Incumbency Disadvantage In Weak Party Systems: Evidence from Brazil[*]

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Abstract

We study the incumbency advantage of political parties in Brazil's municipal mayor elections using a regression discontinuity design. Comparing municipalities where a party barely lost the mayor elections to municipalities where it barely won, we find evidence of a strong negative effect on the probability of winning in the following election. We propose an explanation for these findings that focuses on the interaction of Brazil's weak political parties, the personalistic nature of political networks, and the institutional constraints on electoral horizons. Our explanation yields predictions that we are able to corroborate empirically in an analysis that conditions on whether the previously elected incumbent is running for reelection.

Keywords: Incumbency advantage, regression discontinuity, Brazilian politics

1 Introduction

A vast number of scholars have argued that incumbent legislators in the United States enjoy a substantial electoral advantage over challengers who dispute their seats.[1] This advantage is attributed to a variety of different factors, including the ability of incumbents to deter high-quality challengers, their exclusive access to direct perquisites of office such as franking privileges, name recognition and means to perform constituency service, and the ability of incumbency to function as a cue when partisan ties are weak. The literature on incumbency advantage mostly focuses on the *personal* advantage of incumbent legislators, but recent work by Lee (2008) has shown that this advantage extends also to *parties.*

The arguments and evidence for the U.S. have contributed to the idea that being an incumbent is intrinsically advantageous, emphasizing the access to resources to mobilize and please the electorate that incumbency brings to both parties and politicians. But in a context of weak parties, personalistic political networks and institutional constraints on electoral horizons, the effects of incumbency may become more complex, and incumbency may result in electoral losses.

Although the evidence is scarce, the few scholars who have studied incumbency effects in developing countries have failed to find a positive effect of incumbency on electoral outcomes. Linden (2004) and Uppal (2009) estimate incumbency effects in India's parliamentary elections at the national and state level, respectively, and find a *negative* incumbency advantage, i.e. an incumbency disadvantage. These results have been subsequently confirmed by Aidt et al. (2011) and Fisman et al. (2012). Miguel and Zahidi (2004) estimate incumbency effects in national parliamentary elections in Ghana and find negative but insignificant effects on both the vote share and the probability of winning in the following election. All these

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[1]The list is too long for an exhaustive enumeration. The studies include Alford and Brady (1989), Ansolabehere et al. (1988), Ansolabehere et al. (2000), Cox and Katz (1996), Cox and Morgenstern (1993), Erikson (1971), Erikson (1972), Ferejohn (1977), Fiorina (1977), Gelman and King (1990), Jacobson (1987), Krehbiel and Wright (1983), and Levitt and Wolfram (1997). See Ansolabehere and Snyder (2002) for a study that also considers executive offices.

studies use a regression discontinuity design. In addition, while not using the regression discontinuity design or focusing explicitly on incumbency advantage, scholars have shown that an overwhelming majority of coalition governments in democracies in central and eastern Europe have failed to win reelection since the fall of communism (Birch 2003; Roberts 2008; Pop-Eleches 2010).

This paper contributes to the study of incumbency effects in developing countries by analyzing Brazil's municipal mayor elections using a regression discontinuity design. It is well known that estimating the effects of incumbency poses great methodological challenges due to the reciprocal causation between incumbency status and political skills broadly understood. Lee (2008) formally justified using regression discontinuity to estimate the incumbency advantage of a party when there is a random chance element to the actual vote share obtained in the elections. We apply this design to study the incumbency effect for Brazil's three largest political parties at the municipal level: Partido do Movimento Democratico Brasileiro (PMDB), Democratas (DEM, formerly Partido da Frente Liberal, PFL) and Partido da Social Democracia Brasileira (PSDB). By comparing municipalities where a given party barely lost to municipalities where it barely won in the $2000, 2004, 2008$ and 2012 elections, we find evidence of a *negative* effect of incumbency on the probability of winning in the following election. The results are robust to different specifications, and observable pre-treatment characteristics show no evidence of a jump at the discontinuity, as expected under a valid RD design.

Our contribution is twofold. First, we show that, as measured by the RD estimand, the incumbency advantage in Brazil's mayor elections is negative: when a party barely wins the mayor election, it is significantly less likely to win the following election. This negative effect is observed for the three largest parties considered when all elections are pooled in a single analysis, and in three out of the four election pairs when the analysis is disaggregated. The effect also holds (pooling and disaggregating) when we define the effect for the parties simultaneously, focusing on the incumbency advantage for the incumbent party. In sum, our

results show that the RD-based incumbency advantage is persistently negative in Brazil's mayor elections.

Our second contribution, which is currently in progress, is to develop and test an explanation for the negative incumbency advantage phenomenon. Our explanation focuses on Brazil's weak political parties, and their interaction with the presence of term limits (mayors are elected for four years and can only serve two consecutive terms). Our hypothesis is that, in the election immediately after term-limited mayors are forced to retire, the mayor's party suffers electoral losses due to either the loss of the mayor's network and reputation or the mayor's undesirable behavior in his last term, for which voters punish his party. Our final goal is to distinguish which of these explanations is true. For now, we show a conditional RD analysis that is consistent with our prediction that the incumbency disadvantage should be concentrated in municipalities where mayors were term limited.

The rest of the paper is organized as follows. Section 2 discusses Brazil's institutional background. Section 3 presents the methodology. Section 4 briefly explains the data sources, and Section 5 presents the main results. Section 6 provides a preliminary attempt at developing an explanation of the results. We conclude briefly in Section 7.

2   Institutional Background

Scholars have long emphasized two fundamental features of Brazil's political system: a very strong federalism and a weakly institutionalized party system. In this section, we provide a brief overview of Brazil's institutional background with an emphasis on these two features, which we believe are important for an adequate interpretation of the results presented in Section 5.

When Brazil's *Old Republic* was founded in 1891, a highly decentralized federal system was put in place. In this early period, known as the "Politics of the Governors", state governors decisively dominated the country's politics (Samuels 2004). Although the military government of 1930–1945 sought to debilitate local governments and impose a strong cen-

tral authority, the power of the states was never completely dismantled, and by the time democracy returned in 1945 it was clear that governors were crucial players in the political arena. States recovered a crucial position in the relationship between the national executive and the national legislature: having access to substantial resources, governors exerted influence over national legislators elected from their state, for whom access to the state networks of patronage was crucial to advance their political careers (Abrucio 1998; Samuels 2002). The military regime installed in 1964 tried to undermine these state-based support networks but ultimately failed (Samuels 2004), and states entered Brazil's latest democratic experience in 1989 with remarkable autonomy and high influence on the national political scene.[2] Governors continue to be considered the "power brokers" in Brazil's legislative and distributive politics, due to their influence on their state's Congressional delegations through broad clientelistic networks and their control of nominations to most important offices, and their overall control of state-level politics via pork-barrel funds (Ames 2001a; Abrucio 1998; Carey and Reinhardt 2001; Montero 2005; Samuels and Abrucio 2000; Samuels 2002)

The political power of municipalities was much more limited in the pre-1964 period, but this situation gradually changed during the 1970s and 1980s. Samuels (2000b, 2004) has argued that the continuation of direct elections in a large number of municipalities during the military regime together with the interruption of the states' intermediary role between the national executive and municipal governments, gradually contributed to an increase in municipal political autonomy during the military regime. In particular, these limitations in the intermediary role of states led to an increase in the political capital of municipal mayors, who were the politicians most clearly able to claim credit for the implementation of projects at the local level.

This gradual increase in municipal decentralization and autonomy was crystallized in the 1988 Constitution, which formally established the Brazilian federation as formed by

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[2]The choice of the year 1989 as the ending point of the second military dictatorship is somewhat arbitrary. Although the first democratic presidential elections were not held until 1989, it is generally considered that the period of democratization began much earlier since free elections were held for all offices but president in 1982 and 1986.

the Union (União), the States (Estados), the Federal District (Distrito Federal) and the Municipalities (Municípios). The new constitution thus established the legal status of municipalities as federal entities. Article 30 of Chapter IV in the Constitution established the responsibilities of municipalities, which include the protection of historical and cultural patrimony, the parceling of land, and the organization and provision of public services of local interest (particularly systems of public transportation). The provision of pre-school and primary education and health services are also the responsibility of municipalities, though these count with the technical and financial cooperation of the state and the national government.[3] Brazilian municipalities are currently considered among the most decentralized and autonomous subnational units below the state level in all Latin America (Nickson 1995) and enjoy substantial policy responsibilities (Costa 1998; Samuels 2004).

Moreover, the strength of Brazil's subnational governments has had an impact in the career goals of politicians. Strong state governments coupled with high municipal autonomy make municipalities an attractive destination for ambitious politicians. Data on the career path of politicians show that municipal-level positions are increasingly sought by politicians *after* they serve in Congress (Samuels 1999a, 1998, 2000a,b).

Another feature of Brazil's political system is the weakness of its political parties. Scholars have long argued that Brazil has a weakly institutionalized party system, with high electoral volatility, low levels of party identification and voting in the electorate, high fractionalization, little capacity of parties to exercise discipline over their members, and lack of strong ideological platforms (e.g. Ames 2001a,b; Mainwaring 1993, 1999; Kinzo 2003; Collier and Collier 2002; Samuels 1999a).[4] Moreover, party switching in Brazil's Chamber of Deputies is a common phenomenon (e.g. Desposato 2006).

Some of the reasons that have been cited for weakness of national party labels is Brazil's electoral rules. Federal and state deputies are elected through a system of open-list propor-

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[3]For an overview of the responsibilities and characteristics of Brazilian municipalities, see IBGE (2001, 2002).

[4]Figueiredo and Limongi (2000) present a different perspective.

tional representation under which deputies are elected in at-large statewide districts with very large magnitude, which effectively encourages candidate-centered electoral competition (Kinzo 2003; Samuels 1999b; Mainwaring 1991). Another reason, described in detail above, is the extensive control of governors over their states' Congressional delegation, which undermines the possibility of nationally cohesive platforms.

Brazil currently has 5,564 municipalities. The mayor (*prefeito*) is in charge of the municipal executive, and a municipal legislature (*camara de vereadores*) is in charge of local legislative matters. Since 1996, both the mayor and the municipal legislature are elected in general elections every four years. The legislature is elected by a proportional representation system with seats allocated according to a divisors system among parties that attain a minimum vote share, while the mayor is elected by simple majority. Although twenty-six different parties won the mayor office in at least one municipality in the 2012 elections, only eight parties won at least in five percent of the municipalities.

