

The Influence of Mayors' Characteristics and Elections on the Composition of Brazilian Municipalities' Expenditures

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Abstract

This paper disentangles the main factors conditioning the levels and composition of public expenditures on a large panel of Brazilian municipalities. Using the IMF's classification of expense by functions of government, it is possible to analyze how personal characteristics of Brazilian mayors influence the fiscal policy. Empirical results suggest that expenditures increase during the year before election years. During local election years, there is no evidence of an opportunistic manipulation of expenditure composition. However, in the year before local election, mayors favor items highly visible and appreciated by the electorate, such as housing and community amenities, and recreation, culture, and religion. Political alignment with matters both for the level and weights of expenditures by function. Mayors' ideology is associated with lower weight of recreation, culture, and religion. Ideology, gender, university education and party similarity with higher levels of government are relevant at local election years. We also find demographic and socioeconomic characteristics of municipalities influence the level of expenditures.

Keywords: political leaders, personal traits, fiscal policy, political budget cycles

1. Introduction

1.1 Introduce the Problem

The assumption of public officials as benevolent dictators whose only interest is to maximize social welfare has long been abandoned in political economy. Focusing on parties and institutions, many studies have demonstrated that policies are decided by office-seekers individuals and that electoral incentives may create distortions likely to result in sub-optimal policies. Previous studies have highlighted the adoption of opportunistic measures before elections to woo the electorate (Nordhaus, 1975; Rogoff & Sibert, 1988; Rogoff, 1990; Veiga & Veiga, 2007; Drazen & Eslava, 2010; Sakurai & Menezes-Filho, 2011), and partisan policies to please party supporters (Hibbs, 1977; Alesina, 1987; Petterson-Lidbom, 2008; Albouy, 2013).

Others have focused on the influence of institutions, such as electoral rules and forms of government (Persson & Tabellini, 2003), fiscal rules (Bails & Tieslau, 2000; Dahan & Strawczynski, 2013; Ademmer & Dreher, 2016; Lautenschlage, 2017; Heinemann et al., 2018; Gootjes et al., 2020), pressures by interest groups (Grossman & Helpman, 1996), or voters' preferences (Lindbeck & Weibull, 1987; Cox & McCubbins, 1986). Electoral competition (Besley et al., 2010; Aidt et al., 2011), as well as the rotation in office of parties of different ideologies (Alesina & Tabellini, 1990) have also been identified conditional factor of economic policies. Additionally, party similarity between politicians of lower and upper levels of government has also been shown to condition policymaking mainly through party favoritism in the allocation of intergovernmental grants (Veiga & Pinho, 2007; Brollo & Nannicini, 2012).

More recently, interest on the effects of personal characteristics of political leaders on policymaking and policy outcomes has increased. Some studies highlighted that politicians' preferences depend on their personal traits and, therefore, voters that with similar traits are favored by the adopted policies. Among these attributes, gender (Chattopadhyay & Duflo, 2004; Svaleryd, 2009; Ferreira & Gyourko, 2011; Bhalotra & Clots-Figueras, 2014; Brollo & Troiano, 2016; Carozzi & Gago, 2020; Hessami & Fonseca, 2020), age (Alesina, Troiano, & Cassidy, 2018), social class (Carnes & Lupu, 2015), ethnicity (Pande, 2003), and education (Besley et al., 2011;

Mart íez-Bravo, 2017) received particular attention.

1.2 Importance of the Problem

This paper intends to contribute to this literature by analyzing whether the personal characteristics of Brazilian mayors and elections influence fiscal policy decisions, namely in water and sanitation, social and environmental protection, education, recreational, cultural, and religious activities, economic affairs, public order and security, health, public services, housing, and urbanism. Brazil is a particularly interesting case study due to its level of economic and political development, dimension, and heterogeneity among local governments. Brazil is a federal country with three layers of government: the federal government, 27 states and 5570 municipalities. In municipalities, the executive power rests on the mayor, the vice-mayor, and the secretaries. The mayor and the vice-mayor are elected by direct universal suffrage, while the municipal secretaries are chosen by the first. Local governments can stay in office for a maximum of two four-year consecutive terms. The legislature is formed by councilors, elected by proportional representation. They approve the laws and supervise the executive branch. The executive and legislative powers are independent.

Local elections for mayors and councilors take place simultaneously, always in the first Sunday of October. Mayors are elected according to the plurality rule. In case none of the candidates obtains more than 50% of the votes, a second round of elections takes place between the two main contenders, after a minimum of ten days, also on a Sunday of October (Note 1). Another important characteristic is the Brazilian legal framework regarding fiscal policy in election years. Besides the Constitution, the Fiscal Responsibility Law (Note 2) (FRL) also conditions fiscal policy decisions by defining rules for expenditure and public debt management (Note 3&4) for the three levels of government, both during the election year (Note 5) and the role term. According to the FRL, all public expenditures must have their funding source defined, there are limits to public debt and expenditures on personal, and governments must define and accomplish quarterly fiscal targets. In case of non-compliance, mayors are subject to criminal sanctions and the municipalities ruled by them are prevented from receiving transfers from the Federal Government.

Previous studies have already confirmed the existence of PBC in Brazilian municipalities (Sakurai & Menezes-Filho, 2011; Sakurai, 2009). However, they did not take into consideration mayors' personal attributes and the FRL. Our results suggest that ideology, gender, university degree and party similarity with the president and the state governor influences fiscal policy during the election year. Differently of Sakurai and Menezes-Filho, 2011, our results also indicate no electoral manipulation of expenditures in election years. However, we evidence manipulation on expenditures in the year before election, namely in categories that are highly visible by the electorate, such as housing and community amenities and sports and leisure. This behavior indicates Brazilian fiscal and electoral rules are inhibiting the typical opportunistic behavior, and shifting the manipulation to the year before election, when there are no constraints.

