: own calculations based on electoral data from TSE. The points are local averages are taken over a 0.5% interval of the margin of victory. The black lines are fitted values of 4th-order polynomials regressions in each side of the threshold. The red (dashed) lines represent confidence intervals for the fitted values calculated at the 95% level.

To check the consistency of the results, continuity checks for different variables are performed. Continuities on the predetermined characteristics mean that candidates just above and just below the threshold are similar, and therefore, comparable. Voters may reward or punish politicians based on their previous political experiences. In the literature on the incumbency advantage in the United States, it is commonly argued that the deterrence of challengers who have experiences at prominent political offices explains part of the advantages (Cox and Katz, 1996). To test whether characteristics differ across candidates, two variables that describe the candidate’s political experience are created: (1) how many terms a candidate has served either as a state or as a federal deputy before the elections, and (2) how many times a candidate has served as a city councilor. While (1) measures the visibility of the candidate at a higher political level, (2) serves to test whether being an

“insider” in the local political market differentiates the barely winners and barely losers. Table 6 suggests that there are no significant discontinuities, implying that incumbency results are not likely to be driven by differences in experiences neither at higher levels nor at the municipal level.

I also perform checks on the party membership of the candidates (proportion of candidates belonging to that party). For conciseness, I report the results for the five biggest parties¹⁹. There are continuities for the vast majority of cases. The exception is the probability of affiliation to the PT in the 1996 election, which is more common for candidates above the threshold.

The affiliation to the president’s party can also exert an important role in the election of mayors (Brollo and Nannicini, 2010). A variable on membership to the president’s party is not constructed since the variables of belonging to PSDB in 1996 and 2000 and of belonging to PT in 2004 reflect that impact directly. Coefficients in table 6 reject the existence of a discontinuity. The impact of belonging to the governor’s party are also likely to be an important factor in municipal elections since the governor is the most prominent political figure in each of the 26 states. The estimate for the variable *Governor’s Party* is negative for the elections of 1996 and 2000 at a 10% level of significance. This suggests that membership to party’s governor is likely to be endogenous to the incumbency effect. Interestingly, it shows that candidates who barely won the elections were less likely to be affiliated with the governor’s party, suggesting a form of “punishment” also for the state government in those elections.

In addition to party affiliation, variables that define important characteristics of elections were constructed. Electoral turnout and number of candidates are considered in many cases to be a major determinant of electoral results. To account for characteristics of the municipality in which the election takes place: variables on economic development, economic inequality, poverty, illiteracy, region of the country and the existence of a local radio station are also tested. Besides the possible use of the media to influence close elections, the last variable captures the effect of having an official political campaign on the radio. None of these municipal characteristics present discontinuities at the threshold.

The results displayed in table 6 strengthen the results on incumbency effect by showing that incumbents who have barely won and challengers who barely lost do not differ across other observable characteristics and neither are the characteristics of the municipalities or the elections discontinuous.

¹⁹ Tests for all 10 biggest parties were performed and demonstrated continuities across different party membership for all elections. A complete table can be provided upon request.

Table 6 - Potentially Endogenous Variables - Candidates, Party, Election and Municipal Characteristics, RDD Estimates