The main analysis in this paper concentrates on the three parties which won the highest number of municipal executive offices in the five electoral cycles since the introduction of direct elections (1996-2012): the Brazilian Social Democratic Party (PSDB), the Party of the Brazilian Democratic Movement (PMDB) and the Democratas (DEM). The PMDB was originally the MDB (Brazilian Democratic Movement), the official opposition party established by the military regime in 1966. Its name was changed to PMDB in 1978, and it is considered a centrist party. The PSDB was created in 1988 by a dissident group of the PMDB and follows a social democratic doctrine. Finally, the DEM was created in 1984 by dissidents of the PDS, the party which provided support to the military regime of 1966. Until 2005, it was called Partido da Frente Liberal (PFL), the Liberal Front Party. The PSDB is the party of Fernando Henrique Cardoso, the Brazilian president between 1994 and 2002, which formed an alliance with the PFL and the center-right Brazilian Labour Party (PTB). Cardoso was succeeded by Luiz Inácio Lula da Silva in 2002, who was the leader of the Workers Party (PT), Brazil's most important leftist party. In 2011, Lula was succeeded

by Dilma Rousseff, also from PT. Although its importance at the municipal level has steadily increased in later years, over the entire period since the introduction of municipal elections in 1996, PT controlled only seven percent of municipalities, making it the sixth largest party at the municipal level. For clarity of presentation and ease of exposition, we focus only on the largest parties in the main text, but the results of the analysis including the twelve largest parties are substantively identical to the results based on the three largest parties.

3 Methodology

3.1 Incumbency Advantage: A disambiguation of the outcome of interest

Studying incumbency advantage in Brazil is no easier than studying it everywhere else. Although American politics scholars have studied the phenomenon of incumbency advantage for decades, it remains a topic plagued by methodological problems which have not been fully solved. Erikson (1971) was the first to recognize the methodological challenges involved in the estimation of the *causal* effect of incumbency. As it is well known now, a positive relationship between incumbency status and electoral success does not warrant a causal interpretation due to a number of confounding factors, including that highest quality candidates are the most likely to become incumbents, and that candidates entry and exit strategically according to their evaluation of future electoral fortunes.

Erikson (1971, 1972) and other early work used mainly two measures of incumbency advantage, *sophomore surge* and *retirement slump*. The *sophomore surge* measure is defined as the gain in votes that occurs when a candidate who won at election t for the first time runs for reelection at election $t+1$, while the *retirement slump* measure is defined as the the falloff in the party's vote that occurs when an incumbent that runs for reelection and wins at election t retires at election $t+1$, when the party defends the seat with a non-incumbent. A third measure of incumbency advantage proposed by Gelman and King (1990)

is theoretically defined as the difference between the proportion of the vote received by the incumbent legislator if he runs against a major party opposition and the proportion of the vote received by the incumbent party if the incumbent legislator does not run and all major parties compete for the open seat. Gelman and King proposed to estimate this measure by regressing the vote share obtained by a given party at election t on the vote share obtained by that same party at election $t+1$, a dummy that indicates incumbency status of the party's candidate and a variable that indicates the party that won the election at t.

The *sophomore surge* and *retirement slump* measures provide an unbiased estimate of the incumbency advantage only under very strong assumptions. Namely, they require that the decision to run or not run for reelection at election $t + 1$ is unrelated to the vote share that will be obtained in this election. Similarly, Gelman and King (1990)'s proposed estimator relies on the assumption that the decision to run for reelection is exogenous to the votes that the candidate obtains at election $t + 1$ if he does decide to run. As mentioned above, since the decision to run for reelection is generally related to the expected electoral success (see, for example, the evidence presented by Cox and Katz 2002), these measures are likely to give biased estimates of the incumbency advantage.

Recognizing these difficulties, recent approaches have proposed to use natural experiments and quasi-experimental designs in which incumbency status may be considered to be *as if* randomly assigned. Ansolabehere et al. (2000) propose to use decennial redistricting to identify the personal incumbency advantage by comparing the incumbent's vote-share in units she has represented in the past with her vote-share in units that become part of her district after redistricting, and Lee (2008) proposes to use a regression discontinuity design which compares the electoral outcomes at election $t + 1$ of barely winners and barely losers at election t.

Although these approaches are promising they must be used with caution, as the quest for a solution to methodological problems usually results in a redefinition of the parameters that are being estimated (Sekhon and Titiunik 2012). This is the case with Lee (2008)'s

design, which by comparing vote shares of barely-loosing and barely-winning parties estimates the (local) *party* incumbency advantage and not the *individual* incumbency advantage – the original outcome of interest, carefully defined by Gelman and King (1990). See Erikson and Titiunik (2013) for a discussion of the relationship between the RD estimand of the incumbency advantage and the personal incumbency advantage in a two-party system context.

The research presented here is an attempt to learn about the functioning of the Brazilian party system, and so we purposely define the party incumbency advantage as our outcome of interest. Therefore, in this case, the use of a regression discontinuity design is both appropriate and justified. But the comparisons with the findings in the American politics literature should be done with caution, as the estimands are not the same.

In the next subsection, we present a brief overview of the regression discontinuity design that we use to estimate the party incumbency advantage in Brazil's mayor elections.

3.2 Regression Discontinuity: a Local Estimand

Regression discontinuity was introduced in the social sciences by Thistlethwaite and Campbell (1960), and its relation to the treatment effects literature was formally established by Hahn et al. (2001). The main characteristic of this design is that a binary treatment is assigned based on a score, and the probability of receiving treatment conditional on this score changes discontinuously at a known cutoff. In the so called "sharp RD design, all units whose score is above the cutoff receive the treatment, while units whose score is below the cutoff are assigned to the control condition. Under certain assumptions, this discontinuity in treatment assignment can be used to infer the causal effect of the treatment on an outcome of interest. See Cook (2008), Imbens and Lemieux (2008) and Lee and Lemieux (2010) for recent reviews. We employ this research design to estimate the incumbency advantage in Brazil's mayor elections.

We now introduce some notation to ease the methodological discussion. Let municipality

i at election t have J political parties that dispute the municipal mayoral elections. For $j = 1, \cdots, J$, let $V_{it,j}$ be the vote share obtained by party j in municipality i in election t and $V_{it,(1)}, \cdots, V_{it,(J)}$ be the corresponding order statistics. The margin of victory for party k is defined as the vote share obtained by party k minus the vote share obtained by party k's strongest opponent, where the latter is defined as the party that obtains the highest vote share if party k looses the election and the party that obtains the *second* highest vote share if party k wins. Formally, party k's margin of victory is given by:

$$Z_{it,k} \equiv \begin{cases} V_{it,k} - V_{it,(J-1)} & \text{if } V_{it,k} = V_{it,(J)} \\ V_{it,k} - V_{it,(J)} & \text{otherwise.} \end{cases} \tag{1}$$

It follows that the rule that determines the incumbency status of party k at election $t+1$ in municipality i, denoted by $I_{it+1,k}$ is:

$$I_{it+1,k} = \begin{cases} 1 & \text{if } Z_{it,k} \geq 0 \\ 0 & \text{if } Z_{it,k} < 0. \end{cases} \tag{2}$$

Let $Y^1_{it+1,k}$ denote the outcome of interest for party k in municipality i at election $t+1$ when $I_{it+1,k} = 1$ and $Y^0_{it+1,k}$ denote the outcome of interest for party k when $I_{it+1,k} = 0$. The effect of interest is $\tau_k \equiv \mathbb{E}\left(Y^1_{it+1,k} - Y^0_{it+1,k}\right)$. Of course, for a given election in a given municipality, a party cannot be the incumbent and not the incumbent simultaneously, and hence one only observes $Y_{it+1,k} = I_{it+1,k} Y^1_{it+1,k} + (1 - I_{it+1,k}) Y^0_{it+1,k}$. Without further assumptions, τ_k is not identified.

But progress can be made by exploiting the discontinuity in the assignment of incumbency status given by equation (2). As shown by Hahn et al. (2001), if $\mathbb{E}\left(Y^1_{it+1,k}|Z\right)$ and $\mathbb{E}\left(Y^0_{it+1,k}|Z\right)$ are continuous at $Z_{it,k} = 0$ and have positive density around $Z_{it,k} = 0$, the expected causal effect of incumbency status on the outcome of interest is identified at the

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discontinuity point. Formally,

$$\alpha_k \equiv \mathbb{E}\left(Y^1_{it+1,k} - Y^0_{it+1,k}|Z=0\right) = \lim_{Z\downarrow 0}\mathbb{E}\left(Y_{it+1,k}|Z\right) - \lim_{Z\uparrow 0}\mathbb{E}\left(Y_{it+1,k}|Z\right)$$

Therefore, the discontinuity in the rule that determines which party wins office provides an opportunity to observe the average difference in potential outcomes by comparing points on either side of the $Z_{it,k} = 0$ threshold. Two things should be noted. First, the crucial assumption is the continuity of the expected potential outcomes at the threshold, and the question arises of whether this assumption holds for the problem considered here. Second, in general $\tau_k \neq \alpha_k$. This is, under these assumptions this approach only identifies a causal effect at $Z_{it,k} = 0$, and without additional assumptions, such as constant treatment effects, the results do not generalize to the effect at other values of Z.

Lee (2008) formally established the link between these assumptions and a general problem where agents non-randomly self-select into treatment. Applying his findings to the particular problem of estimating the incumbency advantage, if there is a non-negligible random chance component to the ultimate vote share obtained by party k in municipality i at election t and the conditional density of $V_{it,k}$ is continuous, municipalities just below $Z_{it,k} = 0$ will be valid counterfactuals for municipalities just above $Z_{it,k} = 0$ to identify a weighted average treatment effect for the entire population, where the weights are given by the probability that party k in municipality i draws a $Z_{it,k}$ near the threshold. In addition, if the RD continuity assumptions hold, we expect the distribution of pre-determined characteristics to be continuous at the cutoff. Thus, observed covariates provide important information to test the validity of the design.

4 Data

We construct a dataset at the municipality level containing demographic, socio-economic and electoral variables. Data on population levels were obtained from the 2000 and 2010 Demographic Censuses and estimates based thereof for intermediate years, available at the

Instituto Brasileiro de Geografia e Estatística (IBGE). Municipality-level GDP was also obtained from the IBGE; a survey of the methodology used in municipal accounting can be found in IBGE (2004). Data on social indicators and the public administration of municipalities were obtained from the IBGE's *Pesquisa de Informações Básicas Municipais*, a comprehensive survey conducted every year in all Brazilian municipalities.

