ELECTION CAMPAIGN 2016: THE RELATIONSHIP BETWEEN EXPENSES AND VOTES OF CANDIDATES TO THE MAYOR IN CAPITAL[1]

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Abstract: Who was the most efficient in turning money into votes in the dispute by the prefectures of the capitals of Brazil in 2016? Incumbents or challengers? This article, which tests the occurrence of the Jacobson Effect in the capitals of the country, points out that the candidates for re-election were less efficient in transforming campaign expenditures into votes won: on average, every 1% increase in revenue, for the reelection had a 0.591% increase in the number of votes received, while the challengers reached 0.632%. The research reproduces the model used by Paranhos et al (2013) - descriptive and multivariate statistics - that, analyzing the dispute in the capitals in 2012, found an inverse effect.

Keywords: Electoral Expenses; Jacobson Effect; Municipal Elections.

Introduction

The dispute in large districts and the open list voting are among the characteristics of the Brazilian electoral system that make the campaigns in the country expensive. The number of candidates makes contests "top-of-mind contests, deeply dependent on advertising saturation (and therefore money), precariously fiscalizable, politically unintelligible and - yet - fatally capturing large financiers, even if they are individuals "(REIS, 2016). Given these and other characteristics, financial resources play, therefore, an important role on the electoral results (SAMUELS, 2001; FIGUEIREDO FILHO, 2009; LEMOS, MARCELINO; PEDERIVA, 2010; SPECK; MANCUSO, 2013; CODATO, CERVI; PERISSIONOTO, 2013; SILVA; SILVA, 2014; SPECK; MANCUSO, 2017).

The impact of these resources depends on a number of variables, including whether the candidate is running for re-election or challenging. In the elections held in 2012, for example, mayors who concurred to continue in office in Brazilian capitals were more efficient at turning money into votes, as shown in Paranhos et al. (2013). The findings were published by this journal.

Who was the most efficient in turning money into votes in the dispute for the city halls of Brazilian capitals in 2016? Incumbents or challengers? This research is inserted in the theoretical debate that deals with the relation between campaign resources and performance in the municipal

[1] The text translated here consists of an extract summarized from the original manuscript published in Portuguese.

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elections. In analyzing the disputes in the capitals, we contributed to broaden the group of the scarce studies that exploit the data at this federative level[2]. "Despite the great evolution of Brazilian Political Science in the analysis of the national political system, little attention has been paid to local systems "(PEIXOTO, 2010, p.155).

Like Paranhos et al. (2013), we will test the hypothesis that challengers are more efficient at turning money into votes than those who are running for re-election (Jacobson Effect). Our work contributes by testing these effects in the most recent dispute, including new analyzes (correlation between income and votes for capital) and variables not tested in the previous study (sex, color and education). We chose to reproduce the research design used by Paranhos et al. (2013), which will allow the comparison of the results and collaborate with the construction of knowledge in a longitudinal way. "Good science requires that we are able to replicate existing results, and that other researchers are able to show how substantive findings change as we apply the same methods in new contexts" (KING, 2015, p.399).

2 The Importance of Money

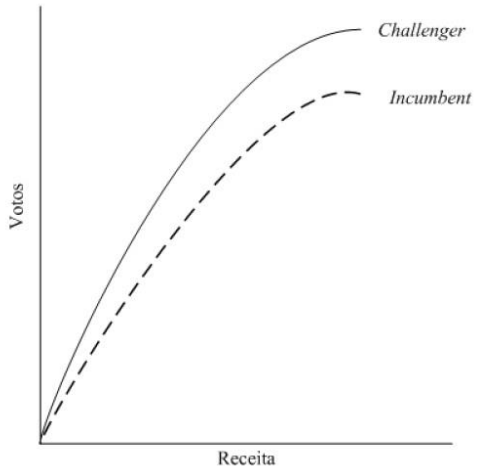
Money is important to win an election dispute. To get your ideas to the citizens, the candidate needs resources to hire professionals who will produce advertising materials, lawyers, journalists, accountants. He also spends with infrastructure (committees, cars, office supplies, telephone, etc.) and holds events, polls and so many other devices available to stand out among the possibilities available to voters.