The remainder of the paper proceeds as follows. The next section discusses the theoretical framework and literature review of conditional political budget cycles. Section 3 describes the dataset, and the empirical strategy. The empirical results are presented in section 4, and the final section presents the conclusions of the work.

2. Theoretical Framework and Literature Review

Politicians' characteristics may have an impact on fiscal policy decisions, namely on expenditure composition since they are likely to reflect differences in preferences for the goods and services provided by the government. One of the first attributes of politicians to be analyzed was ideology, the hypothesis that incumbents adopt measures to favor their constituency (Hibbs, 1977; Alesina, 1988; Alesina & Rosenthal; 1995). At the local level, there is evidence that Norwegian left-wing governments spend more on public administration (Kalseth & Rattso, 1998), Spanish conservative mayors spend more on police (Guillamón et al., 2013), but, in Greece, expenditure preferences do not seem to depend on mayors' ideology (Chortareas et al., 2016). In Germany, ideology matters for state expenditures on education and culture (Potrafke, 2010). Previous research on Brazil suggests that mayors' ideology influences expenditures on health and sanitation, housing and urbanism, communications, legislative, education and culture (Sakurai, 2009).

Studies on the impact of gender and education on fiscal policy choices are more recent. For India, Chattopadhyay and Duflo (2004) concluded that leaders invest more in infrastructures that are directly relevant to the needs of their own gender. Female local leaders increase expenditures on drinking water and roads. For the US, Park (2014) reports that in California, counties led by women have higher expenditures on social welfare. However, also for the US, Ferreira and Gyourko (2011), found no effect of mayors' gender on the size of local governments, the composition of municipal spending and employment, or crime rates. For Norway, Jacobsen (2006) argues that male mayors spend less on health, childcare, culture and sports, and social assistance, while

Svaleryd (2009) claims that female leaders increase expenditures on child and education at the expense of care for the elder.

Jacobsen (2006) also studied the effects of education on Norwegian local governments and concluded that mayors with a university degree have lower expenditure levels, particularly on health, social spending, business development and technical services. Martinez-Bravo (2017) found that, in Indonesian districts, incumbents with a higher degree of education have higher levels of provision of public goods and services, namely health centers, doctors and access to drinking water.

Another factor that may influence expenditure choices is the political alignment between the local leader and leaders of upper levels of government. Results for Germany, indicate that local leaders that belong to the Prime-minister's political family spend more (Hayo & Neumeier, 2014). For Brazil, Sakurai (2009) concluded that mayors politically aligned with the president spend less in agriculture and legislative functions, while those aligned with the state governor spend more on health, sanitation, housing, and urbanism, and legislative, but less in agriculture, social security, education, and culture. Also, for Brazil, Sakurai and Menezes-Filho (2011) claim that mayors of the president's party invest less, while those of the state governor's party present lower total expenditures.

Electoral periods may also lead to changes in the composition of expenditures. In a context of asymmetric information, local politicians may manipulate fiscal policy to signal competence to the electorate (Rogoff & Sibert, 1988; Rogoff, 1990). Many empirical studies have shown that local governments increase expenditures in highly visible items before the election (e.g. Rosemberg (1992) for Israel, Veiga and Veiga (2007) and Alt et al. (2011) for Portugal, Drazen and Eslava (2010) for Columbia, Chortareas et al., 2016 for Greece). Working with Brazilian municipalities, Sakurai and Menezes-Filho (2011) claim that in electoral years' mayors increase total and current expenditures, while reducing investment.

Furthermore, politicians' characteristics may also influence the incentives to adopt opportunistic measures during electoral periods. For Portugal, there is evidence that left-wing mayors generate larger PBC (Veiga & Veiga, 2007; Aidt et al., 2011), but for Brazil no conditioning effect was found (Sakurai & Menezes-Filho, 2011). A positive influence of political alignment with upper levels of government on the occurrence of PBC was reported for Brazil (Sakurai & Menezes-Filho, 2011) but not for Greece (Chortareas et al., 2016). Finally, Besley et al. (2011) claim that in India electoral manipulations of fiscal policy decrease with the level of education of the mayors and the population.

3. Data and Empirical Strategy

We created a large and detailed panel, covering 5389 municipalities, from 2002 to 2020. Our dataset includes expenditures by functions of government, variables capturing municipalities' demographic and educational level, and mayors' level of education, gender, ideology, and party similarity with upper levels of government. For our analysis, the functional classification of expenditures is more relevant than the economic classification since it provides a better picture of politicians' expenditure preferences. During the period analyzed local elections occurred in 2004, 2008, 2012, 2016 and 2020. General elections for the federal and state government took place in 2002, 2006, 2010, 2014 and 2018.