Election returns for the mayor and city council elections for $1996, 2000, 2004, 2008$ and 2012 were obtained from the Tribunal Superior Eleitoral (`http://www.tse.gov.br`). The data contain characteristics of individual candidates, parties and coalitions, electoral returns by party in each municipality, and characteristics of the electorate.

Socio-economic and demographic data were merged to electoral data to create a single municipality-level dataset. The merge was done by matching of municipality names by state, as the municipality identifiers used by the TSE are not equivalent to those used by the IBGE. Newly created municipalities are kept in the dataset if their existence spans at least a pair of elections and excluded otherwise. The final dataset contains 27,650 municipality-year observations, or on average 5,530 municipalities per election.

5   Results

We study Brazil's three largest parties at the municipal level: Partido do Movimento Democrático Brasileiro (PMDB), Democratas (DEM, formerly Partido da Frente Liberal, PFL) and Partido da Social Democracia Brasileira (PSDB), and consider two different outcomes to capture electoral success: (i) the probability that party k wins the mayoral office in election at $t+1$, and (ii) the vote share obtained by party k in election at $t+1$.

We also consider the effect of incumbency on whether the party is a candidate in election $t+1$, since in a small number of cases the parties that barely win or lose in election t do not run in election $t+1$. Note that this would bias the results for the probability of victory or vote share if the decision to become a candidate in election $t+1$ is related to the expected electoral success in that election. In particular, our estimates will be biased if the tendency

to strategically run given the anticipated electoral success at $t + 1$ is different following a bare win compared to a bare loss. A regression-discontinuity estimate of the probability to nominate a candidate at $t+1$ indistinguishable from zero alleviates such concerns, as it implies that bare-winning and bare-losing parties are equally likely to nominate a candidate in the next election, thus eliminating an important potential source of selection bias. Nevertheless, we discuss further below that our results are robust even when the RD estimates indicate potential selection bias from strategic withdrawal.

While we present results for three outcomes throughout the paper, in the ensuing discussion, we focus mainly on the first outcome – victory at $t + 1$. The multiparty nature of municipal elections in Brazil implies that the mapping between vote share and victory is not as simple – and linear – as in a stable two-party system such as that of the U.S. For example, a party getting 30 percent of the vote in one municipality may win in a municipality where the remaining percentage of the vote is dispersed among a large number of other parties. In contrast, in another municipality the vote may be concentrated on the three largest parties. Consequently, a small change in the vote share may simultaneously fail to produce a victory for a party in the first example, while assuring the win for a party in the second example. Therefore, our main focus is on the analysis of victory at $t + 1$, as this is a more informative outcome of interest. Nonetheless, we report the results for vote share for completeness and to be consistent with common practice in other related studies of incumbency effects –most of which focus on a simple two-party majoritarian electoral setting.

To estimate parameters of interest, we use a local linear regression with triangular kernel and mean-square error (MSE) optimal bandwidth. We used the plug-in MSE-optimal bandwidth suggested by Calonico et al. (2013b), but all results remain unchanged if we use the bandwidth selector proposed by Imbens and Kalyanaraman (2012). We report the robust p-values of Calonico et al. (2013b), but we also estimated the results using conventional p-values and undersmoothing (setting the bandwidth at 0.05). The results are generally more conservative with the robust p-values, and so the significance of the results reported below

also generally holds when using the conventional p-values. For additional robustness, we considered a second neighborhood, which keeps only those municipalities where the absolute value of the margin of victory is at most 5%; since this introduces significant undersmoothing, when using this bandwidth we report conventional p-values. Although statistical significance is sometimes affected by the loss of statistical power due to smaller sample sizes, the point estimates are stable and substantively unchanged. At present, these results are available upon request and will be available in the Appendix soon.

A first test of the validity of the identifying assumptions is the comparison of the distribution of pre-treatment characteristics on both sides of the discontinuity threshold. At the candidate level, we include the gender, education and age of the winning candidate. Further, we examine for both the mayoral and the local council elections the balance in the lagged vote share of the winning party and the runner-up party at t, the total number of votes cast, the number of candidates and the number of effective candidates. The remaining municipal-level variables include the size of the municipal legislature, total population, and the municipality GDP. These tests show excellent balance in almost all covariates considered for the three parties under study. This is in line with the evidence on similar samples of close elections in Brazil and other countries around the world found by Eggers et al. (2013). At present, the results are available upon request, and will be available in the Appendix soon.

Next, we consider the estimation of the parameters of interest. In this section, we perform two types of analysis. First, we pool observations for all three parties and all elections together. We call this the incumbent party analysis, as we define the score and outcomes in terms of the incumbent party at t. A detailed description of the treatment and control groups in our incumbent party analysis is presented in Table 1. This analysis defines the incumbent party as the party that won the t election, and looks at the electoral performance of this party at $t+1$ in those municipalities where it barely loses versus those where it barely wins at t.

Note that in order to define the above RD effect we needed three adjacent elections, at

Table 1: Description of Treatment and Control Groups in Incumbent Analysis

Treatment Group

- A party wins at $t-1$, so it is incumbent party at t

- The same party runs again at t and (barely) wins, irrespective of whether its candidate is incumbent or a new candidate;

- The same party runs at $t+1$ (unless the outcome is the probability of nominating a candidate at $t+1$);

- We analyze outcomes for that party at $t+1$, when it is an incumbent party and has either an incumbent candidate running for reelection or a non-incumbent candidate.

Control Group

- A party wins at $t-1$, so it is incumbent party at t;

- The same party runs again at t and (barely) loses, irrespective of whether its candidate is incumbent or a new candidate;

- The same party runs at $t+1$ (unless the outcome is the probability of nominating a candidate at $t+1$);

- We analyze outcomes for that party at $t+1$, when it is not an incumbent party, but some other first-term incumbent party either has an incumbent candidate who runs for reelection, has a new candidate, or does not have a candidate and it is an open race.

RD effect

- Party outcome at $t+1$ when party is an incumbent running with either an incumbent candidate or a non-incumbent candidate vs.

- Party outcome at $t+1$ when the party is in opposition against either an incumbent or non-incumbent candidate of the party who won at t, or in open seat.

$t-1, t$ and $t+1$. Because we are interested in an estimate of incumbency advantage for all parties combined, we need to define a generic incumbent party. Naturally, in an incumbent party analysis, at the point of realization of treatment assignment the party must have won in the previous election – at $t-1$ – to be considered an incumbent.

We present the results for the incumbent party analysis in two ways: pooling all election years, and separately for each set of election triplets. In the latter analysis, five electoral cycles (1996, 2000, 2004, 2008 and 2012) give us three election triplets: 1996/2000/2004, 2000/2004/2008 and 2004/2008/2012. We label each estimate according to the election at which the treatment is assigned, i.e. the election at t (2000, 2004 and 2008).

The second type of analysis we perform focuses on the incumbency advantage of each party. This individual party analysis is described in detail in Table 2. In this case, the RD design is simpler: we just consider, for each party, whether it barely won or barely lost at t, and analyze their outcomes at $t+1$.

Note that unlike for incumbent party analysis, where we require three adjacent elections to define the RD effect, in this case, we require only two adjacent elections, and so our estimates are pooled over four election pairs (1996/2000, 2000/2004, 2004/2008 and 2008/2012), rather than over three election triplets, as in the first set of results.

Figure 1 shows the results of the incumbent party analysis on a pooled sample of all election triplets and the three parties considered (PSDB, PMDB and DEM). We find a strong *negative* incumbency advantage: an incumbent party barely winning an election is around 21 percent *less* likely to win in the following election than if it barely lost. Based on our data-driven optimal bandwidth choice procedure, we estimate this effect on the races decided by a margin smaller than 16 percent of the vote. The estimated RD effect is highly statistically significant.

The incumbency effect on the probability of victory is so large that we find a clear incumbency disadvantage in terms of vote share as well. Bare winners on average lose around 3 percent of the vote compared to bare losers, and the robust confidence interval indicates a

Table 2: Description of Treatment and Control Groups in Individual Party Analysis

Treatment Group

- A party (barely) wins at t, irrespective of whether its candidate is incumbent or a new candidate;

- The same party runs at $t + 1$ (unless the outcome is the probability of nominating a candidate at $t + 1$);

- We analyze outcomes for that party at $t+1$, when it is an incumbent party and has either an incumbent candidate running for reelection or a non-incumbent candidate.

Control Group

- A party (barely) loses at t, irrespective of whether its candidate is incumbent or a new candidate;

- The same party runs at $t + 1$ (unless the outcome is the probability of nominating a candidate at $t + 1$);

- We analyze outcomes for that party at $t + 1$, when it is not an incumbent party, but some other first-term incumbent party either has an incumbent candidate who runs for reelection, or has a new candidate, or does not have a candidate and there is no incumbent party in the race.

RD effect

- Party outcome at $t+1$ when party is an incumbent party running with either an incumbent candidate or a non-incumbent candidate vs.

- Party outcome at $t + 1$ when the party is in opposition against either an incumbent or non-incumbent candidate of the party who won at t, or there is no incumbent party in the race.

