Larger Legislatures and the Cost of Political Brokerage: Evidence from Brazil

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This article shows that larger legislatures reduce the electoral power of incumbent parties in the executive. The electoral effects of legislature size have been largely overlooked by a literature that emphasizes its impact on policies. I estimate the effects of municipal council size on the performance of the local incumbent party in gubernatorial, presidential, and mayoral races in Brazil. The regression discontinuity design exploits variation from a law that set nonlinear council size caps after 2012. In a nutshell, every additional seat triggers a 5 percentage point vote loss for the candidates backed by the mayor's party. Additional evidence suggests that these losses are a consequence of a breakdown in the political brokerage relationships that often characterize developing democracies: in Brazil, mayors exchange patronage for the councilors' electoral support. Larger councils raise this transaction cost for mayors, more so when the council and mayor have unaligned electoral incentives at the state/national levels.

Scholars who study institutional design in democracies have been particularly interested on how the size of legislatures shapes representation, in terms of both policy outcomes and governability (Chen and Malhotra 2007; Primo and Snyder 2008; Weingast 1994).[1] In this context, it is puzzling that little attention has been paid to the effects of legislature size on elections—the most central of all democratic institutions. If the number of seats at the very least influences the bargain between powers, it should also affect the levels of electoral competition and incumbency advantage.[2] Perhaps this omission derives from the intrinsic difficulty in finding exogenous variation in the size of legislatures or in identifying the mechanisms that connect this institution to electoral outcomes.[3]

This article fills this gap in two significant ways. First, it identifies the effects of municipal legislature size in the three executive elections in Brazil in 2014–16 (president, governor,

and mayor). In doing so, it primarily focuses on a dimension of electoral competition that has raised ample interest in the literature—reverse coattail effects (Broockman 2017; Erikson, Folke, and Snyder 2015; Feierherd 2020; Magar 2012)—and thus emphasizes the performance of the tickets backed by the mayor's party in the state and national races. The effects are identified with a quasi-natural experiment: a federal law that set nonlinear caps for the size of local councils based on population thresholds, starting as low as 15,000. The caps range from 9 to 55 seats, increasing by two at every threshold. In these elections, a fuzzy regression discontinuity (FRD) design shows that the vote shares of candidates supported by the mayor fall by nearly 5 percentage points for every additional council seat.

Second, I argue that this vote loss is driven by a previously uncharted theoretical mechanism: a breakdown in the political brokerage relationships that characterize elections in much of

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1. These articles focus on the impact of chamber size on public spending. Barber, Bolton, and Thrower (2019) have also shown that legislative capacity affects certain dimensions of policy implementation by the executive. The size of legislatures is even more relevant in light of separation of powers, as it might also influence the executive-legislative bargain process.

2. Shugart and Taagepera (2017) is one notable exception. The authors use a cross-country analysis to show that assembly sizes are correlated with the number of effective parties that win seats. While they primarily focus on parliamentary systems, they also argue that larger legislatures, by increasing the number of represented parties, might increase the fragmentation of executive elections.

3. Legislature size is often jointly determined with other institutions that also affect electoral outcomes. This limits the ability of most cross-country comparisons to identify the causal effects of assembly size.

the developing world (Gingerich 2020; Holland and Palmer-Rubin 2015; Larreguy, Marshall, and Querubín 2016; Larreguy, Montiel Olea, and Querubin 2017; Rueda 2017; Stokes et al. 2013).[4] This mechanism is particularly pivotal to the mayors' ability to provide reverse coattails in state and national elections.

In a nutshell, local political power in Brazil is shared between the executive (mayor) and the council. Mayors often act as party brokers in state and national elections, given their ample control over spending (Avelino, Biderman, and Barone 2012; Brollo and Nannicini 2012; Novaes 2018). Yet, councilors are particularly close to voters. In that position, they can influence elections at all levels, typically due to their long-standing clientelistic relationships with the electorate (Bobonis et al. 2022; Lopez 2004; Nichter 2018; Nichter and Peress 2017). In this context, mayors often rely on patronage-based coalitions to obtain the support of parties in the council (Colonnelli, Prem, and Teso 2020; Mignozzetti 2021) and to co-opt councilors as subbrokers in elections at all levels.

In Brazil's decentralized and fragmented political system, these alliances can be ideologically incoherent, and local coalition parties typically have electoral incentives in higher races that are unaligned with the mayor's party. In this case, coalition members face a trade-off between supporting the candidates backed by their allied mayor—which provides *patronage-based* incentives—or endorsing their own party candidates due to *alignment-based* incentives. These latter intraparty incentives typically include campaign resources, higher ideological congruence, and future career opportunities.

In this context, larger councils hurt the mayor's ability to sustain reverse coattails in presidential and gubernatorial races. By design, a larger council implies that the executive needs the loyalty of more legislators to obtain the same proportional level of support. Everything else equal, every individual coalition member now extracts less rent from the executive, and, from the members' perspective, the relative value of supporting the mayor's candidates over their own party tickets decreases.

Even though I do not directly measure the quid pro quo implied in these local brokerage relationships, I show further empirical evidence that is consistent with this mechanism. First, I estimate the FRD effects of legislature size on the profile of the mayor's coalition elected in the council in 2012. In short,

where legislatures are larger, local coalitions include more individual councilors, even though these alliances still attain a similar level of proportional support in the legislature.

Second, the heterogeneity in the reverse coattails also suggests that the trade-off above is behind the negative electoral effects of council size. I estimate reverse coattail effects for two subsamples, built based on the alignment between the preelectoral coalitions at the local (2012) and national/state levels (2014). I show that all electoral losses come from municipalities where alignment is low. In these locations, candidates endorsed by the mayor's party lose 12–15 percentage points of their vote for every additional council seat. The losses disappear in municipalities where local coalitions are highly aligned with national/state ones.

Third, I further explore the impact of council size on the subsequent mayoral election (2016). The trade-off faced by local coalition members is slightly different here, given that councilors face much less pressure from higher-level party leaders when building alliances for mayoral contests. Nevertheless, the results suggest that a decline in patronage-based incentives also disrupts the electoral power of the local incumbent's party in 2016 and drives coalition members to seek alternative electoral options: where councils are larger, I observe that (i) the ticket supported by the 2013–16 incumbent loses votes in 2016, (ii) the incumbent coalition breaks down more often between 2012 and 2016, and (iii) preelectoral coalitions in 2016 are more likely to be formed around ideological proximity between parties. This suggests that patronage-based incentives become relatively less important in these races.

Fourth, I rule out potential alternative explanations for the findings, particularly the competing view that these electoral losses are a consequence of the impact of council size on policy. At first, this explanation might resonate within the Brazilian political environment, where voters are highly responsive to the performance of local politicians in areas such as public goods provision or corruption (Boas, Hidalgo, and Toral 2021; Ferraz and Finan 2008; Zucco 2013). In fact, underperforming mayors have been shown to tarnish both their party reputations and electoral performance in both municipal and higher races (Feierherd 2020; Klašnja and Titiunik 2017). However, I show that the effects cannot be explained by changes in the size, allocation, or volatility of public spending, or even by shifts on the outcomes of health and education policies. I also show that council size does not affect the profile of the politicians who are elected locally in 2012—for both the executive and the legislature. Finally, municipalities with larger councils do not see an increase in the number of mayoral candidates in 2016. This rules out the potential explanation that the electoral losses in mayoral races might be

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4. These works study different dimensions of brokerage, such as the impact of monitoring capacity on brokers' performance (Larreguy et al. 2016; Rueda 2017), the party's ability to allocate resources across brokers (Gingerich 2020), the broker's diverse incentives (Larreguy et al. 2017) and types of engagement with parties (Holland and Palmer-Rubin 2015), and the impact of development on brokers' efficiency (Stokes et al. 2013).

the consequence of a higher fragmentation in the executive contest (Shugart and Taagepera 2017).