Table 1. Descriptive statistics of the LHS variables

LHS Variables	Observations	Mean	Std. Dev (Panel)	Min.	Max.
Reals of 2020 per capita					
General public services	105,772	6.641	6.113	-2.692	737.6
Public order and safety	105,772	0.143	0.511	-6.529	50.27
Economic affairs	105,772	2.442	3.856	0	199.9
Environment protection	105,772	0.157	0.495	0	22.96
Housing and community amenities	105,772	3.226	3.532	-0.0328	303.0
Health	105,772	6.833	5.093	0	688.5
Recreation, culture and religion	105,772	0.636	0.903	-0.00525	87.22
Education	105,772	8.532	6.137	0	1,109
Social protection	105,772	1.644	1.898	-0.717	150.7
Total expenditure	105,772	30.25	22.46	0	3,206

Weight					
General public services	95,750	0.217	0.0782	-0.0961	1
Public order and safety	95,750	0.00455	0.0120	-0.257	0.956
Economic affairs	95,750	0.0713	0.0685	0	0.794
Environment protection	95,750	0.00474	0.0117	0	0.448
Housing and community amenities	95,750	0.106	0.0632	-0.127	0.833
Health	95,750	0.227	0.0550	0	0.902
Recreation, culture and religion	95,750	0.0199	0.0176	-0.0204	1
Education	95,750	0.299	0.0837	0	0.814
Social protection	95,750	0.0512	0.0347	-0.108	0.700

Data on municipal expenditures was extracted from the database Finances of Brazil – Accountancy data on municipalities of the National Secretary of Treasure. Our sample comprehends 5389 municipalities from 2002 to 2020. All data is per capita and in 2020 prices. The price index used to deflate the data was obtained from Foundation Getúlio Vargas. The Brazilian functional classification of expenditures comprehends 28 categories (Note 6). To facilitate international comparisons and avoid an excessive number of zeros in some series, the original categories were aggregated according to the IMF's classification of expense by functions of government. Table 1 presents the descriptive statistics of the left-hand side (LHS) variables used in the empirical work. Defense and international relations do not appear in the table because it is not a function of municipalities. Municipalities spent on average more than 50% on just three functions: Education, General Public Services and Health.

The basic specification used in the empirical analysis was the following:

$$Exp_{j,i,t} = \beta_1 BeforeElec_{it} + \beta_2 Election_{it} + Munic_{it}'\beta_3 + Mayor_{it}'\beta_4 + \gamma_i + \varepsilon_{it} \quad (1)$$

where $Exp_{j,i,t}$ is the either real total expenditure or one of the expenditure categories ($j = 1, \dots, 10$), i indexes the municipality ($i = 1, \dots, 5389$) and t indexes the year ($t = 2002, \dots, 2020$). $Election_{it}$ and $BeforeElec_{it}$ are dummy variables, respectively, for the local (2004, 2008, 2012, 2016 and 2020) election years and the year before election years (2003, 2007, 2011, 2015 and 2019). $Munic_{it}$ and $Mayor_{it}$ are vectors of variables used to control for municipalities and mayors' characteristics. γ_i represents fixed effects and ε_{it} the error term. Finally, β_1 to β_4 are coefficients or vectors of coefficients to be estimated.

The vector $Mayor$ includes five dummy variables. M_Female_{it} and $M_UnderGrad_{it}$ identify, respectively, female mayors and mayors with a university degree. M_Left_{it} assumes the value of one when the mayor belongs to a left-wing party (Note 7). M_Pres_{it} and M_Gov_{it} are equal to one when the mayor is of the same party as the President or the state governor, respectively.

The vector $Munic_{it}$ comprises variables that control for demographic and socioeconomic characteristics of municipalities that may influence the level of expenditures. $Urban_{it}$ is the percentage of urban population in municipality i at year t . $Illiteracy_{it}$ is the percentage of individuals with more than 15 years old that are illiterate. $Under_15_{it}$ and $Above_65_{it}$ are, respectively, the percentage of population with 15-year old or less, and 65-year-old or more. Table 2 presents the descriptive statistics of the righthand side (RHS) variables used in the empirical work.

Table 2. Descriptive statistics of the RHS variables

LHS Variables	Observations	Mean	St. dev (Panel)	Min	Max	Source	
BeforeElec	105,772	0.263	0.440	0	1	Institute of Geography and Statistics	
Election	105,772	0.263	0.440	0	1		
Under_15	105,735	0.284	0.0615	0.127	0.707		
Above_65	105,735	0.0758	0.0242	0.00643	0.204		
Illiteracy	105,735	18.51	11.36	0.910	59.95		
Urban	105,735	0.616	0.229	0	1	Superior Electoral Court	
M_Pres	105,256	0.0801	0.271	0	1		
M_Gov	105,256	0.194	0.395	0	1		
M_Left	47,958	0.219	0.414	0	1		
M_Female	47,958	0.100	0.300	0	1		
M_UnderGrad	47,958	0.494	0.500	0	1		

To obtain efficient estimators for dynamic models with panel data with a reduced time horizon and a high number of individuals, Arellano and Bond (1991) proposed a two-step GMM estimator. The first step is to remove the difference from the estimators, which eliminates the individual effects (fixed effects) and only after this procedure, the second step is to apply the GMM. The application of the GMM is necessary to correct the existing endogeneity between the lagged dependent variable and the error term.

The exogeneity of the instruments is crucial for the validity of the GMM, to test for over-identification of moment conditions (Note 8), the Hansen test (Note 9) is used. Arellano and Bover (1995) and Blundell and Bond (1998) introduced a new model with level equations called the GMM System, which adds the non-existence of correlation between the first differences of the instruments with the individual effects and when performing this procedure, there is an increase in the number of instruments which increases the efficiency of the estimator. This procedure is known as the GMM System.

Finally, to be able to perform the statistical inference, Windmeijer (2005) elaborated a procedure that corrects the standard errors obtained in the estimations by the GMM System. In this way the problem of bias of the standard errors is eliminated. Since the sample analyzed in this work is composed of 5389 municipalities over 18 years, the GMM System was chosen, due to its characteristics, as a method to estimate the models, in addition to the standard errors being corrected according to the method of Windmeijer (2005). In estimations using the GMM System method, in addition to having the Hansen test, for over-identification, it is necessary to observe the first and second order autocorrelation. First-order autocorrelation is expected, but not second-order (Note 10).

