

Do Mayors Matter?

Reverse Coattails on Congressional Elections in Brazil *

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Abstract

In federal democracies, parties often invest in local politics as a strategy to improve their performance on upcoming national elections. In this study, I use the concept of reverse coattails to investigate how winning local elections affect upper-level electoral dynamics in Brazil. Using a regression discontinuity design (RDD), I show that parties in Brazil boost their national performance, earning more votes on House elections in districts where their members control local offices. I discuss how access to “pork” controlled by co-partisan House members and mechanical information gains explain these effects. Additionally, I use a Bayesian LASSO algorithm to address data sparsity in RDD designs, and to demonstrate the existence of pro-large party bias on the coattail effects. By disentangling the various effects of winning local elections, this paper contributes to a greater understanding of how parties build electoral strength in fragmented democracies.

Keyword: subnational politics, reverse coattail effects, mayors, political parties, Brazil.

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Introduction

Scholars with a focus on federal democracies have long investigated how elections of different scales produce various electoral incentives for voters and parties (Rodden and Wibbels, 2011; Gibson and Calvo, 2000; Samuels, 2003; Falleti, 2010). As part of this scholarship, much of the literature relies on the concept of coattails to support that horizontal and vertical forces from executive races shape the performance their co-partisans on concurrent and non-concurrent legislative races (Golder, 2006; Magar, 2012; Meredith, 2013; Samuels, 2000; Borges and Lloyd, 2016; Rodden and Wibbels, 2011). While a substantive part of the literature focuses on top-down coattails, much less is known about bottom-up processes. An original effort on this direction is the work by Ames (1994) in Brazil, in which the author uses the concept of reverse coattails to explain how subnational political organizations affected the vote share of presidential candidates. Reverse coattails are particularly attractive in environments where partisanship works poorly as an informational shortcut between parties and voters because in these fragmented environments, information demands on voters abounds, adding even more noise to an inherently difficult process. To remedy such a dilemma, parties often invest in local politics with a focus on acquiring critical policy and non-policy advantages in future electoral disputes.

Building upon this logic, I investigate reverse coattails effects from winning local offices on forthcoming national congressional elections in Brazil. I provide empirical evidence for effects of winning local on upcoming House election, identify which parties benefit from coattails, as well as how they benefit. Using a regression discontinuity design to analyze mayoral polls conducted between 2000 and 2012, I show that winning a local executive race, even by a small margin, significantly increases the vote share for the incumbent party in a forthcoming legislative election. On average, the incumbents' party vote share increases by 2% compared to the runner-up party.

I illustrate that the effects of reverse coattails are robust through a variety of measures, including the variation of the vote-share over time and the probability of the incumbents' party winning the most votes in cities controlled by mayors' from the same party. Further, I show how mayoral coattails vary across the wide range of parties in Brazil. The results of my study indicate that the bottom-up coattail effects are greater for large parties in Brazil, while small parties do not extract substantive national electoral gains from winning local offices. To estimate the effects on different parties, I implement a novel methodological strategy by applying a bayesian estimator, developed to deal with data sparsity across subgroups, in the context of regression discontinuity designs ([Ratkovic and Tingley, 2017](#)).

After discussing robust evidence of the reverse coattails effects, I tease out some of the mechanisms. I first discuss how access to “pork” explains the strength of coattail effects. I show that mayors compensate the costs of using local capital to help national allies by accessing benefits controlled by their co-partisans. I find a substantial increase of 10 percentage points in the probability of local incumbents to receive funding controlled by co-partisans in the House compared to the runner-up party from the last local dispute. I also present robust evidence of how these gains in funding increase the coattails effect on upper-ticket elections. Moving further, I explore how winning local elections serves as an information shortcut improving within-coalition coordination for the mayors' party. I measure information gains using the concentration of votes for the incumbent and runner-up candidates within each coalition. If controlling the local office increases the strength of partisan cues, one should expect a higher concentration of votes for the local incumbent party's top candidate in an upcoming legislative election. More information leads voters to pay more attention to the top candidates of the incumbent party, thus expanding electoral gains at the national level.

This paper contributes to several studies focusing on the relevance of mayors in upper-level electoral dynamics in Brazil. Previous work mainly depicts mayors as *brokers* for politically-oriented national elites, somewhat forced to help their co-partisans due to institutional constraints (Novaes, 2017). In this paper, I provide evidence to confirm that the effects of winning a local election are primarily a consequence of benefits delivered by national elites to local incumbents. Beside, I further discuss the presence of mechanical informational benefits; winning locally improves a party's capacity to concentrate votes for their top candidates, reducing the number of effective candidates within pre-electoral coalitions. This finding expands on the pioneering argument about intra-party coordination of Avelino et al. (2012), which had not been empirically tested until now.

Second, this paper explores how the effects of mayoral elections vary across parties in Brazil. While previous literature neglects to mention these heterogeneous effects (Novaes, 2017; Baião and Couto, 2017; Avelino et al., 2012; Firpo et al., 2015), I provide robust evidence of how large parties, with a strong presence in upper-level legislative and executive positions, perform better in municipalities controlled by their co-partisans than smaller parties.

Finally, to further understand the sources of mayoral coattails, I also analyze coattails conditional on the institutional strength of the mayors' party, incumbency for the House elections, and career incentives at the local level. I show that state-level partisan alignment and possession of a House seat substantially increase the electoral boosting from mayors, explaining part of the findings on pro-large party bias. After that, I analyze the conditional effects on house incumbency effects for the mayor and runner-up parties, and finally the reverse coattails conditional on the mayors' career incentives, which has been primarily used to explain incumbency effects in local Brazilian politics (Titunik et al., 2015). I find weak evidence of heterogeneous effects

for these two later explanations.

The article proceeds as follows: In the first section, I expand on the mechanisms and theory of reverse coattails in Brazil. Then, I introduce the reader to the institutional environment in Brazil. The following section presents the identification strategy and the research design employed in the paper. I then discuss the results, the heterogeneous effect of parties, and the mechanisms behind reverse coattails in Brazil. To conclude, I present a set of robustness checks, and acknowledge the broader contributions of this paper.

Mayoral Reverse Coattails in Brazil

In multilevel democracies, national candidates have incentives to structure their campaigns around local intermediaries, in particular around party members holding elected local offices. Winning a local executive gives a local party member access to clientelistic goods (jobs and “pork”) and non-clientelistic goods (information and reputation) that can play a crucial role in helping co-partisans’ bids for upper-level legislative positions. In federal democracies with high decentralization, as in Brazil, mayors usually control both types of goods, and voters view local politicians as their closest connection to the electoral market. In this section, I discuss these dynamics in detail and shed light on the mechanisms explaining when and how mayors play a central role on partisan-building in Brazil.

Access to Pork and Mayoral Engagement on National Politics

In young democracies where partisanship is less structured as a long, historical and stable identity, national elites cannot solely rely on partisan source cues to solve informational deficits on behalf of voters – a dynamic long-investigated by the scholarship on advanced democracies

(Campbell et al., 1960; Zaller et al., 1992; Green et al., 2004). Specifically in federal democracies, national elites reduce their costs of voter outreach by structuring their campaigns in an economy of scale which relies on local allies. As a result, when voters are forced to decide between thousands of candidates (Calvo et al., 2015; Limongi and Vasselai, 2018) but cannot use party membership to distinguish between candidates, they tend to rely on local politicians to make a decision. This substitution dynamic is the foundation of Ames (1994) argument about reverse coattails in Brazil, and mayors are central piece on this bottom-up political game.

Because local and national elections are non-concurrent in Brazil, mayors can decide under which conditions is beneficial to them to act in alignment with their parties, and play by partisan rules at the time of upper-level elections. In simple principal-agent logic (Besley and Case, 1995), the mayor needs to balance between two principals; on one hand, the local politician can appeal to the interests of national elites by spending political capital to help co-partisans running for upper-level elections; on the other, mayors can focus their total attention to another principal, the local voter.

Previous literature on mayors' behavior in Brazil has primarily focused on this principal-agent dilemma by observing the constraints imposed on local politicians (Novaes, 2017; Ames, 1994). Here, I explain when mayors deliver votes to national elites by considering another equally possible, albeit under-explored, strategy that national elites might deploy to obtain local gains. I focus on the benefits that national parties might provide to their local members in exchange for local support. Specifically, I argue that access to "pork" provided by national House members is essential to explaining mayors' behavior, and the presence of mayoral reverse coattail effects on local and national levels in Brazilian politics.

Federal legislators in Brazil have a variety of tools to convince local politicians to engage

in national partisan efforts. These tools vary from indirect benefits, such as introducing local incumbents to a national network of bureaucrats, to more direct benefits like access to “pork” under their control or access to other federal resources (Brollo and Nannicini, 2012; Firpo et al., 2015; Bueno, 2017). The power to allocated individual amendments to the federal budget and direct these resources to local governments is the most crucial form of pork under the direct control of House members. Even though the payment depends on the political interests of the President and Cabinet members (Luz and Dantas, 2017; Vasselai and Mignozzetti, 2014; Raile et al., 2011; Limongi and Figueiredo, 2005), legislative proposals defining the allocation of federal resources to local governments (amendments to the federal budget) are under full control of House members. Indeed, survey data in Brazil show voters do weight these pork-barrel dynamics, and the capacity of upper-level politicians to bring resources to their municipality, as important for their vote choice (Ames et al., 2008). I show here how partisan alignment and pork-barrel politics using budgetary amendments ¹ work as a crucial tools for national legislators to convince local politicians to be active on the national level, explaining to a great degree the existence of mayoral reverse coattail effect.

Therefore, in this environment, predictions of how politicians behave are straightforward. In order to convince local politicians to truthfully engage in upper-level races, national elites, including candidates running for reelection, rely on pork-barrel politics from the national to the local level. Along these lines, I find empirical evidence that upper-level legislators reward their co-partisan mayors at a higher rate in comparison with politicians from others parties. In this sense, “pork” controlled by national elites functions as a crucial mechanism through which

¹I analyze pork allocation using co-partisans proposals through budgetary amendments. Therefore, I do not include in the model information about the later payment of these amendments by the Federal Government. The decision to pay the individual amendments relies entirely on the Presidency, and it relates to dynamics of coalition-management that I do not analyze in the paper. However, as I show in the paper, the allocation of a resource is sufficient to make intra-party dynamics stronger.

national elites build partisan cohesion within the federal government. More importantly, as I demonstrate in the later section on empirical results, local mayors account for greater access to federal resources and “pork” allocations by delivering better results in upper-level elections for their co-partisans. I present evidence that receiving “pork” from national co-partisans separates the occurrence of reverse coattail effects, explaining how top-down benefits are crucial for local politicians’ electoral engagement.

Information, Within-List Coordination and Mayoral Reverse Coattails

In addition to “pork” dynamics, I argue that winning a local election also helps produce reverse coattail effects by providing national party members with mechanical informational gains and an increased capacity for coordination. In this section, I discuss this second path for the existence of reverse coattails in Brazil. Open List Proportional Representation (OLPR) is commonly recognized as a source of informational challenges for voters, who are required to choose among thousands of individual candidates on dozens of lists. The informational demands presented by OLPR have been used to explain non-ideological and unstable pre-electoral coalitions ([Amorim Neto et al., 2003](#); [Zucco, 2009](#)), pro-small-party bias in legislative seats ([Calvo et al., 2015](#)), and frequent party-switching in Congress ([Desposato, 2006](#)). As evidence, survey data has consistently proven that Brazilian voters have a shortage of memory about their recent voting choices during legislative elections ([Ames et al., 2008](#)).

Winning a local election makes political signals by parties more reliable, therefore producing information gains for the incumbents’ party even when elections are non-concurrent; voters, forced to make a decision in a noisy environment, look to the party of the mayor as a cue for upper-ballot candidates. This information shortcut results in gains for party coordination during non-concurrent , upper-level legislative elections. Information boosts party efforts to

coordinate among candidates, a process I identify by showing a higher concentration of votes for the incumbent party’s top candidates within its coalition. In other words, in municipalities controlled by a co-partisan, parties consistently reduce the number of effective candidates within each pre-electoral list, therefore decreasing voter dispersion and increasing attention to top candidates. My results show how local information increases voters’ awareness of the incumbent party’s top candidates on a national level.

I show how winning a local election, even by a small margin, improves within-list coordination for the candidates of the incumbent party in future House elections. To measure these mechanical informational gains, I consider the number of effective number of candidates within the incumbent’s party pre-electoral coalition for the House election, in comparison with effective number of candidates within the runner-up candidate’s party. This parameter identifies the concentration of votes for the top candidates on the incumbent party’s list compared with the runner-up party’s list; a decrease in the number of effective candidates represents better information flow relative to the incumbent party’s top candidates. This empirical test teases out the information gains from winning local elections and the effect on upper-level legislative elections.

In the following sections, I provide robust evidence for the effects of electing mayors in Brazil, and how both mechanisms discussed here drives this political phenomenon. When partisanship is an unstable identity that carries limited information to voters ([Samuels and Zucco, 2018](#); [Baker et al., 2016](#); [Lupu, 2016](#)), local organizations’ support of co-partisans candidates serves as a crucial mechanism for party building. As I show later, access to “pork” controlled by federal incumbents allows a party to activate their local constituencies, and winning locally makes coordination within-coalition more effective. These dynamics also help explain the pro-large-party bias on the effectiveness of the reverse coattails effect; parties with greater institutional

strength can both mobilize more resources to local allies and be more credible when signaling intra-party connections to voters.