LOCAL COALITIONS AND POLITICAL BROKERAGE IN BRAZIL

Brazilian mayors have ample control over public goods delivery because of a highly decentralized system of spending (Ames 1994; Avelino et al. 2012; Novaes 2018). Most spending in areas such as health, education, and infrastructure is done by municipal administrations, financed primarily by scheduled transfers from the federal and state governments. In this context, linkages between politicians and voters are often rooted on the exchange of targeted public resources for votes (Frey 2019; Gingerich 2014; Hidalgo and Nichter 2016; Nichter 2018). Voters often request goods and favors from local politicians—such as medicine, medical treatment, and construction goods—with a promise of political support (Nichter 2018). These demands are then met "using political criteria, given that the number of requests often exceeds available resources" (Bobonis et al. 2022, 3632). This allows local politicians, notably mayors, to play an important role in raising votes for their candidates in national and state elections (Avelino et al. 2012; Feierherd 2020; Frey 2022; Novaes 2018) and in supporting the survival of their parties. In exchange for their loyalty, mayors rely on their intraparty relationships with state and federal politicians to receive discretionary resources and campaign funds (Brollo and Nannicini 2012; Bueno 2018; Frey 2022) and to access their parties' TV and radio time allotment during municipal races.[5]

Mayors also share the local political power with a council that ranges in size from 9 up to 55 members. Both are elected at the same time (every four years), while state and national elections happen in the midterms (also every four years). Brazil has a fragmented party system with nearly 30 active parties, 26 of which won at least one mayoral election in 2012. In this context, mayors rely on broad and large coalitions to support their administrations (despite the nearly 30 parties, municipalities have less than three mayoral candidates on average). Each of these candidates relies on the electoral support of council candidates from multiple parties: the average number of parties in a winning mayoral coalition is 6.2. What is more, the mayor's coalition elects 50% +1 of all councilors in 58% of all races, but in only 4% of the elections the mayor's party achieves the council majority alone.

The strength of these coalitions often relies on a quid pro quo between mayor and parties in the legislature.[6] Mayors need the council to approve legislation and accounts, to minimize the risk of prosecution (Poulsen and Varjao 2019) and often also to broker votes (Colonnelli et al. 2020; Novaes 2018). Council candidates are typically closer to the electorate and often secure their grasp over voters with long-term clientelistic relationships and the provision of targeted access to public jobs, goods, and services (Lopez 2004; Nichter 2018; Nichter and Peress 2017).[7] Yet, councilors depend on mayors to access resources, given that the executive controls both the budget and most jobs. The result is an exchange of political support for rents, which councilors use for their private consumption or to meet the demands of their supporters (Mignozzetti 2021).

This dynamic is well illustrated by the recent events in Ribeirão Preto (SP). In 2016, the federal police uncovered a scheme of bribes directed to nine councilors from six different parties, which were paid to support the local PSD (Social Democratic Party) administration. The bribes included payments in cash and jobs for their closer activists in companies with ties with the mayor.[8] Similar bribing schemes are a relatively common practice in the country and have been uncovered in multiple other municipalities, such as Joaquim Gomes (AL), Fundão (ES), Parauapebas (PA), Cuiabá (MT), and Iranduba (AM).[9]

What is more, these preelectoral coalitions are typically formed around local rivalries and interests, span the entire ideological spectrum, and are often inconsistent with party behavior at the higher level. Neither the electoral legislation nor most of the parties prohibit their local branches to enter alliances with state and national rivals in municipal races. In this decentralized context, local party branches have ample autonomy to negotiate their own coalitions. This is illustrated in figure 1A, where the arcs represent the number of coalitions between a pair of parties in local elections. As an

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5. Media time during elections is allocated to parties according to their national strength, measured by their share of seats in congress. Candidates in the small municipalities studied in this article often rely on radio rather than TV adds.

6. Similar to what happens in national politics (Figueiredo and Limongi 2000), the local party branches often intermediate the negotiation of alliances between their council candidates and mayoral candidates. This does not mean that individual councilors do not break rank in specific issues or even move parties.

7. Ties between councilors and voters are often personalistic and based on clientelism (Nichter and Peress 2017). However, while both the press and the literature show extensive evidence that clientelism is common in Brazil (Brollo et al. 2013; Hidalgo and Nichter 2016), it is not necessarily the only reason that leads voters to follow electoral endorsements of councilors. Voters might simply reward politicians who claim credit over policies (Zucco 2013), for example.

8. See Globo.com (https://glo.bo/2YPXf9O).

9. See Globo.com (https://glo.bo/3hJqbHB), *A Gazeta* (https://bit.ly /308hQHi), Globo.com (https://glo.bo/32HqlJx), *MidiaNews* (https://bit.ly /3gR8g0U), and Globo.com (https://bit.ly/3SQ4xqv).
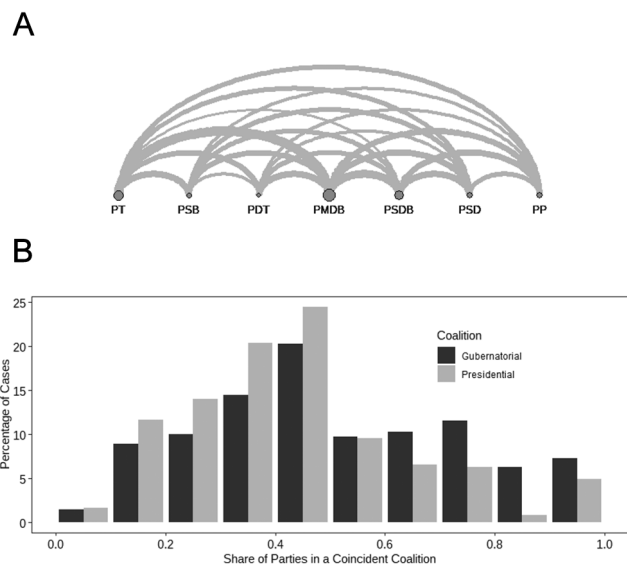
A

B

Figure 1. Local political coalitions by party in Brazil. *A*, Frequency of coalitions between the main parties in 2012. Only the seven largest parties in the country are shown (based on the number of mayors in 2012). Parties are ordered from left to right by their L-R ideology score (Power and Zucco 2009). The size of the dots represents the number of times each party had a mayoral candidate. The thickness of the arc represents the number of alliances between party pairs. An alliance is counted every time one of these parties supports the mayoral candidate of the other party. PSD was created after the survey, so I placed the party in the right-wing group because most members came from PP and DEM, even though PSD supported the federal government under leftist PT. *B*, Coalition members often support different gubernatorial or presidential candidates. The plot splits the dependent variable into 10 bins of 10% each. Bars represent the percentage of all cases that fall within each bin.

example, even PT (Worker's Party) and PSDB (Brazilian Social Democracy Party)—notable rivals in national politics (Samuels and Zucco 2014)—support each other's mayoral candidates in hundreds of races.[10] Figure 1*B* shows, for each winning mayoral coalition, the share of parties that support the same candidate as the mayor's party in gubernatorial and presidential elections. In more than half of the cases, 50% or less of the coalition partners formally support coincident tickets.

