The relationship between federal budget amendments and local electoral performance

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Abstract

The objective of this paper is twofold. First, it investigates whether politicians use amendments to the federal budget as a strategy to maintain and expand their political capital. Second, we check if this strategy pays off in the sense that voters electorally reward politicians that benefit their municipalities in the federal budget. In a broad aspect, our study analyzes the politicians' strategies and the voters' preferences over these strategies by empirically testing the existence of a relationship between electoral performance of Brazilian deputies and authorship of past and future amendments to the federal budget. The findings indicate that politicians tend to favor municipalities that were important in their elections and that voters vote for candidates who have brought more resources to their localities. However, given that Brazil adopts a party-open-list proportional representation system for congressional elections, voters' induced behavior by amendments is not enough to increase the chances of re-election.

KEYWORDS: voter's preference, pork barrel, politician's strategies

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1 Introduction

It has been well-established by the empirical literature that incumbent politicians have some advantages in elections. Fiscal policy has been typically the channel incumbents use to influence voters in elections for the executive branch. Under a district electoral system, the pork-barrel literature has documented that for legislative seats public expenditures are an important mechanism used to canvass voters. The major goal of this paper is to investigate whether fiscal policy is used as an effective strategy whereby incumbent congresspeople obtain voters' support in Brazil, a country that does not use a single member per district electoral system for its Chamber of Deputies. In particular, we assess the relationship between amendments to the federal budget and the electoral outcomes of deputies who proposed such amendments.

A possible mechanism to influence voters investigated in the literature is through public deficits, which would result in electoral cycles on public spending. However, Brender and Drazen (2008), after analyzing a sample of 74 countries over a 43-year period, did not find evidence that public deficit in an election year or in non-electoral periods increases the chances of re-election of executive branch members. As a matter of fact, results show that in more developed democracies the effect is negative, i.e., voters punish those politicians who elevate the budget deficit. For Brazil, Sakurai and Menezes-Filho (2007) show that expenditures in an electoral year tend to reduce the chances of re-election for local executive positions, whereas expenditures in non-electoral years seem to benefit the incumbent. Thus, the increase in fiscal outlays does not appear to be an efficient mechanism for local executive positions. Nevertheless, voters may have preferences about the expenditure composition and not necessarily on the total amount spent. In several countries, the increase of investment expenditures and the reduction of current expenditures have a positive effect.[1] Meneguin, Bugarin and Carvalho (2005) demonstrate that voters in Brazilian municipalities tend to disapprove cost expenditures and extol investment expenditures, which are electorally visible. This way, fiscal manipulation can occur in alternative ways in order to not produce public budget deficit, since voter's choice is likely based on the composition and/or distribution of budget resources.

In the legislative branch, in which total expenditures are not so flexibly determined as in the executive branch, the use of fiscal policy for electoral purposes often occurs via distribution of resources through amendments to the budget. Congresspeople can focus on a specific group of voters, benefiting this group to the detriment of the others. In the U.S. literature, this practice, known as pork-barrel, involves funding for government

[1] See Katsimi and Sarantides (2012), Khemani (2004) and Peltzman (1992).

programs targeted at a geographically specific group in exchange for political support for a candidate, either via campaign contributions or votes. While benefits are restricted to a specific location, costs are paid by all taxpayers.[2]

In the U.S., pork barrel usually occurs through agricultural subsidies and engineering projects (e.g., construction of roads). Most studies in that country show a connection between the benefits assigned to a region and the support for the congressperson during election.[3] As shown by Leigh (2008), a similar phenomenon is also observed in Australia. Not surprisingly, Australia is a country that has a representation system akin to that of U.S., in which only one member is chosen for each electoral district. In this system, there is a direct connection of a politician with a given region, since each location elects its representative.

However, this connection is not well documented in countries whose election for the Legislative occurs in electoral districts with large geographical dimensions and with various parties/candidates elected in a single multimember district. The Brazilian case offers that study opportunity, as Brazil adopts a party-open-list proportional representation system for congressional elections. It is not clear in this case whether congresspeople have incentives to use the fiscal policy targeted at a geographically specific group of voters. Notwithstanding, as shown by Ames (1995a and 1995b) in his analysis of the Brazilian case, there might be informal electoral districts, smaller than the formal district, on which the politician focuses his/her efforts, and where voters eventually reward him/her for that. According to Latner and McGann (2004), two are the major reasons for candidates to seek regional representation in a system with multiple representatives per district. In terms of electoral competition, it could be advantageous for a party to have candidates running for elections in different regions, as this maximizes the total number of votes won by the party. Moreover, inner party competition can stimulate regionalization of candidates, preventing two candidates from the same party from fighting over the same voters.

In Brazilian congress elections, voters cast single ballots either for the party label or for individual candidates. Parties can form election party coalitions. The number of individual votes the candidates receive determines the sort of candidates on the party coalition list. The D'Hondt method determines the number of seats each coalition obtains. Electoral districts are constituted of the country's states, which elect representatives according to the population size of the state. Once elected, the key tool that a congressperson has to assign federal resources towards a specific region of electoral interest is through amendments to the federal budget. The amendments proposed by congresspeople are concerned with changes

[2]The pork-barrel literature, started with Mayhew (1974), is quite extensive. A list with some of the most important contributions can be found in Bickers et all (2007).

[3]For example, Fiorina (1981), Cain, Ferejohn and Fiorina (1987) and Stein and Bickers (1994).

to the Draft Budget Law (henceforth PLO) drawn up by the Executive Branch.

We could wonder why voters have a backward looking behavior, i.e., why they are worried about what a candidate did in a previous term, instead of having a forward looking behavior and look at candidate's future projects in his/her next term in office. In this respect, Drazen and Eslava (2006) propose a theoretical model, in which voters try to infer what the future benefits will be, based on values transferred during the politician's term in office. In this model, it is assumed that politicians have unobservable preferences for locations and that these preferences persist over time. Therefore, a voter who believes he/she had some benefit during the incumbent's term will expect something similar in the expenditure composition after re-election. Their theoretical results indicate that, under informational asymmetry, if voters are affected by public funds, these past expenditures increase the number of votes for the incumbent, even if the electorate perceives the politician's electoral interest. In addition, results show that the incumbent should focus on the group of voters that are more easily influenced before the elections.

Some studies seek to associate the composition of the Brazilian budget with the congress-people's political interest. More precisely, these studies try to determine the relationship between the amendments and electoral performance.[4] Nonetheless, there is no consensus agreement between the findings that amendments contribute to increasing the chances of re-election of a deputy. Furthermore, these studies, except for Ames (1995a and 1995b), assess the aggregate outcome of the candidate in the electoral district. Consequently, it is not possible to directly measure the relation between regionally assigned funds and local political returns for the deputy.