Institutions and Politics in Brazil

Brazil is administratively divided into 26 states and one federal district, which are further subdivided into 5,570 municipalities. Brazil has for decades relied on a three-level federal system in which local municipalities act as autonomous sources of political and administrative power. Municipal governments comprise a relevant share of the provision of public goods and services, especially those related to education, health, and infrastructure projects. Local mayors enjoy relevant authority over policy decisions in their municipalities. Although some series of reforms of fiscal federalism in the 1990s and 2000s have reduced local policy autonomy, in particular regards state-wide governors ([Abrucio, 1998](#); [Arretche, 2007](#); [Almeida, 2006](#)), several recent federal policies were built by establishing a direct relationship with municipalities reinforcing the importance of mayors and partisan dynamics in alignment with the federal government ([Bueno, 2017](#); [Niedzwiecki, 2018](#); [Brollo and Nannicini, 2012](#)).

The political structure at the local level mirrors that of the central government, except that states and cities have a unicameral legislature. The president, governors, and mayors of cities with more than 200 thousand voters are directly elected using a runoff majority rule. However, mayors of municipalities with under 200,000 eligible voters, who represent the absolute majority of the towns, are chosen through plurality rule. Elections for all national and state-level offices take place at the same time every four years, whereas all municipal elections occur every two years. While mayors and local legislators' electoral districts are restricted to their municipalities, state-level and national legislators' districts align with State boundaries.

Legislators at all three levels are selected in an open-list proportional system in which the use of pre-electoral coalition-building between parties occurs at extraordinary levels ([Amorim Neto et al., 2003](#); [Figueiredo and Limongi, 2000](#)). Subnational pre-electoral coalitions, party lists, and candidate selection for executive and legislative positions are decided by regional sections of parties, while national coalitions fall under the direct umbrella of national party branches. All in all, the open-list proportional system in Brazil, combined with high district magnitude and permissive regulation for party-switching disincentives cohesive national party coordination and contributes to a political system characterized by world-record levels of party fragmentation ([Borges, 2018](#); [Desposato, 2006](#); [Calvo et al., 2015](#); [Limongi and Vasselai, 2018](#)).

For example, after the most recent national election in 2018, the largest party in the House, the Worker's Party, held only slightly more than 10% of House seats, whereas thirty parties won at least one seat. The trend of the number of effective parties has consistently moved upward over the last two decades. Based on the Laakso-Taagepera index ([Laakso and Taagepera, 1979](#)), Brazil had a total of 8.16 effective parties in the Lower Chamber in 1998. In 2014, the last year reviewed in this paper, the total number of effective parties nearly doubled, reaching 14.1. However, party fragmentation is not limited to the national level. The local level of party fragmentation resembles the findings depicted above for the House composition. In 2000, the number of effective parties winning local executive offices was 7.38, while in 2012, this value jumped to 11.

Figure 1 depicts the parties' vote share for House elections aggregated at the municipal level. The figure on the left plots the evolution of the number of effective parties using the vote share of the parties in the Lower Chamber, while the right plot illustrates the average vote share of the parties in each municipality. Both figures indicate a worrisome growth of partisan fragmentation

in Brazil over the years.

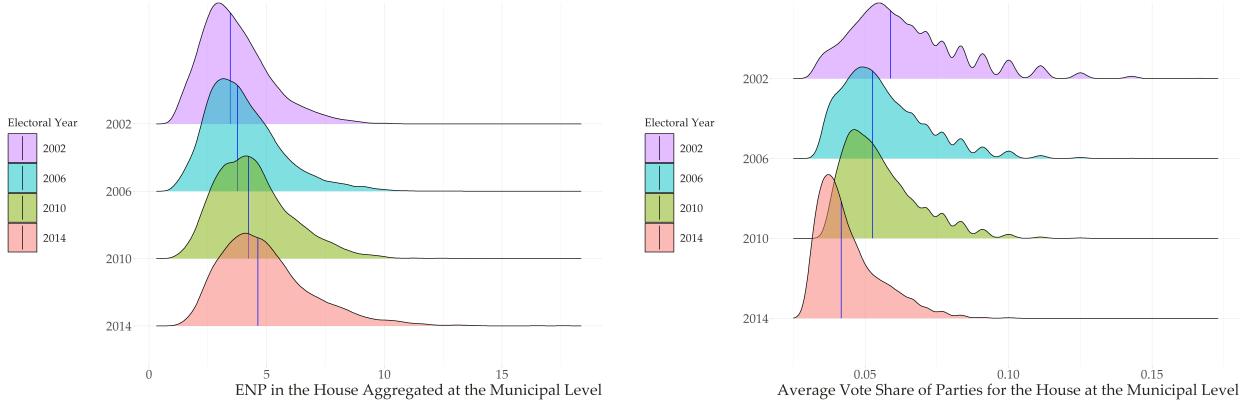


Figure 1: Distribution for the Effective Number of Parties and the average vote share for the House by municipality. The vertical blue line indicates the median for each distribution. The mean over the years and the standard deviation for the number of Effective Parties are 4.29 and 1.74, respectively. Whereas, the mean and the standard deviation for the vote share are 5.5% and 1.1%

Brazil offers a unique opportunity for a thorough investigation of strategies employed by parties in fragmented political systems for several reasons. First, Brazilian electoral institutions produce limited incentives for intra-partisan cooperation. Second, because local and national elections do not coincide, bottom-up electoral incentives can be identified ; because mayors do not formally compete at the same time of upper-level legislative candidates, simultaneity bias cannot emerge from the regular coattails effect from top-down candidates. Therefore, using Brazil as a case, I offer evidence contributing to the larger literature on party-building in multilevel democracies.

Methods

I analyze all elections between 2000 and 2014, measuring the extent to which electing a local executive chief affects the party performance in the subsequent Lower Chamber (national) election. The years of 2000, 2004, 2008, and 2012 represent local elections (t), while 2002, 2006, 2010, and 2014 ($t + 2$) are years with state-wide and national elections. Therefore, the analysis

covers a total of four electoral cycles.² The pressing empirical challenge to estimate causal effects in my study relates to the chance of omitted or reverse bias simultaneously affecting the party vote share for the House (y) and the election of the co-partisan mayor (T). In other words, in municipalities where the mayor for party j is elected, the level of support for said party is likely to be higher; therefore, party j is in an advantageous position in the upcoming legislative race in this particular district, from the onset. Thus, positive results might be spurious due to the differing baseline propensities, rather than the efforts of the mayor to deliver support for co-partisans. To overcome this empirical challenge, I use a regression discontinuity design with the margin of victory at the local election as the running variables. This design has become one of the most credible and accessible strategies in political science used to deal with causal effects on observational electoral data, and has been extensively applied to close elections in Brazil (Avelino et al., 2012; Klašnja and Titiunik, 2017; Novaes, 2017; Boas and Hidalgo, 2011; Brollo and Nannicini, 2012).

To estimate the discontinuity models, I use a local polynomial with degree-one to fit two separate regression functions above and below the cutoff of a margin of victory of zero³. The treatment effects are the difference in the limits of the cutoff, represented by the intercepts from each direction. To smooth the local regression function, I employ triangular kernel weights as a function of the distance between each observation's score and the cutoff. Therefore, observations far from the cutoff are under-weighted by the estimation strategy, allowing for a better approximation of the treatment effect. I use a data-driven search to select an optimal bandwidth for estimation, which minimizes the Mean Square Error (MSE) of the model. To address bias on

²The data is available from the Superior Electoral Court in Brazil. All other variables related to electoral dynamics are extracted from the same source.

³See (Gelman and Hill, 2016; Titiunik et al., 2015; De la Cuesta and Imai, 2016) for an overall discussion about assumptions behind RDD models and the use of non-parametric local linear regression (LLR) to approximate the treatment effects

the treatment effects caused by approximation errors, I report the robust treatment effects and confidence intervals developed by [Calonico et al. \(2014\)](#).

Estimation Strategy

For the baseline setup of the paper, I estimate the effects when party j barely wins (loses) the mayoral election at t on the vote share of the party j co-partisan candidates to the congressional race at $t+2$. I cover the last four electoral cycles in Brazil; hence, t represents the local election, and $t+2$ represents the national elections that occur two years later. The dependent variable is the vote share of the two top candidates (the mayor and the runner-up) from party j for the House election at $t+2$ in the municipality i . Therefore, the causal effect indicates the increase/decrease in the vote share of the incumbents' party at $t+2$ *vis-a-vis* the vote share of the runner-up candidate's party for the House election.

I show how access to "pork" affects the ability of partisan alignment to strengthen the reverse coattails effect. First, I estimate the effect when the party j barely wins (loses) the mayoral election at t on the access to "pork" allocations proposed by House members of party j . I restrict the analyses to the individual budgetary amendments proposed by party j legislators in the two years following the local election; this design guarantees a well-identified effect of electing a mayor on "pork" allocations from national co-partisans. I then use a Bayesian LASSO model to estimate the heterogeneous treatment effects depending on party membership - the advantages of this modelling strategy receive a proper introduction in the following section. The estimator allows the identification of partisan variation on how heavily different political parties reward their local incumbents with "pork" allocation after a local victory. Finally, I subset the sample of mayors/runner-up's between those who received and do not "pork", and show the direct effects of pork on reverse coattails.

In the sequence, I estimate the effect of incumbency on the concentration of top candidates for House elections, in order to capture the informational mechanism from winning a local office. As before, the treatment group and control conditions are identical; the outcome is now the effective number of candidates on each legislative list in which the party j runs at $t+2$. The outcome variable is weighted by the average number of effective candidates within the party's coalition list – these denominators control for the heterogeneity of list composition in Brazil⁴. The treatment effect is estimated using a regression discontinuity design. The parameter approximates the vote concentration of the top candidates within the list of the incumbent party j compared to the runner-up party. In the supplemental files, I provide a detailed description of the subgroups and the estimation strategy for both mechanisms.

Subgroup effects using Bayesian Lasso for Regression Discontinuity Designs

To estimate the heterogeneous effect by parties, I use a novel methodological strategy applying a Bayesian sparse estimator to a regression discontinuity design. Previous work on heterogeneous partisan effects, relying on RDD as an identification strategy, commonly handpicks the largest parties for their analyses ([Boas et al., 2014](#); [Klašnja and Titiunik, 2017](#); [Novaes, 2017](#)), rendering statistical and theoretical problems. First, ad-hoc decisions about subgroup effects can generate false discoveries when no true relationship exists, notably under the condition of sparsity of the data ([Pocock et al., 2002](#); [Imai and Strauss, 2011](#)). Second, eliminating part of the data might render inefficient estimators, as the literature on multilevel modeling commonly argues ([Gelman and Hill, 2016](#)). Third, local linear models with sparse data, as in [Boas et al. \(2014\)](#)'s example

⁴The formula for the outcome is the following $\ln(\frac{ENP_{ijm}}{EN\bar{P}_{jm}})$, where ENP represents the classic measure of effective number of parties by [Laakso and Taagepera \(1979\)](#) using the vote share of each party i on the proportional list j for the House election aggregated at the municipality i , and $EN\bar{P}$ captures the average number of effective parties on the list j and in the municipality m . Using a logarithmic scale simplifies the presentation of the results, but does not alter their significance or value

involving models with less than 50 observations, are likely to render instability in the asymptotic properties of the treatment effect and raise warranted suspicion about the findings.

To overcome this limitation and identify subgroup effects in close races in Brazil, I employ the LASSOplus method developed by Ratkovic and Tingley (2017). A simple LASSO model works by zeroing out non-relevant parameters when dealing with high-dimensional data (Tibshirani et al., 2015). In the Bayesian setup, the LASSO estimator uses some form of prior distribution over the parameters for the regularization process ⁵. I estimate the LASSOplus model by using the Gibbs sampler with 1,000 burn-in iterations and 1,000 posterior samples, thinning every 30 samples (which yield 1,000 draws), and utilizing the same bandwidth calculated by the data-driven approach for the general model (Calonico et al., 2014).