4. Empirical Results

Table 3 reports the results of the basic specification for each expenditure series. Table 4 shows the results for the weights of each expenditure category on total expenditures. The following tables present results for conditional PBC on mayors' and municipalities' characteristics.

4.1 Determinants of Expenditures by Functions

As can be seen from Table 3, there is no evidence of traditional PBC in total expenditures, and in all expenditure categories considered, during local election years. Instead of increasing public expenditures during the election year, mayors tend to decrease *General Public Services*, *Environmental Protection*, *Health*, *Education*, and *Social Protection*. Sakurai and Menezes-Filho (2011) evidenced an opportunist behavior in Brazilian municipalities, namely in current expenditure. However, their data base covered elections between 1988 and 2005. The FRL was approved in 2000, Lautenschlage (2017), Vasconcelos et al. (2013) and Nakaguma and Bender (2005) concluded this legislation decreases the level of the political budget cycle. In the same direction Giuberti (2005), Gadelha (2012) found a shift on expenditure composition after FRL.

The results of Table 3 indicate that during the year before local elections, mayors increase of 1,95 reais per habitant in total expenditures. The same occur in *Housing and community amenities* (0,26 reais per habitant) and *Recreational, culture and religion* (0,09 reais per habitant). The main reason for this is the FRL and the Brazilian Electoral Code, do not allow increases in public expenditures months before elections. Therefore, incumbents decide to increase in the year before when there is no limitation.

Another plausible reason for the increase, in the year before election, of most visible expenditures, namely *Housing and Community Amenities* and *Recreation, Culture and Religion*, is those expenditures take longer to be delivered to the population. For instance, if a mayor desires to deliver a building or road very close to the elections, he must begin the construction in the previous year.

Therefore, our results are in line with those obtained for other countries. Kneebone and McKenzie (2001) found evidence of opportunistic increases in social services for Canadian provinces, and Enkelmann and Leibrecht (2013) report PBC on leisure, environment, and education, on a panel of developed countries. The difference is the timing, in Brazilian municipalities, the manipulation begins in the year before election.

Table 3. Total Expenditure and expenditures by functions

	Total	General Public Services	Public Order and safety	Economic Affairs	Environmental protection	Housing and comm. amenities	Health	Recreat., culture and religion	Education	Social Protection
BeforeElec	1.952** (2.369)	0.00235 (0.0428)	-0.00858 (-0.763)	0.00588 (0.0378)	-0.00162 (-0.271)	0.260** (2.274)	-0.170 (-1.394)	0.0918*** (2.602)	0.510* (1.859)	-0.0975* (-1.683)
Election	-1.129 (-1.130)	-0.894*** (-16.19)	-0.0194 (-1.578)	0.0175 (0.116)	-0.0104** (-2.341)	-0.305 (-0.711)	-0.713*** (-4.278)	0.0198 (0.494)	-0.963*** (-2.720)	-0.368*** (-5.857)
Under_15	-48.08*** (-3.904)	-2.952** (-2.215)	-0.414 (-0.786)	1.313 (0.426)	-0.0275 (-0.233)	5.994 (0.624)	-7.955*** (-3.522)	-1.440 (-1.439)	-7.696** (-2.528)	-2.552*** (-2.606)
Above_65	39.08** (2.409)	12.03*** (3.531)	-0.764 (-0.647)	26.21*** (2.683)	0.0504 (0.285)	5.590 (0.545)	7.056** (2.346)	2.877*** (2.727)	-3.793 (-0.908)	1.877* (1.660)
Urban	-8.333 (-1.382)	-1.873*** (-5.806)	0.0539 (0.581)	-5.347*** (-2.833)	0.0226* (1.776)	-1.246 (-0.609)	0.758 (0.714)	-0.0109 (-0.0358)	-1.007 (-0.533)	0.712 (1.624)
Illiteracy	-0.269*** (-3.243)	-0.0629*** (-6.562)	-0.000840 (-0.771)	-0.124*** (-2.661)	-0.00115** (-2.185)	0.0157 (0.464)	-0.0291* (-1.856)	-0.00105 (-0.215)	0.0255 (1.123)	-0.00174 (-0.337)
Left	0.597 (0.0714)	-0.0236 (-0.0827)	-0.0241 (-0.316)	-1.620 (-0.454)	-0.0438 (-1.642)	0.247 (0.399)	-2.198 (-1.250)	-1.513 (-1.595)	-2.262 (-0.823)	-1.147* (-1.688)
Female	6.701 (0.400)	0.355 (1.043)	0.0108 (0.263)	-0.564 (-0.122)	0.0527 (1.177)	0.318 (0.535)	-0.631 (-0.180)	0.887 (0.694)	4.248 (0.741)	-0.245 (-0.202)
UnderGrad	-3.331 (-0.238)	0.173 (0.838)	0.00838 (0.165)	-0.417 (-0.118)	0.000839 (0.0324)	-0.0416 (-0.103)	-3.511 (-1.271)	0.130 (0.158)	-0.116 (-0.0274)	-1.622 (-1.390)
Pres	15.73 (1.000)	0.393 (1.108)	0.00230 (0.0384)	4.715 (0.780)	0.0286 (1.225)	0.0691 (0.0918)	-2.645 (-0.818)	3.952*** (2.670)	14.79** (2.322)	-1.121 (-0.817)
Gov	25.52* (1.956)	-0.0981 (-0.312)	-0.0293 (-1.604)	-1.630 (-0.512)	0.00542 (0.623)	1.209 (1.151)	3.387 (1.259)	-0.581 (-0.848)	6.372 (1.357)	0.318 (0.279)
Exp_{t-1}	0.396** (2.499)	0.357*** (8.250)	0.392 (1.631)	0.238 (0.764)	0.854*** (6.128)	0.909* (1.656)	0.621*** (5.357)	0.110 (0.569)	0.391*** (3.472)	0.775*** (7.714)
Exp_{t-2}	-0.127 (-0.845)	0.0945** (2.233)	0.299 (1.458)	-0.107 (-1.175)	-0.0302 (-0.275)	0.804 (1.426)	-0.0342 (-0.265)	-0.0479 (-0.280)	0.257* (1.794)	-0.0613 (-0.433)
Constant	38.00*** (4.358)	6.055*** (6.297)	0.223 (0.866)	5.749* (1.771)	0.0521 (0.807)	-3.832 (-0.643)	7.071*** (4.424)	0.736 (1.069)	3.795** (1.963)	1.991*** (2.860)
Observations	43,682	43,682	43,682	43,682	43,682	43,682	43,682	43,682	43,682	43,682
Municipalities	5,389	5,389	5,389	5,389	5,389	5,389	5,389	5,389	5,389	5,389
Hansen (p)	0.490	0.131	0.676	0.831	0.130	0.336	0.902	0.114	0.621	0.113
AR1 (p)	0.00265	5.25e-09	0.00462	0.0545	2.32e-05	0.00466	0.000256	2.09e-05	0.00379	5.74e-06
AR2 (p)	0.282	0.982	0.232	0.469	0.308	0.253	0.162	0.525	0.293	0.148