Using electoral and local results for the actions of federal deputies, this paper investigates the relationship between amendments to the federal budget assigned to municipalities and local electoral outcomes of candidates running for the Brazilian Chamber of Deputies. This study comprises the 50th, 51st, 52nd and 53rd terms in office and five elections for the Chamber of Deputies (1994, 1998, 2002, 2006 and 2010).[5]

Two questions are looked into more detail in this paper. First, whether politicians tend to "bring home the bacon." We show that municipalities that are able to elect candidates that are "associated" with their voters increase their share of the federal budget.[6] That happens because deputies tend to allocate resources towards the localities that have massively voted for him/her in the previous elections. We exploit a discontinuity in the election

[4]Some examples are Ames (1995), Pereira and Rennó (2003), Samuels (2002) and Mesquita (2008).

[5]The 50th, 51st, 52nd and 53rd terms of office correspond to years 1995-98, 1999-2002 and 2003-06 and 2007-10, respectively.

[6]In the following sections we provide a precise definition of association between candidates and municipalities.

rule for congress that guarantees an exogenous variation in the number of elected deputies that are linked (or associated) to a given municipality. We show that this effect is stronger in localities where political concentration is more pronounced. By using a regression discontinuity design, we are able to overcome the concern that unobservable characteristics of candidates and municipalities would be systematically related to both electoral performance and the capacity of the candidate to propose amendments.

The second question assessed in this paper is whether voters support incumbent candidates who have proposed the amendments applied to their region. We look into longitudinal data in order to control for the fixed unobserved characteristics of candidates and municipalities and find evidence that those deputies who were able to "bring home the bacon" are electorally rewarded in the benefited municipalities. However, given that the electoral district is much larger than a municipality, this local effect is not enough to increase the chances of re-election of these deputies, which is in line with previous results using aggregated data.

In summary, the main goal of this paper is to unveil the relationship between votes and local public spending in both ways, i.e., from voters' and politicians' perspectives. The empirical strategies used in this study allows us to identify, under weak assumptions, if voters react to public spending in their municipality and if the politicians use the electoral preference over these local public goods and services as a strategy for reelection.

The paper proceeds as follows. In the next section we provide a discussion of the underlying institutional background, with particular emphasis on the mechanics of the Brazilian budget process. We then have another section which describes datasets used in this paper and shows some descriptive statistics of the personal, political and electoral characteristics of Brazilian federal deputies and also characteristics of the federal budget amendments. Another section, entitled Empirical Strategy, discusses the identification strategies used in this paper in order to estimate the voters' preference and the politicians' reaction to those preferences. The Results section shows and interpret the findings. The last section concludes.

2 Institutional Background: the Mechanics of the Brazilian Federal Budget Process

Brazilian annual federal budget has three main parts: the fiscal budget, social insurance and public companies' investment. The fiscal budget is planned by the Executive branch, which is responsible for estimating the revenues and directing expenditures. The Congress may propose changes on the budget draft through amendments, whose authorship can be from rapporteurs of the budget draft, the congressional budget commission or from deputies

and senators individually. The resources needed to enable amendments must necessarily come from the cancellation of expenditures already provided in the budget proposed by the Executive. Current expenditures, which include personnel expenses, debt charges and constitutional tax transfers to states and municipalities cannot be cut. Indeed, only investment expenditures are subject to be relocated and they correspond around three percent of the total expenditure (Mesquita, 2008).

The congressional budget commission ("Comissão Mista do Orçamento") is responsible for analyzing the Executive's budget proposal in the congress. It is composed of thirty deputies and ten senators who chose a general rapporteur and ten sectorial rapporteurs among them.[7] Since 1995, institutional changes have decentralized the power of budget draft rapporteurs and federal deputies have had their access to budget facilitated. At the same time, in order to guarantee a more uniform distribution of funds among deputies, the number of amendments was limited to 20 and the maximum value was set to R$ 1.5 million per deputy per term.[8] In 2010, the maximum value was raised to R$ 12.5 million and the number of amendments was increased to 25 per deputy per term in office.[9]

Deputies show interest in the funds allocated through the amendments and spend a lot of their time trying to have them approved (Samuels, 1998 and Figueiredo and Limongi, 2002). Each amendment has to be individually approved in the Budget Commission (by majority) and then the entire fiscal budget (including all amendments) has to be approved by the majority of the Congress. However, even approved amendments are not necessarily allocated since the ultimate decision about the execution of an amendment is made by the Executive branch. That implies that the Executive possesses a direct channel to individually influence deputies and enlarge its supporting basis in the Congress without having political parties as intermediaries in this process.

Destination of the funds from budget amendments could be to national, regional, state or local (municipal) programs. From 1995 to 2002, above 60 percent of the total value of amendment implemented was to projects at municipal level. After 2002, this number falls to less than 30 percent.

With respect to local amendments, it is well-known that the deputy is free to allocate them to any Brazilian municipality, including municipalities outside his/her state (electoral district). Nonetheless, if the politician's goal is to maximize the number of votes in a re-election race, one expects that congresspeople would rather allocate amendments to the

[7] The sectors are: health, education, justice, environment, urban development, agriculture, social assistance, tourism, infrastructure, and representation.

[8] This rule came into effect in 1996 during the preparation of the budgeting plan to be executed in 1997.

[9] That value corresponds to around US$ 7.1 million. The annual average exchange rate in 2010 was 1.76 BRL/USD.

municipalities within the state they represent. In fact, out of the total number of individual amendments allocated and executed from 1996 to 2007 only 1.29 percent was allocated to municipalities outside the state in which the deputy was elected. In this same period, taking into account only the local amendments proposed by deputies who were running for re-election, only 1.02 percent was allocated outside the states which the politicians represent. These numbers reinforce the idea that deputies consider budget resources to play an important role in wooing voters and, therefore, they allocate most of the amendments to municipalities located in their electoral district.

3 Data and Definitions

The data used in this paper come from two different sources. The data on votes, electorate, and candidates were obtained from the Superior Electoral Court (TSE). The data on the federal budget, specifically on the implementation of amendments to the federal budget, were obtained from the Brazilian Chamber of Deputies, from which information on the political history of candidates was also collected. The study includes four budget cycles (1995-1999, 1999-2003, 2003-2007 and 2007-2011) and the Brazilian elections for the Chamber of Deputies (1994, 1998, 2002, 2006 and 2010).[10]

Before analyzing characteristics of the federal deputies and the municipalities, important concepts are introduced in order to frame voting and to map candidates to municipalities by reducing the dimension of analysis to candidate or municipality level.

3.1 Some Definitions

Two "effective number" variables are formulated based on the inverse Herfindahl-Hirschman Index (HHI). The number of effective candidates, a variable at the municipality level, which is used to mainly capture the competition within the municipality; and the number of effective municipalities, whose level is the candidate, measures the degree of dispersion of a candidate's voting across municipalities.[11]

[10] The budget execution for 2011 was not used, since it had not finished when the data was collected.