In this context, the loyalty of councilors in state and national elections is often divided. On the one hand, the local incumbent party attempts to use its local alliances to obtain the council's electoral backing. For example, in Teresina (PI), the gubernatorial candidate from PSDB used his relationship with the partisan mayor to seek the support of the 25 councilors who make up the mayor's base—including councilors from

parties that opposed PSDB at the state level (e.g., Progressives [PP]).[11]

On the other hand, councilors might prioritize their intraparty relationships over their commitments to the local incumbent. In Caxias do Sul (RS) and Goiânia (GO), for example, councilors openly endorsed a gubernatorial candidate opposing the one favored by their partner mayor.[12] In Passo Fundo (RS), a councilor declared that while he admired the mayor's candidate, he would rather "follow the party."[13] This unalignment of electoral incentives has the potential to hinder the electoral success of the candidates supported by local incumbent parties, especially in a context where councilors actively employ their mobilization capacity to raise votes for their candidates. In Juazeiro (BA), one councilor expressed that, in support of their presidential candidate, councilors would "unite friends and communities. We would go to the streets as if this (presidential) election was the council race."[14]

Finally, local alliances are also unstable. On average, only 50% of the parties in the winning mayoral coalition (2012) continued to support the incumbent in the 2016 race. This is not surprising for patronage-based coalitions with loose ideology— councilors often revoke their support if they find more attractive alternatives. For example, in Guanambi (BA), three councilors left the mayor's coalition to support a former state governor in the upcoming mayoral race.[15] In Batalha (BA), councilors and mayor disagreed on issues of chamber leadership, and the coalition that previously held eight of the nine seats fell apart.[16] Politicians also revoke support because of their relationships in national politics: in Ladário (MS), councilors left PSDB to the Democrats (DEM) by request from members of the national cabinet.[17]

LEGISLATURE SIZE AND ELECTORAL POWER: THEORETICAL PREDICTIONS

This article identifies the effect of legislature size on the electoral performance of the executive branch of government in Brazil. Given the context described in the previous section, I interpret these effects as a consequence of a dilution in the patronage available to the parties that compose the mayor's coalition in the local council. This mechanism is better

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10. In 2012, PT supported a mayoral candidate from PSDB, or vice versa, in 350 municipalities, i.e., 12% of all elections in which at least one of these parties presented a candidate. I emphasize that in 2012 PT's leadership only allowed coalitions with its major rivals as long as PT did not appoint the vice mayor in the ticket (or vice versa). See https://glo.bo/3ccy2x7.

11. See *Cidade Verde* (https://bit.ly/3gwOIyw).

12. See *Pioneiro* (https://bit.ly/3hZmEoP) and *Jornal Opção* (https://bit.ly/309s9ep).

13. See *O Nacional* (https://bit.ly/2BEhcIc).

14. In Portuguese: "Não basta declarar o voto. Vamos unir nossos amigos e nossas comunidades. Vamos para a ruas como se esta fosse a eleição de cada um dos vereadores." See https://bit.ly/2CSdXxE.

15. See *Agência Sertão* (https://bit.ly/2DcwdBw).

16. See *Sete Segundos* (https://bit.ly/3fbfknS).

17. See *Diário Corumbaense* (https://bit.ly/2DjRc5C).

highlighted in the analysis of reverse coattail effects, that is, the performance of the state and national tickets backed by the mayor's party in each municipality. In this context, local councilors might face a clear trade-off between patronage-based incentives provided by their partner mayor and alignment-based incentives provided by their own parties at the state and national level. This logic is summarized below.

Local councilors are the elected officials closer to voters, and they often sustain their electoral capital through long-term clientelistic relationships. They also use their position to influence executive elections at all levels. In doing so, alignment-based incentives drive them to campaign for candidates supported by their own parties in state and national elections, as councilors rely on parties for campaign funds, career opportunities, and radio/TV time at each electoral cycle. As for patronage-based incentives, they tie councilors to the electoral interests of mayors. Because of their control of the municipal budget, mayors themselves are the main local brokers for state and national politicians. In that position, they employ patronage to co-opt local councilors as brokers to support their candidates.

This dynamic is only relevant when the patronage-based and alignment-based incentives are incongruent, that is, when coalition parties support candidates who oppose the ones backed by the mayor's party. Now, larger legislatures require mayors to sustain coalitions with a higher number of councilors to obtain the same level of proportional support. Everything else equal—including the budget—every coalition member now extracts less rent from the executive. Note that this argument holds even if the mayoral coalition remains with the same number of parties after the increase in seats. Thus, larger legislatures reduce the relative attractiveness of patronage-based incentives vis-à-vis the alignment-based ones to coalition members. As a result, councilors are more likely to campaign for the candidates of their own parties instead of backing the mayor's ticket. This logic generates the following hypotheses:

H1. Candidates supported by the mayor's party lose votes when the council is larger.

H2. In state and national races, these effects are concentrated in locations where local coalitions have a low degree of electoral alignment with state and national alliances.

Although a dilution in patronage is expected to also affect subsequent mayoral elections, the trade-off faced by coalition members here is slightly different. First, there are less alignment-based incentives, as state and national politicians seldom interfere in the coalition choices of the local party branches in small municipalities. Second, even if parties decide to leave the mayoral coalition for an alternative candidate, they would also be affected by the dilution in rents should they win the 2016 mayoral race. Nevertheless, a dilution in rents should still raise the relative importance of all other nonpatronage incentives for local coalition formation in municipalities with larger councils. In other words, parties that joined the governing coalition in 2012 primarily in the pursuit of rents might be less inclined to remain in 2016 if they focus on other factors such as ideological congruence.

In this context, the prediction in hypothesis 1 should still hold for the 2016 mayoral election; that is, larger councils hurt the electoral performance of the incumbent. In addition, the preelectoral coalitions formed in 2012 should be more likely to fall apart in municipalities with larger councils, as parties realign preceding the 2016 race. Finally, the 2016 coalitions are more likely to be based on nonpatronage incentives. These latter two arguments imply the additional testable hypotheses:

H3. Where councils are larger, mayoral coalitions formed in 2012 are more likely to fall apart preceding the 2016 election.

H4. Where councils are larger, new 2016 preelectoral coalitions are more likely to be based on nonpatronage incentives such as ideology.