In the United States, theoretical models start from the assumptions of three different types of agents: (1) interest groups that donate to candidates seeking access, favors, or movement in a political position; (2) candidates who use their campaign expenses to increase their number of votes; and (3) voters who try to maximize their own well-being by voting for the candidate they consider the ideal (STRATMANN, 2017, 5)[3]. In this research, we will deal with the second type.

[2] Out of the 34 papers mentioned in the literary review conducted by Mancuso (2015), only three deal with the municipal level.

[3] Free translation of the author. Original excerpt: "These models generally start with the assumption of three different agente types: 1) Special interests who make contributions to candidates in return for access, favors, or movement on policy positions, 2) Candidates who use the campaign contributions that fund expenditures used to increase their vote share, and 3) Voters who attempt to maximize their own welfare by voting for whom they consider to be the most desirable candidate" (STRATMANN, 2017, p. 5).

Graph 1 – Jacobson Effect



Source: Jacobson (1978, apud FIGUEIREDO, 2009)

Jacobson's seminal work (1978) has paved the way for investigations that address the pros and cons of campaign expenditures for candidates. According to the author, expenditures have a positive effect on both incumbents (those who are already invested with power and are running for re-election) and challengers (those who challenge the ones already in office) with declining marginal returns. However, the challenger's line has a greater slope, indicating a more significant benefit of each additional unit spent on the campaign against incumbents (graph 1).

This would happen because citizens are already acquainted with candidates for re-election even before the electoral contest (JACOBSON, 1978). Therefore, challengers have much more to gain by raising voters' awareness throughout the campaign, that is, the broader the dispute – and more expensive –, the better it will be for the challengers (idem)[4].

Chart 1 – Synthesis of the literature

Author (year)	Argument
Jacobson (1978); Abromowitz, (1988); Ansolabehere and Gerber, (1994); Gerber (2004)	The incumbent's spending is inefficient, but the challenger's spending produces several gains (the regression coefficient associated with the challenger's campaign spending is positive and statistically significant)
Erikson and Palfrey (2000); Green and Krasno (1988); Gerber (1998); Levitt (1994)	After controlling by other variables, neither incumbent expense nor challenger expense exert significant effects (there are no significant differences in the effect of spending for the two groups)
Thomas (1989); Kenny and McBurnett (1994); Goidel and Gross (1994); Green and Krasno (2001))	After controlling for challenger quality and recursive causality, the marginal effect of incumbent spending is substantial (regression coefficient is positive and statistically significant)
Krasno, Green and Cowden (1994)	The incumbent campaign spending is dependent (reactive) of challenger spending

Fonte: Paranhos et al. (2013)

[4] Translated by the author. Original excerpt: "Nonincumbents normally have much more to gain in the way of voter awareness in the course of the campaign, implying that the more extensive – and therefore expensive – the campaign, the better known they will become" (JACOBSON, 1978, p. 479).

Researchers in the area have had difficulties with the omitted variables. Several models are used to try to solve endogenous questions. The efforts mobilized, especially in American literature, have formed a research puzzle in constant dynamics, as shown by the synthesis carried out by Paranhos et al. (2013) (Chart 1). This relation between expenses and votes would be represented by the following equation (PARANHOS et al., 2013 apud GERBER, 2004):

$$Votes_{inc} = \alpha + \beta_1 f(expenses_{inc}) + \beta_2 f(expenses_{chal}) + \beta_3 X + \varepsilon$$

As of 1993, Brazilian law allowed corporate donations and forced parties to declare expenditures on election campaigns. The improvement of the technology allowed the accountability to be carried out electronically, which has made this rendering more reliable and transparent from 2002 onwards. This resulted in an advance in the surveys on financing of the Brazilian electoral campaigns (SPECK, 2016). In Brazil, the literature on electoral investment is organized into three points of discussion: (1) the relationship between investment and outcome; (2) the relationship between electoral investments and benefits for funders; and (3) determinants of electoral investment (MANCUSO, 2015). The first point emphasizes the positive relation between financial resources and electoral results, bringing as dependent variables the votes (number or proportion) or results (elected and not elected) and independent the revenues and expenses (idem). The second point of discussion in the literature pointed out by Mancuso (2015) is about electoral investments and the benefit to these investors, who can be rewarded with bank loans, obtaining public contracts with the government, tax benefits, among others. Finally, the author points out that the third current that studies Brazilian electoral financing investigates the determinants of campaign investments, addressing contributions as dependent variables (ibidem).