[11] Formulae to calculate number of effective municipality and number of effective candidates are, respectively

$$MunEfet_{it} = \left(\sum_{m=1}^{\#Muni_{st}} \left(\frac{v_{imt}}{\sum_{m=1}^{\#Muni_{st}} v_{imt}} \right)^2 \right)^{-1}$$

and

$$CandEfet_{mt} = \left(\sum_{i=1}^{\#Cand_{st}} \left(\frac{v_{imt}}{\sum_{i=1}^{\#Cand_{st}} v_{imt}} \right)^2 \right)^{-1}.$$

We also define a variable that allows us to identify candidates that are associated, from the voter's perspective, with a municipality. First, a rank of the candidates based on their votes is constructed for each municipality. Then, we identify the most voted candidates and associate them to the municipality based on the number of effective candidate in the municipality, i.e.

$$Assoc_{imt} = 1\{r_{imt} \leq CandEfet_{mt}\} \quad (1)$$

in which i represents candidate, m municipality and t the election. The variable r is the rank of the candidate i in the municipality m and therefore it is equal to one for the most voted, two for the second, and so on; and $1\{\cdot\}$ is the indicator function that equals one if its argument is true, and is zero otherwise. Thus, association with the municipality is denoted as a dichotomous variable that indicates whether candidate i is one of the effective candidates ($CandEfet_{mt}$) in municipality m.

We note the similarity of association with Ames' (1995b) notion of *dominance*. Candidate i's municipal dominance at municipality m is a continuous variable, since it is simply the candidate i's share of all the votes cast in municipality m (Ames, 1995b). Given that municipalities may differ in terms of voting concentration, the measure of dominance varies according to each municipality. For example, in a given municipality, a candidate with 10 percent of votes could be a highly dominant candidate, whereas in other municipalities the same 10 percent would not have the same meaning as the voting dispersion across candidates could differ across municipalities. However, association, by its turn, is a concept that allows us to compare electoral performance of the same candidates across different municipalities, because if a candidate is said to be associated with a given municipality m, he/she has a relatively high share of votes in m.

3.2 Federal Deputies

A total of 513 seats are allocated in the Chamber of Deputies in each election. Table 1 shows characteristics of elected federal deputies from 1994 to 2006 that will be analyzed in this paper.

[Insert Table 1 here]

As we can see, around three quarters of elected deputies run for the same position in the subsequent election.[12] This group of politicians differs, to some extent, from those who

[12] The re-election rate calculated by the authors was based on TSE data.

do not run for re-election, in terms of the percentage of nominal votes obtained in their electoral district and in terms of the realized values of amendments. Deputies who do not run for the subsequent election are those who, on average, had the largest number of votes in their electoral district and were less involved with proposing amendments to the federal budget. Possibly, those politicians who decide not to take part in the subsequent election are also those who are often more absent from the Chamber of Deputies and therefore, they are less likely to amend the budget. A second explanation, which is not further investigated in this paper, is that, since they are not interested in getting re-elected, these deputies do not use this type of public policy for electoral purposes.

[Insert Table 2 here]

Table 2 provides information about the municipalities. As we can see, the average number of effective candidates in a given municipality is about six, while the number of associate candidates that are successfully elected is about four candidates. The total amount in budget amendments per voter is around R$30, and that value has decreased over the terms. The average size of electorate is about 20,000 voters.

3.3 Amendments to the Budget

In this paper, we consider only amendments that were well-succeeded, in terms of being approved and executed, proposed by an elected federal deputy individually and with destination to municipalities in the candidate's electoral district.[13] The monetary value of the amendment is the one that is registered in the budget data as paid up (*liquidado*), adjusted accordingly so that the total amount does not exceed the limit established for each deputy, in compliance with the regulations of amendments to the budget.

Previously, Table 1 provided the average amount of amendment proposed by a federal deputies and Table 2 reported the amount gotten by a municipality from amendment proposed by parliamentarians. Table 3 shows the amount received by municipality from amendment written by associate and not associated candidates. It shows that most of the amendments allocated to municipality come from politicians that are associated with that municipality. However, we also have allocation of amendments to municipalities in which the politician is not among the most voted candidates. This way, in addition to benefiting

[13] We also constructed a database for the budget period from 2002 to 2011 in order to consider all the proposed amendment by the deputies – they were not necessarily approved and executed. The findings are according to the expected, proposed but not executed amendment show smaller or not significant coefficient in terms of electoral returns in votes.

the municipalities in which the deputy had electoral support, there is also the strategy to attract more voters. As we will see later, in terms of obtaining voting rewards, that latter strategy has a larger impact.

[Insert Table 3 here]

4 Empirical Strategy

4.1 Allocation of individual budget amendments

One of the goals of this paper is to assess how the allocation of local amendments is distributed among the municipalities belonging to the deputy's electoral district. Therefore, let us consider the following equation:

$$y_{imt} = \beta_0 + \beta_1^\top X_{imt} + \beta_2^\top C_{it} + \beta_3^\top M_{mt} + c_t + c_m + c_i + \epsilon_{imt} \tag{2}$$

where i stands for the federal deputy, m indicates the municipality, t is a time indicator that represents both the election in which the deputy was elected and the politician's term in office. The variables c_t, c_m and c_i denote the fixed effects at the level given by the associated subscript; and ϵ_{imt} is the error term. The dependent variable, y_{imt}, is the amount of individual amendments per voter in municipality m of politician i in period t.

Vector X contains explanatory variables that vary jointly for deputy and municipality. However, some variables change over time, such as the percentage of nominal votes obtained in the municipality and the coincidence of the deputy's party and the mayor's party. Nonetheless, some variables do not change throughout the terms and refer to the politician's previous local political history in the municipality. Vector M denotes municipality variables, such as the number of effective candidates in the municipality. Vector C represents politicians' variables: deputy's characteristics such as gender and previous political experience in other positions (in the specifications that we do not include c_i), the number of effective municipalities in which the deputy ran for elections and the number of previous terms.

Equation (2) is estimated using the ordinary least squares (OLS) method, the fixed-effect (FE) model and the Tobit model, by assuming that the value of the amendment per voter is censored at zero.

Although the fixed-effect approach is consistent in the presence of fixed unobservable characteristics of both deputy and municipality, changes in individual and municipality characteristics overtime that are related to electoral results may bias the results. For instance, it is possible that an exogenous shock boosted the municipality economy in a given

period. This shock may increase the incumbent deputy electoral donations from citizens and firms from that municipality, which may induce him/her to propose more individuals amendment to that particular municipality. In order to overcome that particular caveat, we also implement a regression discontinuity design approach which is robust to unobservable shocks that are not fixed overtime.

4.2 Regression Discontinuity Design (RDD)

We use the discontinuity that arises from the open-list proportional representation rules in which candidates of the same party coalition may be elected or not by a small margin of votes. Lee (2008) applied discontinuous regression to determine the electoral advantages of incumbents in the U.S. Congress elections. In fact, most applications of the regression discontinuity design to elections that followed Lee's approach have used single-member districts, exception being the recent paper by Boas, Hidalgo and Richardson (2011), which uses the same the discontinuity as we do.

Every voter votes either for one candidate or for a party for the Chamber of Deputies. However, seats are distributed to party coalitions according to a D'Hondt formula and candidates are then ranked according to their number of votes in the state. Seats are distributed to candidates within the electoral party/coalition according to that ranking. Therefore, in a given election, for two candidates from the same party/coalition and within a fixed and narrow margin of votes, there is a randomness that may determine one candidate being elected while the other one is not.

