

Fiscal policy and reelection in Brazilian municipalities

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Abstract This paper uses a new panel of more than 2,000 Brazilian municipalities over 13 years to analyze the influence of public expenditures on the probability of mayors' reelection. We examine Brazilian municipal elections from 1988 to 2000 using a logit fixed-effects model. The results suggest that mayors who spend more during their terms of office increase the probability of their own reelection or of a successor of the same political party. In particular, higher capital spending over the years preceding elections and current expenditures in election years are beneficial to Brazilian incumbent mayors.

Keywords Reelection · Brazilian municipalities · Panel data econometrics

JEL Classification H72 · C23 · C25

1 Introduction

The aim of this paper is to examine to what extent the probability of Brazilian mayors' reelection (or the election of their party colleagues as successors) is affected by municipal expenditures in election and non-election years.¹ We evaluate how the spending behavior of Brazilian municipalities affects the chances of a mayor (or his/her political party) to remain in power for more than one term, by separately analyzing the spending behavior in election and non-election years, the former being times when opportunistic budget manipulation

¹The local political unit throughout Brazil is the municipality, which is akin to a county in the United States, except that it is administered by a single mayor and municipal council.

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is more likely to occur. We implement a fixed-effects logit model, which permits controlling the estimates for the unobservable characteristics of Brazilian municipalities. While the analysis of reelection in Brazil can be seen as a contribution to the literature per se, there is an additional factor of relevance in this paper, due to the relative absence of studies about reelection in the sub-national political units of developing countries.²

Fiscal manipulation in election years has been widely analyzed in the literature, since this could potentially increase policymakers' popularity among voters and, hence, the probability that they remain in power. Following the seminal articles of Nordhaus (1975) and Rogoff (1990), Berger and Woitek (1997) found evidence of expansions in aggregate output in periods before German elections, although Alesina et al. (1997) observed an absence of electoral cycles in OECD countries. Specifically for Brazil, the results of Terra and Bonomo (2005) suggest that domestic currency revaluations tend to occur before federal elections, while devaluations are normally observed after elections are held. Fialho (1997) corroborates the hypothesis of expansion of aggregate output before Brazilian presidential elections.

The more recent literature on opportunistic political cycles has sought to analyze fiscal behavior by examining countries at different levels of economic development. Shi and Svensson (2003), for example, find evidence of fiscal deterioration in pre-election periods, while Persson and Tabellini (2003) observe evidence of a reduced tax burden before elections. However, Brender and Drazen (2003) demonstrate that this result is observed basically because of the behavior of countries where democracy is new, since the electoral cycle phenomenon tends not to exist in those with more mature democratic systems. For local entities of a single country, Veiga and Veiga (2007a) evaluate a panel of Portuguese municipalities and find evidence that Portuguese mayors manipulate economic policy instruments by decreasing taxes and increasing budget deficits and expenditures in the year before elections. Whatever the conclusions, the natural and consequent question to be analyzed is to what extent this opportunistic behavior of policymakers is, in effect, taken into account by electors at the polls, and how they evaluate the occurrence of this manipulation in each of these different types of countries.

One of the main references on the question of the effect of government expenditures on political performance is the work of Peltzman (1992), which suggests that American voters are especially averse to higher spending, penalizing candidates irrespective of the political office up for grabs. Voters also consider the timing of these expenditures, that is, the nearer spending increases are to elections, the more they punish candidates. Brender and Drazen (2005) evaluate how the probability of reelection of chief executives is affected by fiscal behavior in 74 countries between 1960 and 2003. The results indicate that voters do not reward politicians who engage in election-year budget manipulation. Especially in developed countries and those with consolidated democracies, the result is exactly the opposite and suggests that voters are more likely to return chief executives to power if there have been reductions in the debt/GDP ratio on their watch.

Regarding local jurisdictions of a single country, Brender (2003) examines reelection of mayors in Israeli cities and finds that voters there are averse to deterioration in the public accounts during the term in office, with a particularly important result suggesting that fiscal deterioration in election years does not influence their chances of remaining in power. In a study evaluating local Russian governmental entities, Akhmedov and Zhuravskaya (2004) find that pre-electoral manipulation of fiscal instruments increases the incumbent's chances of getting reelected, while Veiga and Veiga (2007b) use data from Portuguese municipalities

²Brazil is the largest country in Latin America, including 35% of the continent's population and producing 47% of its GDP.

to find that higher expenditures over the whole term (and specifically in election years) increase the chances of political success.