	1996	2000	2004
Number of Mandates as Federal or State Deputy	0.015 (0.014)	-0.058 (0.041)	0.030 (0.034)
Number of Mandates as City Councilor	n/a	0.035 (0.047)	-0.068 (0.116)
PMDB	-0.214 (0.096)	0.105 (0.123)	-0.167 (0.067)
PSDB	0.017 (0.080)	0.154 (0.136)	-0.068 (0.086)
PPB/PP	0.095 (0.064)	-0.133 (0.103)	0.066 (0.151)
PT	0.067** (0.038)	0.013 (0.015)	0.059 (0.082)
PFL/DEM	0.128 (0.087)	-0.135 (0.103)	-.042 (.125)
Governor's Party	-0.173* (0.104)	-0.143* (0.086)	-0.001 (0.090)
Number of Candidates in Election t	0.034 (0.228)	-0.051 (0.220)	0.079 (0.174)
Electoral Turnout in Election t	0.003 (0.020)	0.006 (0.020)	-0.003 (0.012)
GDP per Capita	0.037 (10.350)	0.456 (10.425)	-1.362 (10.716)
Poverty Level	-0.690 (2.369)	-1.050 (2.631)	0.447 (2.410)
Income Inequality	0.001 (0.017)	-0.005 (0.018)	0.012 (0.014)
Illiteracy Rate	-0.726 (1.714)	-0.921 (1.697)	-0.141 (1.634)
Local Radio	0.036 (0.091)	0.037 (0.105)	0.040 (0.118)
South	0.024 (0.071)	0.050 (0.089)	0.023 (0.090)
Center-West	-0.009 (0.043)	-0.015 (0.057)	0.000 (0.051)
Northeast	-0.037 (0.096)	-0.042 (0.106)	0.034 (.100)
North	-0.004 (0.052)	0.017 (0.076)	0.019 (0.062)
Observations	2,361	2,266	2,104

Source: own calculations. For sources of data see section 5.1. These results are obtained under a local linear regression using the optimal bandwidths technique as in Imbens and Kalyanaraman (2009). Robust standard errors are in parenthesis. Significance at the 10% level is represented by *, at the 5% level by ** and at the 1% level by ***.

I also perform a specification test based on the impossibility of an election in the subsequent period to affect the election in the previous period and aims at testing the strength of the identification strategy²⁰.

Figure 5 - Continuity check - Incumbency Effects in Election at t-1



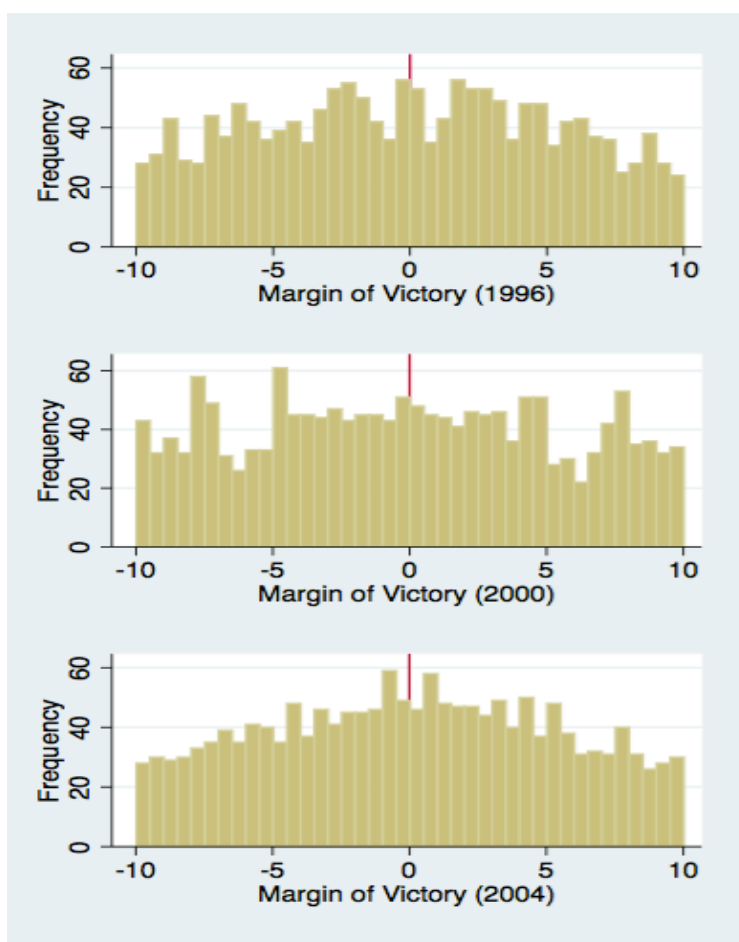
Source: own calculations based on electoral data from TSE. The points are local averages are taken over a 0.5% interval of the margin of victory. The black lines are fitted values of 4th-order polynomials regressions in each side of the threshold. The red (dashed) lines represent confidence intervals for the fitted values calculated at the 95% level.