Note. Robust t-statistics, clustered by municipality, in parentheses.

Significance levels: * 10%, ** 5% and *** 1%.

All regressions include municipal fixed effects. All fiscal variables are measured in logs of 2012 reals.

The age structure of local population seems to influence total expenditures. A higher percentage of the elderly people leads to a higher total amount of expenditure, *General Public Services*, *Economic Affairs*, *Health* and *Recreation, Culture and Religion*. These results were expected, namely *Health* and *Recreation, Culture and Religion*, which are usually related to elderly people. On the other hand, a greater percentage of young people, leads to a lower total expenditure, *General Public Services*, *Health*, *Education* and *Social Protection*. Geys et al. (2022) evidenced a direct relation between age and fiscal conservatism, in Norway.

The rate of urbanization, (*Urban*) influences *General Public Services* and *Economic Affairs*. Regarding to the level of illiteracy (*Illiteracy*), Municipalities with a higher percentage of illiterate population have lower total expenditures, *General Public Services*, *Economic Affairs* and *Environmental Protection*.

Table 4. Weights of expenditures by functions

	General Public Services	Public Order And safety	Economic Affairs	Environmental protection	Housing and comm. amenities	Health	Recreat., culture and religion	Education	Social Protection
BeforeElec	-0.00848 (-1.194)	8.76e-05 (1.052)	-0.00102 (-0.820)	0.000359*** (3.037)	-0.00290 (-1.006)	-0.00823*** (-5.315)	0.00136** (2.318)	0.00124 (0.119)	-0.00193*** (-2.741)
Election	-0.0199*** (-3.601)	0.000151 (1.445)	0.00275** (2.226)	0.000348** (2.207)	0.0159*** (6.270)	0.000593 (0.297)	0.000757 (1.321)	-0.0189*** (-3.491)	-0.00446*** (-7.397)
Under_15	0.145* (1.890)	-0.0277*** (-4.396)	0.102*** (3.928)	-0.00168 (-0.267)	-0.181*** (-3.061)	-0.0171 (-0.670)	-0.0193 (-1.438)	0.000953 (0.0180)	-0.0373*** (-2.825)
Above_65	0.0600 (0.508)	-0.0707*** (-4.369)	0.272*** (7.214)	-0.00343 (-0.241)	-0.398*** (-4.037)	0.0598* (1.787)	0.0463** (2.561)	-0.137 (-1.305)	0.0136 (0.937)
Urban	0.0149 (0.398)	0.00731*** (4.701)	-0.083*** (-6.528)	0.00114 (0.662)	0.196*** (4.771)	0.00899 (0.588)	0.0131* (1.720)	0.0428 (1.287)	0.0122* (1.726)
Illiteracy	-0.00138** (-2.383)	-1.75e-05 (-1.424)	-0.002*** (-9.628)	-3.27e-05 (-1.180)	0.000115 (0.321)	-0.000304 (-1.505)	0.000251** (2.577)	0.000411 (0.591)	4.02e-05 (0.480)
Left	0.0315 (0.499)	-0.000213 (-0.310)	0.00953 (0.348)	0.00112 (1.446)	0.0888 (1.562)	0.0598* (1.738)	-0.0422** (-2.243)	0.0577 (0.488)	-0.0101 (-0.722)
Female	0.0478 (0.509)	-0.000663 (-0.889)	-0.0426 (-1.548)	1.62e-05 (0.0251)	-0.0490 (-0.802)	0.00937 (0.258)	-0.00114 (-0.0697)	-0.0751 (-0.689)	-0.0112 (-0.757)
UnderGrad	-0.0635 (-0.612)	-0.000169 (-0.253)	0.00407 (0.111)	-0.000261 (-0.488)	-0.146* (-1.649)	0.000357 (0.00777)	-0.0146 (-0.743)	-0.115 (-1.449)	-0.0265 (-1.405)
Pres	-0.439*** (-3.861)	4.72e-05 (0.0713)	0.0347 (0.895)	-0.000641 (-0.659)	-0.0287 (-0.336)	-0.152*** (-2.825)	0.0843*** (3.281)	-0.0855 (-0.765)	0.00229 (0.109)
Gov	-0.110 (-1.290)	9.79e-06 (0.0367)	-0.0143 (-0.613)	-0.000239 (-0.327)	-0.00428 (-0.0884)	0.0131 (0.515)	-0.0135 (-1.113)	-0.170 (-1.330)	-0.00295 (-0.291)
Yt-1	0.852*** (2.861)	-0.0319 (-0.241)	0.313*** (12.41)	0.533** (2.414)	-0.248** (-2.408)	0.819** (2.455)	0.140** (1.978)	1.203*** (2.878)	0.727*** (6.597)
Yt-2	-0.0126 (-0.145)	-0.109 (-1.032)	0.0920*** (6.107)	0.214 (1.003)	-0.452*** (-4.624)	-0.111 (-0.432)	-0.0500 (-1.016)	-0.427 (-0.858)	0.249** (2.100)
Constant	0.0876 (1.277)	0.0142*** (4.405)	0.0772*** (3.925)	0.00179 (0.431)	0.194*** (3.957)	0.0684*** (2.805)	0.0193** (2.056)	0.136*** (3.255)	0.0233*** (2.623)
Observations	35,175	35,175	35,175	35,175	35,175	35,175	35,175	35,175	35,175
Municipalities	5,309	5,309	5,309	5,309	5,309	5,309	5,309	5,309	5,309
Hansen (p)	0.518	0.486	0.175	0.205	0.00352	0.396	0.203	0.742	0.940
AR1 (p)	0.00494	0.00101	0	0	7.39e-05	0.0453	0	0.0547	0.00450
AR2 (p)	0.686	0.797	0.170	0.609	3.91e-07	0.304	0.255	0.581	0.359