In this context, the analysis of Latin American countries is of special interest, since these countries have different political traits than the developed ones, given that most of them have recently changed from military governments to a democratic regime and, theoretically, their voters have limited experience with the democratic process (elections), making them more susceptible to opportunistic policies. This could explain a (possible) different reaction of Latin American voters to manipulation of economic variables prior to elections, in comparison to the results obtained by Brender (2003) and Peltzman (1992), for instance.

Drazen and Eslava (2005) analyze Colombian mayoral elections by considering a panel of Colombian cities during the 1992–2000 period. Similarly to Peltzman (1992) and Brender (2003), their results indicate that Colombian voters penalize the incumbent party for running high deficits before elections, providing them with a lower proportion of votes. Furthermore, higher capital expenditures increase the share of votes obtained by the incumbent party relative to the challenger, while current expenditure has no significant effect. In turn, Cerda and Vergara (2007) uses a panel of Chilean municipalities to conclude that the national rate of unemployment decreases the incumbent's share of votes.

To anticipate the main results of this paper, we find that higher spending during the entire term in office raises the chances of reelection. In particular, higher capital spending over the years preceding elections and current expenditures in election years are beneficial to Brazilian incumbent mayors. The rest of the paper is organized as follows. Section 2 describes the Brazilian electoral system and the data that will be used in the analysis. Section 3 sets out the estimation results, while Sect. 4 concludes.

2 Institutions and data description

The recent literature concerning political cycles has devoted some attention to the local governmental entities of developing countries, where the democratic regime is relatively recent. This is precisely the case of Brazil, which had a military government from 1964 to 1984. The new Constitution, enacted in 1988, states that voting is mandatory for all Brazilian citizens over 18 year of age and that elections are to be held every four years.³ This means that the electoral calendar is rigorously exogenous and that both voters and candidates are aware of the timing of the election cycle. The chief executives of the three government levels (Federal, State and City level governments) are chosen by a majority rule and the Legislative council members by a proportional rule.⁴

Concerning the municipal elections, in the smaller cities (less than 200,000 voters) there is only one round, whereas in the larger cities there is an additional election round, pairing the two candidates with the most first-round votes. The second round is not held, however, if one of the candidates achieves an absolute majority of votes in the first round of the elections.⁵ Although this rule applies to all the Brazilian states in a similar way, the elec-

³Voting in Brazil is obligatory for all those over the age of 18, and optional for those between 16 and 18 and over 70 years old.

⁴It is interesting to notice that only the Federal government has two Legislative houses, the Chamber of Deputies and the Senate. State and city level governments have only one Legislative House. The number of members serving on each city's Legislative council varies between 9 and 55, depending on the city population.

⁵In order to distinguish two concepts, we call absolute majority a situation in which the candidate gets more than 50% of all valid votes. On the other hand, we call simple majority (or plurality) a situation in which one candidate gets the highest proportion of votes, but not necessarily higher than 50%.

toral calendar is not synchronized.⁶ In fact, the local and state level elections are perfectly staggered, so that every two years Brazilian voters are requested to choose their political representatives. In the years of state-level elections, the President, the senators and the member of the Federal Legislative Council are also chosen.⁷

In terms of fiscal management, the Brazilian federalist system is highly centralized, in the sense that a significant amount of fiscal revenues are under the control of the Federal government and, in a smaller proportion, of the State governments.⁸ In 2006, for example, federal tax revenues were close to 25% of Brazilian GDP, while the State and municipal taxes were in the range of 9% and 1.5% of Brazilian GDP, respectively. At the same time, expenditures are decentralized, given that the municipalities are responsible for important government functions such as education, health and sanitation. This means that Brazilian cities, especially the small ones, are highly dependent on constitutional transfers from federal and state-level governments. Even though they have the legal right of developing their own tax systems, revenues from this source are, in practice, residual, with the exception of the larger cities (such as the state capitals).