Finally, by comparing municipalities with the same number of effective candidates, we can check whether those municipalities that had a larger number of elected associated candidates face a larger transfer of budget resources. By taking into account only those municipalities whose associated candidates won or lost by a small margin of votes,[14] we can have the randomness necessary to determine which municipality has more elected candidates associated and which do not have them or have them in smaller numbers.

We compare municipalities with the same number of effective candidates, and therefore, the same electoral competition structure. Note that we compare a municipality that had an associated candidate on the margin who ended up elected with another municipality that had an associated candidate on the margin who was not elected. Thus, we seek to verify whether the first municipality will obtain more transfers via amendments to the budget for electing its candidate. That is, we test whether an elected candidate associated with the

[14] Surrogates are regarded as not elected, despite the possibility that these candidates will have been sworn in as federal deputies later on.

municipality contributes to the allocation of budget resources. Therefore, we expect that deputies (and their respective associated municipalities) within the margin should be on average very similar. The only difference between them is that one was elected (and had their associated candidate elected) and the other was not.

To determine the margin of votes in a proportional representation system in which each candidate is elected or not due to the total number of votes obtained by the coalition party instead of the total number of votes, the following mechanism was established: the total number of nominal votes of the elected candidate with the smallest number of votes and the votes of the not elected candidate with the largest number of votes was considered for each party/coalition in each electoral district. The simple mean of the votes of these two candidates is used as reference. If the difference between the candidate's votes and the mean is smaller, in module, than a percentage of that mean, for instance, 5 percent, this candidate is said to be within the margin; otherwise, he/she is not. For instance, suppose two candidates of the same party/coalition. One was the elected candidate with the least votes (e.g. 105,000 votes); the other was the non-elected candidate with most votes (e.g. 95,000 votes). In this case, the average number of votes of both candidates was 100,000. Therefore, these candidates would be within the margin of 5 percent since the difference to the average (5,000) was 5 percent.

We first check whether there is any pooling of candidates in either one of both sides of the discontinuity. In fact, as can be seen in Figures 1 and 2, there is no evidence of manipulation across sides. We performed a visual version of McCrary's (2008) test for differences in densities across the discontinuity and there is no evidence of such effect.

[Insert Figure 1 here]

[Insert Figure 2 here]

We then check whether candidates have similar characteristics. Table 4 provide some characteristics of the candidates to the congress office by having been elected or not, considering all the candidates and then, only those within a narrow margin. If candidates on the margin won or lost due to randomness, no differences in their pre-election characteristics should be observed. In fact, there are substantial differences in characteristics for candidates that do not fall within the narrow margin, but those disappear when we compare candidates within the margin. Selected candidates with a narrow margin of victory do not differ remarkably between themselves, as the difference between the means is not significant for most variables.

[Insert Table 4 here]

4.3 Electoral returns of individual budget amendments

The second model to be tested herein regards amendments as explanatory variable. It investigates whether pork barrel in Brazil, with the distribution of budget resources to the municipalities, is a way to woo voters. The model to be tested will be,

$$y_{im,t+1} = \beta_0 + \beta_1 X_{imt} + \beta_2 C_{it} + \beta_3 M_{mt} + c_t + c_m + c_i + \epsilon_{imt} \tag{3}$$

where i now refers to the federal deputy who runs for re-election and y represents the nominal votes obtained by deputy i in municipality m.

Note that the votes in $t+1$ are observed only for deputies who run again for the subsequent re-election and that the amount of budget resources allocated to the municipality by the politician during his/her term will be one of the explanatory variables. In this case, we also include a joint deputy-municipality fixed effect (c_{im}) in the specifications that we do not include deputy or municipal fixed effects alone.

5 Results

5.1 Allocation of individual budget amendments

According to our results in Table 5, votes obtained in a given municipality have a strong effect on the politician's decision to allocate local amendments into that municipality. Increasing vote share within the municipality by one percentage point elevates the number of resources allocated via individual budget amendments by approximately R$ 38 per voter. This confirms that politicians tend to reward their voters for the votes they obtain, "bringing home the bacon."

[Insert Table 5 here]

One interesting findings is that the larger the number of effective municipalities in which the deputy runs, the smaller the value of the amendments allocated to the municipality, i.e., deputies who had more disperse votes often allocate smaller amounts to the municipality. These politicians' strategy might be to split the funds among a larger number of municipalities and, as a result, the value allocated to each municipality is smaller.

The number of effective candidates in a given municipality seems to reduce the transfer of funds in some of our models. Nevertheless, when we take into account the fixed effect of the municipality, the coefficient of this variable is not significant, which means that changes in local electoral competition in a given municipality does not seem to affect the amount of transfers allocated there. Therefore, a further investigation of the effect of electoral competition on amendments is necessary and we used a discontinuous regression whose results we discuss later. Finally, in the estimation by the Tobit model, when we explicitly control for the zeroes in the dependent variable, the coefficient of that variable is positive and significant.

Interestingly, control variables that represent the politician's political history in the municipality are not so important for the deputy's decision. Having been a mayor in the municipality before appears to help with the allocation of amendments, although the coefficient is poorly significant.

The results support the idea that, in general, candidates tend to benefit municipalities where they obtained a sizeable amount of votes and with which they have some bond, e.g. having held other political positions in the past or belonging to the mayor's party. Nevertheless, this is not the only behavior demonstrated by politicians, as shown in Table 3 and which we further exploit.

The fact that deputies tend to benefit municipalities where they obtained a larger number of votes, in addition to the finding that politicians with more disperse votes reduce the value and the probability of transferring amendments to a specific municipality, implies that, due to the allocation problem faced by the politician, an advantageous strategy for the voters of a municipality would be to vote for traditional candidates locally and for those whose influence covers a smaller region. Thus, the creation of informal districts would be advantageous to voters. This suggests that Ames' (1995a) classical interpretation of politicians' lack of interest in national questions may be driven by the demand side. In other words, deputies are in fact constrained by their constituents' demand for increases in their share of federal resources.

In order to corroborate the previous findings, we propose to explore a discontinuity generated by the electoral rules. The electoral outcome of some candidates may be driven by a random change. Therefore, the number of elected candidates associated to the municipality, in this case, has an exogenous source of variation.

The regression discontinuity design is used to deepen the assessment of the allocation of individual amendments by politicians to municipalities in the state where the deputy was elected. First, candidates who won or lost by a narrow margin of votes are selected. Therefore, municipalities with associated candidates that fall within the margin will have

a variation in the number of representatives in the Chamber of Deputies as a pure result of randomness. The aim is to verify whether municipalities which, by chance, elected more associated candidates will be granted larger amounts of amendments.

[Insert Table 6 here]

The results using the discontinuity in the rules of the proportional representation system corroborate previous findings. As shown in Table 6, the greater the number of elected candidates associated with the municipality, the larger the resources assigned to the municipality. This is true for all margins selected. This evidence is stronger in municipalities with a smaller number of effective candidates. In a municipality with fierce electoral competition, the addition of an elected candidate does not contribute to the allocation of funds, but in municipalities where competition is milder, having an elected candidate strongly influences the allocation of amendments. In this case, having an elected candidate associated with the municipality increases the value per voter obtained from individual amendments by around R$7.