Chart 2 – Studies on the dispute between incumbents and challengers in Brazil

Author	Office	Election year	Method	Results
Samuels (2001)	Federal Deputies	1994 and1998	OLS	*Incumbents and challengers have the same marginal gains as raising campaign expenditures*.
Figueiredo Filho (2009)	Federal Deputies	2006	OLS and Logistic Regression.	Expenditures of the challengers exert greater effect on the dispersion of votes, before the revenue of incumbents: 0.507 and 0.384, respectively.
Lemos, Marcelino e Pederiva (2010)	Federal Deputies and Senators.	2002 and 2006	Descriptive Statistics	Re-election candidates get more resources and spend more on average, but challengers get similar results by investing less money.
Peixoto (2010)	Federal and State Deputies.	2006	OLS	Interaction between expenses and expertise (being a deputy or senator) was negative, indicating the Jacobson Effect.
Paranhos et al. (2013)	Mayors (capitals)	2012	OLS and Logistic Regression	Incumbents are more efficient than challenging candidates, not being verified the Jacobson Effect.

Speck e Mancuso (2014)	Federal and State Deputies.	2010	Logistic Regression.	Association between funding and electoral success tends to be stronger for challengers than for incumbents (Jacobson Effect), with higher association for challenging women.
Speck e Mancuso (2013)	Mayor	2012	Logistic Regression.	In all scenarios analyzed according to the size of the electorate, incumbents are more likely to win than challengers.
Arruda et al. (2016)	Federal, State and Deputies Senators.	2014	OLS and Pearson's Correlation.	The impact of revenue on votes is greater for challengers for the three positions analyzed, confirming the Jacobson Effect.
Avis, Ferraz, Finan e Varjão (2017)	Mayors	2016	OLS and Discontinuous Regression.	The establishment of an expenditure ceiling reduced the incumbent's advantage.

Source: Elaboração do autor

The effects of incumbency in Brazil have been tested by researchers over the years as a proxy for measuring political capital (SPECK, MANCUSO, 2014). In this article, we consider incumbent that candidate for mayor who is running for re-election. Table 2 shows research results using the incumbents X challengers approach. Ordinary Least Squares (OLS) and logistic regressions are the most commonly used techniques.

The seminal work of Samuels (2001) pointed out that, in Brazil, 1% increase in campaign expenditures can increase the number of votes, for a vacancy in the Chamber of Deputies, by 0.5% (p.580). Incumbents and challengers would have the same advantage over expenditures, indicating that limiting expenditures would make electoral competition more competitive (SAMUELS, 2001). The conclusion is different from that advocated by Jacobson (1978), who argued that – given the context of the American political system – limiting campaign spending would protect incumbents. Further research found divergent results from those of Samuels (2001).

Figueiredo Filho (2009), Lemos, Marcelino and Pederiva (2010), Peixoto (2010), Speck and Mancuso (2014) and Arruda et al. (2016) verified the Jacobson Effect when analyzing the elections for federal deputy, with significant results also when the scope of the analysis covered the dispute for the state parliaments and Senate. By focusing on the municipalities, Speck and Mancuso (2013) have found that incumbents have more advantage. However, it was reduced in the 2016 municipal dispute, according to Avis, Ferraz, Finan and Varjão (2017), because, among other factors, more candidates launched the dispute due to the limitation of campaign expenses imposed by Law 13.165 / 2015 (BRASIL, 2015).

Regarding the analysis of Paranhos et al. (2013) on disputes in Brazilian capitals specifically, the authors concluded that the incumbents were more efficient than the challengers in turning money into votes in 2012. The 1% increase in campaign revenue would increase, on average, 0.866% in the amount of votes received by the incumbents, while the percentage increase for the challengers was 0.607% (PARANHOS et al, 2013), contradicting the Jacobson Effect.

Based on these findings we will reproduce the research model used by the authors to

know how the effect of spending on votes in the 2016 municipal campaign was in the capitals. This research, therefore, tests the hypothesis that the challengers were more efficient in transforming financial resources into votes than the incumbents (Jacobson Effect) in these municipalities. We have the following hypotheses, being null (H0) and alternative (Ha):

(1) H0: incumbents and challengers have the same efficiency in transforming financial resources into votes;

(2) Ha: challengers are more efficient than incumbents at turning financial resources into votes.