Regarding the empirical analysis of this paper, our newly constructed dataset consists of 2,235 municipal governments followed between 1988 and 2003. We have information on Brazilian municipalities for the election years 1988, 1992, 1996 and 2000, which permits us to study reelection in three of the last four local races. Therefore, we use logit panel data approaches to model the determinants of reelection. The dependent variable in the estimations assumes the value of 1 when the mayor or his/her party is reelected (0 otherwise).⁹

We chose control variables seeking to follow the pattern suggested in the most recent literature, which are: (i) per capita tax revenue;¹⁰ (ii) per capita revenue from transfers (from state and federal governments); (iii) proportion of elderly (people over 65 years old) and (iv) proportion of youths (people below 14 years old) residing in each municipality considered; (v) rate of urbanization (proportion of municipal population living in urban areas); (vi) total population (in log) of each municipality; (vii) a dummy that assumes value 1 if the mayor's party is the same as the governor's (0 otherwise); (viii) a dummy that assumes value 1 if the mayor's party is the same as the president's (0 otherwise) and (ix) the number of years that the incumbent Mayor is in office.

Regarding the source of the data, fiscal variables¹¹ were provided by the Secretary of National Treasure and demographic variables were provided by the Brazilian Institute of Geography and Statistics. Political variables were obtained from the Superior

⁶The difference is that the two-round system is applied to all Brazilian states, independently of population size. However, similarly to the case of local elections, the second round is not held when one of the candidates gets an absolute majority. The same is true of presidential elections.

⁷Municipal elections were held in 1988, 1992, 1996, 2000 and 2004. On the other hand, federal and state level elections were held in 1990, 1994, 1998, 2002 and 2006.

⁸The taxing powers and revenue-sharing process are broadly spelled out in the Brazilian Constitution of 1988. For instance, income tax is a federal liability and tax on commercial transactions and on automobile ownership are state liabilities. Municipalities have the right to institute service taxes and urban property taxes (not covering rural properties within the municipality, which are taxed by the federal government), and to receive mandatory transfers from the federal and state governments. They also get a percentage of royalties paid to the federal government on mineral deposits within their borders or off their shores, since all mineral resources are the property of the nation. For the great majority of municipalities, transfers are the main source of revenue.

⁹For the elections of 1988 and 1992, data concerning the proportion of votes obtained by the candidates are not available, which is why we have used a binary indicator of electoral success.

¹⁰The municipality's own tax revenues, not counting mandatory federal and state transfers.

¹¹All fiscal variables are in per capita terms, in Brazilian currency units (Real—R\$) of 2006.

Table 1 Brazilian political parties

Left	Center	Right
PT	PMDB	PFL
PDT	PSDB	PPB
PSB	PTB	PL
PC do B		PSD
PPS		PSC
PMN		Prona
PV		PSL
		PST

Source: Rodrigues (2002)

Electoral Tribunal. The descriptive statistics of these variables are presented in Appendix 2.

Municipal revenues, divided between own tax receipts and transfers, are included in the regression to control for the impact of public sector revenue on the probability of reelection, since higher expenditures obviously depend on the revenues.¹² Moreover, revenues from local taxation are also a proxy for the economic performance of the municipality. We also consider that the alignment of the local party in power with the state and national government can influence opportunities of mayors to remain in power through forms other than those associated with budget questions, justifying the inclusion of this control in the regressions. The number of years in office was included because the mayor's political power may increase as he gets more experienced with the governance process and so may the probability of remaining in office. On the other hand, there is the possibility of popularity erosion over the time. Finally, we included demographic variables to remain in line with the literature (Shi and Svensson 2003; Persson and Tabellini 2003).

Concerning the Brazilian political parties, we classified them as left, center and right, following the methodology of Rodrigues (2002), which is described in Table 1.¹³ The parties not included in the table are treated as an isolated group, not ideologically defined in this study.

It is important to point out that given the unavailability of data, it was not possible to capture the chances of a mayor's changing parties during his or her term, or of resigning to run for another office, facts that are not rare in Brazilian politics. Therefore, an important limitation of our analysis is the assumption that once the mayor's term starts, he or she finishes it. We also clarify that the reelection of the chief executive at all levels of government became possible only as of 1998. Therefore, specifically for the election of 2000, the first year when this change applied to mayors (elected in 1996), the reelection of a mayor is treated as an unbroken continuation in office, regardless of party changes that may have occurred during the period.¹⁴

Figure 1 shows the proportion of municipal governments administered by each of the political parties during each administrative period analyzed here, while Fig. 2 presents their respective rates of reelection. In 1992 and 1996 only reelection of political parties was permitted, while in 2000 both the party and mayor could remain in power. This can be a reason

¹²According to the Brazilian fiscal legislation, budgets must balance at the end of each legislative term.