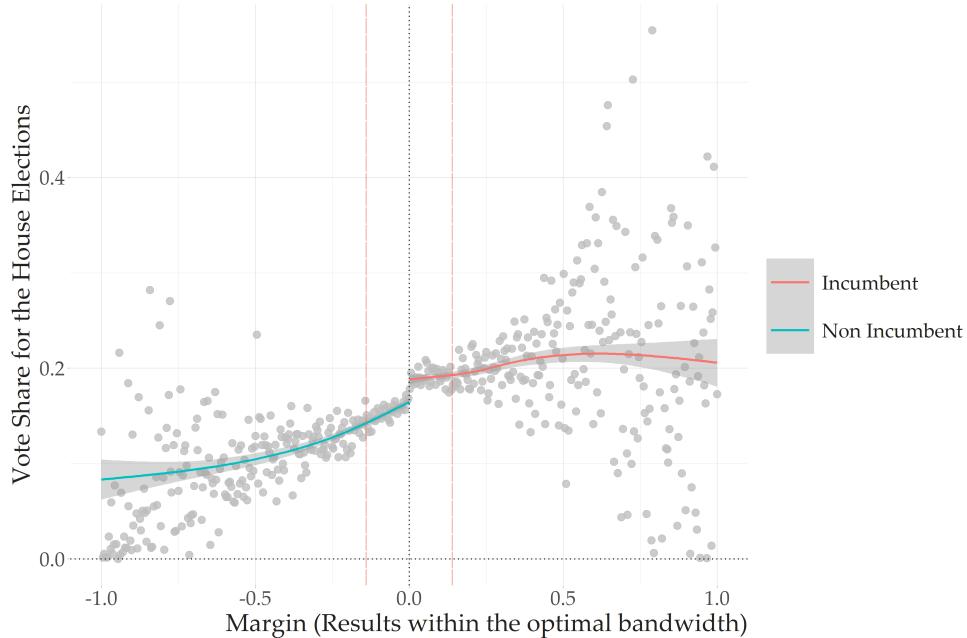
Results

I start providing evidence for the effects of electing a mayor on the co-partisans vote share for House seats. Figure 2 presents the results for the RD estimation. Analyzing all electoral years, the average effect of controlling the local executive is an increase of two percentage points in the vote share of the incumbent party's bid for a House seat. The results are aggregated at the municipal level; therefore, the increase should be understood as an average at the local level. The numerical results for the treatment effect are displayed in table 1. Under different specifications for the bandwidth, the results remain positive, with some variation of statistical

⁵The Bayesian version of the estimator has proven to exhibit a better performance compared with its frequentist counterparts. Not only has the broad family of Bayesian methods been shown to work better when groups have few observations (Stegmueller, 2013); it also appropriately manages the estimation of standard errors in the LASSO setting. In particular, Bayesian methods may create measures of uncertainty affecting the parameters in which the penalty term shrinks to zero (Kyung et al., 2010). I refer the reader to (Anastasopoulos, 2018) simulations to show the superior ability of the LASSO regularization to minimize false negative results when dealing with sparse data in regression discontinuity designs.

significance within very narrow windows.⁶

Figure 2: Smoothed Regression Discontinuity of the Treatment Effect (Red lines represent the optimal bandwidth decision)



The average vote-share per party for House elections across electoral years is 5.5%, with a standard deviation of 1.1% in each city (See figure 1). Therefore, electing the mayor increases, on average, two standard deviations in the vote share of the parties for the Brazilian House election in each municipality. Undoubtedly, an increase of two standard deviations is a substantial effect. More importantly, considering the high level of competition for House Seats in Brazil, (Calvo et al., 2015), an increase of two standard deviations in the party vote share could constitute the difference between winning or losing a seat.

⁶To ensure robustness of the findings, I present different model specifications in the appendix, section six. I re-estimate the models using different choices of the polynomial functions for the local regressors, and also use simple difference-in-means estimators and linear models with polynomials in the running variables. Results are largely consistent with the results presented here

Table 1: REGRESSION DISCONTINUITY RESULTS

Outcome: Vote Share Co-partisans for the House Election				
Bandwidth (Margin of Victory)	Estimate	Lower 95% CI	Upper 95% CI	Number of cases
Optimal Bandwidth Selection				
14.4%	0.021	0.011	0.032	12770
Alternative Specification				
1%	0.031	-0.024	0.086	1080
5%	0.015	-0.006	0.036	5376
10%	0.016	0.001	0.031	9971
25%	0.022	0.012	0.032	17491
100%	0.023	0.017	0.030	21397

Note: Running variable is party's margin of victory for the local executive election at t , outcome is mayor/runner-up's co-partisans' vote-share for the House election at $t+2$. Estimate is the average treatment effect at cutoff estimated with local linear regression with a triangular kernel. The main result in the first row uses a MSE-optimal bandwidth selection procedure ([Calonico et al., 2014](#)). Columns 3–5 report, respectively, 95% robust confidence intervals, and the number of treated and control observations within the bandwidth. Rows 2–5 present results using alternative *ad hoc* bandwidths.

Mayoral Reverse Coattails by Parties

Figure 3 presents the Bayesian LASSO non-zero coefficients for the party effects. The results indicate that the five largest parties in the Brazilian electoral system have treatment effects different from zero: the *Partido do Movimento Democrático Brasileiro* (PMDB), the *Democratas* (DEM, formerly Partido da Frente Liberal), the *Partido da Social Democracia Brasileira* (PSDB), and the *Partido Progressista* (PP), and the *Partido dos Trabalhadores* (PT). The effects are positive and statistically distinct from zero, and the PP has the largest conditional effect.

First, the number of seats in the House and the number of elected mayors over the last three decades suggest that party size matters for the successful alignment between local-national

politicians. The PP, a non-programmatic, traditional clientelistic party, have the strongest conditional effect, suggesting that the treatment is loosely related to the strength of party labels, as the literature suggests, when analyzing incumbency effects ([Titunik et al., 2015](#)). Such a pattern is an important contribution to the literature on political parties in Brazil. Several studies converge on the conclusion that PT is unique in the hostile Brazilian environment ([Keck, 1992](#); [Hunter, 2010](#); [Feierherd, 2020](#); [Samuels and Zucco, 2018](#)), and my results show that other political parties also have a remarkable capacity to persuade local politicians to work towards their national interests, even though the PT exhibits consistent positive effects.

Second, programmatic preferences and coattail-presidential effects also seem to have no impact. The five major parties represent a fair amount of variation regarding policy preferences, and with the exception of the PT and PSDB, these parties have had competitive presidential candidates in the recent Brazilian elections. To test for presidential coattails, I provide models for robustness checks in the supplemental files. The results show no consistent effects of having a competitive presidential candidate on the treatment effect.

Finally, the existence of partisan bias favoring larger parties validates theories on party strength, moderating the coattail effects. Larger Congressional parties have more representatives distributed throughout the districts, as well as elected governors, therefore exhibiting a higher ability to coordinate mayors' behaviors. Latter sections provide more empirical evidence for this argument.

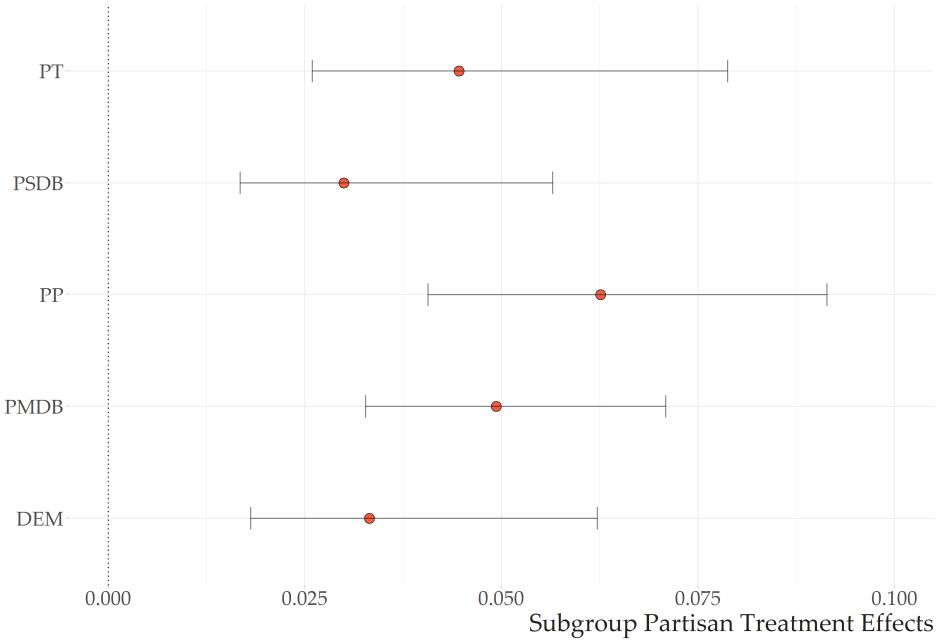


Figure 3: Nonzero conditional treatment effects by parties using the Bayesian Sparse LASSO algorithm. The estimation uses a data-driven bandwidth selection and presents the median point estimates with 95% confidence intervals.

Pork-Barrel and Partisan Alignment

Figure 4 presents the effect of winning locally on access to the allocation of “pork” from the House by the local mayors’ co-partisans. The dependent variable in this first model is a binary indicator for whether the municipality i had resources allocated from individual amendments to the federal budget proposed by House members from the incumbent/runner-up party in the two years after the local election, and before the upper-level legislative race.

As depicted in the leftmost plot of figure 4, after a local election, a municipality increases the probability of an allocation of “pork” from a House representative from the same party of the incumbent by 12 percentage points, compared with the runner-up party. In other words, House members send more money to municipalities that their party wins than municipalities where the parties are barely defeated. The rightmost plot presents the conditional effect of access to “pork”

by parties using the Bayesian LASSO estimator. In accordance with the partisan effects, the results indicate that the largest parties in Brazil are more efficient at rewarding local co-partisan incumbents that win elections.

The effects on parties are roughly similar to the average effect, except for the case of the PT that has an above the average effect; large parties increase, on average, the chances that their local incumbent will receive an individual amendment in the following two years after being elected by 15 percentage points on average. When a large party wins the local executive race, their co-partisans 'bring home the bacon' by granting resources to the municipalities controlled by their co-partisans. On the other hand, smaller parties show no substantial effects. Even when successful in electing a mayor, small parties do not receive the support of their co-partisans in the House. In conclusion, from the perspective of the local incumbent, using local capital to help a co-partisan running for an upper-level election is more efficient only for a few major parties in the Brazilian electoral system.⁷

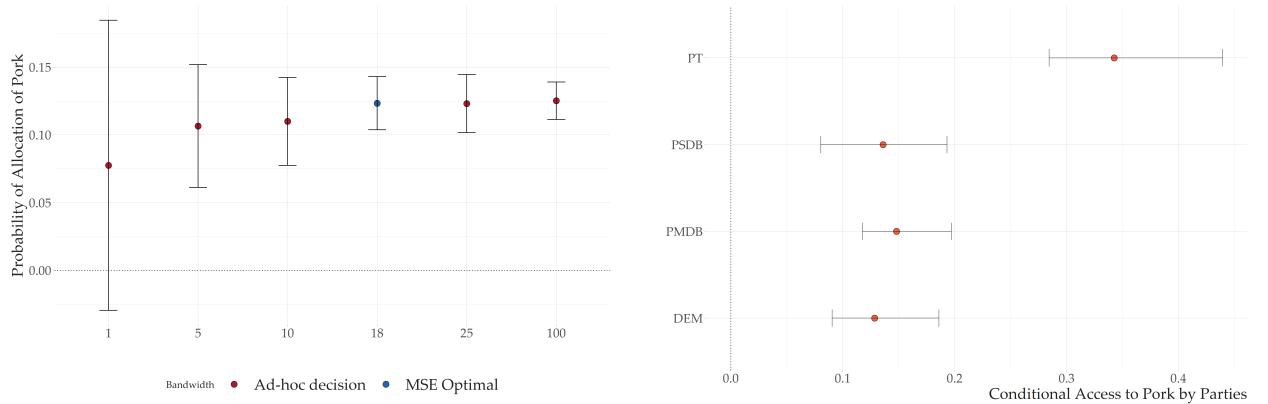


Figure 4: Reverse Coattails and Access to Pork. The left figure shows the treatment effect of winning a local election on the allocation of pork by House members from the same party. The right figures presents the nonzero conditional effects by parties on access to pork using the Bayesian Sparse LASSO algorithm.

⁷The supplemental files show similar results when estimating a single model for each party using the local linear estimator (Titunik et al., 2015). Although more positive cases appear when using a local modeling strategy, the general findings about large-party-bias do not change.

To connect this finding with the theory of reverse coattails, I estimate the mediated effect of “pork” on upper-level vote-share in figure 5. I separate the data according to the incumbent and runner-up candidates’ access to “pork” using the dependent variable described in the above paragraph. In the sequence, I estimate the effects conditional on the subgroups. The results are fascinating, and depict several interesting dynamics connecting pork with mayors engagement in upper-level races.

First, the results demonstrate that “pork” allocation strongly affects upper-level co-partisans’ performance on upper-ticket legislative elections. Incumbents who receive promises of “pork” from co-partisans on average increase their party vote share by 10 percentage points. However, when the incumbent receives no allocation of resources (second point-estimate), reverse coattails, on average, disappear. Therefore, “pork” allocation from upper-level co-partisans is a key mechanism pushing mayors to engage on upper-level party building strategies.

More interestingly, when House members from runner-up candidate’s party allocate pork to a particular municipality, reverse coattails are greatly diminished. In the first case, when a municipality receives money from both the mayor and the runner-up co-partisans no extra votes are won by the incumbent’s party in the forthcoming House elections. However, when only the runner-up party allocates pork, the incumbent’s party vote-share is abruptly reduced compared to the runner-up’ party vote-share. One should consider how pork allocations work at the local level to grasp the dynamics behind these results. Locally targeted ”pork” allocations from House members, independent of the national representative’s party, are likely to fall under the control of the incumbent, who can directly claim the credit for the benefit. And upon receiving “pork” allocation from other than their own parties, mayors can use their local capital to support these, likely, new allies. Therefore, although reverse coattails are, on average, positive, its effects are

strongly conditional on national co-partisans rewarding local politicians with financial benefits, and in the absence of this "tit-for-tat" transaction, mayors are unlikely to engage on national party building efforts in upper-level election, or might simply cross the party line to build new local coalitions.⁸

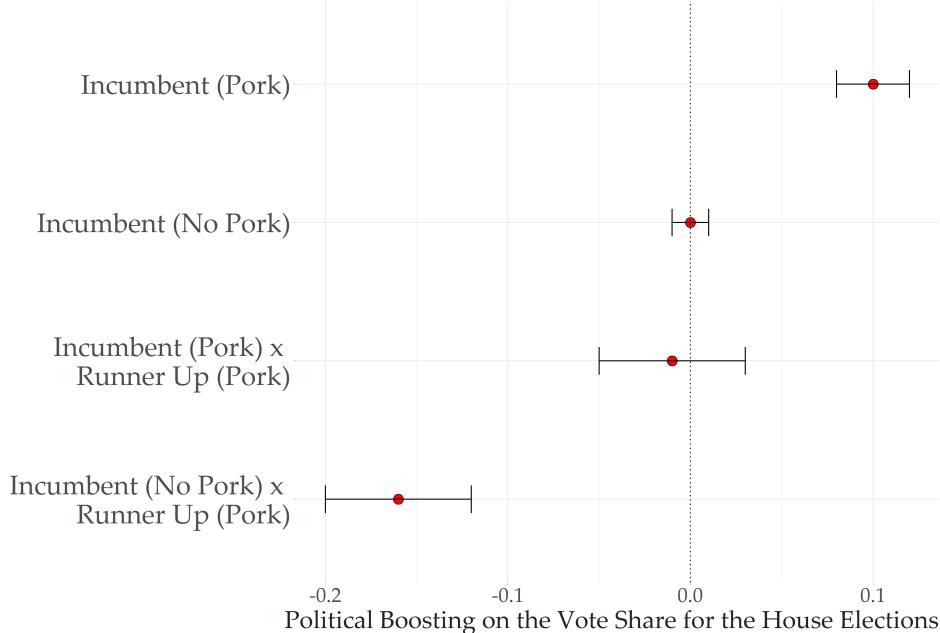


Figure 5: The figures shows the coattails effect mediated by access to pork and reports only coefficients using the optimal bandwidth. The estimations uses the robust 95% confidence intervals and point estimates.