EMPIRICAL DESIGN AND DATA

This article's empirical strategy exploits federal legislation from 2009 that established caps for the size of municipal councils in Brazil, based on several population thresholds (see details in table A.1; tables A.1–A.11 are available online). This discontinuous assignment in the maximum number of seats allows me to use a regression discontinuity design to compare the electoral outcomes in municipalities just above each population threshold (those with a larger cap) to the ones in municipalities just below. I use this design to identify the effect of council size on the electoral performance of the local incumbent party in executive elections in Brazil (mayoral, gubernatorial, and presidential). Figure 2 illustrates the number of council seats in Brazil after the municipal 2012 election.[18]

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18. Previously, instead of a cap, the law determined the exact council size of each municipality. Although the size was also based on the population, the thresholds were different (much higher). As a result, under the previous rule, not many municipalities are found with populations around the cutoff points (the lowest was cutoff was 47,619, followed by 95,238). In contrast, the 2009 rule set the first three thresholds at 15,000, 30,000 and 50,000. Figure 2 shows how the vast majority of municipalities in Brazil
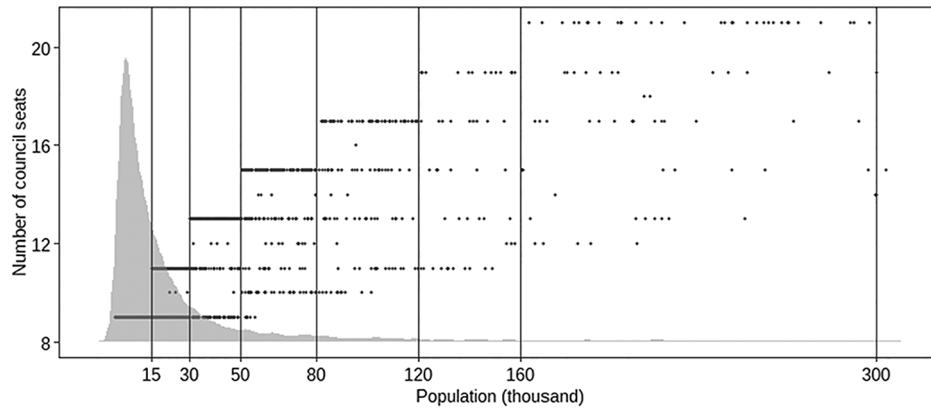
Figure 2. Number of council seats in Brazilian municipalities. Each dot represents one municipality. Vertical lines show the population levels at which the cap on council size changes. The shaded area shows the density of the observations. For ease presentation, the plot excludes 1% of all municipalities, which have populations above 310,000. There is total of 5,428 municipalities in the plot.

The maximum council size set by the legislation is not binding. This means that local administrations can choose not to increase the number of seats or to increase it to less than the cap (80% of all municipalities have their council size at the cap). This has direct implications for the empirical specification here, which requires an FRD design (Calonico, Cattaneo, and Titiunik 2014; Imbens and Lemieux 2008). In the sharp RD design, the uptake of treatment is forcefully determined at the discontinuity, in which case the probability of an increase in council size is always one. Here (FRD), the probability of compliance with treatment still jumps at the threshold, but it is between zero and one.

Accordingly, the estimation of the FRD resembles an instrumental variables design, where the discontinuous assignment rule first identifies an exogenous change in council size (under the usual RD assumptions), and this variation in council size is used to identify the local treatment effect on electoral outcomes at the discontinuity, in a second stage.[19] This is better illustrated by equations (1) and (2):

$$\text{SEATS}_{iw} = \gamma_0 + \gamma_1 T_{iw} + \gamma_2 \text{POP}_{iw} + \gamma_3 T_{iw} \text{POP}_{iw} + \lambda_w \quad (1)$$
$$+ \mu_{iw}.$$

$$Y_{iw} = \beta_0 + \beta_1 \widehat{\text{SEATS}}_{iw} + \beta_2 \text{POP}_{iw} + \beta_3 T_{iw} \text{POP}_{iw} \quad (2)$$
$$+ \lambda_w + \varepsilon_{iw}.$$

Equation (1) is the first stage, which estimates the effects of the assignment rule on the compliance with the treatment (i.e., on the increase in council seats) for municipality i and assignment window w around each population threshold. The variable T_{iw} indicates whether the municipality is just above the threshold in each window w and thus eligible to a larger council. The variable POP_{iw} is the normalized value of the population.[20] Finally, I include fixed effects by population window (λ_w), given that the assignment to the treatment is made locally around each population threshold.[21]

Figure 3 shows the estimation of equation (1). On average, treated municipalities have roughly one more council member than the control group. Table A.2 shows that these coefficients are robust to the choice of bandwidth, polynomial, and the inclusion of state fixed effects and other covariates, which are also balanced at the discontinuity. Table A.3 shows the usual RD balance test for these covariates and describes the construction of each variable. Finally, as it is usual, observations are weighted by the triangular kernel, and the estimation only includes observations within a bandwidth around each threshold, set by the algorithm in Calonico et al. (2014).

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have less than 50,000 inhabitants, which provides a lot more observations around the thresholds—this explains this article's choice for the 2009 assignment rule. For perspective, using all locations within 7,500 inhabitants of any threshold allows me to use nearly 3,000 municipalities (53% of Brazil) under the 2009 rule. However, under the same range, this number drops to less than 300 (5% of Brazil) under the 2004 rule.

19. In the FRD case, the treatment effect is doubly local: it is the effect both (i) at the discontinuity threshold and (ii) on the compliers, i.e., the municipalities that increased their number of seats as a result of the legislation.

20. This is the highest value of municipal population among the official IBGE (Brazilian Institute of Geography and Statistics) measures of 2010 and 2011, subtracted by the threshold value in each assignment window. These were the years before the 2012 election in which municipalities were allowed to change their bylaws to increase the council size.

21. The data on council size, electoral results, preelectoral coalitions, and candidate profiles come from the Superior Electoral Court (TSE). The effective sample excludes 2% of municipalities that had the 2012 election canceled by the courts and 0.5% of municipalities that had missing data on covariates. Also, only municipalities with populations below 305,000 are potentially included in the estimation (99% of the total), given that only the first seven population thresholds have at least one observation on each side of the discontinuity within the optimal bandwidth (see table A.1).
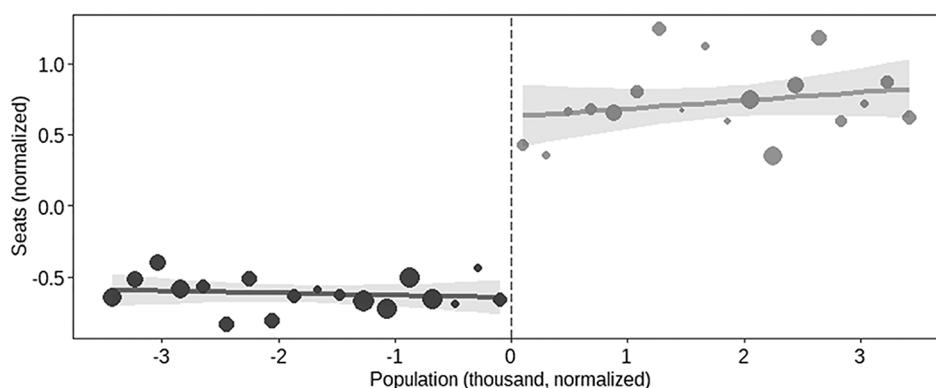
Figure 3. Discontinuity in council size after 2012. Pooled data from the first seven population windows. The *X*-axis shows the population (in thousand inhabitants), normalized by value of each assignment threshold. The outcome variable in the *Y*-axis is also demeaned by the average value in each assignment window. The optimal bandwidth is 3,520, and the line is a linear fit on each side of the discontinuity.

Ultimately, this article studies the effects estimated by equation (2). Here, for any electoral outcome Y_{iw}, the explanatory variable is now the predicted number of council seats $(\widehat{\text{SEATS}}_{iw})$ obtained with equation (1). Accordingly, the local treatment effect is given by β_1. In most specifications, I also include fixed effects by state and demographic and political party covariates fully described in the appendix.[22]

Finally, the caps for both the wages of legislators and the local spending with councils are assigned in a discontinuous manner over population thresholds in Brazil. Two of these thresholds coincide with the ones used in the current empirical strategy (50,000 and 300,000).[23] This could present a threat to the identification strategy if legislators' wages or legislative expenses affect the elections under analysis. Accordingly, I rule out this potential source of confounding using two empirical exercises.