3 Research design

Accountability data is available from the TSE Electoral Data Repository (TSE, 2017). Although there are indications that some candidates do not reliably declare their revenues and expenses to the Electoral Court – there are cases where the competitor informs that they have not spent anything during the campaign, which is very unlikely to happen – we consider this to be the best basis for this type of analysis. In order to give more transparency to the tests performed in this article, we have made our database available on the Open Science Framework (OSF) [5].

Chart 3 – Research design

Population	Candidates for mayor in the 26 capitals (N = 196)
Variables	Dependent variable: votes (logarithm) Independent variable: campaign revenue (logarithm)
Controls	Sex (dummy: 0 = male, 1 = female), color (dummy: 0 = not white, 1 = branco) e schooling (categorical: 4 = Complete Elementary School, 6 = Complete High School, 7 = Incomplete Superior, 8 = Complete Superior)
Hypothesis	Challengers are more efficient than incumbents at turning financial resources into votes (Jacobson Effect)
Techniques	Descriptive Statistics, T-Test, Analysis of Variance, Pearson's Correlation, and Ordinary Least Squares Regression (MQO)[6]

Source: Elaboration of the author based on Paranhos et al. (2013)

Population is formed by the candidates for mayor who competed in the Brazilian capitals, which represents an N equal to 196[7]. We exclude from the analysis the candidates who had voided vote by decision of the court (rejection of the candidacy), resigned or did not declare campaign expenses [8].

Our dependent variable will be the number of nominal votes; and the independent

[5] Material available for replication at address <osf.io/wa39s>.
[6] MQO or, in English, OLS (*Ordinary Least Squares*).
[7] Like Paranhos et al. (2013), we assume that the ideal would be the randomization of the sample, however, the disaggregation of the data provided by the TSE will require a greater future effort to prepare a more robust database.
[8] They do not declare expenses: Paulo Sérgio da Silva Falcão (PSTU, Maceió), José Luís Teixeira do Lago Neto (PPL, São Luís) and Thelma Maria da Silva Bastos (PCO, Rio de Janeiro); Resignation: Lauro Sérgio Davi (PROS, Campo Grande); Applications rejected: Rosana Santos de Oliveira (PSOL, Campo Grande), José Cleber Barros Rabelo (PCB, Belém), Afonso Celso Rangel Santos (PRP, Curitiba), Roberto Eduardo Sobrinho (PT, Porto Velho), João Paes da Costa , Aracaju), Alexander Ladislau Menezes (PRP, Boa Vista), Márcio Henrique Junqueira Pereira (Pros, Boa Vista) and Cassius Clay Assunção Fonseca (PSOL, Palmas).

variable, the total collected by the candidates that disputed the city halls of capitals in 2016. Both will be transformed into a Neperian logarithm so that the distribution curve approaches normality. Our model, therefore, will be a double log.

As controls, we will use the candidates' personal characteristics – sex, color, and schooling – to see if they interfere with the relationship between money and electoral performance. The literature points to a disadvantage for women (PEIXOTO, 2010; SECKCHET; SPECK, 2012; SPECK; MANCUSO, 2013), and traditionally, the political career in Brazil has a greater predominance of fair-skinned people (SPECK, MANCUSO, 2017).

We will use descriptive and multivariate statistics (comparison of means, variance analysis, Pearson's correlation and ordinary least squares regression to try the hypothesis that challengers are more efficient in their campaign expenditures than incumbents (Jacobson Effect) in the 26 Brazilian capitals.