Information Gains and Party Coordination

In this section, I present evidence of mechanical gains from winning locally on party coordination capacity within upper-level legislative elections. I estimate two distinct models to ensure robustness. First, I show the effect of incumbency on the effective number of candidates, con-

⁸Unfortunately, the results do not distinguish between cases when local incumbents punish their party by not engaging in the upper-level election or by working in favor of another party. The latter I assume is more likely particularly considering how common party switches and changes in pre-electoral coalitions are in Brazil; upon receiving pork from House members not from their own party, mayors reward them with votes, and might work towards bringing the party to their local coalition. The investigation of this politics of punishment deserve future and detailed investigation.

sidering the entire sample. Second, I isolate the effects for the cases in which the mayor's and runner-up's parties are competing for House seats on the same list. The latter case provides strong evidence for information gains after winning local offices; even for candidates running in the same coalition, incumbency has a stronger negative effect - an increase in coordination - on the number of effective candidates running for upper-level legislative elections. Both parameters are statistically distinct from zero, using 95% confidence intervals. Figure 6 presents the main results.

The estimates indicate that top candidates from the incumbent party gain increased attention *vis-a-vis* the runner-up party, which renders a more efficient allocation of votes for the party as a consequence of information gains. Substantively, the effects indicate a reduction of 12% in the number of effective candidates, using the optimal bandwidth, for the case when both the runner-up and incumbent parties are in the same coalition for the House election. Greater attention to the top candidates emerges from voters observing the party of the mayor, and rewards the more competitive candidates on each list. The results remain positive under more restrictive bandwidths, although statistical significance decreases.

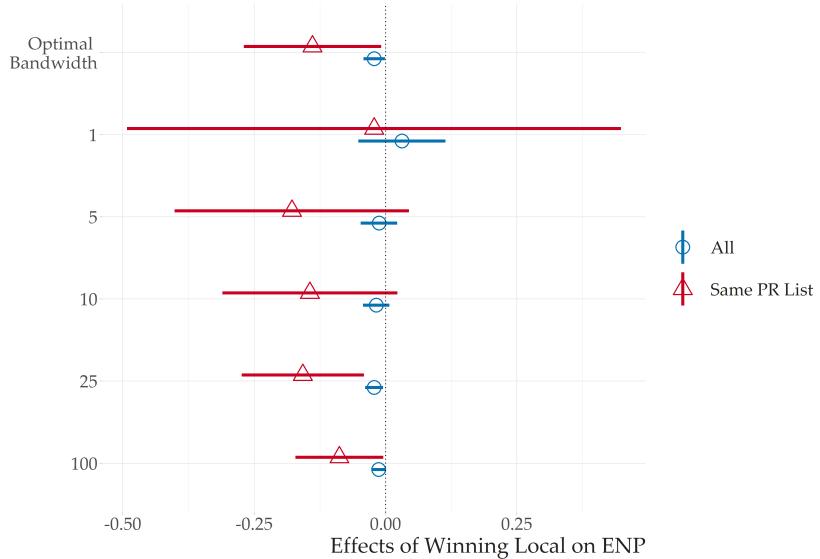


Figure 6: Information Gains: the effects on winning local in the effective number of candidates by electoral list. The estimation uses a data-driven bandwidth selection and presents point estimates with 95% confidence intervals.

Party Institutional Strength, House members Incumbency, and Mayors’ Career Incentives

In this section, I present three extensions to explain some variation in the strength of reverse coattail effects⁹. I estimate whether the coattails effects are conditional on the mayors’ party institutional strength, on house members incumbency, and on the mayor’s career incentives. Specifically, I measure whether the effects of electing the local incumbent changes if: i) the state governor is from the same party of the barely elected mayor; and ii) at least one House Representative from the incumbent party was elected for the House at $t-2$; both measures are instrumental proxies for party strength at a particular electoral district.¹⁰ Then, I examine if the effects change when both the mayor and the runner-up have, or do not have, a co-partisan

⁹In the supplemental files, I provide a detailed description of the research design, the treatment and control groups, and the outcome variable for the subgroup analysis discussed in this section

¹⁰See the supplemental files for results using the sub-samples in which the mayor has no representative running for reelection or is not from the same party as the governor.

running for reelection at $t+2$ for the House elections.¹¹ Lastly, for the career-centered incentives, I split the data into three subgroups: i) Incumbent, when the mayor runs for reelection at $t+4$; ii); Lame-duck, when the mayor hits term limits and cannot run for reelection; iii) Open Seat, when the mayor decides not to run for reelection. This research design closely replicates the model in [Titunik et al. \(2015\)](#).

First, I present evidence for the importance of party strength. The results in figure 7 show that winning the mayoral race increases the party vote share for the House election by 13.5 percentage points, if the winning candidate belongs to the same party as the current governor. This conditional effect on the governor sub-sample is six times larger than the average treatment effect, indicating the importance of vertical alignment. This substantial effect confirms previous research about the relevance of governors for electoral dynamics in Brazil ([Samuels, 2003](#); [Abrucio, 1998](#)). Figure 7 shows a similar effect for the mayors who have at least one elected House representative at the time of the election in $t+2$. The effect is twice the size of the average treatment effect.

In addition, figure 7 also display the reverse coattails effects conditional on the mayor and runner-up parties having candidates running for reelection for the House races at $t+2$. This analysis separates the reverse coattails from other intervening factors associated with partisan incumbency advantages on House elections. In both sub-samples, reverse coattails are positive and statistically distinct from zero, which indicate reverse coattails are not strongly heterogeneous conditional on incumbency effects from the House elections. Interestingly, the effects are

¹¹I appreciate the Reviewer suggestions to further investigate these conditional effects. This analysis is substantively distinct from the party strength proxy. In the party strength conditional effects, I consider only when the mayor's party elected at least one House member in the same district at $t-2$, while in the house reelection analysis, I discuss the case for when both the runner-up and the mayor had a co-partisan elected at $t-2$ and running reelection at $t+2$; the assessment of conditional effects of an incumbent re-running for a House seat is crucial because, as noted by [De Magalhaes \(2015\)](#), re-running is not widespread among individuals or parties in Brazil

larger when neither (mayor/runner-up) has a co-partisan running for reelection in the House, which indicates that the importance of controlling the local office increases and mayors' support become even more instrumental for parties competing on upper-level races.

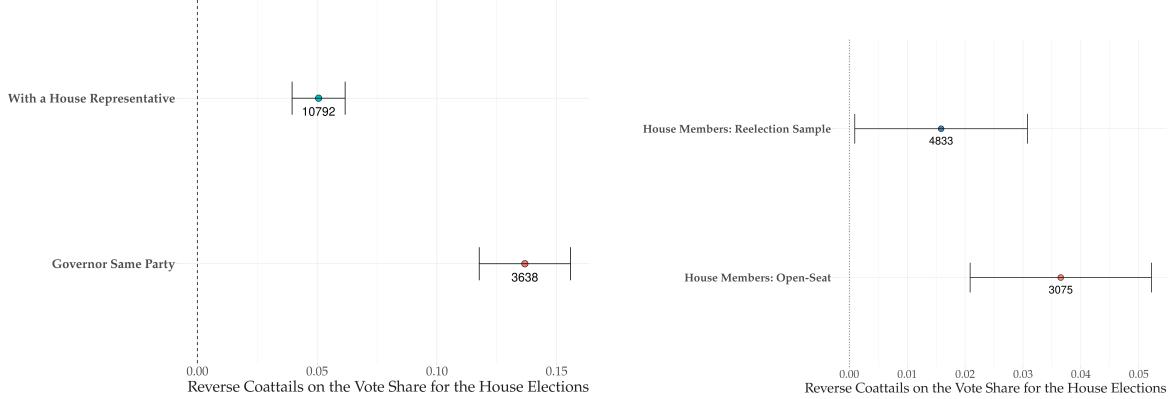


Figure 7: The left plot presents the conditional treatment effect on the party institutional strength proxies, when the mayor is from the same party of the governor, and the mayors' party elected at least one House member (t_{-2}) at the incumbents' State. The right figures presents the conditional effects when the mayor/runner-up have a co-partisan running for reelection for the House at t_{+2} , or when neither has a co-partisan running for reelection (open-seat). The figures plot 95% confidence intervals. The number of cases is printed above each point estimate.

The number of cases is printed above each point estimate.

In accordance with preexisting literature on incumbency effects (Titiunik et al., 2015), I estimate the effect of career incentives on the presence of reverse coattails effect. Figure 8 indicates a lack of consistent differences between career paths and the effect of winning local elections in House election results. Across the three sub-samples - reelection, open-seat, and lame-duck mayors - the effects are similar in magnitude to the average treatment effect of a 2% increase in the vote share for House elections. However, in the Lame-Duck sample, the effect is not statistically different from zero using the robust 95% confidence intervals. The lack of mayors' career incentives separating coattails effects is likely to be related with the timing of the House election compared to the local electoral cycle; because mayors are in the middle of their term when House elections occur, even leaders who cannot run again for local executives might still act to please their party leaders and avoid any future retribution from national elites.

To summarize, reverse coattails does not vary conditional on the mayors' career ambition, while institutional party strength has strong conditional effects on how winning local affects upper level elections. The logic behind these results is straightforward – in an economy of scale, political elites have more loyal allies at the local level when party strength in the district is higher. Stronger parties have more access to intergovernmental grants in Brazil([Brollo and Nannicini, 2012](#); [Bueno, 2017](#)), and the support of the governor and a house representative at a given district increases the allocation of pork to local offices boosting coattails dynamics. At the same time, the costs for an incumbent to not assist co-partisan candidates running in upper-level elections might increase conditional on local party strength. Second, because coattails effects also arise from reducing noise in a fragmented political environment and improving party coordination, the null effect of career ambition indicates that voters do not discount the perspectives of the mayor when using the political offices as an informational device to choose between upper-ticket candidates.

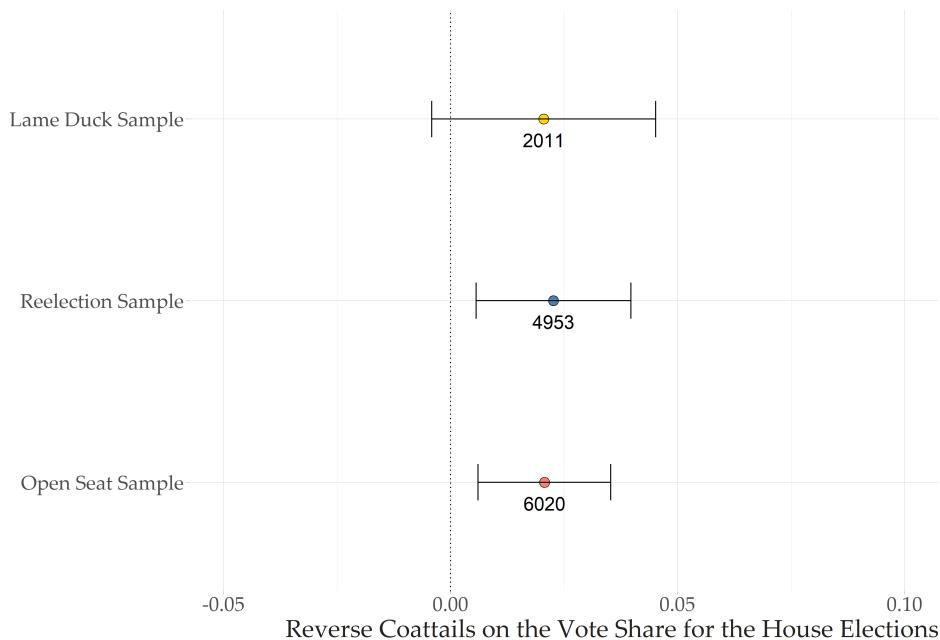


Figure 8: Conditional Treatment effect for Mayors' career ambition on reverse coattail effects. The figures plot robust 95% confidence intervals. The number of cases is printed above each point estimate.