Figure 1: Pooled Results for Incumbent Party
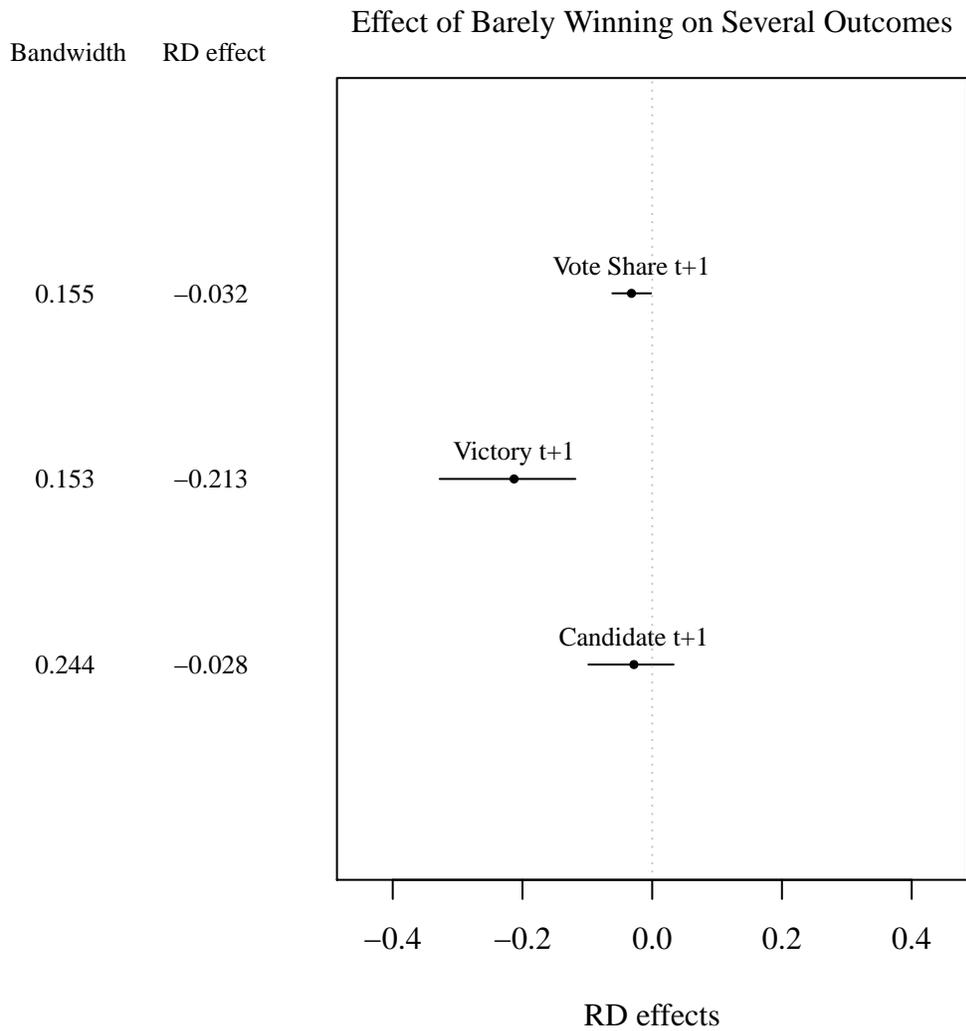
Effect of Barely Winning on Several Outcomes

Bandwidth	RD effect	
		Vote Share t+1
0.155	−0.032	
		Victory t+1
0.153	−0.213	
		Candidate t+1
0.244	−0.028	

RD effects

−0.4   −0.2   0.0   0.2   0.4

Note: Solid dots are RD effects (indicated in RD effects column) estimated via local linear regression and mean-squared error optimal bandwidth (indicated in the Bandwidth column). Solid lines are 95% robust confidence intervals developed by Calonico et al. (2013b) and implemented in Stata package `rdrobust` (Calonico et al. 2013a).
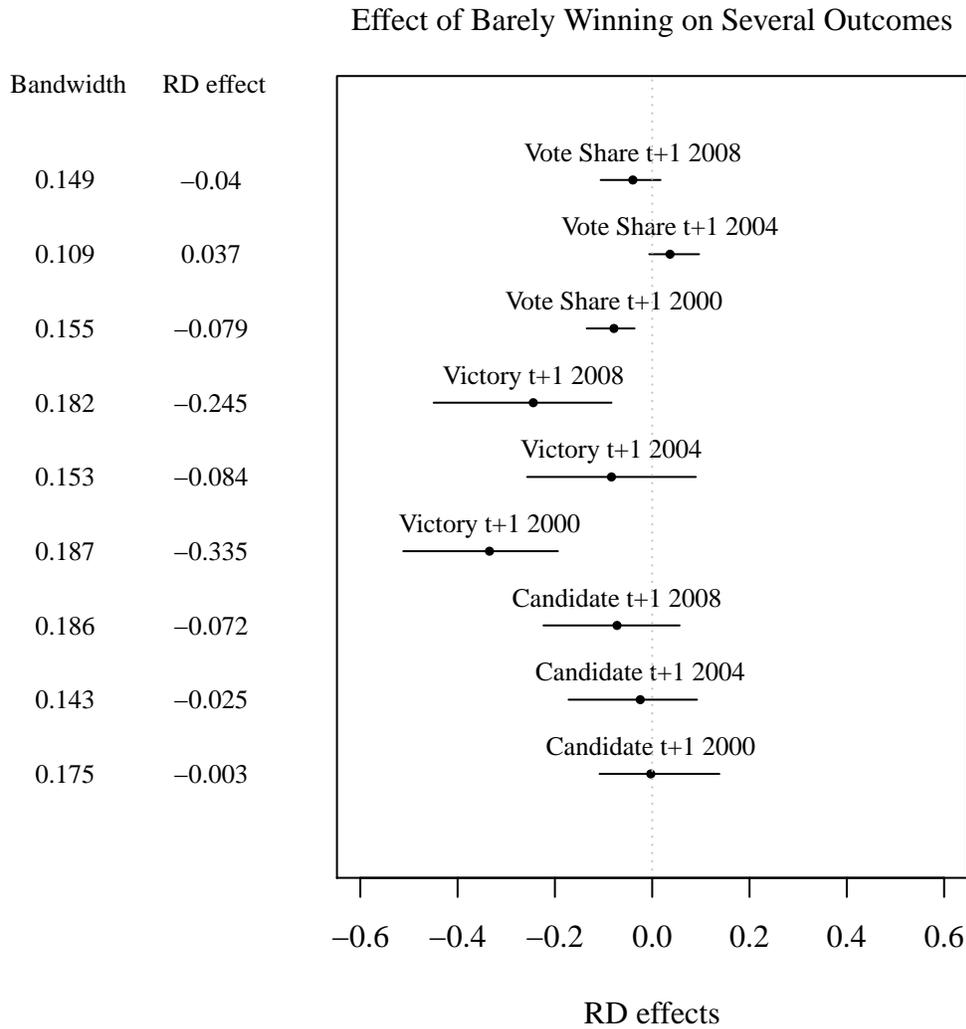
significant effect at conventional levels. Importantly, the last estimate in Figure 1 suggests that bare-winning and bare-losing incumbent parties do not show a different probability of fielding a candidate in the subsequent election, suggesting that selection bias due to strategic withdrawal is not a concern in the pooled sample.

We disaggregate these estimates by election triplets in Figure 2. In two of the three triplets, the results unambiguously replicate the findings in the pooled analysis. In 1996/2000/2004 and 2004/2008/2012, there is still marked incumbency disadvantage in terms of the probability of victory of roughly 25 and 34 percent, respectively. The results for vote share and probability of candidacy are also consistent with the overall pooled results. The exception is the 2000/2004/2008 cycle, where the results are non-significant for all three outcomes. It is an open question what may have brought about this temporary shift in the effect on the probability of victory. Note, however, that taken together the evidence strongly rejects existence of *any* incumbency *advantage* in close mayoral elections in Brazil.

In Figure 3, we report the results of the individual party analysis, pooling all election pairs. The results are striking – pooling across the four election pairs, *all three* largest parties at the municipal level are less likely to win when they contest an election as an incumbent party than as a challenger following a close election. For all three parties, incumbency disadvantage in terms of the probability of winning is greater than ten percent. Results for vote share are mixed, but as previously noted, the probability of victory is a considerably more informative outcome because of the non-monotonic mapping of vote shares into electoral outcomes in the context of multi-party elections with a majority rule.

Figure 3 shows that for PMDB, and marginally so for PSDB, the probability of contesting the $t + 1$ election is higher in treatment than in the control group. As discussed above, this is potentially problematic, because it indicates differential – and possibly strategic – candidacy based on the treatment status. Because RD estimates for victory and vote share are conditioned on the party running at $t + 1$, they may be biased. For example, if following a bare win an incumbent party chooses to run in the subsequent election even in the face of

Figure 2: Disaggregated Results for Incumbent Party

Effect of Barely Winning on Several Outcomes

Bandwidth	RD effect
0.149	−0.04
0.109	0.037
0.155	−0.079
0.182	−0.245
0.153	−0.084
0.187	−0.335
0.186	−0.072
0.143	−0.025
0.175	−0.003

Vote Share t+1 2008
Vote Share t+1 2004
Vote Share t+1 2000
Victory t+1 2008
Victory t+1 2004
Victory t+1 2000
Candidate t+1 2008
Candidate t+1 2004
Candidate t+1 2000

−0.6   −0.4   −0.2   0.0   0.2   0.4   0.6

RD effects

Note: Solid dots are RD effects (indicated in RD effects column) estimated via local linear regression and mean-squared error optimal bandwidth (indicated in the Bandwidth column). Solid lines are 95% robust confidence intervals developed by Calonico et al. (2013b) and implemented in Stata package `rdrobust` (Calonico et al. 2013a).