¹³The names of the Brazilian political parties are provided in Appendix 1.

¹⁴In other words, the unit of observation is controlled by the name of the mayor.

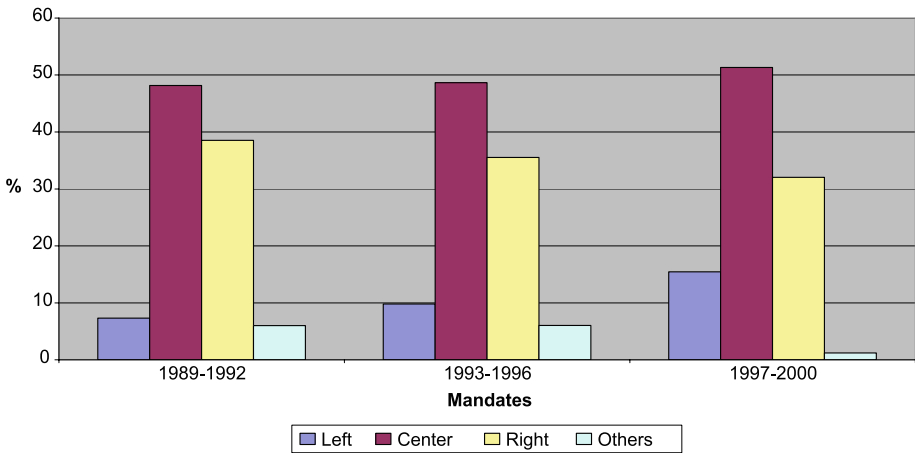


Fig. 1 Municipalities governed by political parties according to ideology per governing period (%). Source: Authors, based on data from the Superior Electoral Tribunal and Regional Electoral Tribunals

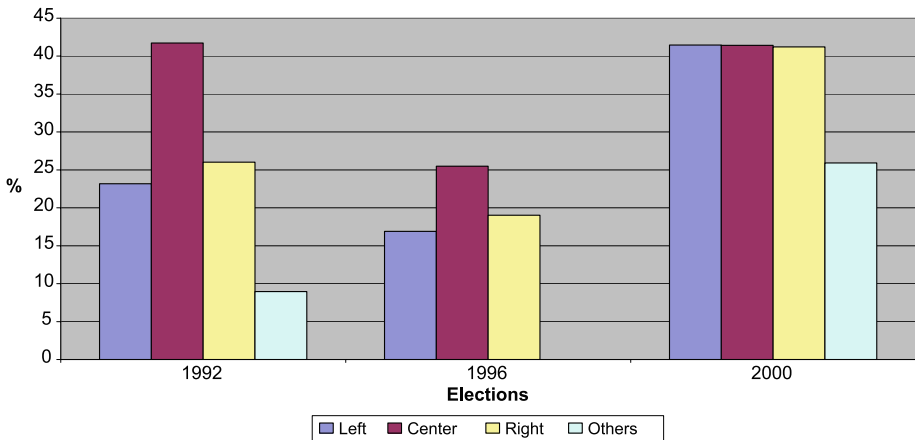


Fig. 2 Reelection rate of political parties according to ideology per electoral year. Source: Authors, based on data from the Superior Electoral Tribunal and Regional Electoral Tribunals

why the reelection rates were higher in 2000 than in the previous two election years. In 1992, the average reelection rate was 24.96% and in 1996 it was 15.34% while in 2000 it rose to 37.49%. Note also that this drop in 1996 and then the increase in 2000 were consistent for all groups considered. It can be observed also that the proportion of local governments under the control of centrist parties remained practically unchanged, but there was a re-composition effect because of the fall in the participation of parties of the right and the increased participation of those of the left.

Keeping all these elements in mind, we carried out two econometric exercises, whose descriptions and results are presented in sequence.