Validity and Robustness Checks

For the discontinuity design to be internally valid, the continuity assumption must hold ([De la Cuesta and Imai, 2016](#); [Skovron and Titunik, 2015](#)). Although the continuity assumption is un-testable, best practices suggest looking carefully for signs of inconsistencies. I perform two types of tests for the validity of the RD design. In the supplemental files, I first demonstrate no evidence of sorting on the margin of victory in the pooled data, the annual data, the sub-samples, and the five parties with positive conditional effects. None of these cases have p-values for the null hypothesis of sorting smaller than .11 using the test developed by Cattaneo, Jansson, and Ma ([2018](#)). I also run a "placebo" test regressing the treatment on lagged values for the vote share for House Elections on $(t-2)$ using the pooled data, the yearly sub-samples, and the five parties. The results of the lagged vote share are particularly reassuring regarding the validity of the RD setup, as they imply that predetermined electoral outcomes are unrelated to close races. I find no evidence of spurious correlation with the pre-treatment vote share.

To further test the robustness of the results, I re-estimate the treatment effect using some different outcome measure for the effects of winning local on upper level elections. First, I test models using the rate of change of the barely elected (loser) mayor's vote share from the previous election to the upcoming election as explanatory variables; if winning locally can help explain distinct electoral gains between the incumbent and the runner-up in upcoming elections, it is reasonable to expect both the incumbent's and runner-up candidate's vote share to increase over time. Second, I estimate models using two dependent variables: i) if the incumbent/runner-up' won the plurality of votes in the $t+2$ upper-level House election in municipality i ; and ii) if the incumbent/runner-up's party is one of the top-three vote-earning parties. Third, I also verify reverse coattails using the vote share of state-level legislative candidates.

In short, the findings converge for change of electoral support over time; indeed the treatment effect is more substantial when the baseline vote share in previous elections is included in the model. Findings for the probability of being the most-voted-for party and one of the top-three most-voted-for parties are also positive, an increase in eight and four percentage points respectively, and statistically distinct from zero. However, the effects on state legislators do not seem as strong. In the latter case, the mayoral coattails effect is more dependent on party strength than compared to the average results reported for the House elections. The findings for state-level legislators speak to the fact that state deputies are usually more involved with local political dynamics than their co-partisans in the House, and are also institutionally weaker with less to offer for local incumbents.

Conclusion

In this paper, I extend upon the original concept of reverse coattail effects from Ames (1994) and find strong evidence that electing a co-partisan mayor improves the incumbent party's performance in future upper-level House elections in Brazil. These effects are largely explained by the fact that incumbency renders greater access to "pork" and mayors reward national co-partisans running for House elections with votes. However, not all parties experience these effects to the same proportion. Large parties are more efficient when using their local incumbents for national gains compared to their smaller contenders. Not to mention, winning locally - even in a close-race or when the incumbent and the runner-up party belong to the same list - also generates information gains for top candidates, and reduces the number of effective candidates in upper-ticket elections for the local incumbent party, therefore, making party coordination more effective. Both mechanisms explain the effectiveness of allocating local capital to national

elections, and prove that winning locally improves party performance on upper-level upcoming elections.

This paper presents new evidence in support of emerging literature on mayoral politics in Brazil ([Ames, 1994](#); [Avelino et al., 2012](#); [Brollo and Nannicini, 2012](#); [Bueno, 2017](#); [Baião and Couto, 2017](#); [Novaes, 2017](#)). While previous research focuses on macro-level institutional changes ([Novaes, 2017](#)) and intra-partisan coordination ([Avelino et al., 2012](#)) to explain the influence of mayors on upper levels elections, I expand these findings by i) estimating how “pork” distribution increases the reverse coattails effect; ii) demonstrating the importance of information gains and within-list party coordination; iii) introducing a discussion about pro-large party bias and the increased levels of benefits for large parties resulting from political coordination with co-partisan mayors.

The robust evidence of the reverse coattails effect in Brazil also speaks to the literature on information shortcuts in democratic regimes. In opposition to Rodden and Wibbels’ ([2011](#)) argument, I argue that information runs from the local to the upper level when elections are non-concurrent. In this sense, controlling local information becomes key for party-building in fragmented political systems. Voters seem to pay attention to local politics – in this case, affiliation with the mayor – to reward co-partisan candidates for the House. In the specific case of Brazil, some have argued that party labels in the local level might actually hurt presidential candidates when voters are dissatisfied with the local government ([Feierherd, 2020](#)). The findings for legislative coattails presented here go in the opposite direction; when voting for upper-level legislative elections, in which information is more scarce than in presidential elections, local incumbency helps parties.

In addition, this paper discusses how reverse coattail effects are independent of mayors’ career

incentives. I show that mayoral coattails diverge from incumbency effects in Brazil ([Titunik et al., 2015](#)), which explains why national elites fight to control local offices in Brazil even though incumbency has a negative effect on local elections. Although more research is needed to explain these differences, one possible reason is that ambitious mayors retain interest in maintaining a solid reputation with their national co-partisans when house elections take places. Such an explanation, open to future empirical tests, might explain why I find no difference between the presence of reverse coattails being conditional on a mayor's Lame-Duck status.

This paper offers a roadmap to understanding how parties utilize different strategies to pursue national goals. Although previous research identifies the presence of small-party bias in House elections in Brazil ([Calvo et al., 2015](#)), this paper indicates that large parties have a distinctly dominant strategy when building their national stand: "going local" now to win more votes in Congress in the upcoming elections.

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Do Mayors Matter?

Reverse Coattails on Congressional Elections in Brazil

Supporting Information Files (SIF)

October 12, 2020

Contents

1 Research Design for the Mechanisms and Extensions	3
2 Parties with Competitive Presidential Candidates	5
3 Effects for Non-Governor and No Representative Sample	7
4 Local Linear Estimators for Partisan Effects	9
5 Validity of RD Designs	12
6 Robustness Checks: Rate of change of Reverse Coattails for House Elections, Probability of Winning Local, and Support for State legislators	18

1 Research Design for the Mechanisms and Extensions

In this section, I detail the research design for the models assessing the mechanisms of reverse coattails and the empirical extensions. The tables below introduce the treatment and control groups and the outcome variables in each specification.

Table 1: Description of the Treatment Effect for Access to Pork

Entire Sample

- Treatment Group: Mayor barely wins at t .
- Control Group: Runner up candidate who barely loses at t
- Outcome: Binary indicator to when the municipality had resources allocated from individual amendments on the federal budget proposed by House Members from the incumbent/runner up's party.

Party Effects Sample

- Treatment Group: Mayor of party j barely wins at t .
- Control Group: Runner up candidate from party j who barely loses at t
- Outcome: Binary indicator to when the municipality had resources allocated from individual amendments on the federal budget proposed by members of the House from party j .

Table 2: Description of the Treatment Effect for Information Gains

Entire Sample

- Treatment Group: Mayor barely wins at t .
- Control Group: Runner up candidate who barely loses at t
- Outcome: Effective Number of Candidates by list for the incumbent/runner up's party weighted by the average number of effective candidates in each of their proportional list for the House Election at $t+2$.

Table 3: Description of the Design for the Party Institutional Strength

Governor Sample

- Treatment Group: Mayor who barely wins at t and is a member of the Governor's
- Control Group: Runner up candidate who barely loses at t for a mayor from the treatment group.
- Outcome: The party vote share for House at $t+2$ in municipality i for the treatment and control group.

Representative Elected Sample

- Treatment Group: Mayor who barely wins at t and her party has at least one elected representative for the House at the same district at $t-2$
- Control Group: Runner-up candidate who barely loses at t for a mayor from the treatment group.
- Outcome: The party vote share for House at $t+2$ in municipality i for the treatment and control group.

Table 4: Extension: Reverse Coattails for Career Incentives

Reelection Sample

- Treatment Group: Mayor barely wins at t and runs for reelection at $t+4$.
- Control Group: Runner up candidate who barely loses at t and the winner runs for reelection at $t+4$
- Outcome: The party vote share for House at $t+2$ in municipality i for the treatment and control group.

Lame Duck Sample

- Treatment Group: Mayor barely wins the reelection at t and is forbidden to run again at $t+4$.
- Control Group: Runner up candidate who barely loses at t for a Lame-Duck mayor
- Outcome: The party vote share for House $t+2$ in municipality i for the treatment and control group.

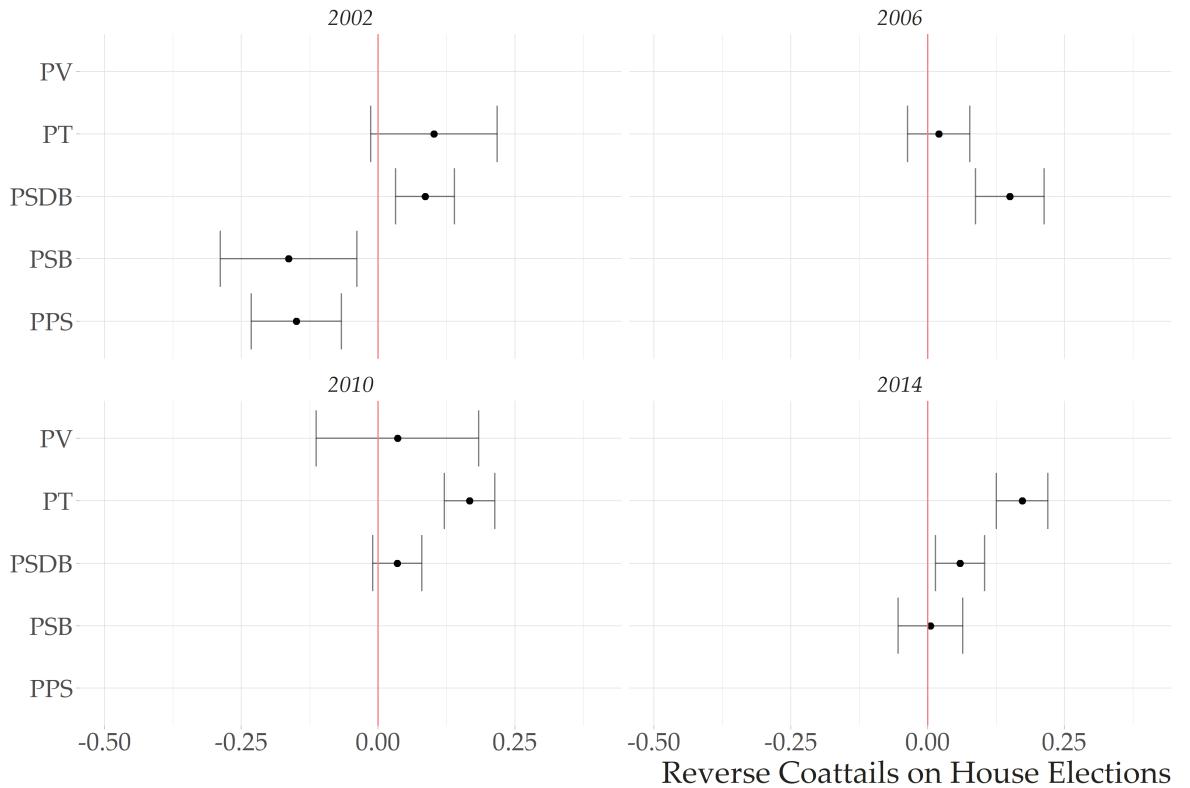
Open Seat Sample

- Treatment Group: Mayor barely wins the reelection at t and decides not to run for reelection at $t+4$.
- Control Group: Runner up candidate who barely loses at t for a mayor who has decided not to run for reelection.
- Outcome: The party vote share for House $t+2$ in municipality i for the treatment and control group

2 Parties with Competitive Presidential Candidates

Being competitive nationally might explain reverse coattails effects. This idea has remarkable semblance with the arguments made by the scholarship on presidential coattails about horizontal effects; therefore, it offers us a way to check the robustness of the results presented in the main paper. In Brazil, Presidential elections coincide with House elections; hence, it is a plausible argument that national competitiveness might work as the causal mechanism explaining heterogeneous effects by parties. To discuss this alternative, I estimate local polynomial models splitting the data by year and by each competitive presidential candidate in the race. The PT and the PSDB appear in all the estimations. I then add the third and fourth runner up party for each election conditional on summing more than 95% of the valid vote share in the first round. Figure 1 presents the results.

Figure 1: Treatment effect for nationally competitive party using the local linear estimation by electoral year



Having a competitive national candidate has no consistent effect. As figure 1 indicates, none

of the other parties running against the PT and PSDB, exhibit consistent positive co-partisan effects of winning local elections. Even among the PT and the PSDB some heterogeneity occurs. In 2002 and 2006, only the PSDB has positive effects, while the PT exhibits positive effects alone in 2010 and together with the PSDB in 2014. The results also rule out the effect of presidential incumbency affecting coattails effects for the case of PSDB in 2002 and PT in the next elections.

3 Effects for Non-Governor and No Representative Sample

In subsection *Party Institutional Strength and Incumbents' Career Incentives*, I assess whether alignment with the Governor Party and having an co-partisan House Member in the same district explains the degree to which parties gain from coattails. Here, I provide an extra piece of information for this section by analyzing the treatment effect for the opposite cases of these two subsamples. I discuss the impact of winning the local election when the mayor does not belong to the governors' party, and it has no representative elected at $t-2$ in the House race. The table below presents the treatment and control group for each subsample.