Figure 3: Pooled Results for PMDB, PSDB and DEM
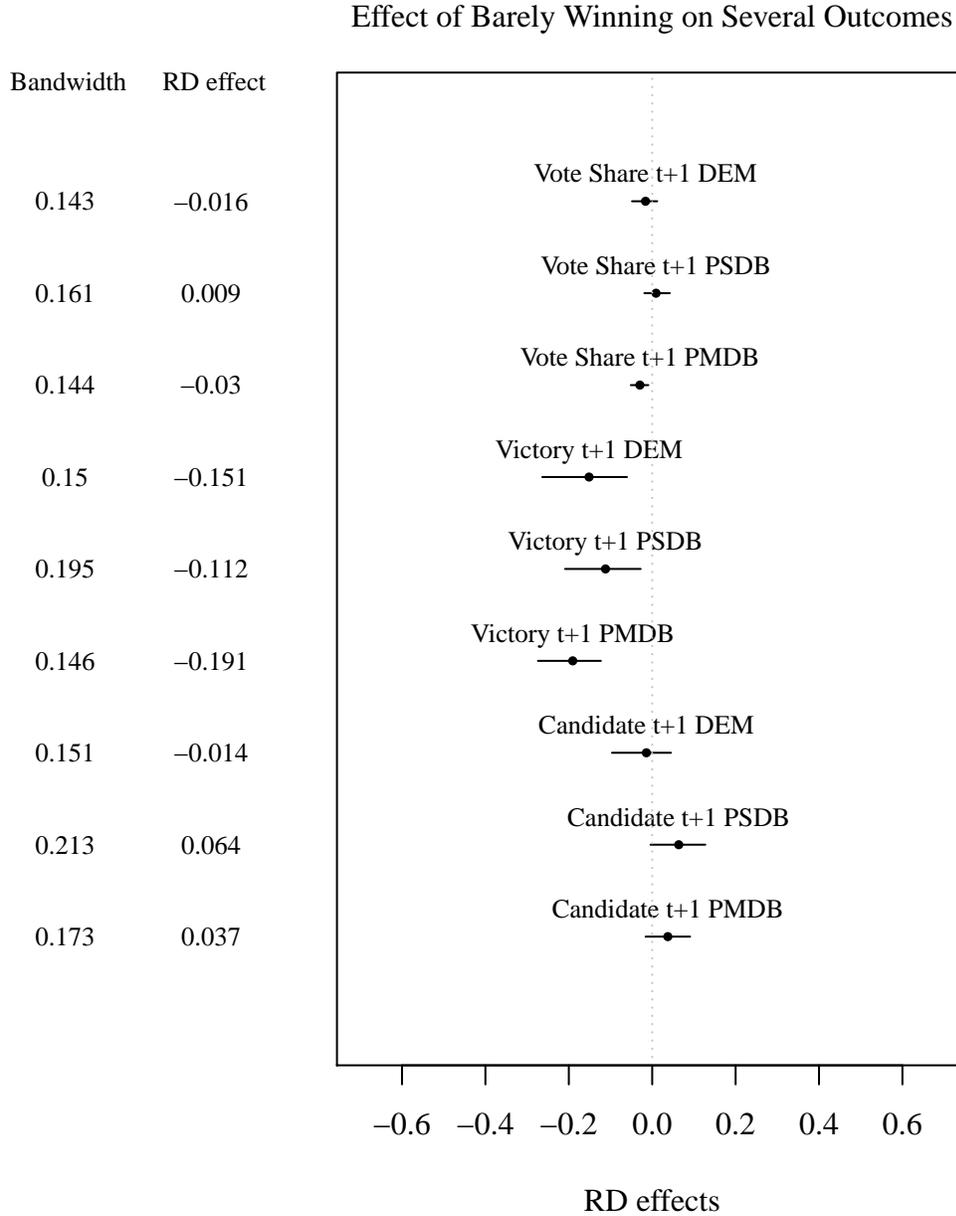
Effect of Barely Winning on Several Outcomes

Bandwidth	RD effect
		Vote Share t+1 DEM
0.143	−0.016
		Vote Share t+1 PSDB
0.161	0.009
		Vote Share t+1 PMDB
0.144	−0.03
		Victory t+1 DEM
0.15	−0.151
		Victory t+1 PSDB
0.195	−0.112
		Victory t+1 PMDB
0.146	−0.191
		Candidate t+1 DEM
0.151	−0.014
		Candidate t+1 PSDB
0.213	0.064
		Candidate t+1 PMDB
0.173	0.037

RD effects

−0.6 −0.4 −0.2 0.0 0.2 0.4 0.6

Note: Solid dots are RD effects (indicated in RD effects column) estimated via local linear regression and mean-squared error optimal bandwidth (indicated in the Bandwidth column). Solid lines are 95% robust confidence intervals developed by Calonico et al. (2013b) and implemented in Stata package `rdrobust` (Calonico et al. 2013a).

a weaker electoral prospect than if following a bare loss, the bias would be in the direction of the results we find. This is because ceteris paribus, an incumbent party will have fared worse than a challenger who strategically withdrew to avoid a poorer electoral return, dragging the estimate of incumbency advantage down (or inflating the incumbency disadvantage).

To test the robustness of our results against such potential selection bias, we estimate bounds on the RD effect on the probability of victory at $t + 1$. If not running indicates an expectation of a poor result, than the worst-case scenario is to assume that the party not running would never have won had it decided to contest. Using the notation from Section 3, this is equivalent to recoding the victory outcome variable as follows:

$$
Y_{it,k} \equiv \begin{cases} 1 & \text{if party runs at } t + 1 \text{ and wins,} \\ 0 & \text{if party runs t+1 and loses, } or \text{ if party does not run at } t + 1. \end{cases} \tag{3}
$$

In other words, where previously we omitted from the sample municipalities where a party does not run at $t+1$ when estimating the RD effect on victory (or vote share), we now assume that the party lost, despite not running. If not running implies attempting to avoid a poor electoral outcome at $t+1$, and because results for PMDB and PSDB in Figure 3 suggest that these parties were less likely to run when being a challenger at $t + 1$, assigning a loss when not running represents an *upper* bound to our estimate of incumbency *disadvantage*. This is because more challengers than incumbents will have been assigned a loss than when conditioning on rerunning, boosting the estimated electoral performance of the incumbents.

If the RD estimate of the incumbency disadvantage is nevertheless still below zero and significant, we can be confident under this set of assumptions on strategic retirement that it is robust to the selection bias. This is indeed what we find. In Figures 4 and 5 we compare the original Victory $t + 1$ (conditional on the party running) to Upper Bound Victory $t + 1$ (the recoded outcome as described above). Once we recode not running to losing, our point estimates for victory are somewhat lower, but are substantively unaffected – we still find incumbency disadvantage. Of course, under a different set of assumptions, assigning a loss

when not running may not represent the upper bound.[5]

6 Towards an Explanation of Incumbency Disadvantage

The results just reported show a strong negative effect of incumbency on future electoral success for Brazil's major parties in municipal elections. The effect is not only large but, more significantly, it is persistent: with few exceptions, election after election, after "controlling" for all the possible confounders that affect both current incumbency status and future election success via an RD design, parties do worse when they win than when they lose.
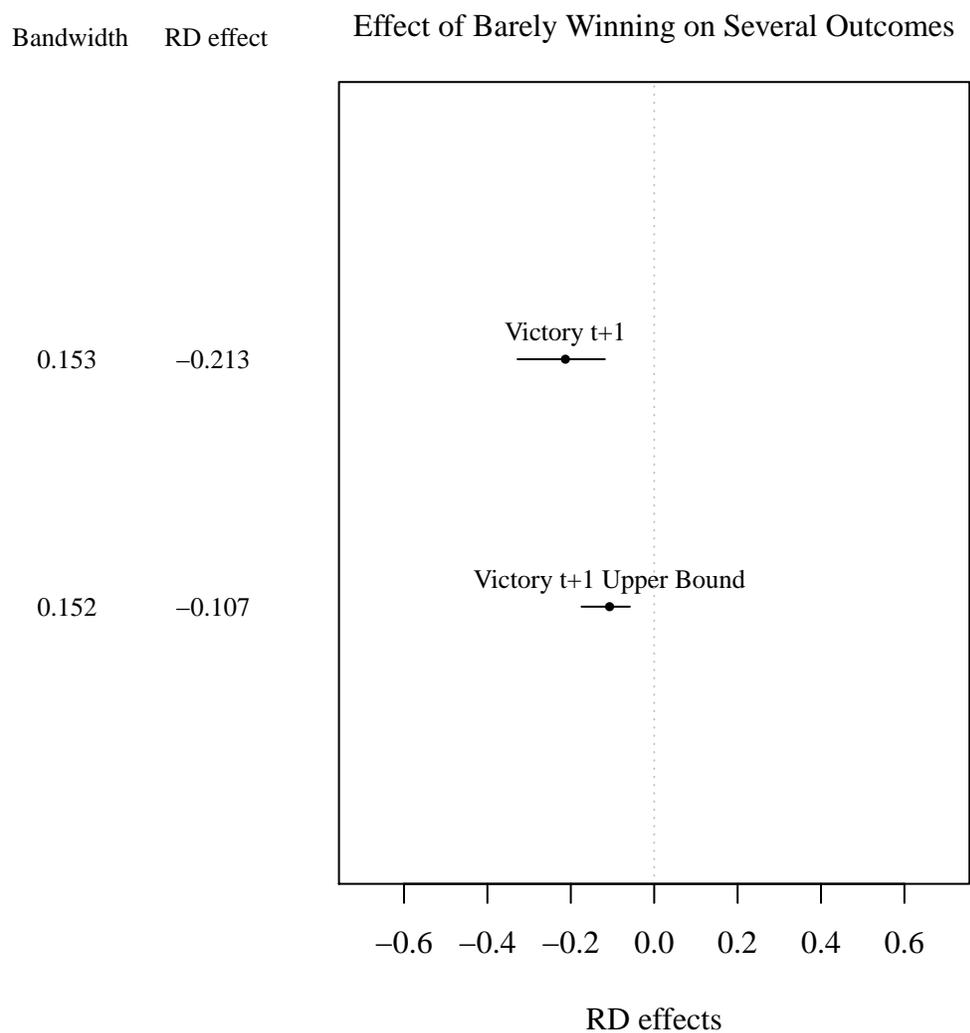
We now turn to the much more difficult task of explaining why this phenomenon occurs. We hypothesize that the negative effect arises due to the interaction of the institutional rules that constrain municipality elections and the relative weakness of Brazilian political parties. In particular, our analysis focuses on the fact that Brazilian mayors can only serve consecutively a total of two terms, which forces parties to run with a non-incumbent candidate at least as frequently as every other election. At its most general level, our hypothesis is that the presence of term limits, combined with political parties to which voters and politicians are only weakly attached, creates conditions under which political parties can be periodically hurt by winning.

More specifically, we expect the observed negative incumbency effects to be concentrated in those municipalities where term limits force the parties to contest the election with non-incumbent candidates immediately after a term-limited mayor has concluded his/her second term. We consider two sub-hypotheses that can explain the observed overall negative effect:

Hypothesis 1: After a two-term mayor is forced to retire, the mayor's party finds it more difficult to stay in office due to the loss of the incumbent mayor's personalistic support, name recognition, experience, etc.

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[5]We could, for example, assign a victory whenever a party decides not to run, although this would be much harder to justify than the approach we take.

Figure 4: Upper Bound for Victory $t + 1$: Pooled Results for Incumbent Party

Bandwidth   RD effect   Effect of Barely Winning on Several Outcomes

                                        Victory t+1
0.153   −0.213

                                  Victory t+1 Upper Bound
0.152   −0.107

                  −0.6   −0.4   −0.2   0.0   0.2   0.4   0.6

                                          RD effects

Note: Solid dots are RD effects (indicated in RD effects column) estimated via local linear regression and mean-squared error optimal bandwidth (indicated in the Bandwidth column). Solid lines are 95% robust confidence intervals developed by Calonico et al. (2013b) and implemented in Stata package `rdrobust` (Calonico et al. 2013a).