3 Results

3.1 Total expenditures (total budget spending in the four governing years)

Table 2 shows the results of the regressions from the first econometric test, which associates the reelection of mayors or parties in Brazilian municipalities with the budget expenditures made during the four years of the respective administrations. The purpose is to find some evidence that higher spending may be converted into permanence of the mayor or incumbent's party. The first estimation (column 1) includes only total expenditures as independent variable and the second estimation (column 2) considers, additionally, the control variables described above. Column 3 is a regression with all the previous variables plus the time dummies to control for macroeconomic and institutional year-specific changes. For the last set of results, odds ratios are reported in column 4. As all the models were estimated using a fixed-effects logit approach, 873 cities were dropped out from the regressions due to the fact that the dependent variable (reelection) was always 0 or 1.

The results robustly suggest that expenditures affect in a positive manner the probability of reelection, as statistical significance is observed in all the regressions. Hence, according to this result, greater fiscal expansion during the term in office is politically beneficial for Brazilian mayors. Moreover, the odds ratios reported in column 4 imply that this effect is quite strong.

Regarding the control variables, a higher level of local tax revenues raises the possibility of reelection, while the effect of transfer revenues is not statistically significant in the full specification. Although political alignment with the State Governor does not seem to influence a mayor's reelection prospects, the results reported in columns 3 and 4 suggest a negative effect of political alignment with the President. Moreover, the negative impact of the number of years in office (term) is similar to that found by Veiga and Veiga (2007b) and possibly means that Brazilian mayors are also subject to popularity erosion over time.

Concerning the demographic variables, the complete model suggests that reelection is positively affected by population size, although all the other coefficients are not statistically significant. The results of this estimation also indicate that the three groups of parties inherently have a lower probability of reelection in comparison to centrist ones (omitted category). Finally, the negative coefficient of the 1996 dummy suggests that a decrease in reelection probabilities took place in the elections held that year.¹⁵

In order to evaluate how reelection is affected by specific types of public expenditures and in different time periods, Table 3 reports the results of further estimations. Column 1 considers capital and current expenditures separately for the whole sample period, while columns 2 and 3 consider the first and the last two elections separately, to examine whether the effects of expenditures change as institutions evolve and democracy matures. The results of column 1 show that capital expenditures have a positive and statistically significant impact on the probability of reelection for the period as a whole, while the impact of current expenditures is not precisely estimated. Columns 2 and 3¹⁶ show that these results persist

¹⁵The estimates above may suffer from endogeneity problems, since the probability of reelection may also affect total expenditures. We would expect, however, that mayors who expect a close race (those with a lower probability of reelection) would be the ones spending more opportunistically. The fact that we are still able to obtain a positive effect of spending on reelection means that our estimates should be regarded as a lower bound of the true effects.

¹⁶Some variables were dropped out from these two regressions. For the first two elections (1992 and 1996), political alignment with the President was removed because none of the Brazilian mayors was of the same

Table 2 Probability of reelection and total expenditures

Coefficient/Odds ratio (Standard error)	1	2	3	4 Odds ratio
Total expenditures (over the mandate)	1.185*** (0.130)	1.145*** (0.494)	1.157*** (0.488)	3.181*** (1.554)
Local tax revenues		0.433*** (0.111)	0.481*** (0.115)	1.618*** (0.186)
Revenue from transfers		0.739* (0.408)	0.537 (0.475)	1.711 (0.813)
Political alignment with state governor		0.017 (0.094)	0.041 (0.095)	1.041 (0.099)
Political alignment with president		-0.456*** (0.185)	-0.521*** (0.190)	0.594*** (0.113)
Old people		-0.280*** (0.067)	-0.079 (0.081)	0.924 (0.074)
Urbanization rate		-3.2E-03 (0.011)	-0.002 (0.011)	0.998 (0.011)
Young people		-0.026 (0.041)	-0.034 (0.055)	0.966 (0.053)
Logarithm of total population		1.313*** (0.470)	1.419*** (0.509)	4.132*** (2.106)
Term		-0.650*** (0.024)	-0.642*** (0.025)	0.526*** (0.013)
Left		-0.488*** (0.157)	-0.532*** (0.161)	0.587*** (0.094)
Right		-0.512*** (0.115)	-0.545*** (0.120)	0.580*** (0.069)
Others		-1.405*** (0.365)	-1.461*** (0.373)	0.232*** (0.086)
Dummy 1996			-0.574*** (0.187)	0.563*** (0.105)
Dummy 2000			-0.108 (0.330)	0.898 (0.296)
Observations	4085	4085	4085	–
Pseudo R ²	0.0320	0.3287	0.3383	–
Hausman test	$\chi^2 = 66.34$ Prob = 0.00	$\chi^2 = 763.59$ Prob = 0.00	$\chi^2 = 904.72$ Prob = 0.00	–