Table 5: Description of RDD for the Party Coordination Hypothesis

No Governor Sample

- Treatment Group: Mayor who barely wins at t and is not a member of the Governor's.
 - Control Group: Runner up candidate who barely loses at t for a mayor from the treatment group.
 - Outcome: The party vote share for House at $t+2$ in municipality i for the treatment and control group
 - Outcome: The party vote share for House $t+2$ in municipality i for the treatment and control group.
-

No Representative Elected Sample

- Treatment Group: Mayor barely wins the reelection at t and has no co-partisan House Member elected at $t-2$.
- Control Group: Runner up candidate barely loses at t for a mayor from the treatment group.
- Outcome: The party vote share for House $t+2$ in municipality i for the treatment and control group.

Figure 2 presents the results. For both subsamples, the treatment effects are negative. Mayors who are barely elected reduce the vote share of their party in subsequent elections in cases of non-alignment with the governor. The same effects occur for incumbents affiliated with a party with no representative elected in the district. In this sense, as the paper more broadly show, mayoral reverse coattails seems to work effectively for larger parties. In comparison, smaller parties probably rely on different strategies for gaining national political offices.

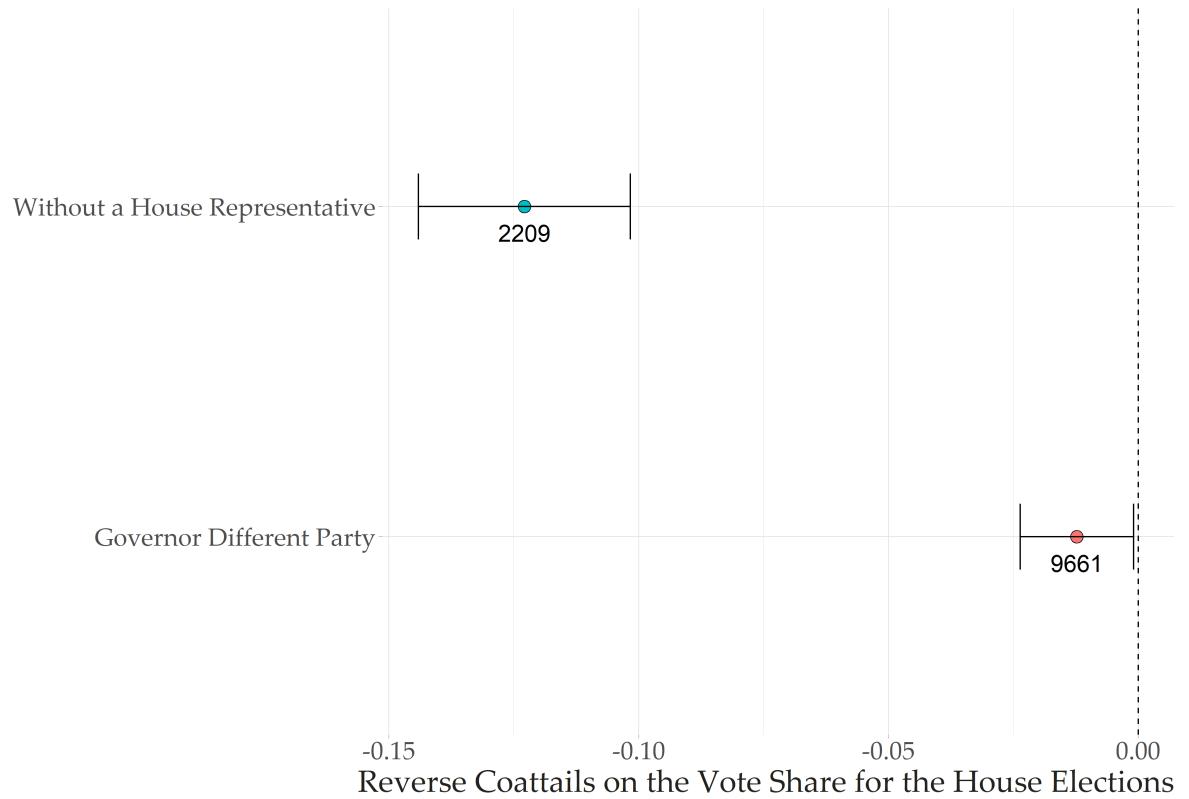


Figure 2: Conditional Treatment effect for the No Governor Alignment and No Representative Elected subsamples. The figures plot robust 95% confidence intervals. The number of cases is printed above each point estimate.

4 Local Linear Estimators for Partisan Effects

In this appendix, I provide the estimates for party subgroup treatment effects and for access to pork using the local estimators proposed by Calonico, Cattaneo, and Titiunik (2014). Table 6 presents the full results, and figure 4 plots them graphically. The results provide a crucial intuition about the advantages of using the Bayesian Lasso estimation for subgroup effects. First, data is sparse for most of the parties that might render bias in the parameters' local estimation. Second, the results somewhat converge to those reported in the paper. Except for the PCdoB, a strong programmatic communist party in Brazil, which have positive and statistically significant treatment effects, all the other 5 five parties identified by the Bayesian Lasso model also appear in the local estimation with positive and significant results. The main issue here related to the identification of false negatives; the local linear model finds a negative and statistically significant effect for some other parties for which the samples are ridiculously small. I direct the reader to the cases of the PRTB and the PSL with 21 and 53 cases, respectively, as an example.

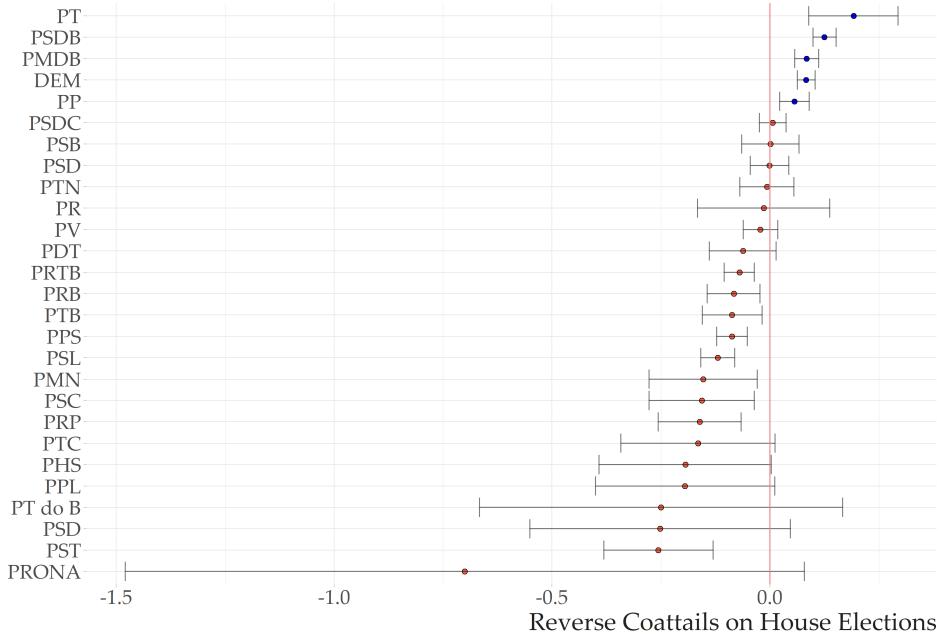


Figure 3: Treatment subgroup Party Effects using Local Estimators.

Table 6: REGRESSION DISCONTINUITY FOR PARTY EFFECTS USING LOCAL ESTIMATORS

Outcome: Vote Share Co-partisans for the House Election					
Party	Number of Cases	Estimate	Lower 95% CI	Upper 95% CI	Bandwidth
PC do B	64	0.177	0.089	0.294	16.089
PT	1292	0.124	0.099	0.152	19.563
PMDB	2829	0.086	0.063	0.104	15.391
PSDB	1504	0.079	0.057	0.112	11.076
DEM	1423	0.060	0.022	0.090	13.518
PP	1295	0.004	-0.024	0.037	13.308
PSB	616	0.002	-0.045	0.043	14.366
PSD	288	-0.006	-0.069	0.055	12.764
PSDC	14	-0.016	-0.065	0.067	7.526
PR	833	-0.026	-0.061	0.018	17.493
PTN	18	-0.032	-0.166	0.137	16.824
PV	184	-0.054	-0.139	0.014	17.450
PDT	881	-0.070	-0.105	-0.036	18.926
PRTB	21	-0.074	-0.144	-0.023	10.874
PRB	82	-0.081	-0.155	-0.018	13.321
PTB	853	-0.083	-0.122	-0.052	13.949
PPS	530	-0.121	-0.159	-0.081	20.445
PSL	53	-0.138	-0.276	-0.029	17.574
PSC	115	-0.149	-0.256	-0.066	12.840
PMN	100	-0.156	-0.277	-0.036	19.996
PHS	27	-0.175	-0.400	0.011	11.235
PRP	52	-0.177	-0.342	0.012	11.976
PTC	37	-0.187	-0.392	0.003	18.221
PPL	3	-0.197	-0.666	0.167	7.602
PT do B	25	-0.230	-0.551	0.047	8.754
PSD	68	-0.242	-0.381	-0.130	12.578
PST	8	-0.535	-1.479	0.079	6.782

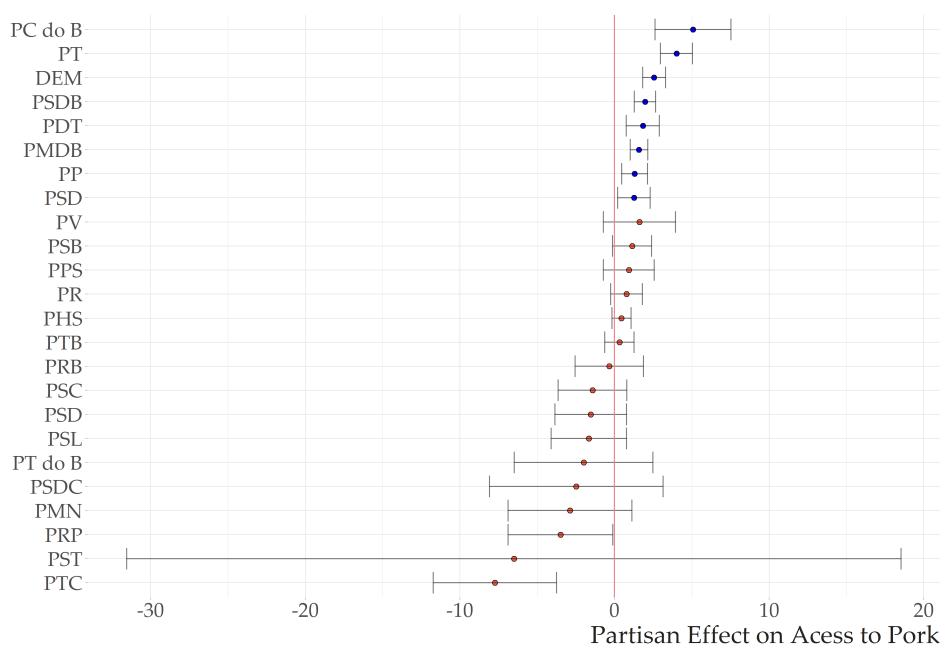


Figure 4: Access to Pork by Parties using Local Estimators.

5 Validity of RD Designs

In this section, I discuss the validity of the RD design used for the paper's main model. To analyze the change in the outcome occurring at the cutoff as being the causal effect of winning local elections, I must show that the continuity assumption for the RD design holds in this case. I discuss in this section some empirical evidence supporting the validity of the continuity assumption.

The main empirical challenge here is to show no other factors related to the outcome, and the running variable is discontinuous at the cutoff. I first plot the density of the running variable for the pooled data and by year, for each subsample of the mediators and the five parties with positive conditional effects identified using the Bayesian LASSO model. If parties could influence whether they lose or win, one would be likely to observe very few parties that barely lose, and many more parties that barely win. At least since the adoption of electronic ballots, Brazil has tremendously reduced cases of electoral manipulation ([Hidalgo, 2010](#)). However, it is paramount to verify this empirical pattern to validate the RD design. Figure presents histograms for the margin of victory and p-values of the null hypothesis that the density of the running variable is continuous at the cutoff using the local polynomial density estimator developed by Cattaneo, Jansson, and Ma ([2018](#)). The graphs [5](#), [6](#), and [7](#) indicate that there is no evidence of sorting in any of the cases (p-values range from 0.11 to 0.99).

Furthermore, I estimate "placebo" RD effects on pretreatment covariates. The treatment here being assigned after these covariates are measured, then I can assume winning local elections have effects indistinguishable from zero. Significant effects would be an indication of unobserved confounders affecting the outcome. I run tests estimating the treatment effects of winning at t on the party vote share at $t-2$ in the House elections for the pooled data, for each year, and for the five parties, I find significant subgroup effects. Table [7](#) presents the results. The assumption here is the same; if winning at t has any relationship with the dependent variable measured before the treatment occurs, it indicates the presence of unobservable covariates. I should note I do not run this test on the election of 2000 because in the lagged case - house election for 1998 - the country was not yet using electronic ballots, and then electoral fraud was still a possibility. Except for the PMDB, actually, with negative results, none of the models are statistically indistinguishable from zero at 95% level of confidence using the robust standard

errors and data-driven bandwidths.