First, I show that the results remain robust for a subsample that excludes the two "contaminated" assignment windows around the 50,000 and 300,000 thresholds (table A.5). Table A.6 also shows that the results are robust for the first threshold (15,000) only, which includes most of the

municipalities in the sample (68%). Second, table A.7 shows a placebo test using past elections (2010, 2012). While the discontinuous assignments in wages and expenditures were already in place during the electoral tenure preceding the 2010/2012 races, the ones for council size were not. If the wage/expenditure assignment rules had significant direct effects on electoral results, we should already observe significant estimates in this exercise. The fact that all coefficients are weak and insignificant further suggests that these rules are not relevant threats to the identification strategy.

COUNCIL SIZE AND ELECTORAL LOSSES BY LOCAL INCUMBENTS

Table 1 shows the effect of council size on the electoral performance of the candidates backed by the mayor's party in the three executive elections during the mayoral tenure of 2013–16 (gubernatorial and presidential in 2014 and a new mayoral election in 2016).[24] The outcome is always the percentage of the municipal vote obtained by the candidate.

The first outcome is an index that aggregates the electoral losses in all three elections—a direct test of hypothesis 1.[25] Table A.9 shows that these estimates are robust to polynomial

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22. As is typical in RD designs, pretreatment covariates are included to improve the precision in the estimation. I later show that the results are robust to their exclusion. Table A.3 shows the description of the demographic covariates and their sources. The political party covariates are dummies that indicate whether the mayor elected in 2012 belongs to one of the seven largest parties in Brazil by number of mayors (PT, Brazilian Democratic Movement Party [PMDB], PSDB, Brazilian Socialist Party [PSB], PSD, PP, and Democratic Labor Party [PDT]) and one dummy that indicates whether the incumbent is part of PT's federal coalition. Table A.4 shows that these variables are also unaffected by the treatment assignment.

23. See the Brazilian Constitution, articles 29 and 29A. For legislators' wages, the population thresholds (equal or below 300,000) are 10,000, 50,000, 100,000, and 300,000. For legislative spending, they are at 100,000 and 300,000.

24. These candidates are the ones whose 2014/2016 preelectoral coalition includes the mayor's party, either as the coalition head (e.g., governor or vice governor's party) or just as a member. Figure A.1 (figs. A.1–A.3 are available online) shows that the main results do not significantly vary depending on the status (head or member) of the mayor's party in the coalition. In cases in which the mayor's party did not support any candidate, the outcome could not be measured. This represents .001% of the gubernatorial races and 11% of mayoral races. Accordingly, the last line of table A.8 also shows that the incumbent party's decision not to participate in the 2016 mayoral race is uncorrelated with treatment at the discontinuity.

25. The index is the average of the outcomes, weighted by the inverse of their covariance matrix.

Table 1. Loss of Electoral Strength by the Local Incumbent Party

	(1)	(2)	(3)
Vote share index (aggregates the elections below)	−4.674*	−4.761*	−4.218*
	(1.503)	(1.559)	(1.506)
Observations	1,114	1,114	1,114
Individual election outcomes:			
Gubernatorial (2014)	−4.936*	−4.904*	−4.573*
	(2.266)	(2.324)	(2.278)
Observations	1,305	1,305	1,305
Presidential (2014)	−4.648*	−4.181[+]	−3.918
	(2.005)	(2.492)	(2.465)
Observations	1,307	1,307	1,307
Mayoral (2016)	−3.848*	−3.714*	−3.089[+]
	(1.877)	(1.892)	(1.836)
Observations	1,116	1,116	1,116
Demographic covariates	Yes	Yes	No
Political party covariates	Yes	No	No

Note. The dependent variable is the percentage of total votes in the municipality obtained by the candidate supported by the mayor's party in each election. Standard errors are heteroskedasticity robust and presented in parentheses. All regressions include fixed effects for the assignment window and state dummies. Covariates are listed in tables A.3 and A.4. The bandwidth is 3,520 for all regressions, in line with the first stage shown in fig. 3.
[+] $p < .1$.
* $p < .05$.

and bandwidth changes.[26] Overall, the effects are consistently negative across all elections and specifications. On average the candidates of the local incumbent party lose 4.7 percentage points for every extra council member in the municipality. Given that these candidates average 46% of the vote in the pretreatment baseline, the effect of one council member is a decrease in vote percentage of nearly 10%. Finally, the placebo test (table A.7), where I reestimate this table using electoral results from the pretreatment period, finds no significant statistical effects.

Local coalitions and losses in reverse coattails (hypothesis 2)

Table 2 presents additional empirical evidence in support of the mechanism. First, council size had no effect on the number of parties or candidates running in the 2012 election (rows 1 and 2) and on the number of parties that composed the preelectoral alliance of the eventual mayor (row 3). However, legislature size affected the size of the mayoral coalition elected for the council (postelection panel): although the mayor still managed to control a similar share of the total seats

(row 6), mayoral coalitions had a significantly larger number of individual councilors (row 5).

Second, figure 4 shows the heterogeneous effects of council size on the vote shares of the mayor's party in gubernatorial and presidential races—a direct test of hypothesis 2. The sample is split by the level of alignment between the incumbent mayoral coalition and the state and national alliances supported by the mayor's party. Alignment here is measured as the share of parties in the 2012 mayoral alliance that were also part of the 2014 state and national coalitions supported by the mayor's party. Although these variables are measured posttreatment, they are uncorrelated with council size at the discontinuity (last rows of table 2). In short, the negative effects on reverse coattails are highly concentrated in municipalities where coalitions are less aligned with party positions in higher races. This is consistent with the argument in hypothesis 2 that coalition councilors become more likely to endorse their own party candidates over the mayor's ticket after a dilution in patronage.[27]

These results also suggest that brokerage does not respond to a dilution in patronage unless councilors have an attractive

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26. Table A.10 shows that they are robust to the inclusion of congressional elections.

27. The local-state (or local-national) alignment in preelectoral coalitions is uncorrelated with council size at the discontinuity.

Table 2. Effect of Council Size on the 2012 Municipal Election

	(1)	(2)	(3)
Preelection outcomes (2012):			
Total parties running (number of parties)	.233	.232	.208
	(.386)	(.384)	(.386)
Total candidates running (per seat)	−.143	−.139	−.157
	(.240)	(.241)	(.254)
Total parties in winning coalition (log)	.060	.059	.068
	(.055)	(.055)	(.055)
Postelection outcomes (2012):			
Coalition parties elected (number of parties)	.433*	.430*	.471*
	(.159)	(.159)	(.159)
Coalition councilors elected (number of councilors)	.473*	.478*	.520*
	(.208)	(.207)	(.208)
Coalition share elected (share of total seats)	−.002	−.002	.002
	(.020)	(.020)	(.020)
Alignment in preelectoral coalitions (mayor in 2012 with state/national in 2014):			
Gubernatorial alignment (share of coincident coalition)	−.027	−.025	−.024
	(.026)	(.026)	(.025)
Presidential alignment (share of coincident coalition)	−.003	−.003	−.004
	(.019)	(.022)	(.022)
Demographic covariates	Yes	Yes	No
Political party covariates	Yes	No	No

Note. Dependent variables are explained in the text. Standard errors are heteroskedasticity robust and presented in parentheses. All regressions include fixed effects for the assignment window and state dummies. Covariates are listed in tables A.3 and A.4. The bandwidth is 3,520 for all regressions, in line with the first stage shown in fig. 3. $N = 1,305$.
$^+ p < .1$.
$^* p < .05$.

alternative to the mayor's candidates. This has further implications for the theoretical argument: it indicates that the losses are not driven by a potential reduction on the effort of councilors in campaigning for higher candidates. If this were the case, the dilution in rents would have also affected the effort of councilors in highly aligned coalitions. On the contrary, this evidence is consistent with a narrative in which the rent dilution primarily affects the councilors' choice of candidates in these races, as they face the trade-off between patronage- and alignment-based incentives.