Note. Robust t-statistics, clustered by municipality, in parentheses.

Significance levels: * 10%, ** 5% and *** 1%.

All regressions include municipal fixed effects. All fiscal variables represent weights on total expenditures.

When we migrate to mayors' characteristics, results suggest the gender and the university don't bias public expenditures. Previous studies focusing on gender, found that female leaders tend to spend more on social issues, such as support to families and children (Besley & Case, 2003; Jacobsen, 2006; Clots-Figueras, 2012; and Park, 2014). Our results do not confirm that female mayors attribute a higher priority to social issues. As well, they do not confirm earlier studies that found that education matters for expenditure composition. Focusing on Norwegian municipalities Jacobsen (2006) concluded that more educated incumbents spend less on social expenditures. Scott (2022) found a direct relationship, in Britain, between university degree and a reduction on authoritarianism and racial prejudice. He also evidenced an increase on economic right-wing attitudes.

The ideology of mayors and the alignment with the state governor also seems to don't matter for the expenditure level. On the other hand, Political alignment with the President is associated with higher *Recreation, Culture and Religion* and *Education* spends. Sakurai (2009) found evidence of higher expenditures in Agriculture, Housing and Urbanism by mayors belonging to the same party as the President and the Governor.

To investigate the factors that determine the relevance of each function on total expenditure, regressions were also run using the weight of each expenditure function on total expenditure. Results presented in Table 4, reveal

that during both local elections years and the year before, there is a significant change in the composition of public expenditures. In both cases there is increases in the weight of *Environmental Protection*, and a decrease in the weight of *Social Protection*.

The results also suggest the weight of *Economic Affairs* and *Housing and Community Amenities* increase during election years. *General Public Services*' and *Education's* weight seems to be decrease in election year. The weight of *Health and Recreation*, *Culture and Religion* decrease during the year before local elections. In municipalities with a larger share of young population, the weights of *Public order and safety*, *Housing and Community Amenities*, and *Social Protection* are lower, and the weight of *Economic Affairs* is higher. In localities with a higher percentage of elderly population, the weights of *Public order and safety*, *Housing and Community Amenities* are also lower, and the weight of *Economic Affairs* and *Recreation, Culture and Religion*, are higher.

Regarding to the level of urbanization, we evidence more urban municipalities, have higher weight of *Public order and safety*, and *Housing and Community Amenities*. On the other hand, localities with less percentage of population leaving um urban areas, seem spend relatively less with *Economic Affairs*. Municipalities with a higher percentage of illiterate population have lower weight of *General Public Services*, *Economic Affairs* and higher weight of *Recreation, Culture and Religion*.

Table 5. Marginal effects of elections and ideology

VARIABLES	(1) <i>General public services</i>	(2) <i>Economic affairs</i>	(3) <i>Environment protection</i>	(4) <i>Housing and comm. amenities</i>	(5) <i>Social protection</i>
Election*Left=0	-0.859*** (-12.118)	4.224*** (2.753)	-0.016*** (-3.366)	-0.304 (-0.710)	-1.393* (-1.811)
Election*Left=1	-0.945*** (-7.720)	-14.837*** (-2.836)	0.001 (0.057)	-0.323 (-0.652)	5.020** (2.364)
Observations	43,682	43,682	43,682	43,682	43,682
Wald, p-value	0.535	0.00482	0.159	0.946	0.0246
BeforeElec*Left=0	0.442 (0.124)	-43.563*** (-3.156)	0.056 (0.150)	0.256* (1.886)	0.329 (0.247)
BeforeElec*Left=1	-0.876 (-0.076)	148.607*** (3.142)	-0.155 (-0.126)	0.271 (1.174)	-1.175 (-0.263)
Observations	43,682	43,682	43,682	43,682	43,682
Wald, p-value	0.930	0.00165	0.895	0.956	0.795

Note. Robust t-statistics, clustered by municipality, in parentheses.