Source: Authors

Notes: Results from logit fixed-effects regressions for the panel comprising the 1992, 1996 and 2000 elections. The successful outcome is reelection. Robust standard errors in brackets. Stars indicate statistical significance at 1% (***), 5% (**) and 10% (*) levels. Coefficients are reported in columns 1–3. Odds-ratios are reported in column 4: odds higher than one indicate a positive impact on the reelection probability

Table 3 Capital and current expenditures

Coefficient (Standard error)	1	2	3
	Whole period	92–96	96–00
Capital expenditures	0.626*** (0.116)	0.403*** (0.144)	0.615*** (0.169)
Current expenditures	0.332 (0.478)	0.146 (0.502)	−1.128 (0.712)
Local tax revenues	0.446*** (0.119)	0.177 (0.137)	0.340* (0.191)
Revenue from transfers	0.580 (0.486)	0.080 (0.531)	2.061** (0.848)
Political alignment with state governor	0.064 (0.096)	0.668*** (0.130)	0.256* (0.150)
Political alignment with president	−0.512*** (0.193)	–	1.021*** (0.164)
Old people	−0.111 (0.082)	−0.254 (0.200)	−0.042 (0.110)
Urbanization rate	−0.004 (0.011)	−0.034 (0.022)	0.002 (0.016)
Young people	−0.040 (0.057)	−0.191** (0.089)	0.139* (0.079)
Logarithm of total population	1.372*** (0.507)	0.071 (0.984)	1.138* (0.689)
Term	−0.642*** (0.026)	–	–
Left	−0.499*** (0.164)	−0.001 (0.457)	0.668*** (0.137)
Right	−0.553*** (0.121)	−0.303 (0.274)	0.185* (0.100)
Others	−1.483*** (0.369)	–	−0.903*** (0.338)
Dummy 1996	−0.401** (0.195)	−1.165*** (0.304)	−0.749*** (0.290)
Dummy 2000	0.214 (0.346)	–	–
Observations	4085	1518	1860
Pseudo R ²	0.3468	0.1489	0.2529
Hausman test	$\chi^2 = 887.48$ Prob = 0.00	$\chi^2 = 30.76$ Prob = 0.00	$\chi^2 = 115.18$ Prob = 0.00

Source: Authors

Notes: Coefficients from logit fixed-effects regressions for the panel comprising the 1992, 1996 and 2000 elections. The successful outcome is reelection. Robust standard errors in brackets. Stars indicate statistical significance at 1% (***), 5% (**) and 10% (*) levels

when we treat the first and the last two elections separately, that is, only capital expenditures have a significantly impact on reelection. The effects of the other control variables do not differ qualitatively across the sub-periods. The results indicate that voters only consider capital expenditures when deciding whether or not to reelect the incumbent mayors of their municipalities, perhaps because capital expenditures tend to be more visible to voters.

3.2 Expenditures in election years and in non-election years

In line with the theory of electoral cycles (Nordhaus 1975; Rogoff 1990), the election year can be seen as different from others because of the opportunistic behavior of politicians seeking to raise their chances of staying in power. In the Brazilian context, the fact that all elections are held on predetermined dates and are thus known by the agents can permit the political class to adjust the timing of the policies implemented so that the results obtained can raise their popularity and chances of remaining in power. This is particularly probable in the Brazilian case because: (i) elections are held only in October of a given electoral year and (ii) the fiscal year coincides with the calendar year. Hence, there is a possibility that the municipal expenditures executed between January and October can effectively influence voters' choices. If election years stand out from the rest, then a detailed study of these years should be relevant regarding the influence of higher spending on the results at the polls.