The appendix contains additional evidence linking the mechanism to the main results. Table A.11 shows that the bulk of the electoral losses comes from municipalities with weaker financial capacity in 2013–16.[28] The intuition here is

that, because local administrations with more access to resources were better shielded against the dilution in patronage, the mayor's party in these municipalities was less likely to lose electoral power. Finally, figure A.2 shows that the negative electoral effects of council size are concentrated in smaller municipalities, as expected, given that the two-seat increase is proportionally much more significant for councils with a small pretreatment size. Table A.1 shows the percentage increase in council size for each population threshold.

Local coalitions and subsequent mayoral races (hypotheses 3 and 4)

Table 1 shows that legislature size also has a negative effect on the electoral performance of the mayor's party in the subsequent mayoral election (2016). This is the first race that

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28. I use two different measures of financial capacity for local administrations. The first is the average per capita municipal budget for the period. Here the sample is split by the median value into "high" and "low" budget subsamples. Even though this variable is measured post-2012, fig. 6 shows that it is unaffected by the treatment assignment. The second measure is a proxy for access to discretionary public resources from intergovernment transfers. The variable here is a dummy that

indicates whether the mayor's party is part of both the gubernatorial and the presidential governing coalitions in 2012, given that intergovernment alignment is an important determinant of access to discretionary funds for Brazilian mayors. The results remain similar using either variable to split the sample.
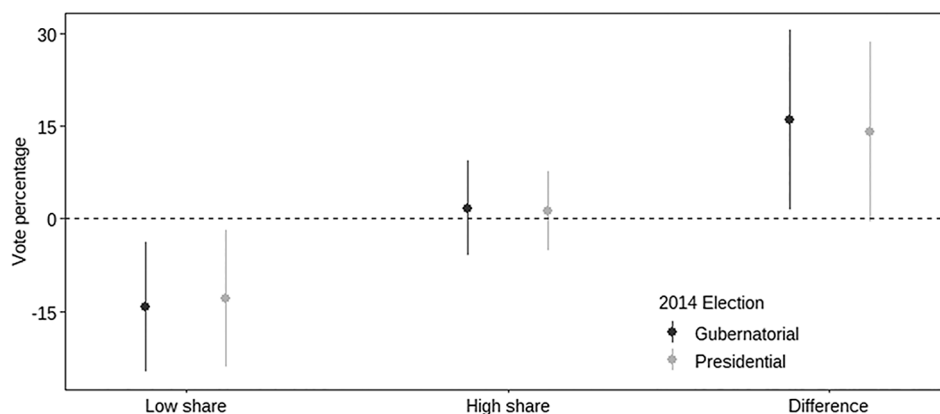
Figure 4. Heterogeneity in reverse coattails: the role of unaligned electoral incentives. Coefficients represent the effect of council size on the vote shares of the candidates supported by the local incumbent's party in gubernatorial and presidential elections (2014). The two subsamples are described in the text. As it is standard, the estimation is done using a single regression where the independent variable that measures the council seat number ($\widehat{\text{SEATS}}_{iw}$ in eq. [2]) is also interacted with a dummy that indicates whether the observation belongs to the high-share sample. Both variables have as instruments the treatment indicator T_{iw} (as before) and its interaction with the dummy described above. Standard errors are heteroskedasticity robust. Regressions include fixed effects for the assignment window, state dummies, and the covariates listed in tables A.3 and A.4 and control for the number of parties in the 2012 mayoral coalition. The bandwidth is 3,520, in line with the first stage shown in figure 3.

follows a four-year period when the council size differences were in place (2013–16). For mayoral races, hypothesis 3 predicts that the mayor's coalition is more likely to collapse between 2012 and 2016 in municipalities with larger councils. This is shown by figure 5: the first estimate shows that council size is uncorrelated with the proportional support obtained by the mayor in the 2012 election. However, the second coefficient shows that the mayor's party loses the support of a significant share of elected councilors in advance of the 2016 run.[29]

I also assess the effect of council size on the ideological profile of incumbent mayoral coalitions in 2012–16 (a test of hypothesis 4). Aware of the limitations of this exercise,[30] I use the ideological leaning of the largest parties in Brazil—PT, PSB, PDT on the left and PMDB, PSDB, PSD, and PP on the right—to build a binary variable that indicates whether the preelectoral mayoral coalition was ideologically inconsis-

tent; that is, a left-wing party supported a right-wing candidate or vice versa. In 2012, these coalitions were present in 39% of the sample. In a second specification, I define inconsistent coalitions as the ones where PT or PSB (left) supported candidates from PSDB or DEM (right) or vice versa. These are the large parties that were consistently at opposite sides in national politics since 1994. These coalitions represent 14% of the sample. For both cases, the shift in the ideological profile of the coalition is measured as the difference between the value of the dummy in 2016 and 2012.

The last two coefficients in figure 5 show the effect of council size on these two variables: in both cases, there is a decrease in the number of ideologically inconsistent coalitions between 2012 and 2016 where councils are larger. This is in line with hypothesis 4's prediction that patronage-based incentives become less important in mayoral races relative to the ideological convergence between parties.

ALTERNATIVE EXPLANATIONS

In this section I assess the merit of two potential alternative explanations for the electoral effects of council size observed in table 1.

Council size and local public policy

One might be concerned that the electoral results are spillovers of the impact of legislature size on public policy provision, rather than the consequence of the proposed mechanism. This potential explanation is particularly pertinent to Brazil, where voters in all elections are highly responsive to the performance of mayors (Boas et al. 2021; Feierherd 2020;

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29. The outcome variable for these two coefficients is the share of the elected councilors who belong to the mayor's preelectoral coalition (2012 and 2016). The same pattern is observed for a subsample that only considers coalition councilors who attempted reelection in 2016 (i.e., third and fourth coefficients).

30. Local elections in Brazil have often weak ideological appeals, and many parties are primarily office seeking (Power and Rodrigues-Silveira 2018). Yet, a recent literature has shown how party labels still inform vote choice in the country (Samuels and Zucco 2014), and how mayoral candidates propose policies that are highly consistent with the national ideological brands of their parties (Desai and Frey 2023). This latter article also shows extensive evidence that voters, politicians, and experts alike can consistently classify the main Brazilian parties in broad Left and Right groups.
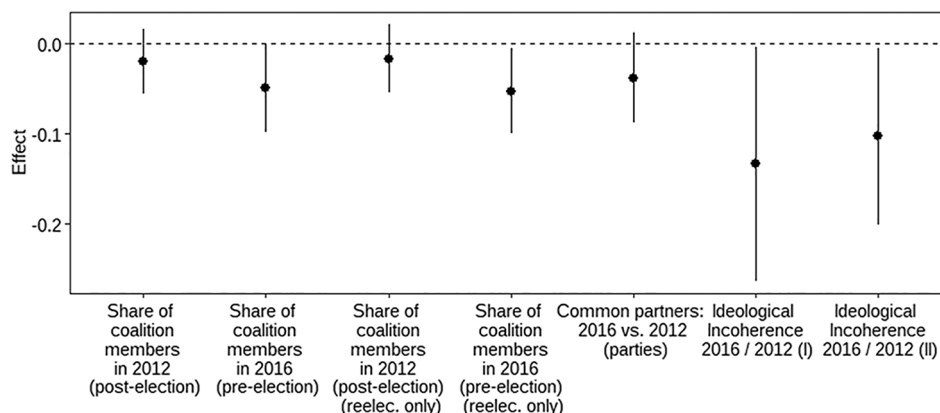
Figure 5. Change in winning mayoral coalitions between 2012 and 2016. Coefficients represent the effect of council size on each variable. Plots show 95% confidence intervals. The first four variables are calculated as a share of the total council seats in the municipality. The construction of each variable is described in the text. Standard errors are heteroskedasticity robust. Regressions include fixed effects for the assignment window, state dummies, and the covariates listed in tables A.3 and A.4 and control for the number of parties in the 2012 coalition. The bandwidth is 3,520, in line with the first stage shown in figure 3.