Figure 5: Upper Bound for Victory $t + 1$: Pooled Results for PMDB, PSDB and DEM
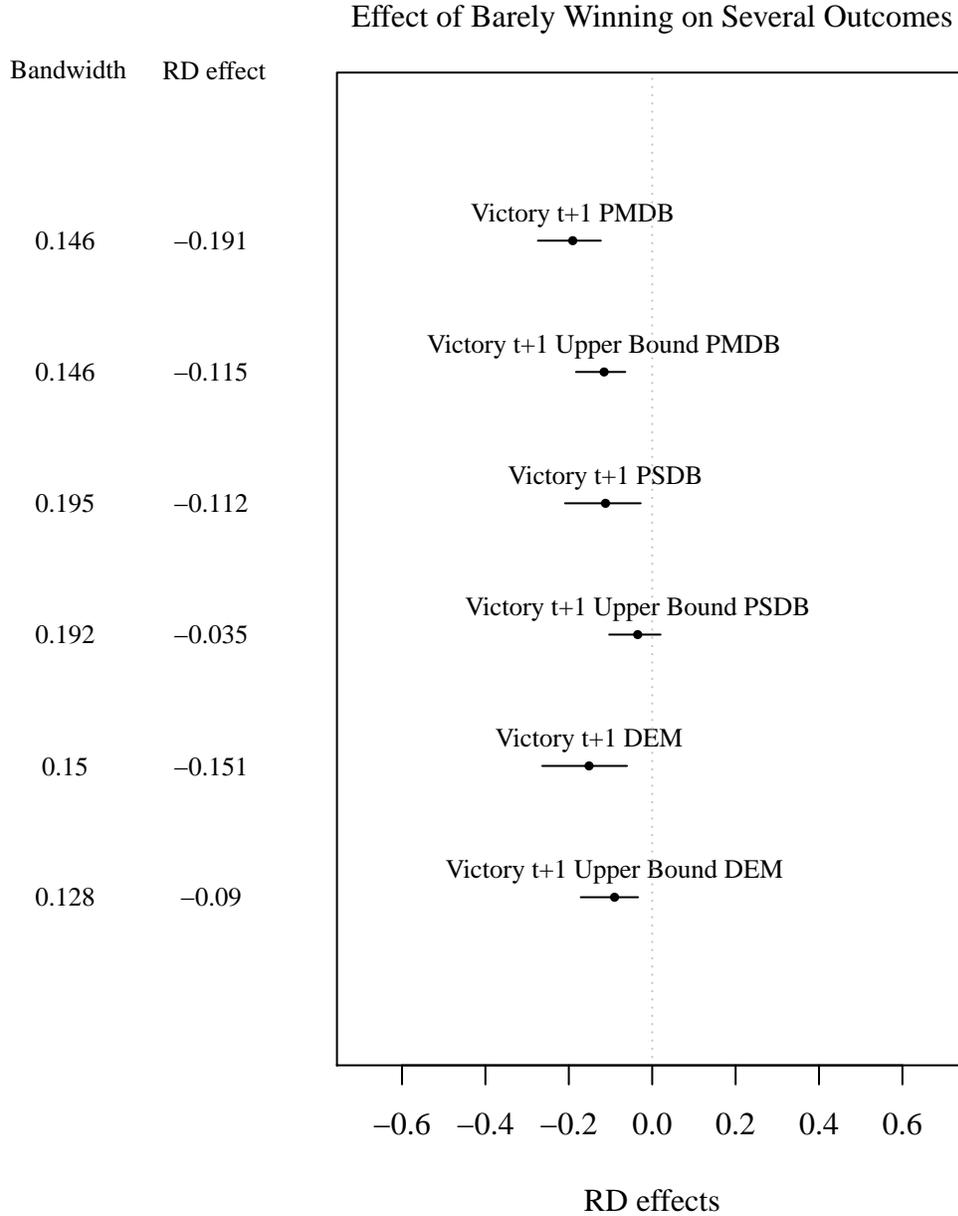
Effect of Barely Winning on Several Outcomes

Bandwidth	RD effect
		Victory t+1 PMDB
0.146	−0.191	
		Victory t+1 Upper Bound PMDB
0.146	−0.115	
		Victory t+1 PSDB
0.195	−0.112	
		Victory t+1 Upper Bound PSDB
0.192	−0.035	
		Victory t+1 DEM
0.15	−0.151	
		Victory t+1 Upper Bound DEM
0.128	−0.09	

−0.6   −0.4   −0.2   0.0   0.2   0.4   0.6

RD effects

Note: Solid dots are RD effects (indicated in RD effects column) estimated via local linear regression and mean-squared error optimal bandwidth (indicated in the Bandwidth column). Solid lines are 95% robust confidence intervals developed by Calonico et al. (2013b) and implemented in Stata package `rdrobust` (Calonico et al. 2013a).

Hypothesis 2: After a two-term mayor is forced to retire, the mayor's party finds it more difficult to stay in office due to the mayor's shirking behavior in his last term, for which voters punish the mayor's party.

Basic facts about the Brazilian party system can support both hypotheses. Brazilian parties have low levels of institutionalization and, particularly in local elections, political networks are highly personalistic. In this context, the forced retirement of mayors who have proved successful enough to be reelected may result in losses for his party. On the other hand, there is also evidence that corruption is considerably higher and effort lower in municipalities where mayors cannot run for reelection (see Ferraz and Finan 2011), which indicates that mayors tend to engage in shirking in the absence of reelection incentives.[6]

Unfortunately, it is difficult to explore these hypothesis with a strong quasi-experimental design. In the RD design that we used above to characterize the overall party incumbency effects, very close races allow us to proceed "as if" victory at election t had been randomly assigned. But there is no similar as-if randomization for mayors' decisions to run for re-election, which is at the center of both of our hypotheses. Although we cannot solve this inferential issue, we analyze two subsamples of our dataset where, based on our hypotheses, the effects are predicted to be different. This tentative analysis can show that our hypotheses are consistent with the observed results, but it cannot prove that they are correct.

We now describe our conditional analysis for the incumbent party analysis. Our conditional analysis divides the sample in two mutually exclusive subsets. The Incumbent Sample is composed of all municipalities where the candidate who got elected at $t-1$ for a given party runs for reelection at t under the same party.[7] The Open Seats Sample is composed of all municipalities where the candidate who got elected at $t-1$ for a given party does not run for reelection at t. Note that the incumbent candidates' decision to run for reelection,

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[6]This has been shown in other contexts as well; see for example Alt et al. (2011); Besley and Case (1995).

[7]We exclude cases where the candidate who got elected at $t-1$ for a given party runs for reelection at t under a different party. In future versions, we plan to leverage these party switches to provide further evidence about our hypothesized mechanisms.

although clearly endogenous, is made before election t is held. Thus, we are legitimately subsetting our data based on a pre-treatment variable.

We describe the Incumbent Sample in Table 3, and the Open Seat Sample in Table 4. For our purposes, the most important difference between the two samples is whether the party is running immediately after a lame-duck mayor has retired. The Open Seat sample contains a combination of incumbent candidates and non-incumbent candidates in both the treated and control group. In contrast, in the Incumbent Sample, the same combination of incumbent and non-incumbent candidates exists in the control group, but the treatment group is composed exclusively of non-incumbent candidates who are running immediately after the party's previous incumbents have finished their second and last term and are therefore prohibited from running at $t + 1$. Under Hypotheses 1 and 2, we expect to see a concentration of the negative effects of incumbency in the Incumbent Sample rather than in the Open Seat Sample.

Figure 6 presents a comparison of the incumbency effects for the incumbent party, pooling across all elections. The results strongly support our prediction. Neither effect is significant at conventional levels in the Open Seat Sample: the effect on Vote Share $t + 1$ is extremely close to zero (-0.006), and the confidence interval is tight; the point estimate for Victory $t + 1$ is negative and large (-0.101), but it is not significant at 5% level. Finally, the incumbent party does not seem to be more likely to contest the election at $t+1$. In contrast, in the Incumbent Sample, the effect on Vote Share $t + 1$ is ten times larger (-0.06) and highly statistically significant, and the effect on Victory $t + 1$ triples to -0.327 and becomes strongly significant. In addition, in this sample, the incumbent party is significantly *less* likely to contest the $t + 1$ election after a bare victory at t.

Figures 7, 8 and 9 present analogous figures, disaggregating the incumbent party analysis for each election. Again, the results support our prediction in each of the three election triplets. In all cases, the point estimate for Victory $t+1$ is smaller in the Incumbent Sample than in the Open Seat Sample and, with the exception of 2000 (1996/2000/2004 triplet), the
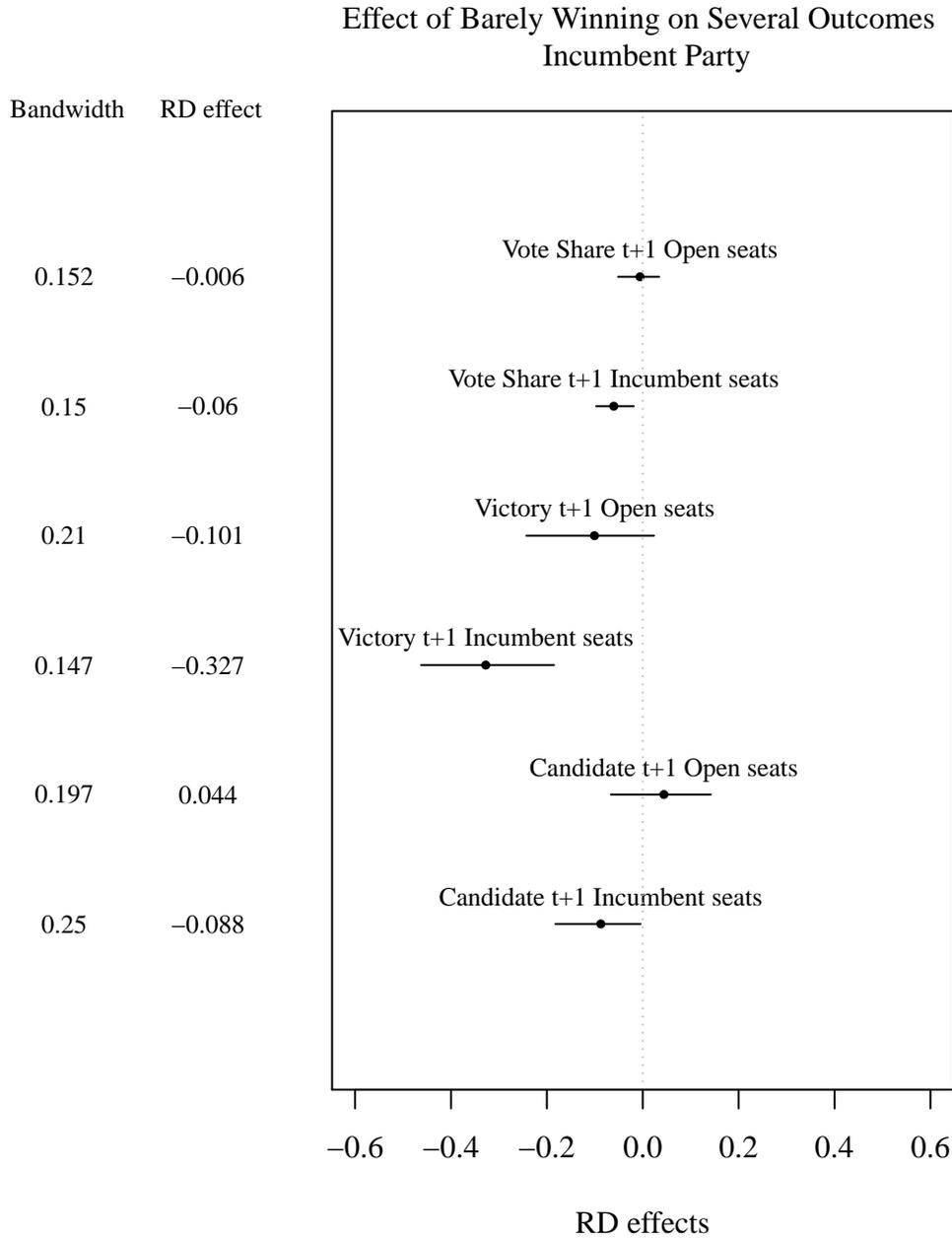
Table 3: Description of Treatment and Control Groups in Incumbent Sample