We decided, therefore, to extend the initial investigation by evaluating the impact of spending in election years on the probability of reelection of the mayor or succession by a member of the mayor's party. In the following regressions we split the budget expenditures into two elements, as in Veiga and Veiga (2007b): the *average* expenditures carried out in the three years preceding elections and the percentage deviation of election year expenditures from the average of the three previous years.

Table 4 presents the results obtained from different samples. Column 1 presents the full sample results using total expenditures, while columns 2 to 4 consider capital and current expenditures separately, first for the period as a whole and then separately for each sub-period. Odds-ratios are reported below the standard errors, in squared brackets.

With respect to column 1, the results regarding expenditures indicate that the probability of reelection is positively related to the average spending in the three previous years (coefficient significant at 1%) and also positively related to the component of opportunistic deviation. This result is analogous to that found by Veiga and Veiga (2007b) and by Akhmedov and Zhuravskaya (2004), suggesting that Brazilian voters are receptive both to higher public spending over the years preceding elections and to positive changes in election-year spending. On the other hand, this result is opposite to that found by Drazen and Eslava (2005) for the Colombian municipalities, for instance.

Analyzing the two types of expenditures separately, column 2 reports results showing that average pre-election capital expenditures have a positive impact on the probability of reelection, while election year deviations do not seem to have an effect. In the case of current expenditures, the opposite occurs, as pre-election expenditures do not have a significant impact on reelection, but deviations from the average have a positive and significant impact on reelection. Columns 3 and 4 consider the first and the last two elections separately. Considering the 1992 and 1996 elections, only the average capital expenditures carried out over

political party of the President in the 1992 election, and the group "others" did not reelect any of its mayors in the 1996 election. The variable *Term* was dropped from the sub-period estimations because it is perfectly collinear with reelection in these cases.

Table 4 Average and election years expenditures

Coefficients	1	2	3	4
	Whole period	Whole period	92–96	96–00
Average pre-election total expenditures	1.189*** (0.487) [3.284]	–	–	–
% deviation of electoral year total expenditures from average of three previous years	0.510** (0.249) [1.665]	–	–	–
Average pre-election capital expenditures	–	0.605*** (0.114) [1.831]	0.404*** (0.144) [1.498]	0.571*** (0.163) [1.770]
% deviation of electoral year capital expenditures from average of three previous years	–	0.031 (0.035) [1.032]	0.072 (0.079) [1.074]	–0.015 (0.040) [0.984]
Average pre-election current expenditures	–	0.368 (0.476) [1.445]	0.221 (0.506) [1.247]	–1.192 (0.720) [0.303]
% deviation of electoral year current expenditures from average of three previous years	–	0.615** (0.289) [1.850]	0.353 (0.352) [1.423]	0.333 (0.421) [1.396]
Observations	4085	4085	1518	1860
Pseudo R ²	0.3387	0.3481	0.1499	0.2562
Hausman test	$\chi^2 = 903.96$ Prob = 0.00	$\chi^2 = 884.68$ Prob = 0.00	$\chi^2 = 29.88$ Prob = 0.01	$\chi^2 = 115.01$ Prob = 0.00

Source: Authors

Notes: Results from a logit fixed-effects regression. The successful outcome is reelection. Controls of Table 2 are included in all the regressions. Robust standard errors in brackets. Stars indicate statistical significance at 1% (***), 5% (**) and 10% (*) levels. Odds-ratios are reported in square brackets: odds higher than one indicate a positive impact on the reelection probability
Standard errors are in round brackets
Odds ratio are in square brackets

the three previous years influences (positively) the chances of reelection. This result also holds true for the 1996 and 2000 elections.

The results as a whole suggest that average capital expenditures have a positive and robust impact on the probability of reelection. There is also evidence suggesting that the opportunistic component of current expenditures increases the possibility of reelection, but this result was not confirmed when we considered the elections separately.

4 Final considerations

In general terms, the results obtained from the econometric exercises above suggest higher expenditures during an entire term in office is looked upon favorably by voters, reflected in a higher probability that the incumbent (or his/her party) will remain in power. Moreover, the results suggest that both higher capital spending in the three years before an election and deviations of current expenditures in election years (relative to the previous years) benefit the electoral pretensions of Brazilian mayors. These results suggest that Brazilian voters are receptive to capital investment and also to fiscal manipulations in election years, a result quite similar to that obtained by Veiga and Veiga (2007b) and Akhmedov and Zhuravskaya (2004), and this is especially true for current types of public expenditures.