4 Results and discussion

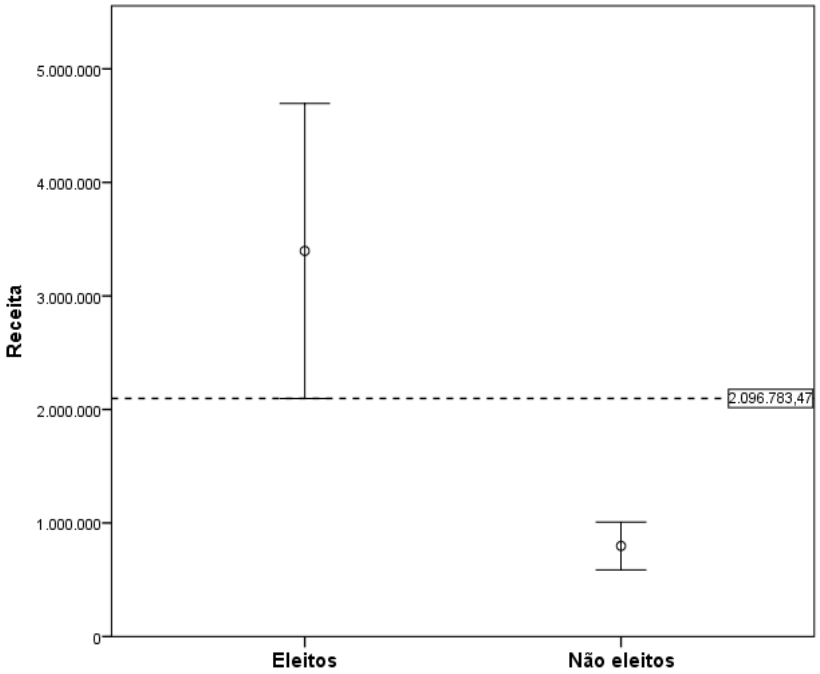
Before presenting the tests to verify the hypothesis of this work, we will use the descriptive analysis of the income of all the candidates for mayor who disputed the elections in the capitals of the Country and, also, disaggregated by type of candidature and challengers. Out of the 196 candidates analyzed, 176 are challenging and 20 mayors have run for re-election.

Table 1 – Campaign revenue descriptive statistics

N	Minimum	Maximum	Average	Standard Deviation
196	11,60	12.446.819,95	1.142.256,87	1.946.837,23

Source: Author's elaboration.

Graph 1 – Average of elected and non-elected expenses (IC 95%)



Source: Author's elaboration.

Out of the 26 elected, 15 were incumbents and 11 were defiants. Five capital mayors tried their second term, but failed to re-elect. Table 1 shows a standard deviation of 1,946,837.23, while the average revenue was R $ 1,142,256.87. In the 2012 campaign, Paranhos et al. (2013) found an average of R $ 2,627,985.50 and a standard deviation of 5,268,806.05, a much more considerable asymmetry when compared to the 2016 dispute.

On average, elected people spent more on their campaigns than those who did not elect in 2016 (figure 1). This is a first indication that, as the literature points out, electoral success is strongly related to candidate spending. After analyzing the revenue of all applicants in aggregate form, we will disaggregate the collection of the challengers and the candidates who have run for re-election.

Table 2 – Descriptive statistics by type of candidate

Type of candidate	N	Minimum	Maximum	Average	Standard deviation	Coefficient of variation
Incumbents	20	224.810,09	10.407.826,88	2.774.212,82	2.883.812,93	1,03
Challengers	176	11,60	12.446.819,95	956.807,33	1.726.688,80	1,80

Source: Author's elaboration

A challenging mayoral candidate spent an average of R $ 956.807,33 during the 2016 campaign, a much smaller amount when compared to the expenses of those who tried to re-elect in the capitals, which were R $ 2,774,212.82 (Table 2).

Table 3 – T-test for independent samples (Revenue)

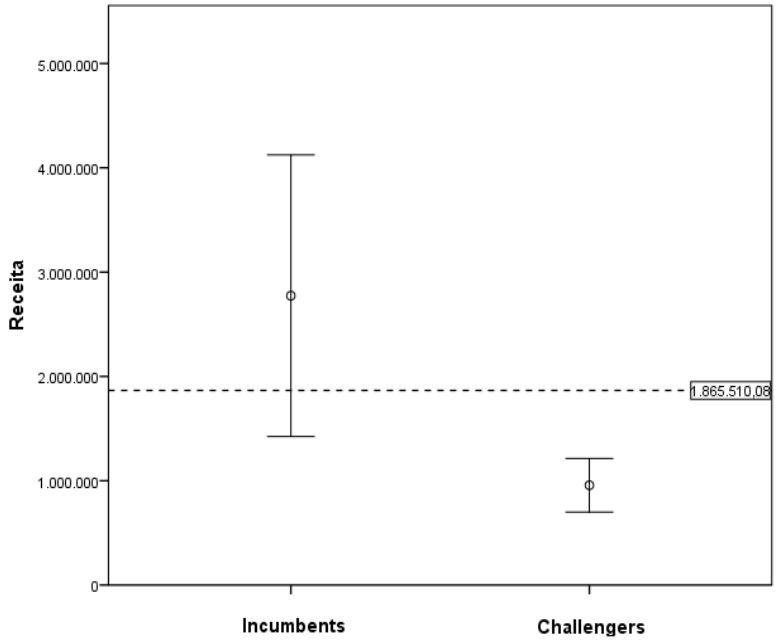
	Levene test for equality of variances		T-Test for averages						
								95% Confidence Interval of Difference	
	F	Sig.	t	gl	Sig. (bilateral)	Average Difference	Standard error of difference	Inferior	Superior
Equal variances assumed	11,970	0,001	4,118	194,000	0,000	2,191	0,532	1,141	3,240
Equal variances not assumed			7,574	46,807	0,000	2,191	0,289	1,609	2,773