5.2. Party Incumbency Effects

Disentangling the party incumbency effect from individual incumbency is a challenging task (Ansolabehere, Snyder and Stewart, 2000). Even though the presence of party switching and the possibility of choosing a different party affiliate to run would provide ways to examining in Brazil, that would require data on the change in affiliation by the mayors and other data that is not available (e.g. how parties choose candidates). The goal here is to estimate the impact that being the party in government has had in the subsequent election.

²⁰ The same test is performed by Lee (2008) and Uppal (2009 and 2010).

Figure 6 - Histograms of Party's Margin of Victory



Source: own calculations based on electoral data from TSE. The bin is the same for all graphs: 0.5%. Only candidates whose margin of victory is greater than -10% and smaller than 10% are represented.

The unit of observation is a party at each municipality. Similar to what has been done for candidates, the sample encompasses only parties that have run against each other in a situation that at least one of them was the incumbent party. The same econometric strategy described in section 4 is applied. Table 2 (section 3) suggests that a relatively high percentage of incumbent parties chose not to run the subsequent elections. As for candidates, in order to have valid estimates of party incumbency effect, we need to demonstrate that parties are not able to manipulate whether they win or lose an election when it is decided by a close margin. The histograms in Figure 6 shows this seems to be the case since frequency of parties is not concentrated on the upper side of the threshold.

Table 7 shows the impact of party incumbency in electoral results. In 2000 and 2004, voters punished the parties in office while in 2008 there was no penalty for holding office. The estimates show that incumbency caused a decrease in approximately 6.3 (2000) and 6.5 (2004) percentage points, diminishing the probability of reelection of the incumbent parties by

24 percentage points in 2000 and by 30 percentage points. The results for 2008 suggest that incumbent parties were not punished neither rewarded for being in office.

Comparing those results across different countries is problematic because of the various attachment levels among parties and citizens and the specificities of their importance for elections. However, the magnitude of party incumbency effects in Brazil over the elections into consideration is not dissonant from what has been found for other contexts. Party incumbency in elections for the U.S. House of Representatives and in State Legislatures increases the probability of victory by 45 and 30 percentage points, respectively (Lee, 2008; Uppal, 2010). Elections for Indian State Assemblies after 1991 were affected by a negative effect of 22 percentage points (Uppal, 2009).

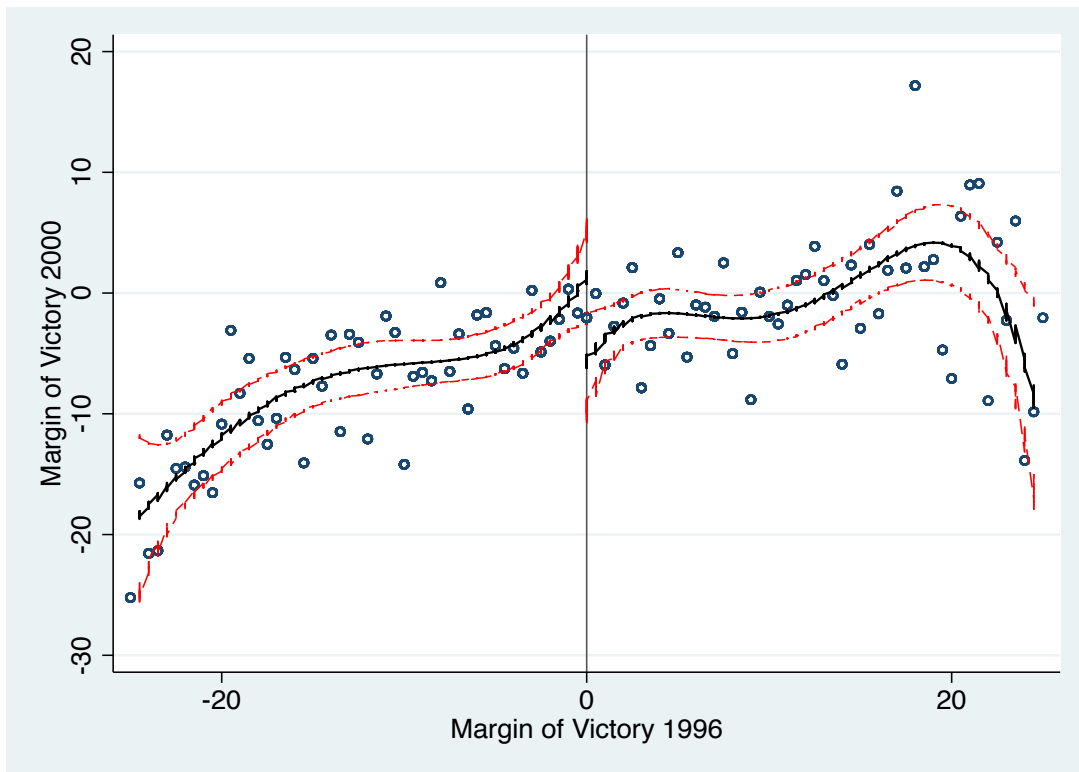
Table 7 - The Impact of Party Incumbency on Electoral Results,
RDD Estimates