Ferraz and Finan 2008; Klašnja and Titiunik 2017). In principle, there are at least two reasons why council size could affect the mayor's policies. First, the average preference of legislators could change with chamber size. For example, if larger chambers have on average more left-leaning members, the executive will likely face more pressure to increase both taxation and spending. Second, the executive-legislative bargaining process itself might be affected by the change in the number of players involved. For example, more seats could put pressure on the executive for suboptimal increases in spending (Chen and Malhotra 2007; Primo and Snyder 2008) or for more services that are highly salient to voters (Mignozzetti 2021).

Nevertheless, figure 6 shows that council size is uncorrelated with several local public policy outcomes in 2013–16. These variables measure changes in both the intensity of policy implementation (e.g., increases in budget size) and shifts across policy priorities such as spending in health care or public security—all variables are described in the figure legend. In a nutshell, the coefficients are small in magnitude, and none of the 12 is statistically significant.

I also show that the lack of policy effects does not jeopardize the councilors' status as brokers. The mechanism proposed here relies on the notion that their electoral strength comes from their ability to target public resources across voters. Thus, one might wonder whether the absence of policy expansions might lead voters to see larger councils as ineffective, which would threaten their electoral power. Table A.8 suggests that this is not the case: under larger councils, legislators elected in 2012 are no more or less likely to run for reelection in 2016. What is more, council size has no effect on the reelection rate of those who run. Overall, this is highly consistent with political environments characterized by clientelism in which politicians succeed by selectively targeting public resources to voters and by relying on the relative scarcity of public services to keep voters dependent (Frey 2022; Weitz-Shapiro 2014). Additionally, the electoral losses
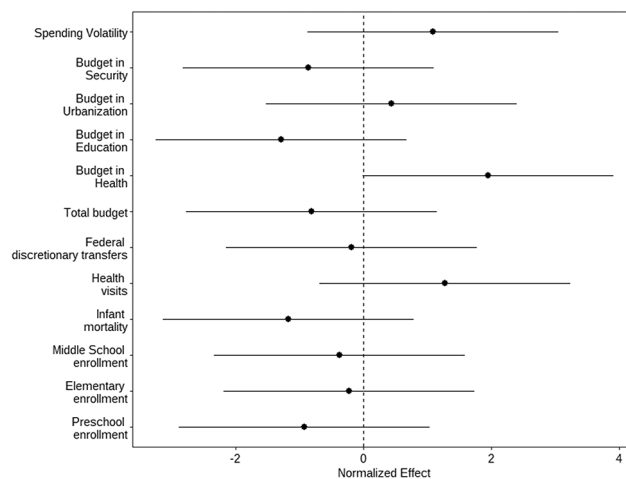

Figure 6. Policy outcomes in 2013–16. Coefficients represent the effect of council size on each variable. Plots show 95% confidence intervals. School enrollment comes from the Brazilian school census of 2016 (National Institute of Educational Research [INEP]). Variables are coded as the number of students in each grade as a percentage of the local population. Budget data come from the FINBRA (Brazilian Finance) database maintained by the National Treasury, for 2013–16. Total budget is calculated in millions of BRL, and the shares are a percentage of the total spending. It only includes municipalities that reported at least two years of data. Data on federal discretionary transfers come from the SIAFI (Integrated System of Financial Management) database for 2013–16 (also in millions of BRL). Infant mortality and health care visits come from http://tabnet.datasus.gov.br/. Mortality is calculated as the number of infant deaths per population, and it is available for 2013–16, while health care visits are only for 2013–14 (calculated as the number of visits per covered household). Spending volatility is measured as the absolute deviation in spending from the average within each group (treatment or control), within each treatment window.
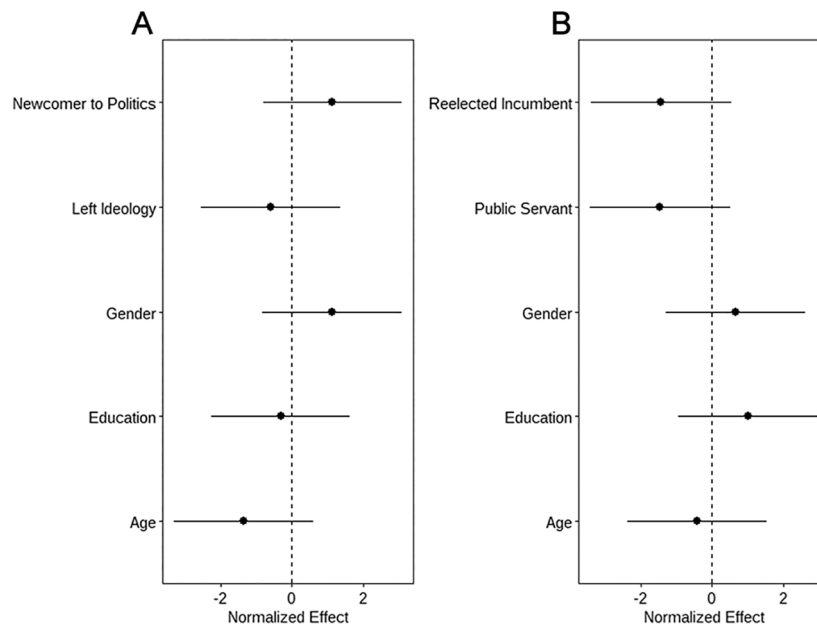
A B

Figure 7. Effects on the profile of elected politicians: *A*, council; *B*, mayor. Coefficients represent the effect of council size on each variable. Plots show 95% confidence intervals. All coefficients are normalized by their standard deviation, for the purposes of presentation. The estimation here only includes municipalities where the incumbent's party formally supported a candidate in the 2016 election (89% of the full sample). "Gender" indicates whether the councilor/mayor is female; "education" is the education level of the councilor/mayor; "age" is the councilor's/mayor's age in 2012; "newcomer to politics" indicates whether the candidate registered as a party affiliated for the first time in 2011; "left ideology" indicates whether the member belongs to a left-wing party; "reelected incumbent" indicates whether the recently elected mayor was also the mayor in 2009–12; "public servant" indicates whether the mayor was a former public servant.

shown in table 1 are consistent with this argument: if these legislators lose their effectiveness as brokers, they would also fail to steal votes from the mayor's party in state and national elections.