Source: Author's elaboration

The T-test for independent samples (table 3) shows heterogeneity of variance between the two groups of candidates (F = 11,970 and p-value = 0.001). As a result, we calculated the coefficient of variation[9] to compare means between groups with different distributions. The result was 1.80 for challengers and 1.03 for those who competed for re-election (table 2). In 2012, Paranhos et al. (2013) found coefficients of variation 2.25 for challengers and 1.23 for incumbents. The T-Test also leads to rejection of the null hypothesis (H0), with t = 7.574, p-value <0.001 and confidence interval of the difference between 1.609 and 2.773. That is, candidates for re-election and challengers turn revenue into votes differently.

[9] The same operation was performed by Paranhos et al. (2013). The coefficient is the result of the division between the standard deviation and the mean.

Graph 2 - Campaign revenue by type of candidate (95% CI)



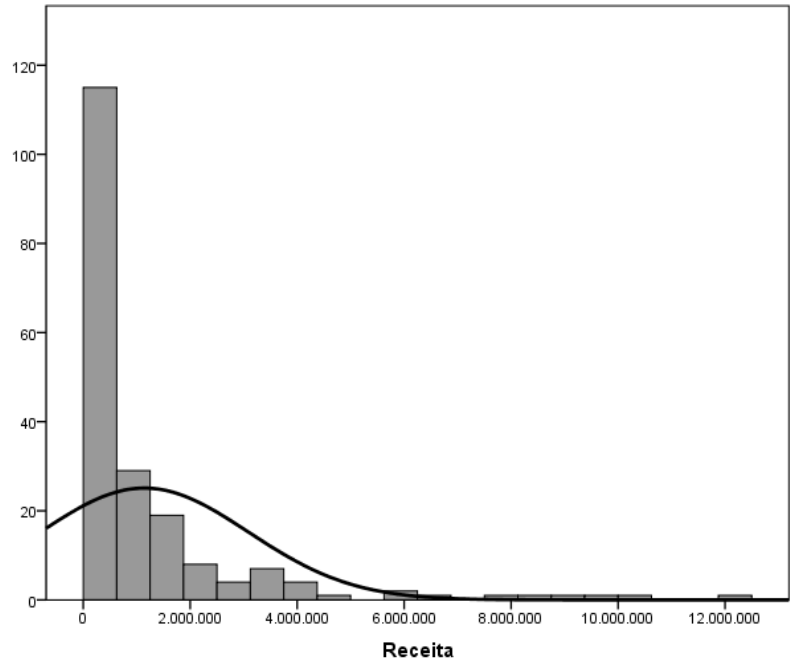
Source: Author's elaboration

With a 95% confidence index, graph 2 shows the average revenue between the two types of postulants[10], with the dotted line at R $ 1,865,510.08. The bar shows the variation of the recipes of each of the groups. In 2012, the average spending between the two groups was higher, with the line going through the point R $ 2,627,985.50 (PARANHOS et al, 2013, p.37). As in 2012, in 2016 challengers continued to spend on average less than incumbents. The result of this research points to a difference from the previous findings: in the 2012 contest in the capitals, challengers were in line with the average spending, which did not happen in 2016. Candidates competing for re-election failed to spend less than average, unlikely what happened in 2016.

Because of the asymmetry in the distribution of the sample, we transformed our variables into neperian logarithm to observe the normal distribution (graphs 3 and 4) before the correlation and linear regression tests.