	2000	2004	2008
Party's Margin of Victory	-6.294*** (2.424)	-6.499*** (2.065)	-0.363 (2.055)
Party's Probability of Victory	-0.243*** (0.100)	-0.304*** (0.107)	-0.121 (0.091)
Observations	3,847	4,025	3,402

Source: own calculations based on electoral data from TSE. These results are obtained under a local linear regression using the optimal bandwidths technique as in Imbens and Kalyanaraman (2009). Robust standard errors are in parenthesis. Significance at the 10% level is represented by *, at the 5% level by ** and at the 1% level by ***.

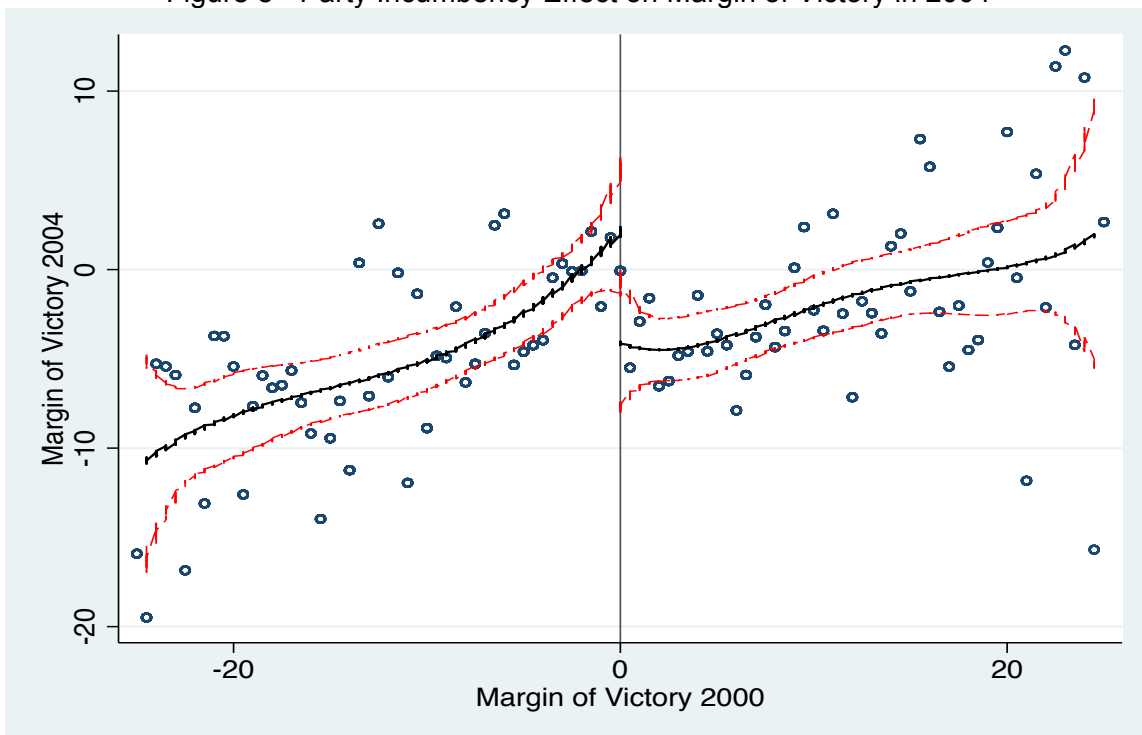
The negative effect of party incumbency in the 2000 and 2004 elections can be also demonstrated in figures 7 and 8, which contain a RDD with a 4th-order degree polynomial regression on each side of the threshold. Figure 9 reveals the continuity observed in 2008 and the inexistence of a significant party incumbency effect in that election.