Significance levels: * 10%, ** 5% and *** 1%.

All regressions include municipal fixed effects and the independent variables used in Table 3. The reported Wald tests' p-values are for the equality of the estimated coefficients.

Among the mayors' personal characteristics, ideology and the alignment with the president seem to matter the most for expenditure composition with left-wing mayors spending relatively less in *Recreation, Culture and Religion*, and the mayors of the same party of the president of Republic, spend relatively less with *General Public Services* and *Health*, and spend relatively more with *Recreation, Culture and Religion*.

4.2 Leaders' Characteristics and PBC

Finally, to analyze if leaders' characteristics influence the occurrence and dimension of PBC, each of the dummies for mayors' characteristics ($M_Female_{i,t}$, $M_Univ_{i,t}$, $M_Left_{i,t}$, $M_Pres_{i,t}$ and $M_Gov_{i,t}$) were interacted with the election year dummy variables and added to equation 1. Tables 5 to 9 present the marginal effects of elections.

Left-wing mayors, as can be seen from Table 5, are less opportunist regarding to *Economic Affairs* and more opportunist, with *Social Protection*, when they are compared to right-wing and centrist mayors. During election year, Left-wing mayors, increase more, compared to right-wing and centrist mayors, *Social Protection* spending, as can be seen from Table 5, Column 5. On the other hand, left-wing mayor increase less *Economic Affairs* during election year, but they spend more during the year before election.

Table 6. Marginal effects of elections and gender

VARIABLES	(1) <i>Total expenditures</i>	(2) <i>General public services</i>	(3) <i>Economic affairs</i>	(4) <i>Health</i>
Election*Female=0	-0.971 (-0.100)	-0.753*** (-9.156)	3.328*** (2.890)	-0.268 (-0.158)
Election*Female=1	-2.621 (-0.033)	-1.440*** (-5.587)	-29.148*** (-2.973)	-5.032 (-0.329)
Observations	43,682	43,682	43,682	43,682
Wald, p-value	0.985	0.0310	0.00301	0.779
BeforeElection*Female=0	-3.387 (-1.352)	0.026 (0.503)	-1.232 (-1.559)	-1.355* (-1.916)
BeforeElection*Female=1	36.492* (1.877)	0.692** (2.095)	12.326* (1.826)	7.575 (1.268)
Observations	43,682	43,682	43,682	43,682
Wald, p-value	0.0681	0.0348	0.0715	0.181

Note. Robust t-statistics, clustered by municipality, in parentheses.

Significance levels: * 10%, ** 5% and *** 1%.

All regressions include municipal fixed effects and the independent variables used in Table 3. The reported Wald tests' p-values are for the equality of the estimated coefficients.

Regarding gender, as can be seen from Table 6, differences are only visible in *General Public Services* and *Economic Affairs*. Female mayors decrease more *General Public Services* at local election years (column 2) and decrease the spend with economic affairs at election year (column 3), *Economic Affairs*. When we migrate to the year before elections, we can evidence female mayors spend more with general public services, while their male counterparts seem to not do so.

Table 7. Marginal effects of elections and education

VARIABLES	(1) <i>General public services</i>	(2) <i>Housing and comm. amenities</i>	(3) <i>Social protection</i>
Election*UnderGrad=0	-1.041*** (-11.807)	-6.843*** (-2.979)	-0.094 (-0.097)
Election*UnderGrad=1	-0.670*** (-8.024)	8.198*** (3.482)	0.094 (0.093)
Observations	43,682	43,682	43,682
Wald, p-value	0.00144	0.00114	0.923
BeforeElection*UnderGrad=0	0.383 (0.304)	-1.679 (-1.134)	-12.046* (-1.895)
BeforeElection*UnderGrad=1	0.313 (0.295)	2.481* (1.653)	11.419* (1.862)
Observations	43,682	43,682	43,682
Wald, p-value	0.976	0.157	0.0602

Note. Robust t-statistics, clustered by municipality, in parentheses.

Significance levels: * 10%, ** 5% and *** 1%.

All regressions include municipal fixed effects and the independent variables used in Table 3. The reported Wald tests' p-values are for the equality of the estimated coefficients.

The results of Table 7, indicate that mayors with, at least, a university degree, spend more with *Housing and Community Amenities* and less with *General Public Services*, during election years, matching with the opportunist behavior described by Rogoff (1990), because *Housing and Community Amenities* spends are very visible and well received by population.

Table 8. Marginal effects of elections and alignment with the President

VARIABLES	(1) <i>General public services</i>	(2) <i>Economic affairs</i>
Election*Pres=0	-2.040*** (-3.657)	0.043 (0.094)
Election*Pres=1	13.693* (1.831)	-0.109 (-0.021)
Observations	43,682	43,682
Wald, p-value	0.0467	0.979
BeforeElection*Pres=0	3.883 (1.641)	-10.956** (-2.140)
BeforeElection*Pres=1	-41.897 (-1.594)	127.404** (2.116)
Observations	43,682	43,682
Wald, p-value	0.110	0.0341

Note. Robust t-statistics, clustered by municipality, in parentheses.