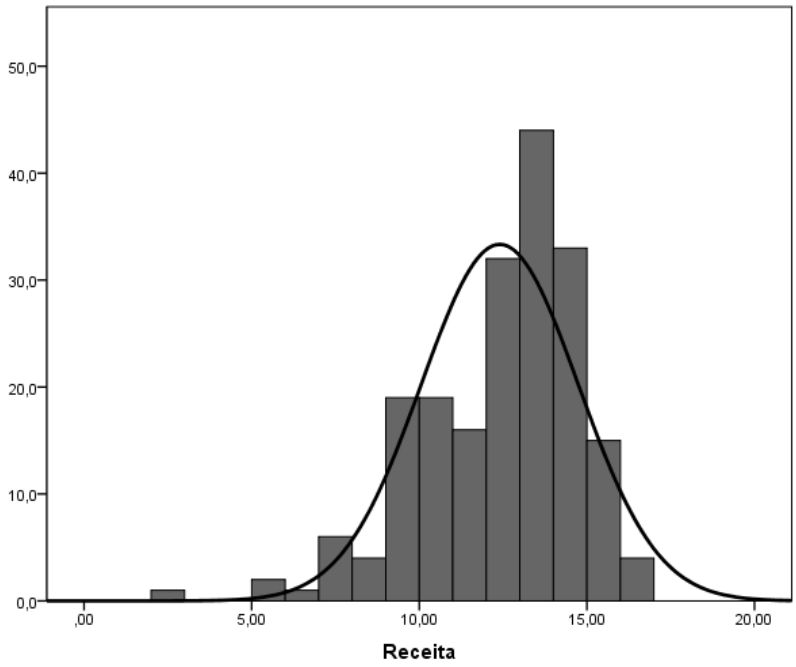
[10] Sum of the means of the two groups divided by two.

Graph 3 – Distribution of revenue in absolute numbers (2016)



Source: Author's elaboration

Graph 4 – Log revenue distribution (2016)



Source: Author's elaboration

Table 4 shows that there is a positive correlation between income and votes in all Brazilian capitals, with strong and significant correlation in Salvador (0.901), Fortaleza (0.907), Goiânia (0.965), São Luís (0.929), Campo Grande (0.907), Belém (0.827), Recife (0.879), Teresina (0.966), Curitiba (0.914), Rio de Janeiro (0.911), Natal (0.929), Porto Alegre (0.951)

and São Paulo (0.897). In substantive terms, the results show that, in these capitals, the higher the campaign expenditures, the greater the number of votes. Only in six cities – Rio Branco (0,940), Maceió (0,657), Macapá (0,665), Cuiabá (0,733), João Pessoa (0,897) and Florianópolis (0,678) – the results were not significant.

Table 4 – Pearson correlation between revenue (log) and votes (log)

Capital	N	Correlation	P- value
Rio Branco	4	0,940	0,060
Maceió	7	0,657	0,109
Manaus	9	0,798	0,010
Macapá	7	0,665	0,103
Salvador	7	0,901	0,006
Fortaleza	8	0,907	0,002
Vitória	5	0,901	0,037
Goiânia	7	0,965	0,000
São Luís	8	0,929	0,001
Belo Horizonte	11	0,686	0,020
Campo Grande	13	0,905	0,000
Cuiabá	6	0,733	0,098
Belém	9	0,827	0,006
João Pessoa	4	0,897	0,103
Recife	8	0,879	0,004
Teresina	7	0,966	0,000
Curitiba	8	0,914	0,001
Rio de Janeiro	10	0,911	0,000
Natal	7	0,929	0,002
Porto Velho	6	0,874	0,023
Boa Vista	7	0,803	0,030
Porto Alegre	9	0,951	0,000
Florianópolis	7	0,678	0,094
Aracaju	6	0,900	0,015
São Paulo	11	0,897	0,000
Palmas	5	0,900	0,037