Figure 7 - Party Incumbency Effect on Margin of Victory in 2000



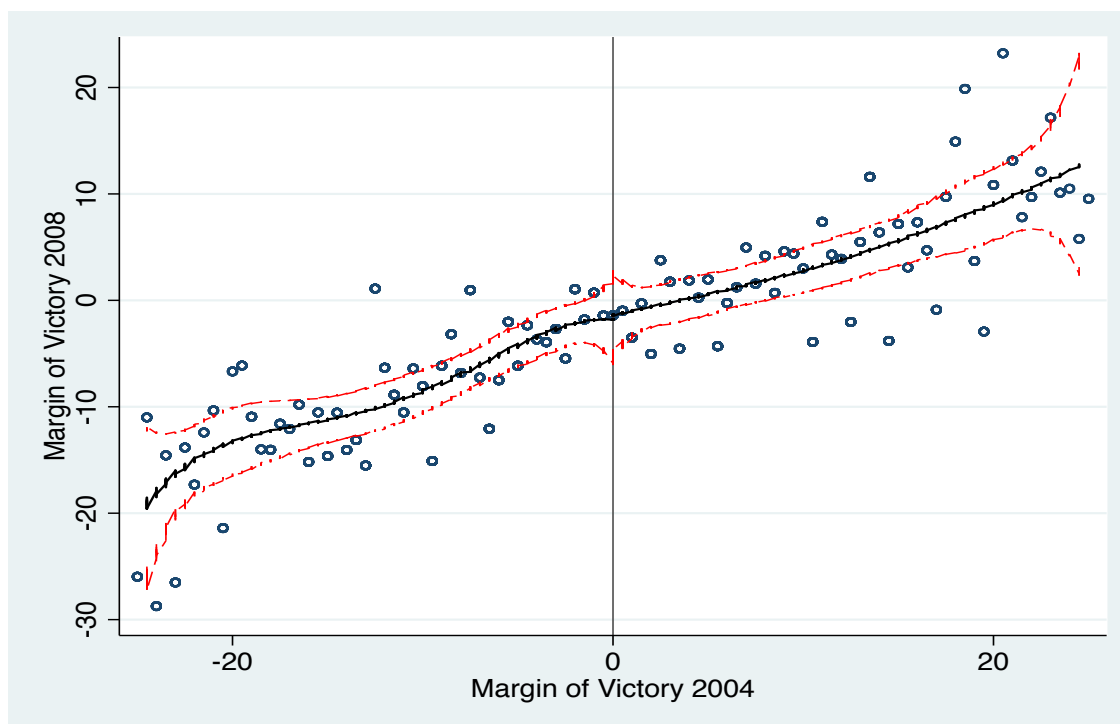
Source: own calculations based on electoral data from TSE. The points are local averages are taken over a 0.5% interval of the margin of victory. The black lines are fitted values of 4th-order polynomials regressions in each side of the threshold. The red (dashed) lines represent confidence intervals for the fitted values calculated at the 95% level.

Figure 8 - Party Incumbency Effect on Margin of Victory in 2004



Source: same as figure 7.

Figure 9 - Party Incumbency Effect on Margin of Victory in 2008



Source: same as figure 7.