The models tested previously did not make it clear how electoral competition in the municipality affects the amount of allocated budget amendments. The results demonstrate that it depends on the effective number of candidates in the municipality. In municipalities in which intramunicipal competition is low, defined here as the number of effective candidates being below 5 candidates,[15] an increase in competition further reduces attracting budget resources. On the other hand, in municipalities whose voters systematically chose different candidates and had, therefore, more than 5 effective candidates, electoral competition seems to positively attract funds. Thus, there is a U-shape relationship between electoral competition and value of amendments per voter.

Figure 1 represents graphically the findings using discontinuity regression. As we may see, the total amount received in amendments in municipality in which the candidate is associated is slightly greater for candidates in the right side of the margin, i.e., elected candidates. These findings are stronger when only municipalities with less than five effective candidates are considered.

[Insert Figure 3 here]

[15] The median of the number of effective candidate in the municipality in around 5.

We conclude that there is clear evidence that elected deputies tend, in general, to bring home the bacon, especially when they have a large local dominance. Local electoral competition seems to possibly create incentives for deputies to attempt to woo new voters, as when local competition is higher, municipalities tend to benefit from that fact.

5.2 Local Electoral Returns of Individual Budget Amendments

After assessing the behavior of deputies towards the allocation of amendments, the subsequent goal is to check how these funds affect the performance of politicians as candidates for re-election. Therefore, the sample is restricted to elected federal deputies who ran for re-election in the subsequent period. The goal is to investigate the impact of individual amendments allocated by politicians to municipalities on the number of votes obtained by this politician in the municipality to which the funds were assigned. Later, the focus is on the deputy's re-election performance, i.e., whether the amendments contribute or not to his/her re-election.

[Insert Table 7 here]

As shown in Table 7, the allocation of amendments increases the number of nominal votes in the municipality obtained by the politician in charge of the budgeting project. The coefficient of the 'Amendment per voter' variable, which measures the total value per voter in amendments proposed by the deputy throughout the budget cycle during his/her term has a positive and significant coefficient in all tested models. However, by adding the candidate-municipality fixed effect, the coefficient drops to seven votes per R$ invested by voter. The deputy's past relationship with the municipality influences the number of votes obtained by him/her, showing, among other things, that voters are faithful to the politician. Evidently, the number of votes previously obtained by the politician in the municipality explains much of the current number of votes. By not controlling for the deputy's electoral strength in the municipality, we have an omitted variable problem and, given that politicians allocate amendments to the municipalities where political support is stronger, as outlined above, the role amendments play at the ballot box must have been overestimated. By controlling the deputy-municipality fixed effect, previous connections of the politician with the municipality are taken into consideration; consequently, the coefficient of the Amendments per voter explanatory variable decreases, and more accurate estimates of the effect of amendments on the deputy's electoral performance are obtained. The variable Amendments per voter squared has a negative coefficient, indicating that the return in votes decrease with the total transferred by voter. As a conclusion, we find that in an average municipality with 20,000

voters, for instance, R$200K allocated in budget amendments would give about 58 votes to the candidate.

The number of effective candidates in the municipality in the previous election increases the number of votes obtained in that municipality. Obviously, it is easier to obtain votes in regions not controlled by a restricted group of candidates. Deputies with disperse votes in the previous election obtain a larger number of nominal votes in the subsequent election. Candidates who effectively ran in a larger number of municipalities are those who, in general, obtain more votes, and this pattern must persist in the subsequent election.

By categorizing the funds used in budget amendments as those allocated to municipalities whose deputy was one of the effective candidates in the previous election and as those in which the politician has no association, it is possible to investigate further the electoral return from amendments. Based on the coefficients obtained, it is advantageous to the politician to allocate amendments in both types of municipalities. However, the application of funds in a municipality that does not constitute the deputy's electoral "backyard" has a stronger impact on nominal votes (5.14 compared to 7.76, the difference is significant at 5 percent). This means that the investment in voters that have not yet been wooed has a higher electoral return compared to the application of amendments in municipalities whose deputy has already won most of the electorate. In the theoretical model devised by Drazen and Eslava (2006), the budget and political cycle will exist if the returns from amendments vary according to the groups of voters. As shown by the results herein, the application of amendments in municipalities not yet won by the politician brings more electoral benefits.

Therefore, electoral amendments are useful for obtaining nominal votes for incumbent deputies who try to get elected, and this effect is greater when these amendments are used in municipalities that do not represent the deputy's electoral district. This way, they can be an effective tool for canvassing votes in regions where voters have not been wooed yet.

5.3 Amendments and Re-election Outcome

Given that amendments influence the local performance of deputies, it would be interesting to assess whether they are also important for the politician's final results. Thus, using aggregate data per deputy, it is investigated to what extent the allocation of amendments to the budget contributes to re-election. The goal now is to demonstrate whether amendments are important to guarantee the politicians' careers. The dependent variable is the success or not in re-election attempts.

In line with Mesquita (2008), who recently found evidence of no relationship between amendments and the success of deputies in the subsequent election using aggregate data, our

results show that although being an important tool in obtaining local dominance, amendments are not important for re-election. As shown in Table 8, few variables were relevant in explaining the politician's re-election. In the first model, the total number of locally allocated amendments had a negative, but not significant coefficient, i.e., amendments would reduce a politician's likelihood of re-election. When splitting amendments to municipalities that the candidate is associated or not, we find that resource in municipality that he/she is a associated has positive effect, though it is not significant. On the other hand, amendments in municipality in which the candidate is not associated seems to reduce the chances of re-election, even though we found that such strategy increases his/her votes among that electorate.

[Insert Table 8 here]

Therefore, even though amendments are good tools to woo voters of a region, they do not seem crucial to guarantee electoral success. There are different political strategies and the candidate's profile probably has a strong influence on the success of his/her career as legislator. Our results are in line with Ames' (1995b) conjecture that re-election may not be a deputy's career goal and the running for a local executive position may be more appealing. In that sense, as amendments are an important for increasing local dominance, incumbents deputies may have a leverage.

6 Conclusions

The main objective of this paper was to assess the factors that affect federal deputies' choice to allocate individual amendments to a municipality and to check whether the invested funds have an effect on the electoral performance of the incumbents who were running for re-election. To achieve that, several empirical strategies were adopted. First, data on all federal deputies elected in the municipalities from the electoral district where he was elected were collected. Results indicate that the previous votes obtained in the municipality have a strong impact on the amount of amendments to the budget allocated to the municipality and also on the probability that the politician will assign funds to the municipality. This is not the only strategy adopted by congresspeople, but in conclusion, we may say that politicians reward their voters.

A discontinuous regression was used to investigate further the allocation of amendments to municipalities. Results indicate that the effects depend on the level of electoral competition in the municipality. In municipalities with a smaller number of candidates with effective

votes, an elected effective candidate remarkably contributes to the allocation of funds. However, this does not apply to municipalities with high electoral competition. Several deputies seem to allocate funds to towns with this characteristic, possibly as an attempt to woo new voters.