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Treatment Group

- A party wins at $t - 1$, so it is incumbent party at t;

- The party's candidate who won at $t - 1$ runs at t and (barely) wins;

- The same party runs at $t + 1$ (unless the outcome is Candidate t+1);

- We analyze outcomes for the party at $t+1$, when it is an incumbent party but the candidate who won at t-1 and t cannot run anymore due to term limits; instead, the party has a new candidate.

Control Group

- A party wins at $t - 1$, so it is incumbent party at t;

- The party's candidate who won at $t - 1$ runs at t and (barely) loses;

- The same party runs at $t + 1$ (unless the outcome is Candidate t+1);

- We analyze outcomes for the party at $t+1$, when it is not an incumbent party, but some other first-term incumbent party either has an incumbent candidate who runs for reelection, or has a new candidate, or does not have a candidate and there is no incumbent party in the race.

RD effect

- Party outcome at $t + 1$ when party is an incumbent running with either an incumbent candidate or a non-incumbent candidate vs.

- Party outcome at $t + 1$ when the party is in opposition against either an incumbent candidate or non-incumbent candidate of the party that won at t, or no party is the incumbent at t

---

Table 4: Description of Treatment and Control Groups in Open Seat Sample

Treatment Group

- A party wins at $t-1$, so it is incumbent party at t;

- The party's candidate who won at $t-1$ does not run at t, but the party runs with another candidate and (barely) wins;

- The same party runs at $t+1$ (unless the outcome is Candidate t+1);

- We analyze outcomes for the party at $t+1$, when it is an incumbent party and it either runs with an incumbent candidate who seeks reelection or with a new non-incumbent candidate or it does not run and there is no incumbent party in the race.

Control Group

- A party wins at $t-1$, so it is incumbent party at t;

- The party's candidate who won at $t-1$ does not run at t, but the party runs with another candidate and (barely) loses;

- The same party runs at $t+1$ (unless the outcome is Candidate t+1);

- We analyze outcomes for the party at $t+1$, when it is not an incumbent party, but some other first-term incumbent party either has an incumbent candidate who runs for reelection, or has a new candidate, or does not have a candidate and there is no incumbent party in the race.

RD effect

- Party outcome at $t+1$ when party is an incumbent running with either an incumbent candidate or a non-incumbent candidate vs.

- Party outcome at $t+1$ when the party is in opposition against either an incumbent candidate or non-incumbent candidate of the party that won at t, or in seat where no party is the incumbent.

Figure 6: Incumbent Sample versus Open Seat Sample: Incumbent Party Pooling All Elections

Effect of Barely Winning on Several Outcomes
Incumbent Party

Bandwidth	RD effect
0.152	−0.006
0.15	−0.06
0.21	−0.101
0.147	−0.327
0.197	0.044
0.25	−0.088

Note: Solid dots are RD effects (indicated in RD effects column) estimated via local linear regression and mean-squared error optimal bandwidth (indicated in the Bandwidth column). Solid lines are 95% robust confidence intervals developed by Calonico et al. (2013b) and implemented in Stata package `rdrobust` (Calonico et al. 2013a).

effect on Victory $t+1$ is insignificant in the Open Seat Sample and highly significant in the Incumbent Sample.

Figure 7: Incumbent Sample versus Open Seat Sample: Incumbent Party in 2000
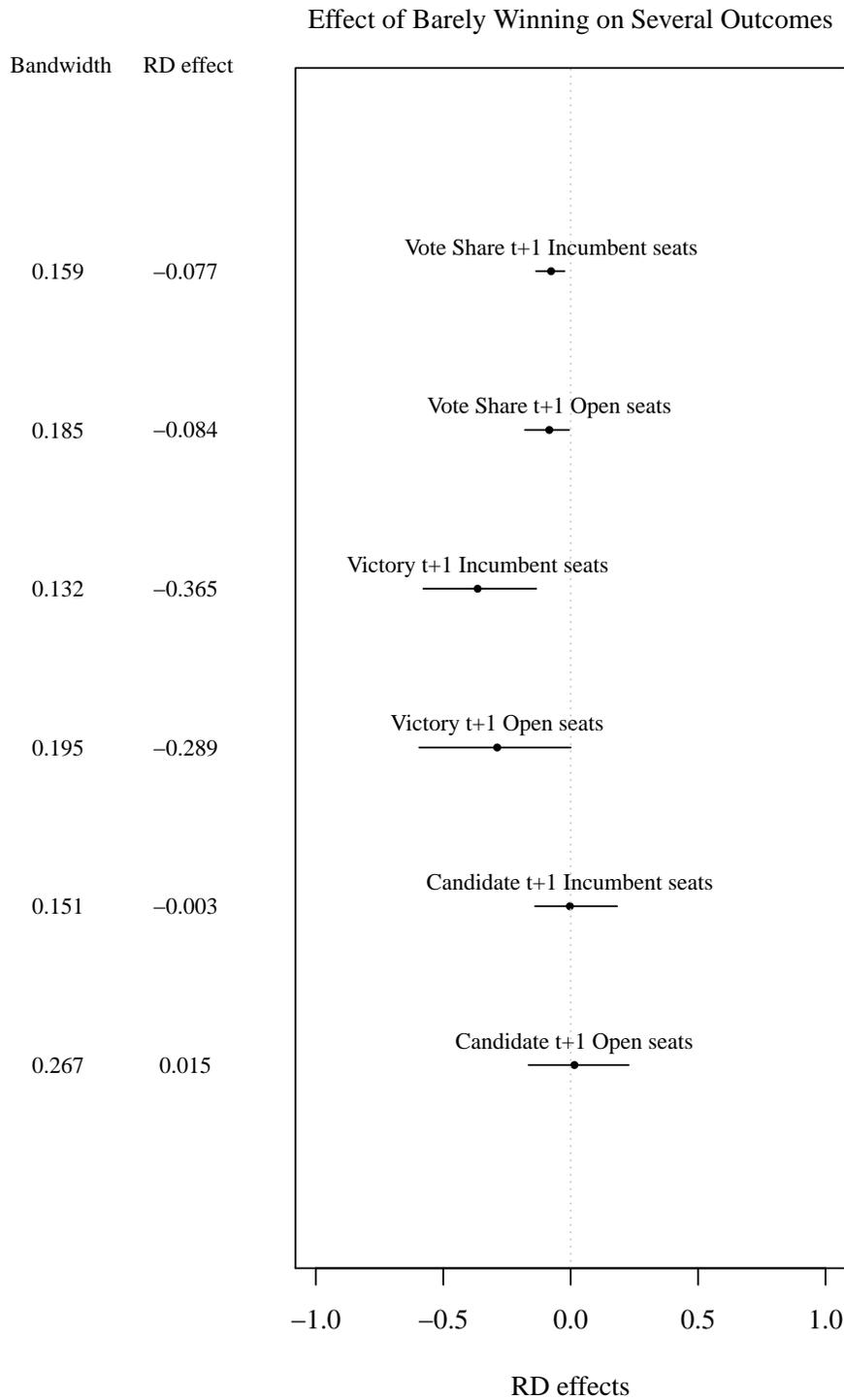
Effect of Barely Winning on Several Outcomes

Bandwidth	RD effect	
		Vote Share t+1 Incumbent seats
0.159	−0.077	
		Vote Share t+1 Open seats
0.185	−0.084	
		Victory t+1 Incumbent seats
0.132	−0.365	
		Victory t+1 Open seats
0.195	−0.289	
		Candidate t+1 Incumbent seats
0.151	−0.003	
		Candidate t+1 Open seats
0.267	0.015	