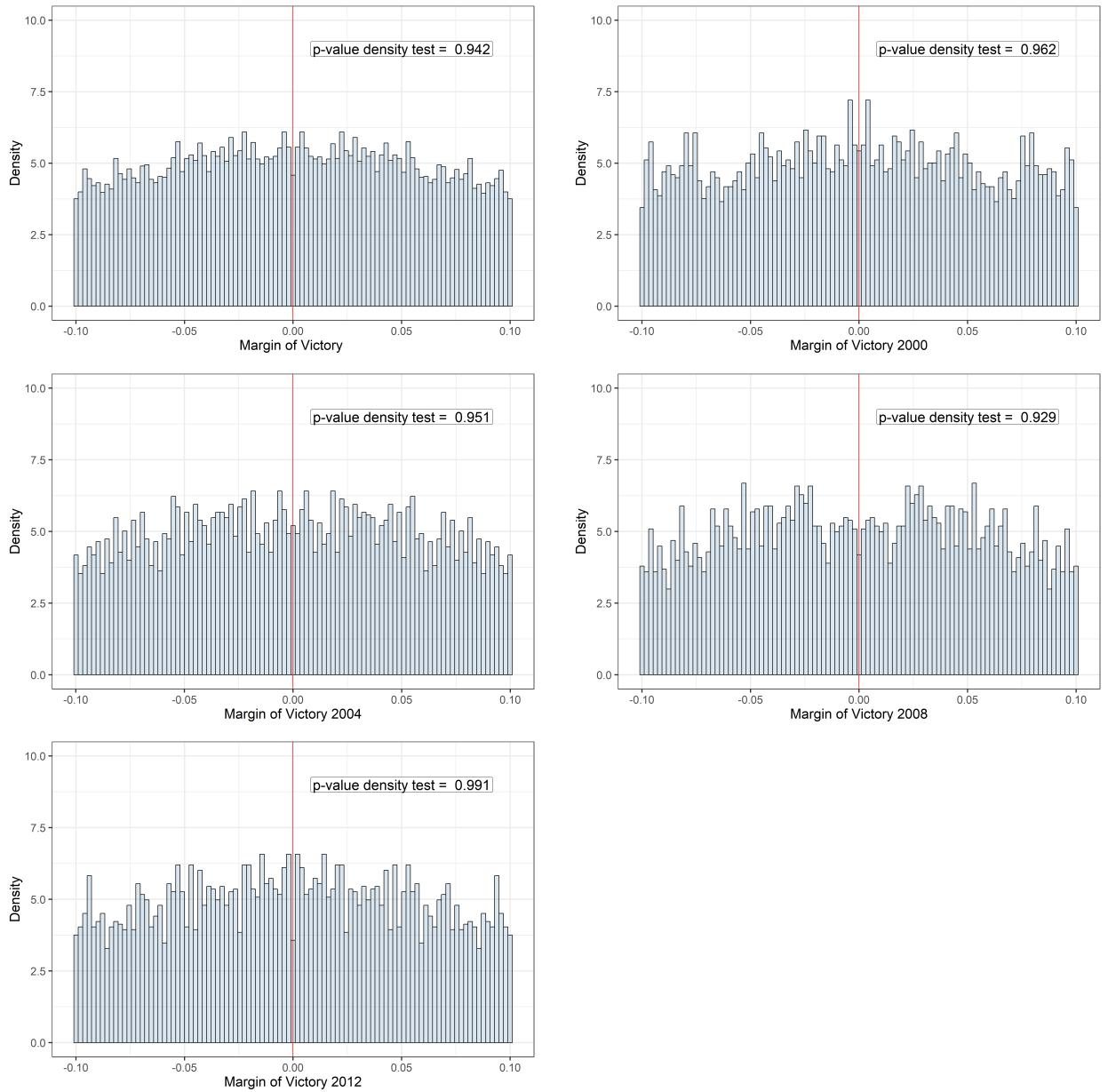


Figure 5: Histogram of margin of victory for the pooled data and divided by electoral cycle. P-value robust density tests developed by Cattaneo, Jansson, and Ma (2018) in each figure.

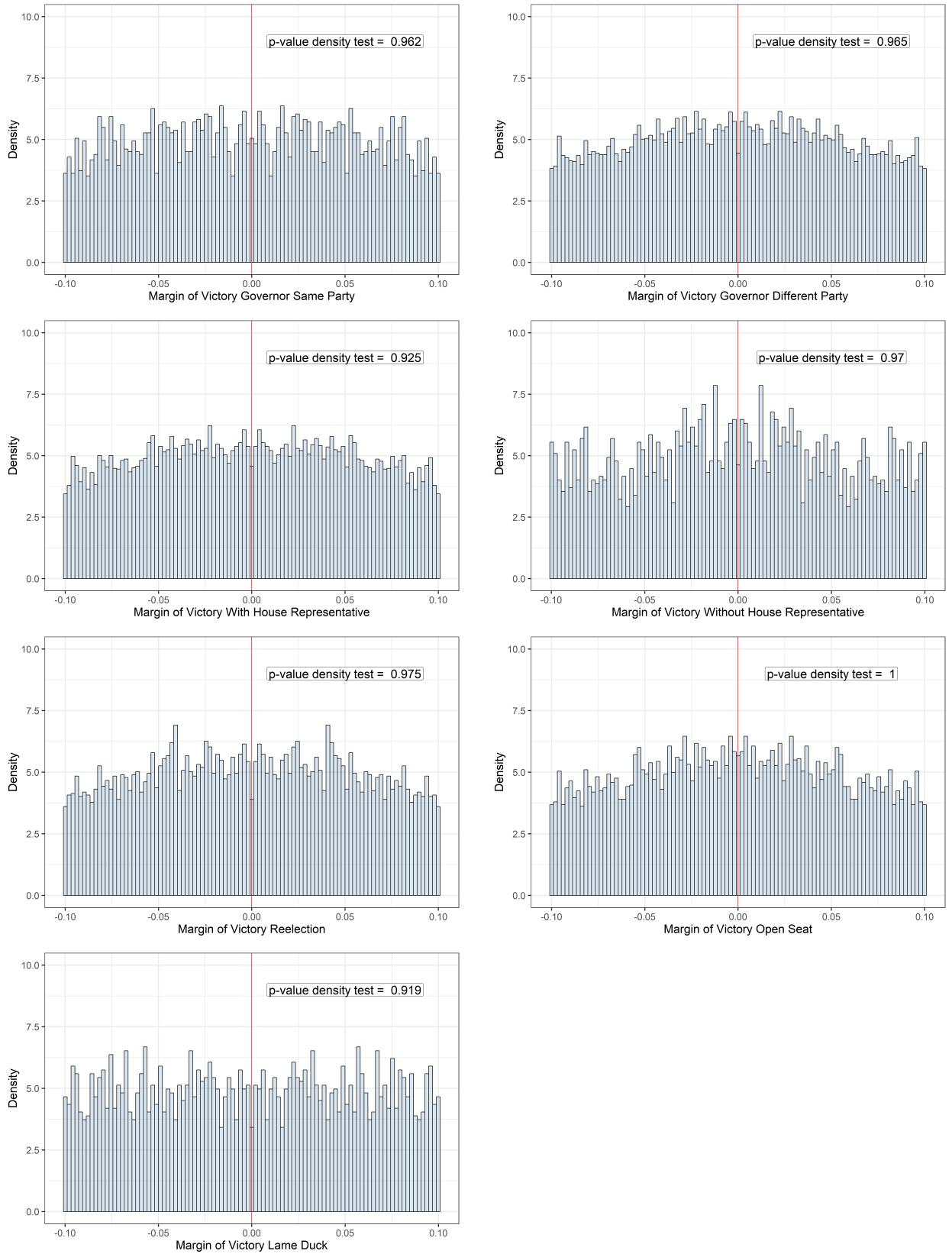


Figure 6: Histogram of margin of victory for the mediators subsample. P-value robust density tests developed by Cattaneo, Jansson, and Ma (2018) in each figure.

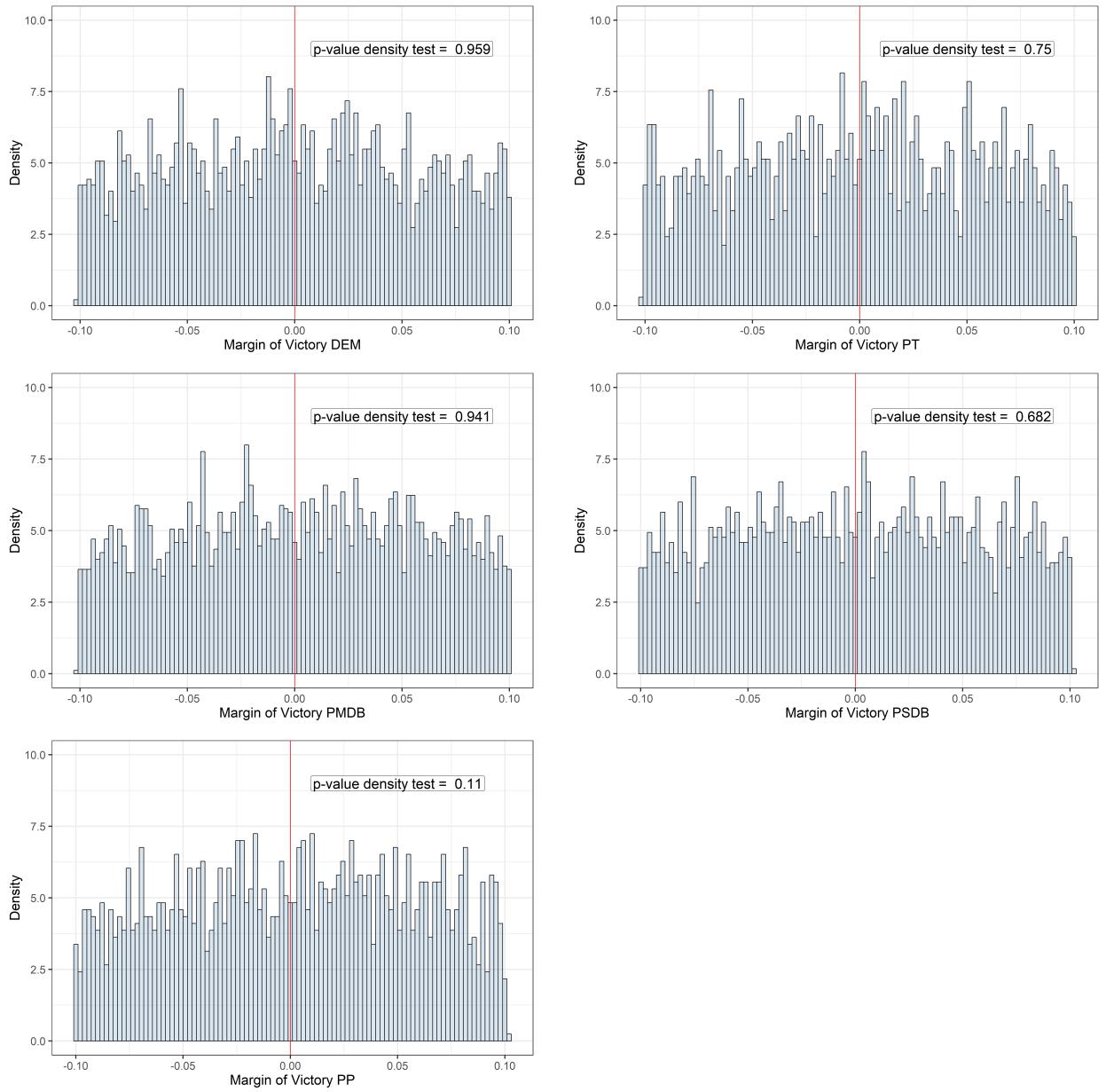


Figure 7: Histogram of margin of victory for each of the five parties with positive conditional treatment effects. P-value robust density tests developed by Cattaneo, Jansson, and Ma (2018) in each figure.

Table 7: REGRESSION DISCONTINUITY ON LAGGED VALUES VALIDITY

Outcome: Vote Share Co-partisans for the House Election in the previous election						
Outcome	p-value	Estimate	Lower 95% CI	Upper 95% CI	Number of cases	Bandwidth
Lagged Vote Share: Incumbent	0.325	-0.005	-0.018	0.006	9894	14.264
Lagged Vote Share: 2004	0.071	-0.019	-0.039	0.002	3941	18.389
Lagged Vote Share: 2008	0.085	0.018	-0.002	0.038	3431	16.109
Lagged Vote Share: 2012	0.306	-0.009	-0.027	0.009	3661	16.453
Lagged Vote Share: PT	0.752	0.002	-0.027	0.038	1380	15.668
Lagged Vote Share: PSDB	0.226	0.017	-0.011	0.047	937	15.146
Lagged Vote Share: PMDB	0.040	-0.026	-0.056	-0.001	2001	14.725
Lagged Vote Share: PP	0.280	-0.018	-0.067	0.019	796	11.679
Lagged Vote Share: DEM	0.899	-0.003	-0.050	0.044	931	13.787

6 Robustness Checks: Rate of change of Reverse Coattails for House Elections, Probability of Winning Local, and Support for State legislators

To ensure the robustness of the findings, I present results using different models specifications for the Regression Discontinuity Design. Table 8 presents six different models. Column 2-4 uses a local regressor, as in the main paper, with a triangular kernel, and different choices of the polynomial functions and bandwidth selection. Columns 5 presents a simple difference in means model, and columns 6-7 uses a linear models with quadratic and cubic polynomial terms for the running variable. Overall, results provide evidence of robustness for the existence of reverse coattails. Across all the specifications, point-estimates are vastly positive, and in models that demand less data, as in the linear models, results are significant even on narrow bandwidths.