A second contribution of this paper is the analysis of possible mechanisms that influence the deputy's number of votes. As expected, amendments to the budget have a positive effect on the nominal votes obtained by the deputy who proposed the amendment in the municipality to which funds were allocated. By classifying municipalities into those in which the deputy was an effective candidate and those in which he was not, we note that amendments assigned to voters outside the politician's electoral "backyard" have a stronger impact on electoral performance.

Nonetheless, by analyzing the importance of amendments to the electoral success of federal deputies, it was not possible to confirm that the allocation of amendments to the budget help to increase the chances of re-election. Thus, the supply of funds through federal budgets is part of the relationship between the candidate and the municipality and could be an important electoral tool for canvassing votes, but it is not a determining factor for the politician's electoral success.

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Tables and Figures

Table 1 – Overall characteristics of elected deputies and by their re-election pursuit status.

	All	Not Seeking re-elect.	Seeking re-elect.	Difference
Seeking re-election	0.75			
	(0.44)			
% of votes in electoral district	0.03	0.04	0.03	0.01***
	(0.08)	(0.00)	(0.00)	(0.00)
Number of effective municipalities	12.74	12.30	12.89	-0.59
	(13.12)	(0.03)	(0.01)	(0.66)
Local amendment in electoral district (in million)	4.64	4.10	4.82	-0.72***
	(3.9)	(0.01)	(0.00)	(0.20)
Age	49.23	50.36	48.85	1.51***
	(10.1)	(0.02)	(0.01)	(0.51)
Female	0.07	0.08	0.07	0.01
	(0.26)	(0.00)	(0.00)	(0.01)
Undergraduate degree	0.77	0.76	0.77	-0.01
	(0.42)	(0.00)	(0.00)	(0.02)
Number of previous terms	1.28	1.38	1.25	0.13**
	(1.46)	(0.00)	(0.00)	(0.07)
Have been concilor	0.36	0.28	0.38	-0.10***
	(0.72)	(0.00)	(0.00)	(0.04)
Have been mayor	0.24	0.27	0.23	0.04*
	(0.57)	(0.00)	(0.00)	(0.03)
Obs	2052	523	1529	

Note: * indicates that the difference is significant at * p<0,10, ** p<0,05, *** p<0,01. Standard error in brackets. Amendments are in million Reais of 2010.

Table 2 – Characteristics of municipalities according by term.

	50th term	51th term	52th term	53th term
Number of effective candidate	5.74	5.54	6.08	6.52
	(4.18)	(3.95)	(3.76)	(4.32)
Number of associate candidate	5.76	5.56	6.1	6.54
	(4.21)	(3.97)	(3.77)	(4.33)
Number of associate candidate elected	3.49	3.64	4.2	4.44
	(2.59)	(2.56)	(2.67)	(2.88)
Amendment per voter	43.04	44.49	32.5	23.41
	(74.49)	(71.36)	(73.02)	(68.83)
Amendment in the municipality	417,465	464,531	480,967	535,197
	(772,911)	(1,083,633)	(1,614,644)	(3,207,721)
Electorade	18,870	19,237	20,698	22,570
	(118,858)	(125,911)	(132,007)	(140,077)
Obs	5019	5513	5565	5565

Note: Standard deviation in brackets. Amendments are in Reais of 2010.

Table 3 – Overall local amendment values and by deputies association status (at municipal level)

Amendments from not associated candidate				
	Median	Mean	Std Dv	Obs
50th term	0.00	99,707.89	278,867.40	5,019
51st term	0.00	118,906.40	394,318.10	5,513
52nd term	0.00	137,478.30	576,932.90	5,565
53rd term	0.00	136,004.90	1,038,235.00	5,565
Amendments from associated candidate				
	Median	Mean	Std Dv	Obs
50th term	116,115.00	274,027.20	585,892.40	5,019
51st term	122,061.50	307,976.90	819,991.80	5,513
52nd term	0.00	309,711.40	1,145,345.00	5,565
53rd term	0.00	367,857.60	2,280,779.00	5,565

Note: Amendments are in Reais of 2010.

Table 4 – Characteristics of elected and non-elected deputies, all and only candidates on narrow margin of victory.

	All			Margin 5%			Margin 2.5%		
	Elected	Not elected	Diff.	Elected	Not elected	Diff.	Elected	Not elected	Diff.
Number of municipalities	41.75	4.28	37.47***	30.83	26.02	4.81**	31.47	27.4	4.07*
that is associated	(0.02)	(0.00)	(0.42)	(0.11)	(0.09)	(2.12)	(0.2)	(0.17)	(2.87)
Number of effective	12.74	4.90	7.84***	11.63	9.72	1.91**	11.52	10.31	1.21
municipalities	(0.01)	(0.00)	(0.18)	(0.06)	(0.04)	(1.05)	(0.11)	(0.07)	(1.44)
% of votes in electoral	0.03	0.00	0.03***	0.02	0.02	0.00	0.02	0.02	0.00
district	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Age	49.26	47.6	1.66***	48.66	48.74	-0.08	48.48	48.00	0.48
	(0.00)	(0.00)	(0.25)	(0.05)	(0.05)	(0.94)	(0.08)	(0.08)	(1.23)
Female	0.07	0.11	-0.04***	0.07	0.08	-0.01	0.05	0.08	-0.03
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.03)	(0.00)	(0.00)	(0.03)
Obs	2052	9825		212	207		123	121	

Note: * indicates that the difference is significant at * p<0,10, ** p<0,05, *** p<0,01. Standard error in brackets.

Table 5 – Allocation of budget amendments to municipalities. Dependent variable: amount of allocated amendments per voter (denominated in reais).

	OLS 1	OLS 2	FE 1	FE 2	Tobit†
Vote Percentage in the municipality	37.773***	38.134***	38.039***	38.963***	32.237***
	(0.698)	(0.704)	(0.693)	(0.706)	(0.234)
Number of effective candidate		-0.021***	-0.005	-0.022***	0.144***
		(0.002)	(0.003)	(0.002)	(0.006)
Number of effective municipalities		-0.018***	-0.018***	-0.023***	-0.035***
		(0.001)	(0.001)	(0.002)	(0.002)
Constant	29.648***	29.722***	1.132	7.289	-2.969*
	(0.000)	(0.000)	(0.000)	(0.000)	-1502
Fixed effect municipality	no	no	yes	no	no
Fixed effect deputy	no	no	no	yes	no
R2	0.100	0.100	0.067	0.068	
N	683,125	683,125	683,125	683,125	683,125

Note: * p<0,10, ** p<0,05, *** p<0,01. Robust standard error in brackets.† Coefficients of the Tobit model refer to marginal effect conditional on being censored. Dummies for elections, party and state are contemplated in all models. Number of councilor mandate in municipality, number of mayor mandate in municipality, party is equal to mayor's party, party is equal to governor's party, party is equal to president's party, number of previous legislatures, number of state congressman mandate, number of governor mandate, number of senator mandate, undergraduate degree, dummy for state capital, population and GDP per capita are used as controls. Dependent variable expressed in Reais with 2010 value.

Table 6 – Discontinuous Regression. Dependent variable: amount of amendments per voter (denominated in reais).