RD effects

Note: Solid dots are RD effects (indicated in RD effects column) estimated via local linear regression and mean-squared error optimal bandwidth (indicated in the Bandwidth column). Solid lines are 95% robust confidence intervals developed by Calonico et al. (2013b) and implemented in Stata package `rdrobust` (Calonico et al. 2013a).
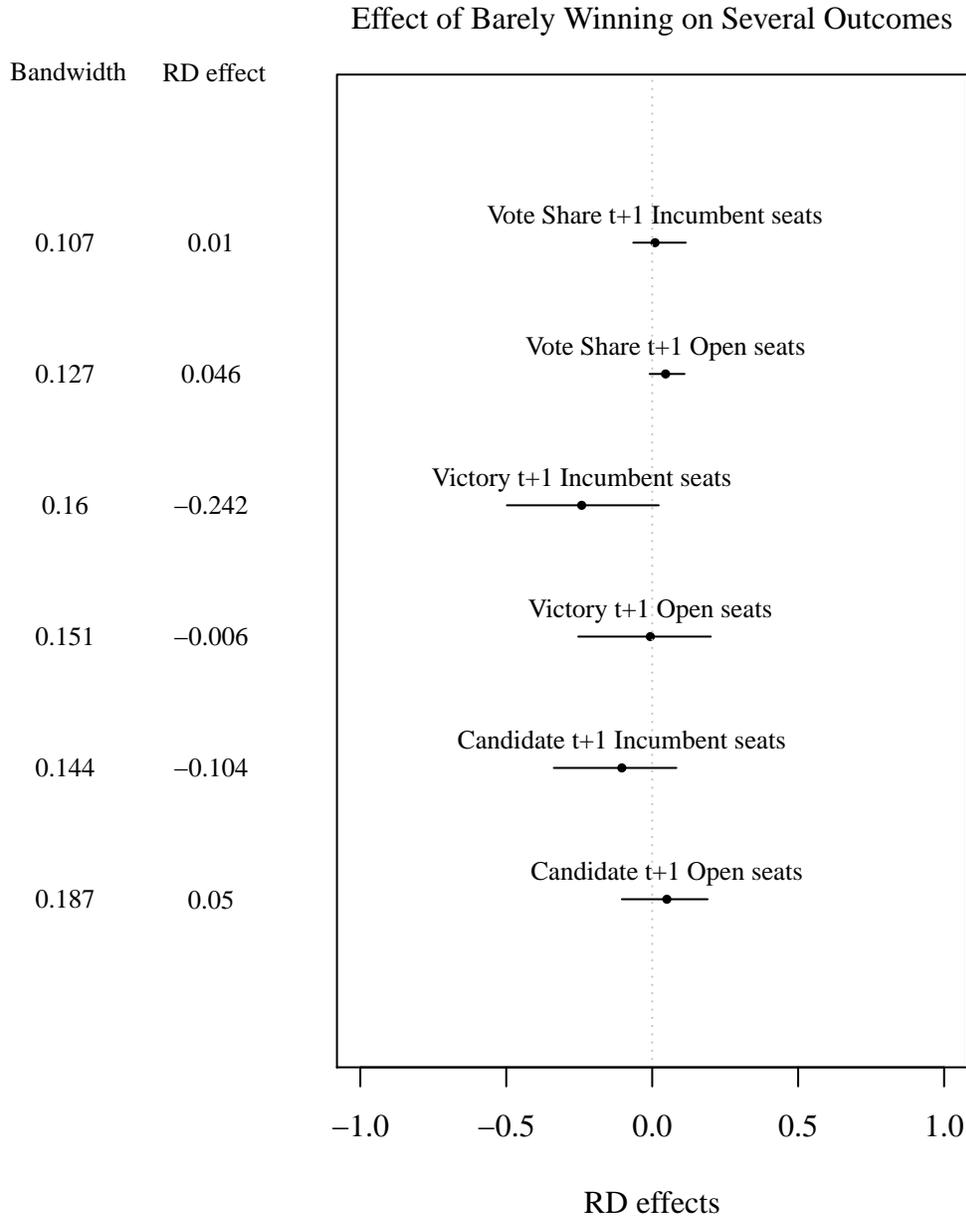
33

Figure 8: Incumbent Sample versus Open Seat Sample: Incumbent Party in 2004

Effect of Barely Winning on Several Outcomes

Bandwidth	RD effect
0.107	0.01
0.127	0.046
0.16	−0.242
0.151	−0.006
0.144	−0.104
0.187	0.05

Vote Share t+1 Incumbent seats

Vote Share t+1 Open seats

Victory t+1 Incumbent seats

Victory t+1 Open seats

Candidate t+1 Incumbent seats

Candidate t+1 Open seats

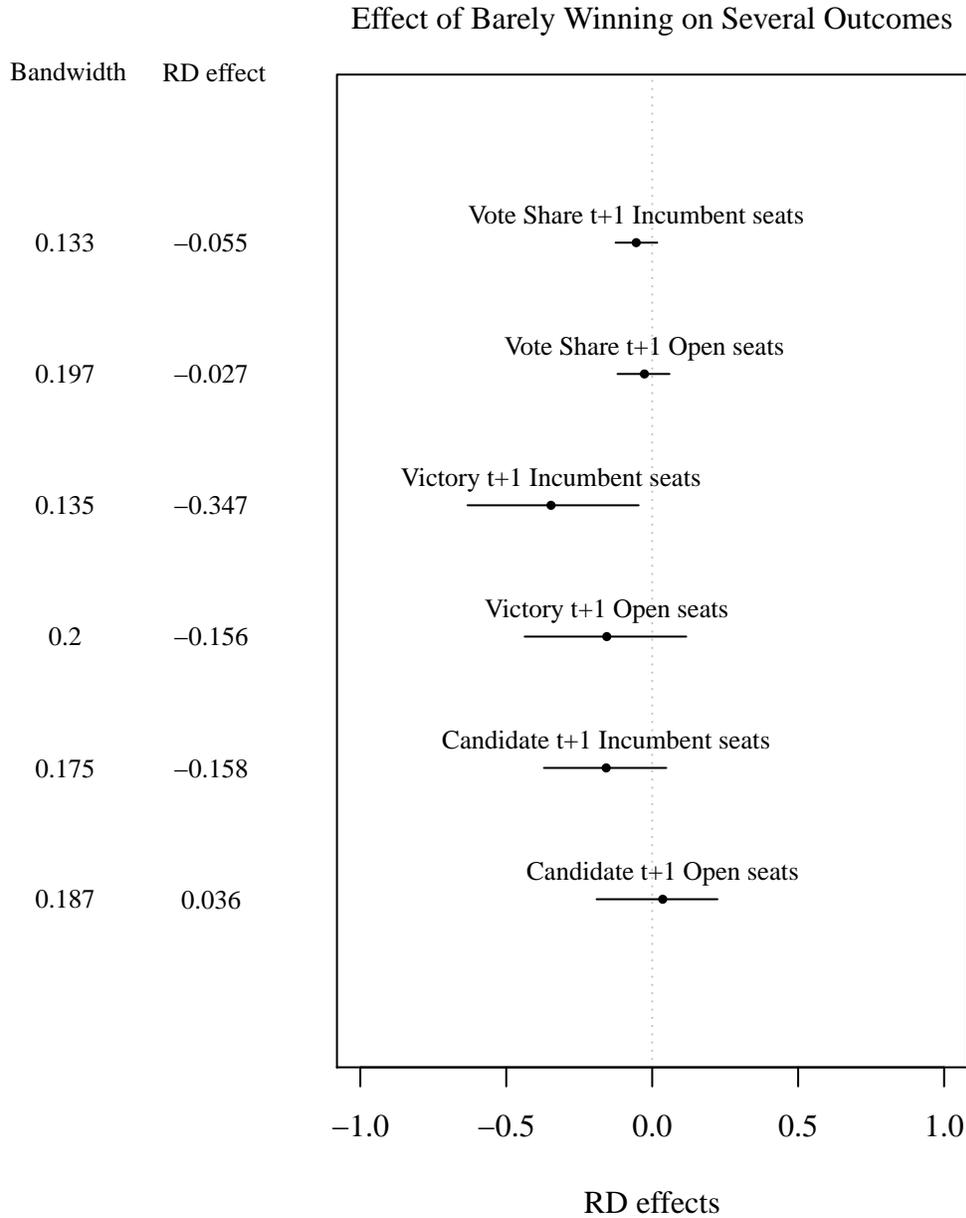−1.0   −0.5   0.0   0.5   1.0

RD effects

Note: Solid dots are RD effects (indicated in RD effects column) estimated via local linear regression and mean-squared error optimal bandwidth (indicated in the Bandwidth column). Solid lines are 95% robust confidence intervals developed by Calonico et al. (2013b) and implemented in Stata package `rdrobust` (Calonico et al. 2013a).

Figure 9: Incumbent Sample versus Open Seat Sample: Incumbent Party in 2008

Effect of Barely Winning on Several Outcomes

Bandwidth	RD effect	
		Vote Share t+1 Incumbent seats
0.133	−0.055	
		Vote Share t+1 Open seats
0.197	−0.027	
		Victory t+1 Incumbent seats
0.135	−0.347	
		Victory t+1 Open seats
0.2	−0.156	
		Candidate t+1 Incumbent seats
0.175	−0.158	
		Candidate t+1 Open seats
0.187	0.036	

−1.0   −0.5   0.0   0.5   1.0

RD effects

Note: Solid dots are RD effects (indicated in RD effects column) estimated via local linear regression and mean-squared error optimal bandwidth (indicated in the Bandwidth column). Solid lines are 95% robust confidence intervals developed by Calonico et al. (2013b) and implemented in Stata package `rdrobust` (Calonico et al. 2013a).

7 Conclusion

Using a regression discontinuity design to analyze Brazil's municipal mayor elections, we found strong negative effects of becoming the incumbent party on the probability of winning in the following election. The results are negative for the three parties which control over seventy percent of Brazilian municipalities and are consistent with the negative and non-positive effects found by Linden (2004), Miguel and Zahidi (2004) and Uppal (2009) in developing countries, but they are in sharp contrast to the large and positive effects typically found in the U.S.

The finding of these large negative party incumbency effects for an executive office deserves further analysis and explanation. As explained in Section 2, Brazilian mayors enjoy substantial autonomy and access to a large number of local resources, and thus they have the ability of targeting resources to constituents. Therefore, the fact that the mayor's party is systematically punished cannot be easily explained by an inability of mayors to respond to the desires of her constituents.

In Section 6 we advanced a tentative explanation that concentrates on the interaction of the weakness of the Brazilian political parties, the short temporal horizon of mayors and the general characteristics of the careers of Brazilian politicians. Mayors serve a four-year period, and can only be consecutively elected for two terms. We hypothesized that the negative effect would arise from those municipalities where parties contest the election after the mayor was term-limited. We developed an indirect test of this hypothesis, which predicts different RD effects for the two subsamples that arise by conditioning on whether the candidate who won at $t-1$ is a candidate at t. Importantly, this is a pre-treatment variable, and conditioning on it preserves the internal validity of the comparison between treatment and control groups *within* each subset. Consistent with our prediction, the effects in our Incumbent Sample, where incumbent candidates run at t, are negative, large and significant, while the effects in our Open Seat Sample, where no incumbent candidates run at t, are not distinguishable from

zero. Future versions of this manuscript will explore this promising result in more detail, in order to develop a more comprehensive explanation of the negative incumbency effects that allows us to further our understanding of the Brazilian party system.

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