Table 8: REGRESSION DISCONTINUITY RESULTS: ROBUSTNESS CHECKS

Outcome: Vote Share Co-partisans for the House Election						
Bandwidth	Local Linear	Local Quadratic	Local Cubic	Diff-in-Means	Linear Quadratic	Linear Cubic
MSE-Optimal	0.021 (0)	0.021 (0)	0.02 (0.002)			
bw <1 %	0.031 (0.271)	0.035 (0.359)	0.017 (0.726)	0.02061 (0.00519)	0.01767 (0.24281)	0.01629 (0.4283)
bw <5 %	0.015 (0.17)	0.02 (0.163)	0.023 (0.214)	0.02608 (0)	0.02183 (0.00107)	0.01337 (0.1322)
bw <10 %	0.016 (0.033)	0.017 (0.083)	0.016 (0.195)	0.03391 (0)	0.02206 (0)	0.01681 (0.00796)
bw <15 %	0.017 (0.008)	0.016 (0.052)	0.017 (0.103)	0.03597 (0)	0.0259 (0)	0.01947 (2e-04)
bw <25 %	0.022 (0)	0.016 (0.013)	0.014 (0.085)	0.04257 (0)	0.02289 (0)	0.02504 (0)
bw <100 %	0.023 (0)	0.024 (0)	0.022 (0)	0.05183 (0)	0.02848 (0)	0.02196 (0)

Note: Running variable is party's margin of victory for the local executive election at t , outcome is mayor/runner-up's copartisans vote-share for the House election at $t + 2$. The main result in the first row uses a MSE-optimal bandwidth selection procedure ([Calonico et al., 2014](#)) for the local models, and present robust p-values for the local models. Difference in means and the other linear models were estimated using benchmark OLS

Then, I re-estimate the models for the main effects and mediators using different dependent variables. My theory would also predict the existence of reverse coattails. I first estimate the treatment effect on the rate of change of the partisan vote share for House elections before and after electing the mayor; second, I use vote share of state legislators between the incumbent and the runner up's party. If winning the local matters to explain different electoral gains between the incumbent and the runner up in the upcoming election, it is reasonable to expect the incumbents' vote share *vis-a-vis* the runner up candidate also increases comparing the moment before and after winning the control over the local executive. I replicate precisely the same models of the paper and present the results below.

Second, I estimate the same models of the paper using a different manipulation for the dependent variable. In the main paper, I measure reverse coattails using the incumbent/runner-up party vote-share in a given municipality in the forthcoming House election. Here, I use two different set of dummies indicating if the party of the incumbent/runner-up is: i) the most-voted party in the $t+2$ upper-level House election in municipality i ; or ii) one of the top-three most voted parties in the $t+2$ upper-level House election in municipality i . Although both variables are similar proxies for the dependent variable discussed in the paper, especially considering the high levels of fragmentation in Brazil, using these rank-order dummies provide a harder assessment for the presence of reverse coattails in Brazil.

Finally, I do the same tests for State legislators' elections, which also occur on the same day of House elections for all the States in Brazil.

The effects of the rate of change are higher than those reported on the paper for my original dependent variable. In other words, winning the local executive generates a substantial impact on the incumbent party vote share's growth compared to the previous House election. All the results are aggregated at the municipal level. For the mediators, the results are somewhat similar in the case of the career ambition variables, while party coordination capacity seems to explain most of the variation. In conclusion, the results confirm our theory that controlling the local matter for partisan national gains.

Figure 8: Smoothed Regression Discontinuity of the Treatment Effect using the variation in vote share for the incumbent's party before and after winning the local election (Red lines represent the optimal bandwidth decision).

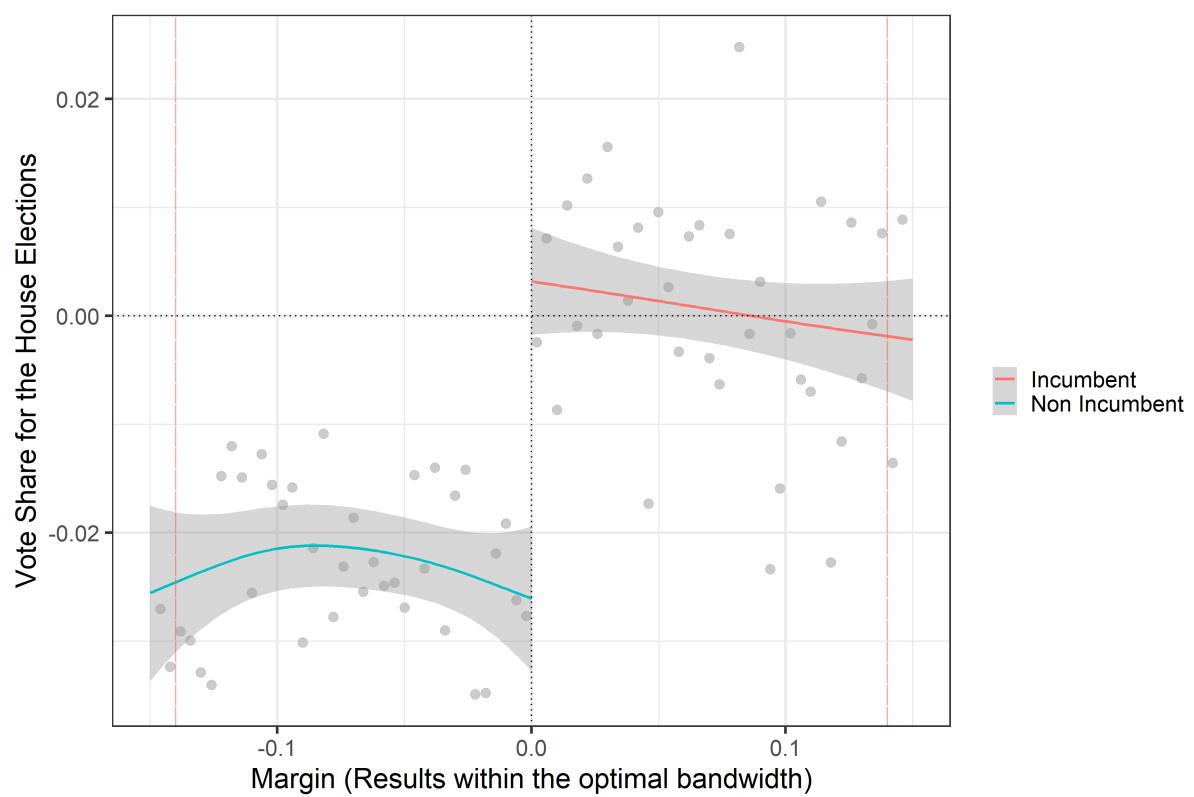


Table 9: REGRESSION DISCONTINUITY RESULTS

Outcome: Rate of Change of the Vote Share of co-partisans for the House Election						
	Subsample	Optimal Bandwidth)	Estimate	Lower 95% CI	Upper 95% CI	Number of cases
Incumbent	14.7	0.031	0.022	0.041	13239	
Year: 2000	18.561	0.030	0.012	0.052	3637	
Year: 2004	15.617	0.022	0.001	0.041	3576	
Year: 2008	15.563	0.033	0.016	0.052	3352	
Year: 2012	12.088	0.034	0.019	0.053	2966	
Open Seat Sample	17.711	0.016	0.002	0.028	6311	
Reelection Sample	11.456	0.061	0.046	0.080	4569	
Lame Duck Sample	18.441	-0.014	-0.037	0.010	2552	
Governor Different Party	16.817	0.033	0.023	0.043	11178	
Governor Same Party	20.889	0.015	-0.003	0.036	3686	
Without a House Representative	16.847	0.018	-0.003	0.040	2251	
With a House Representative	16.594	0.032	0.023	0.043	12033	

Besides, the models for the probability of being the most-voted party and the top-three most-voted party are also positive, and statistically distinct from zero. Tables 10 and 11 presents the results. Electing a mayor increases in almost eight percentage points the probability of being the most-voted party at municipality i compared with the runner-up party, and four percentage points of being in the top three most voted party. Intuitively, the effect is greater for the first because when comparing the top three most voted parties, the party of the runner-up candidate appears more often, making the differences smaller. The effects are consistent over time.

Regarding the results for state legislators, the effects are weaker than I expected, although still positive. Here, the effects are only restricted to larger parties and are weaker on average. As I discuss in the paper, I read this result as an indication that the economy of scale I suggest shape parts of the effects are weaker for state legislators.

Table 10: REGRESSION DISCONTINUITY (Most VOTED PARTY)

Subsample	Optimal Bandwidth	Estimate	Lower 95% CI	Upper 95% CI	Number of cases
All years	14.40	0.079	0.054	0.104	13287
2000	18.25	0.067	0.020	0.114	3588
2004	17.11	0.043	-0.002	0.087	3788
2008	16.51	0.150	0.102	0.198	3488
2012	15.54	0.071	0.026	0.116	3546

Table 11: REGRESSION DISCONTINUITY RESULTS (TOP THREE MOST VOTED PARTY)

Subsample	Optimal Bandwidth	Estimate	Lower 95% CI	Upper 95% CI	Number of cases
All years	14.40	0.039	0.009	0.069	12799
2000	18.25	-0.011	-0.066	0.044	3547
2004	17.11	-0.005	-0.062	0.051	3564
2008	16.51	0.107	0.048	0.166	3189
2012	15.54	0.079	0.022	0.137	3237

Figure 9: Smoothed Regression Discontinuity of the Treatment Effect using the state legislators vote share (Red lines represent the optimal bandwidth decision).

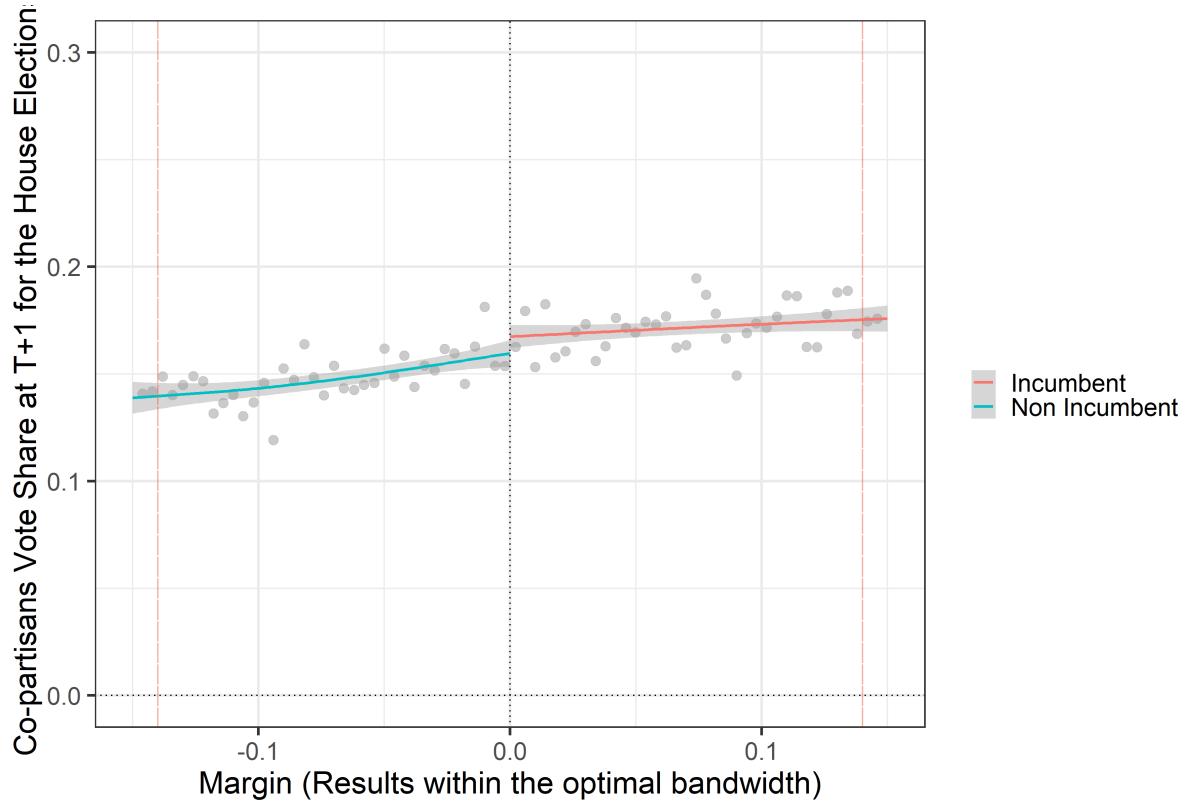


Table 12: REGRESSION DISCONTINUITY RESULTS

Outcome: Vote Share Co-partisans for the State Legislators						
	Subsample	Optimal Bandwidth (Margin of Victory)	Estimate	Lower 95% CI	Upper 95% CI	Number of cases
Incumbent		13.1	0.004	-0.007	0.013	12201
Year: 2000		15.826	0.001	-0.020	0.020	3265
Year: 2004		13.756	-0.006	-0.029	0.011	3305
Year: 2008		14.390	0.022	0.004	0.043	3203
Year: 2012		18.008	0.004	-0.012	0.019	3874
Open Seat Sample		13.912	0.009	-0.005	0.024	5438
Reelection Sample		13.633	-0.005	-0.022	0.009	5178
Lame Duck Sample		16.906	0.026	-0.001	0.047	2391
Governor Different Party		12.674	-0.032	-0.045	-0.023	9299
Governor Same Party		18.893	0.132	0.114	0.153	3490
Without a House Representative		20.906	-0.071	-0.091	-0.053	2539
With a House Representative		13.563	0.019	0.007	0.029	10569

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