	All municipalities			Margin 5%			Margin 2,5%		
		CandEfet ≤ 5	CandEfet > 5		CandEfet ≤ 5	CandEfet > 5		CandEfet ≤ 5	CandEfet > 5
N. of elected associated candidates	1.237***	4.119***	-0.0100	3.590**	6.359***	1.565	4.116***	7.560***	1.591
	(0.431)	(0.611)	(0.550)	(1.550)	(1.951)	(2.150)	(1.541)	(2.375)	(2.027)
N. of effective candidate	-0.894***	-6.431***	0.0444	0.427*	-3.890***	0.533*	0.0413	-3.355**	0.101
	(0.345)	(0.722)	(0.451)	(0.231)	(1.175)	(0.280)	(0.211)	(1.488)	(0.251)
N. of elected candidates that have been mayor	0.820	15.63***	-10.98***	-3.430	-0.668	-1.482	-4.800	-0.574	-3.970
	(3.612)	(5.628)	(4.033)	(4.278)	(5.155)	(6.803)	(3.454)	(6.921)	(4.525)
N. of elected candidates that have been councilor	6.446***	12.92***	5.383***	3.252*	24.48***	1.218	2.863	34.45***	1.411
	(1.975)	(4.845)	(1.906)	(1.759)	(8.985)	(1.711)	(1.990)	(11.00)	(1.870)
Constant	68.14***	80.02***	76.20***	55.15***	69.61***	57.38***	47.39***	66.77***	45.14***
	(1.927)	(3.243)	(4.378)	(2.387)	(5.298)	(4.017)	(2.258)	(6.534)	(3.263)
N	21,662	12,605	9,057	8,559	3,723	4,836	5,734	2,347	3,387
R2	0.038	0.050	0.054	0.037	0.063	0.039	0.034	0.080	0.027

Note: * p<0,10, ** p<0,05, *** p<0,01. Robust standard error in brackets. Dummies for elections are contemplated in all models. Number of associated candidate that party is equal to mayor's party, party is equal to governor's party, party is equal to president's party, mean of effective municipality of the associated and electorate are used as controls. Amendments are expressed in Reais with 2010 value.

Table 7 – Impact of budget amendments on the number of votes. Dependent variable: nominal votes for deputies in the municipality.

	OLS 1	OLS 2	FE 1	FE 2	FE 3	FE 4
Amendment by voter	9.420***	13.251***	13.791***	14.381***	5.894***	
	(1.428)	(0.909)	(1.056)	(0.905)	(0.450)	
Amendment by voter^2		-0.006***	-0.007***	-0.007***	-0.008***	
		(0.002)	(0.002)	(0.002)	(0.001)	
Amendment by voter to municipality where the deputy is associated						5.142***
						(0.536)
Amendment by voter to municipality where the deputy is associated^2						-0.007***
						(0.001)
Amendment by voter to municipality where the deputy is not associated						7.764***
						(0.646)
Amendment by voter to municipality where the deputy is not associated^2						-0.011***
						(0.003)
Constant	-260.846	-365.545	-80.163	-4.999	175.753**	176.142**
	(232.115)	(230.709)	(67.074)	(25.638)	(86.361)	(86.388)
Fixed Effect						
Deputy	no	no	yes	no	no	no
Municipality	no	no	no	yes	no	no
Deputy-Municipality	no	no	no	no	yes	yes
Obs	526,025	526,025	526,025	526,025	350,926	350,926
R-squared	0.329	0.329	0.309	0.113	0.017	0.017

Note: * p<0,10, ** p<0,05, *** p<0,01. Clustered standard error in brackets. Dummies for elections, party and state are contemplated in all models. Number of councilor mandate in municipality, number of mayor mandate in municipality, party is equal to mayor's party, party is equal to governor's party, party is equal to president's party, number of previous legislatures, number of state congressman mandate, number of governor mandate, number of senator mandate, undergraduate degree, dummy for being woman, dummy for state capital, electorate are used as controls. Amendments are expressed in Reais with 2010 value.

Table 8 – Relationship between budget amendments and electoral success. Dependent variable: success or failure in re-election attempts.

	Probit 1	Probit 2	Probit 3	Probit 4
Amendment by voter	-0.003	-0.009		
	(0.003)	(0.005)		
Amendment by voter^2		0.000		
		(0.000)		
Amendment by voter to municipality where the deputy is associated			-0.002	0.006
			(0.002)	(0.008)
Amendment by voter to municipality where the deputy is associated^2				-0.000
				(0.000)
Amendment by voter to municipality where the deputy is not associated			-0.011	-0.068***
			(0.010)	(0.019)
Amendment by voter to municipality where the deputy is not associated^2				0.003***
				(0.001)
Obs	1,525	1,525	1,525	1,525
Pseudo R-squared	0.0347	0.0353	0.0353	0.0407

Note: * p<0,10, ** p<0,05, *** p<0,01. Standard error clustered by State in brackets. Reported coefficients refer to marginal effects. Dummies for elections are contemplated in all models. Amount of national, regional and state amendments, number of effective municipalities, number of councilor mandate, number of mayor mandate, party is equal to governor's party, party is equal to president's party, number of previous legislatures, number of state congressman mandate, number of governor mandate, number of senator mandate, undergraduate degree, dummy for being woman, state electorate are used as controls. Amendments are expressed in Reais with 2010 value.

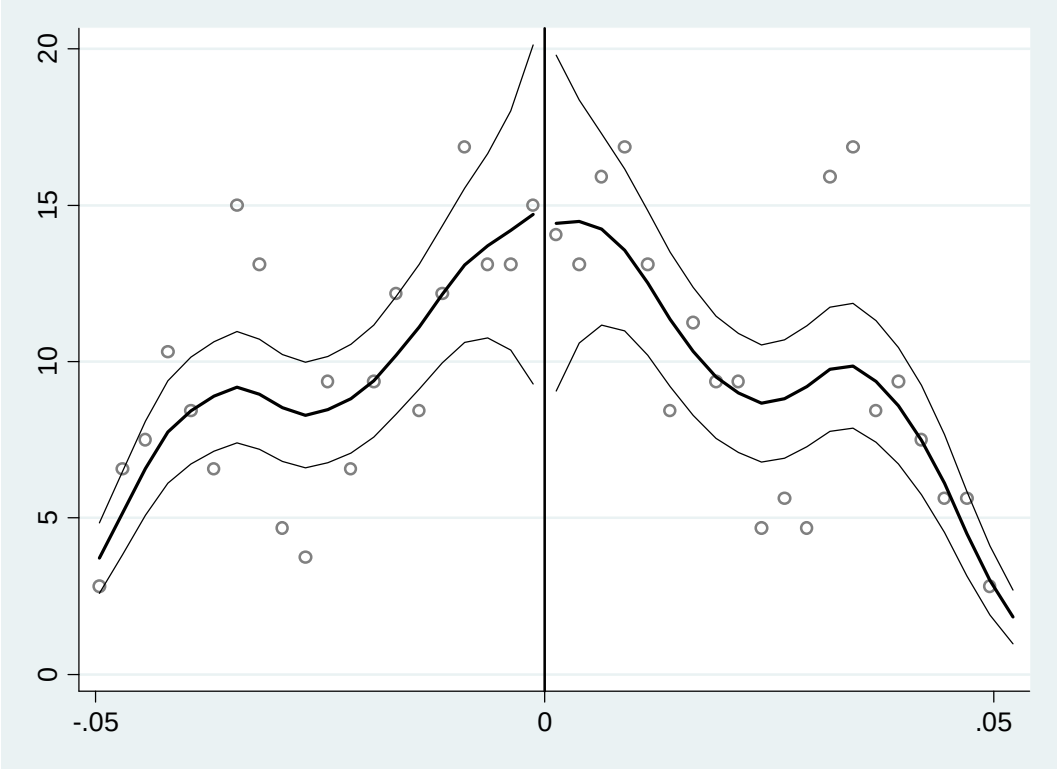


Figure 1 – Densities and their 95% confidence intervals of intra-party coalition vote share for non-elected (negative) and elected deputies (positive x axis).