Finally, in what follows I discuss potential explanations for the observed absence of policy effects in the context of Brazilian municipalities in 2013–16. First, the null effect of council size on total spending—a straightforward measure of policy intensity—is likely the consequence of the decentralized spending system in Brazil where local budgets are primarily financed by scheduled transfers from federal and state resources, which are often nondiscretionary. In this context, mayors are limited in their ability to significantly affect the size of their budgets.[31]

Second, the absence of shifts in policy priorities might mirror the fact that council size has no effect on the profile of

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31. A recent study examines the policy effects of council size in Brazil using the assignment rule that prevailed in 2004–8 (Mignozzetti 2021)—see my detailed explanation in n. 18. Similar to the results here, they do not find any council size effects on either the size of the local budget or its allocation. They do, however, find some positive effects on the quality of selected health and education services (mortality rate and primary school enrollment). The divergence between results is most likely caused by methodological differences: their study examines a different time period and identifies effects for a different sample of much larger municipalities.

elected politicians—see figure 7 for effects on the profile of both the average councilor (fig. 7*A*) and mayor (fig. 7*B*). If the policy preferences of politicians are correlated with their observable characteristics such as gender, age, political party, or experience, it is not surprising that the policy outcomes here remain similar across different council sizes.

Third, the polarization in policy preferences in small Brazilian municipalities is relatively low, which likely leads mayors and legislators to support similar types of spending. To illustrate this, consider a case in which the mayor supports an increase in health programs but most coalition councilors prefer education programs. The stronger the councilors' preference for education over health, the more patronage it takes for them to embrace the mayor's agenda. However, if health spending also widely benefits the council's constituencies—and polarization is low in this dimension—a small reduction in patronage might not jeopardize the mayor's control over the coalition's policy choices.

Even though I cannot directly measure the policy preferences of individual politicians, the 2012 Brazilian Barometer survey (LAPOP) provides some insight on the preferences of voters, which are likely correlated with the councilors'. The survey shows that health and education programs are by far the most relevant priorities for voters: 93% of them rate at least one of these categories among their top two spending
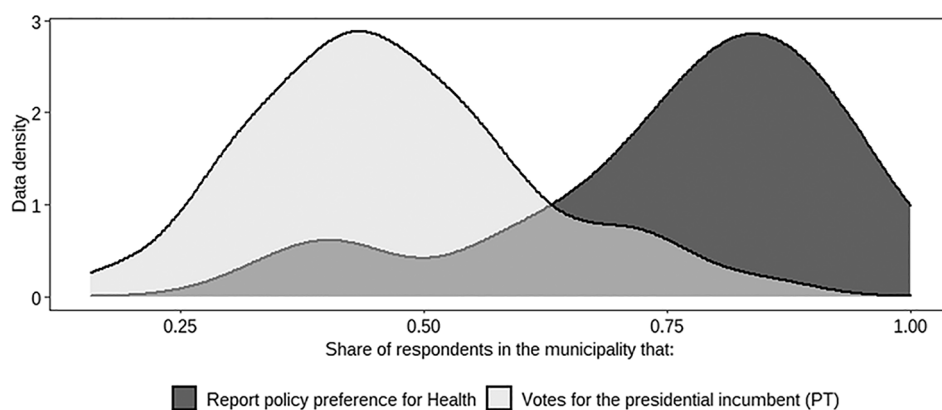
Figure 8. Electoral and policy preferences of voters. *Dark shade*, Distribution of the average preference for health policy across 106 municipalities surveyed in the LAPOP Brazil 2012. *Light shade*, Distribution of the average vote for PT in the 2010 presidential election for the same 106 municipalities.

priorities.[32] What is more, 77% rate health policy as their top priority, and among the voters who do so, two-thirds rate education as their second priority. Overall, this pattern strongly suggests a high level of congruence in policy preferences at the local level and offers a possible explanation for why a weakening of mayoral coalitions does not significantly affect policy outcomes.

This is even more informative for the current findings when compared with polarization in electoral preferences, as illustrated by figure 8. For the 106 municipalities in the survey, the dark shade shows the distribution of the average preference for health spending, and the lighter shade shows the average share of the municipal vote for the incumbent (PT) in the 2010 presidential race. The plot suggests that voters are much more likely to agree in their preferences for policies than on their choice of presidential candidate. This pattern is consistent with a political environment where the electoral support of legislators is relatively "more expensive" than their support for policy and, therefore, more likely to be affected by a reduction in patronage.

Council size and new entrants in politics

I assess the alternative explanation that the electoral losses, in the case of the mayoral race only, are the effect of an increase in the number of candidates in the contest (Shugart and Taagepera 2017). The argument is simple: newly acquired representation in the legislature might lead (newcomer) parties to present candidates in the mayoral race. If larger

councils elect more parties (as it is the case here; table 2), then executive races might be more fragmented, and incumbent parties might lose more votes. Nevertheless, table A.8 shows that council size has no effect on the number of candidates competing in the subsequent mayoral election in 2016 or on the coalition size and electoral strength of the eventual winner.

CONCLUSION

This article uses an FRD design to examine the effects of municipal legislature sizes on gubernatorial, presidential, and mayoral elections in Brazil. In a nutshell, every additional council seat in a municipality triggers a reduction of nearly 5 percent points in the vote percentage obtained locally by the candidates backed by the mayor's party. Additional evidence supports the theory that these electoral losses arise from a breakdown in the local executive-legislative electoral coalitions. In a context in which councilors often extend political support to mayors in exchange for patronage, an increase in council size raises the cost of support for the executive, more so when council and mayor have unaligned electoral incentives at the state and national levels.

These findings have at least three implications for future research. First, there is burgeoning literature that studies the demise of entrenched, dominant political parties in the developing world (Dasgupta 2018; Frey, López-Moctezuma, and Montero 2024), especially in a context where their hegemony is based on targeted redistribution of public resources (Fujiwara and Wantchekon 2013; Larreguy, Marshall, and Trucco 2015). By revealing a mechanism for how legislature resizing weakens the electoral power of entrenched incumbents, this article suggests that this research agenda should also focus on how changes in other democratic institutions might affect electoral competition.

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32. The survey question is: "What is the area in which the public sector should invest more resources?" The options were education, security, infrastructure, antipoverty policies, retirement, health, housing, and environmental policies.

Second, the mechanism here is relevant to research that aims to further understand the incentives faced by political brokers and the electoral consequences. In many developing countries brokers often face a trade-off between their party interests and other attachments, either ideological or monetary (Holland and Palmer-Rubin 2015; Larreguy et al. 2016, 2017). In these political environments, patronage-based appeals are likely pivotal in defining both the brokers' loyalties and their effort.

Finally, municipal races in Brazil are often personalistic, and the conventional wisdom dictates that most parties in the country are patronage-oriented and ideologically weak (Ames and Smith 2010; Klašnja and Titiunik 2017). However, the findings here show that parties matter in local elections, even in this political environment. In doing so, this article adds to a recent body of evidence that highlights the relevance of Brazilian parties in (i) organizing vote brokerage in elections at all levels (Avelino et al. 2012; Feierherd 2020; Frey 2022; Novaes 2018), (ii) guiding individual voting behavior (Power and Rodrigues-Silveira 2018; Power and Zucco 2009; Samuels and Zucco 2014), and (iii) determining municipal policy outcomes (Desai and Frey 2023). In this context, this also implies that the mechanism uncovered here is likely present in other developing democracies that posses a stronger party system and where patronage is also pervasive.

ACKNOWLEDGMENTS

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