Similarly to what has been done for candidates, to check the reliability of such estimates of party incumbency effect, table 8 contains a specification test. With the exception of the effect on the party's probability of victory in 2004, which nevertheless is significant only at the 10% confidence level, incumbency does not affect the results of previous elections.

Table 8 - Control Test for Party, RDD Estimates

	2000	2004	2008
Party's Margin of Victory in t-1	-1.578 (2.401)	-0.677 (2.043)	-1.656 (2.821)
Party's Probability of Victory in t-1	-0.062 (0.106)	0.019 (0.102)	-0.237* (0.124)
Observations	3,847	4,025	3,402

Source: own calculations based on electoral data from TSE. These results are obtained under a local linear regression using the optimal bandwidths technique as in Imbens and Kalyanaraman (2009). Robust standard errors are in parenthesis. Significance at the 10% level is represented by *, at the 5% level by ** and at the 1% level by ***.

Table 9 comprises continuity checks on the characteristics of the parties and municipalities in which the respective party has ran the elections. To measure for possible discontinuities, two variables were created to define whether the party is the same as the

president's and the governor's in office when the municipal election takes place. The RDD estimates shows that the variable *Governor's party* in 1996 is discontinuous at a 5% confidence level. Parties that barely lost in 1996 were more likely to be the same as the Governor's. Also in this case, it seems that voters tend use elections to punish parties in office at both the municipal and the state level. The variable *President's Party* is continuous across the zero threshold, and so are all variables on municipalities' and election characteristics.

Table 9 - Potentially Endogenous Variables - Party and Municipal Characteristics, RDD Estimates

	1996	2000	2004
Governor's Party	-0.140** (0.070)	-0.195 (0.137)	-0.040 (0.171)
President's Party	-0.060 (0.065)	0.000 (0.110)	0.010 (0.148)
Number of Candidates	-0.040 (0.187)	0.299 (0.341)	0.157 (0.309)
Electoral Turnout (%)	-0.009 (.017)	0.003 (0.025)	-0.033 (0.024)
GDP per capita	-4.910 (7.627)	5.373 (13.100)	3.374 (17.410)
Income Inequality (Gini Coefficient)	0.005 (0.012)	0.002 (0.020)	0.022 (0.026)
Poverty Level (%)	1.050 (1.756)	-1.284 (2.707)	-0.296 (3.593)
Illiteracy Rate (%)	0.196 (1.295)	-0.936 (1.914)	-0.092 (2.211)
Local Radio	0.025 (0.081)	0.084 (0.154)	0.080 (0.183)
South	0.024 (0.076)	-0.036 (0.147)	-0.140 (0.186)
Center-West	0.001 (0.042)	0.001 (0.088)	0.014 (0.137)
Northeast	-0.052 (0.081)	-0.052 (0.125)	0.007 (0.037)
North	0.060 (0.047)	-0.037 (0.039)	0.055 (0.200)
Total Population	880.475 (3248.119)	6166.99 (5477.385)	-348.760 (8108.27)
Observations	3,847	4,025	3,402

Source: see section 5.1. All results are obtained under a local linear regression using the optimal bandwidths technique as in Imbens and Kalyanaraman (2009). Robust standard errors are in parenthesis. Significance at the 10% level is represented by *, at the 5% level by ** and at the 1% level by ***.

The party incumbency effect may differ if the party decides to keep the same candidate or to change the candidate that represents the party in the next election. A strategy to avoid the negative incumbency effect at the candidate level would be to anticipate it and nominate another candidate instead of the incumbent mayor. To understand whether the party is likely to reverse a negative incumbency effect by selecting another candidate, the sample of parties were divided between those that nominate the same candidate consecutively and those that nominate a different one. Even though we are unable to provide further checks on the parties' strategy, they were unable to reverse the negative incumbency present in 2000 and 2004 by changing the nominated candidate. For these elections, the coefficients in table 10 are similar to the one in table 8, which contains the general results on party incumbency, demonstrating that whether the party runs with the incumbent mayor runs or not, the incumbency disadvantage is unchanged.