Additional insights are provided by the results of the control variables. In all estimated models we find a positive influence of tax revenues on the probability of reelection. This result can be associated with the fact that successful local administrations can generate significant stimuli for tax payments, since Brazilian citizens might be more willing to bear local expenditures if these are being managed well (Meneguín et al. 2005). The coefficient related to the numbers of years in office is systematically negative, possibly meaning that Brazilian mayors are subject to a significant loss of popularity among voters over the time. Finally, the analysis produced two interesting political results. The first is that political alignment with the President decreases the chances of a mayor being reelected. This may be related to the fact that during this period the Brazilian economy experienced a series of severe macroeconomic crises.¹⁷ The second result is that there is a relative heterogeneity among Brazilian parties concerning their inherent probability of political success, possibly related to different preferences of Brazilian voters with respect to these different groups and how they manage the country's local governmental entities.

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Appendix 1: Name of Brazilian political parties

PT = Partido dos Trabalhadores (Workers' Party)

PDT = Partido Democrático Trabalhista (Democratic Labour Party)

PSB = Partido Socialista Brasileiro (Brazilian Socialist Party)

PC do B = Partido Comunista do Brasil (Communist Party of Brazil)

PPS = Partido Popular Socialista (Socialist People Party)

PMN = Partido da Mobilização Nacional (National Mobilization Party)

PV = Partido Verde (Green Party)

PMDB = Partido do Movimento Democrático Brasileiro (Brazilian Democratic Movement Party)

PSDB = Partido da Social Democracia Brasileira (Brazilian Social Democratic Party)

PTB = Partido Trabalhista Brasileiro (Brazilian Labour Party)

PFL = Partido da Frente Liberal (Liberal Front Party)

¹⁷In 1992, the rate of inflation was over 1,100% a year and the President was about to suffer an impeachment process. The Mexican financial crisis of 1995 had major consequences for Brazil. Finally, in 1999, Brazil suffered serious blows following the Asian (1997) and Russian (1998) crises. All these episodes were close to the local election periods.

PPB = Partido Progressista Brasileiro (Brazilian Progressive Party)

PL = Partido Liberal (Liberal Party)

PSD = Partido Social Democrata (Social Democratic Party)

PSC = Partido Social Cristão (Social Christian Party)

Prona = Partido de Reedificação da Ordem Nacional (Party of the National Order Rebuilding)

PSL = Partido Social Liberal (Social Liberal Party)

PST = Partido Social Trabalhista (Social Labour Party)

Appendix 2

Table 5 Descriptive statistics

Variable	Observations	Mean	Standard error
Reelection dummy	6705	0.31	0.46
Total expenditures—full mandate (natural logarithm)	6705	7.85	0.50
Current expenditures—full mandate (natural logarithm)	6705	7.65	0.52
Capital expenditures—full mandate (natural logarithm)	6705	5.99	0.70
Average pre-election year total expenditures (natural logarithm)	6705	6.43	0.51
Average pre-election year current expenditures (natural logarithm)	6705	6.23	0.52
Average pre-election year capital expenditures (natural logarithm)	6705	4.58	0.72
% deviation total expenditures	6705	13.53	21.60
% deviation current expenditures	6705	16.00	19.64
% deviation capital expenditures	6705	11.95	88.94
Municipal own taxation revenues (natural logarithm)	6705	4.55	1.33
Constitutional transfer revenues (natural logarithm)	6705	7.58	0.51
Left	6705	0.11	0.31
Right	6705	0.35	0.48
Others	6705	0.04	0.21
Term (years in office)	6705	4.84	1.91
Political alignment mayor & state governor	6705	0.33	0.47
Political alignment with state governor \times state GDP growth	6705	-0.45	6.20
Political alignment mayor & president	6705	0.09	0.28
Proportion of old people	6705	5.91	1.57
Urbanization rate	6705	62.99	22.24
Proportion of young people	6705	31.23	4.61
Total population (natural logarithm)	6705	9.51	1.11

Source: Authors

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