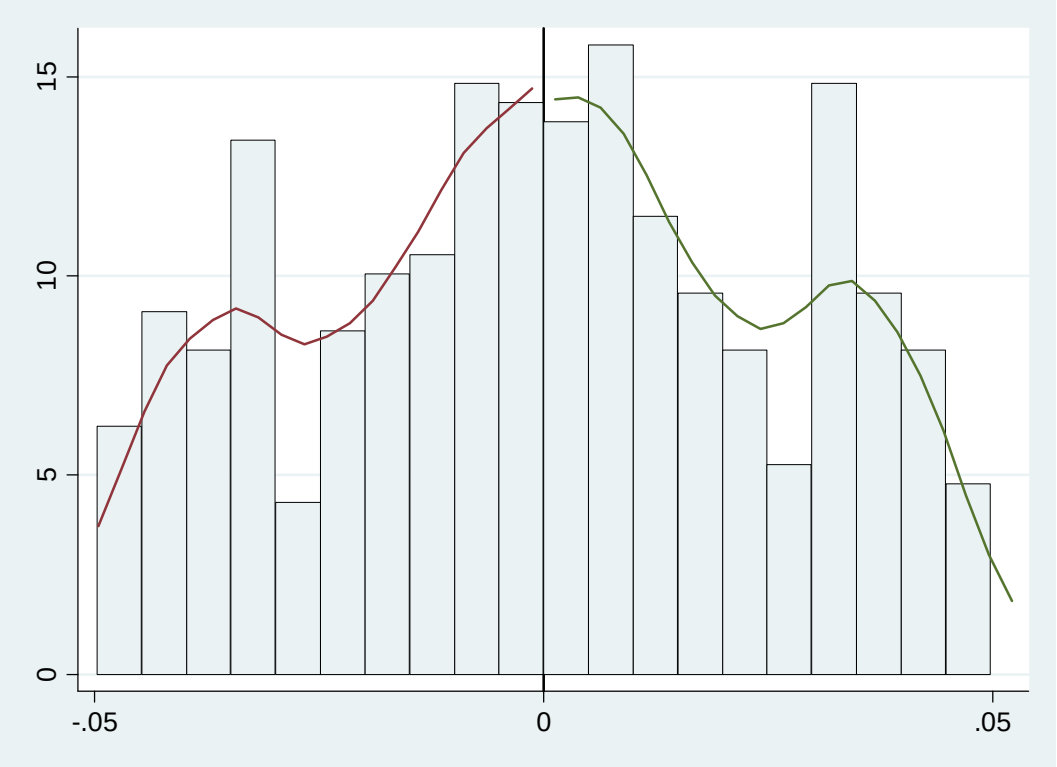
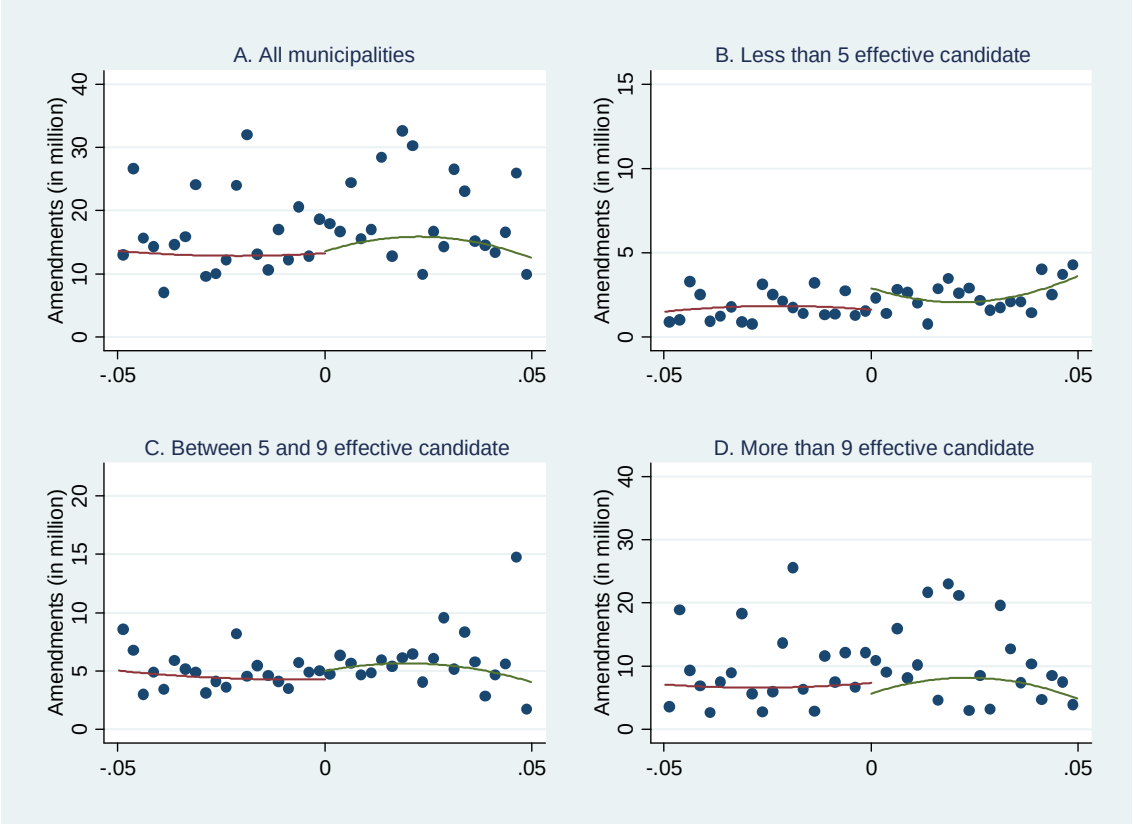


Figure 2 –Densities and histograms of intra-party coalition vote share for non-elected (negative) and elected deputies (positive x axis).



Note: Total of amendments in the municipalities in which the candidate is associated. The scatter refers to the average of the candidates in a bandwidth of 0.25%.

Figure 3 – Total amount in amendments of the municipalities in which the candidate is associated.