Significance levels: * 10%, ** 5% and *** 1%.

All regressions include municipal fixed effects and the independent variables used in Table 3. The reported Wald tests' p-values are for the equality of the estimated coefficients.

Regarding party similarity with higher levels of government appears, as can be seen from Column 2 of Table 8, that mayor aligned with the president, spend more with *Economics Affairs* in the year before election. There is also weak evidence of an increase in *General Public Services* during local electoral periods in municipalities where the mayor does belong to the same party as the President. These are probably reflecting that these municipalities are being penalized in the allocation of transfers by upper levels of government from a different political family.

Table 9. Marginal effects of elections and alignment with the Governor

VARIABLES	(1) <i>Economic affairs</i>	(2) <i>Environment Protection</i>	(3) <i>Housing and comm. amenities</i>
BeforeElection*Gov=0	3.251* (1.645)	-0.028*** (-3.673)	-0.710 (-1.383)
BeforeElection*Gov=1	-16.956* (-1.710)	0.048* (1.720)	0.928 (1.085)
Observations	43,682	43,682	43,682
Wald, p-value	0.0887	0.0263	0.0882
BeforeElection*Gov=0	4.163*** (2.934)	0.012 (1.400)	0.611** (2.493)
BeforeElection*Gov=1	-21.743*** (-2.711)	-0.067** (-2.266)	-1.055 (-1.313)
Observations	43,682	43,682	43,682
Wald, p-value	0.00601	0.0254	0.0980

Note. Robust t-statistics, clustered by municipality, in parentheses.

Significance levels: * 10%, ** 5% and *** 1%.

All regressions include municipal fixed effects and the independent variables used in Table 3. The reported Wald tests' p-values are for the equality of the estimated coefficients.

Belonging to the governor's party leads to lower level of *Economic Affairs* spending during the year before elections (Column 1 Table 9) compared to mayors of other parties. There is also weak evidence (Column 2 Table 8) of an influence on *Environmental Protection* during election year and pre-election.

5. Final Considerations

This work proposed investigate how public expenditures are influenced by election. Working on a large sample of Brazilian municipalities we were able to disentangle the main factors conditioning the levels and composition

of public expenditures. There is no evidence of an increase in total expenditure per capita, and in all categories analyzed, during local election years. Although in the year before local elections, expenditures seem to grow, results indicate an opportunistic manipulation of their composition, favoring items highly visible and appreciated by the electorate, namely Housing and Community Amenities and Sports and Leisure.

This scenario indicates after the Fiscal Responsible Law, opportunistic manipulations occur in the year before election. As FRL restricts increases on total public expenditures in election year, Brazilian mayors anticipate opportunistic manipulation in one year, when there is no limit. Therefore, FRL should be updated to include limits on public spending during all term, not only in election year. This work also indicates that Brazilian mayors shift public revenues, during election year, to be the most visible to the electors, namely housing and community amenities and sports and leisure spending. Therefore, Brazilian legislators should, introduce restrictions on this opportunistic shift on the composition of public expenditures. These two additional limitations should decrease the incumbency advantage in Brazil.

The second question this work aimed to answer was the influence of mayor's personal traces on public expenditures. We find evidence of the political alignment with the president of Republic is associated with higher levels of recreation, culture and religion and education spending. This feature is also linked to lower weight of public general services and health and higher weight of recreation, culture, and religion. The left-wing mayor, on the contrary, is associated to lower weight of recreation, culture, and religion.

Our data also suggests a linkage between mayors' personal characteristics and expenditures levels by functions during election year and the year before. Left-wing mayors spend more with social protection during election years. Municipalities led by women spend less during election years, and they also have lower expenditures per capita on general public services and economic affairs, while those ruled by individuals with a university degree spend more, during election years, on the housing and community amenities but less on public general services.

Mayors aligned with the president decrease less general public services spending during election years, and mayor of the same party of the state governor decrease less environmental protection spends during election year. Finally, empirical results confirm that the level of socio-economic development of municipalities and their demographic structure condition the level and composition of public expenditures.

As this work focus on the existence of opportunistic manipulations on public expenditures and the conditional effect of personal characteristics of Brazilian mayors on opportunism, we did not use variables which could capture the economic environment in election years. Because of that, for future works, we must spread the analysis and add variables of the labor market, production, income, etc. Another important investigation, for future works, is how Brazilian electors react to these opportunistic behaviors, for instance, a mayor who spends more with housing and community amenities and sports and leisure during election year will have more chances of reelection?

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Notes

Note 1. Because the pandemic of SARS-CoV-2, the first-round of 2020 local elections took place in November 15th.

Note 2. Complementary Law n. 101 of May 4th, 2000.

Note 3. Debt limits only exist for state and municipal governments.

Note 4. 60% of the net current revenue: 54% for the executive branch and 6% for the legislative branch.

Note 5. Besides of FRL, Brazilian Electoral Code (Law n. 4737 of July 15th, 1965), also conditions fiscal policy during election year.

Note 6. Legislative, judiciary, essentials to justice, administration, national defense, public security, international relations, social assistance, pensions, health, labor, education, culture, rights of citizenship, urbanism, housing, sanitation, environmental management, science and technology, agriculture, agrarian organization, industry, trade and services, communications, energy, transport, sports and leisure, and special charges.

Note 7. The classification proposed by Zucco (2011) was used to identify parties according to their ideology.

Note 8. $E(Z'_i \Delta v_i) = 0$, Where Z represents the matrix of instruments.

Note 9. Hansen (1982).

Note 10. Roodman (2009).

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