The negative incumbency results for 2008 suggest that in that election it was not advantageous to run with a different candidate. Parties that did so were not able to benefit from the “neutralization” of the incumbency disadvantage particular to the 2008 elections. Parties that, on the other hand, endorsed the incumbent mayor, were not punished.

Table 10 - The Impact of Party Incumbency on Electoral Results depending on the candidates who run, RDD Estimates

	2000	2004	2008
A. Party Runs the Subsequent Election With a Different Candidate			
Party's Margin of Victory	-7.250** (3.591)	-6.930** (3.139)	-6.363* (3.384)
Party's Probability of Victory	-0.329** (0.147)	-0.189 (0.152)	-0.385*** (0.122)
Observations	1,958	2,042	1,654
B. Party Runs Subsequent Election With the Same Candidate			
Party's Margin of Victory	-7.226*** (2.626)	-5.106** (2.540)	3.060 (2.482)
Party's Probability of Victory	-0.186* (0.112)	-0.312** (0.125)	0.018 (0.112)
Observations	1,889	1,983	1,748

Source: own calculations based on electoral data from TSE. These results are obtained under a local linear regression using the optimal bandwidths technique as in Imbens and Kalyanaraman (2009). Robust standard errors are in parenthesis. Significance at the 10% level is represented by *, at the 5% level by ** and at the 1% level by ***.

6. Conclusion

Being in office was a condition that lowered the electoral chances of candidates and parties in the 2000 and 2004 municipal elections. The magnitude of the effects was significant. In 2008, when standards of living were quickly improving, citizens stopped penalizing incumbents. These results hold across different specifications and are unlikely to be driven by any other factor that are not endogenously correlated with incumbency.

This study corroborates the findings of individual incumbency effects obtained by Boas and Ceniviva (2011) though a difference-in-difference approach and extends the analysis of the party incumbency. The hypothesis suggested by Titiunik (2009) of negative incumbency effect for a few parties level for the elections in 2004 where present not only in 2004 while analyzing all parties but also in the preceding elections (2000). I demonstrate that even if parties change the candidate, they cannot avoid the “penalty” related to being in office.

The identification strategy under a regression discontinuity design for close races suits well the elections in Brazilian municipalities, which are commonly decided by relatively small margins of victory. By considering candidates and parties who ran repeatedly against each other (and also by adding a condition that one of the candidates - or parties - runs the subsequent as the incumbent) it is possible to control and test for a series of covariates that differentiate the competitors so that the internal validity of the examination of incumbency is strengthened. Besides that, the setting of this study does not suffer from some of the obstacles present in other countries (e.g. decennial redistricting and differences in electoral rules).

A major limitation, which still has to be dealt with by the literature on the incumbency effect, is how to disentangle the share of the effect that is due to the individual in office, the share that citizens attribute to parties and the combination of the two. By analyzing the incumbency effects both at the candidate and party level in the Brazilian municipalities, it becomes clear why understanding those interactions is important.

Reelection for one-consecutive term in might help voters to punish low-quality types and maintain high-quality mayors. On the other hand, if politicians and their parties are able to use office and get re-elected independently of their performance, this might have negative impacts on policies and the populations' wellbeing. The incumbency disadvantage can also distort incentives making the life of high quality politicians harder but can, on the other hand, motivate politicians to please voters so as to have a chance of surpassing the obstacles in order to be reelected. The negative incumbency effects on the first elections happening after the introduction of the possibility of re-election in Brazil indicate that, contrary to most

concerns of “entrenchment of power”, it has not granted incumbents a significant advantage over challengers. The inexistence of a negative incumbency effect in 2008 suggests that mayoral elections in that year were different. What is unclear is that if this represents a first demonstration of a trend or if it will be again reversed if municipal elections happen in a less encouraging scenario.

7. References

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8. Appendix

Figure 11 - Geography of Local Power in Brazil



Source: ESP (2008), Estado de São Paulo, based on data from TSE. Each color represents the party which was elected to govern the corresponding municipality in 2008.