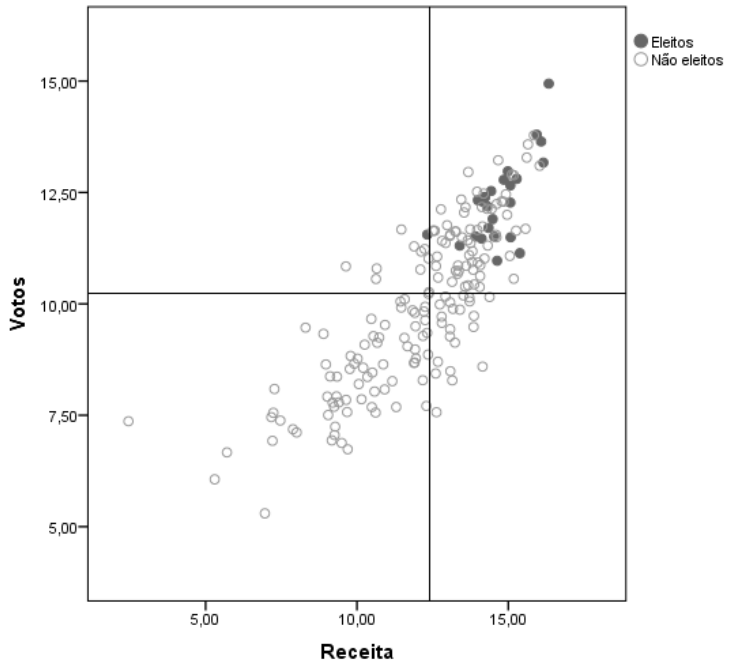
Source: Author's elaboration.

Table 5 – Coefficients of all candidates (log-log)

Model MQO		Non-standardized coefficients		Standardized coefficients		
		B	Standard error	Beta	t	Sig.
	Constant	2,082	0,398		5,229	0,000
	Revenue (log)	0,657	0,032	0,831	20,835	0,000

Source: Author's elaboration

Gráfico 6 – Revenue (log) and Vote (log)



Source: Author's elaboration

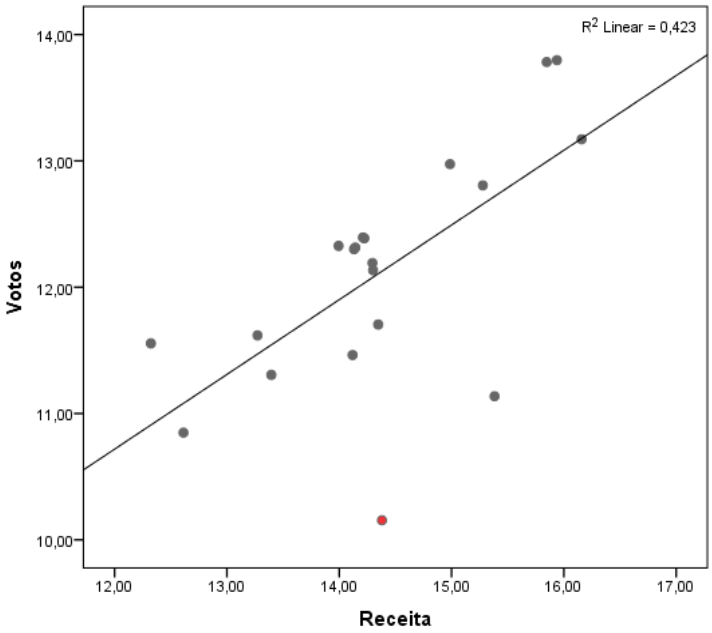
In all cases (N = 196), using the Linear Model of Ordinary Least Squares (OLS), we observed a positive relation between the number of votes and the income of the candidates who competed in the city halls in 2016, with B = 0.657, β = 0.831 and p-value <0.001 (table 5). Estimates show that the 1% increase in revenue represents an increase of 0.657% in the number of votes, on average (t = 20,835 and p-value <0.001). The results are very similar to the findings of Paranhos et al. (2013), when – analyzing the candidates in aggregate form – the 1% increase in campaign revenue pointed to a rise of 0.646% in the average number of votes (PARANHOS et al., 2013).

Graph 6 – which has the means as reference lines for the "x" and "y" axes – shows the ones in the upper right quadrant. In the model, the average revenue variation explains 69% change in the number of votes received by the candidates (adjusted $R^2 = 0.690$). That is: thus, as in 2012, in 2016 also the rule was that the more financial resources, the more votes the postulants won. We will now analyze each of the groups separately to test the hypothesis of this work.

Disaggregating by type of candidate, we see in all the graphs (7, 8, 9 and 10) a positive

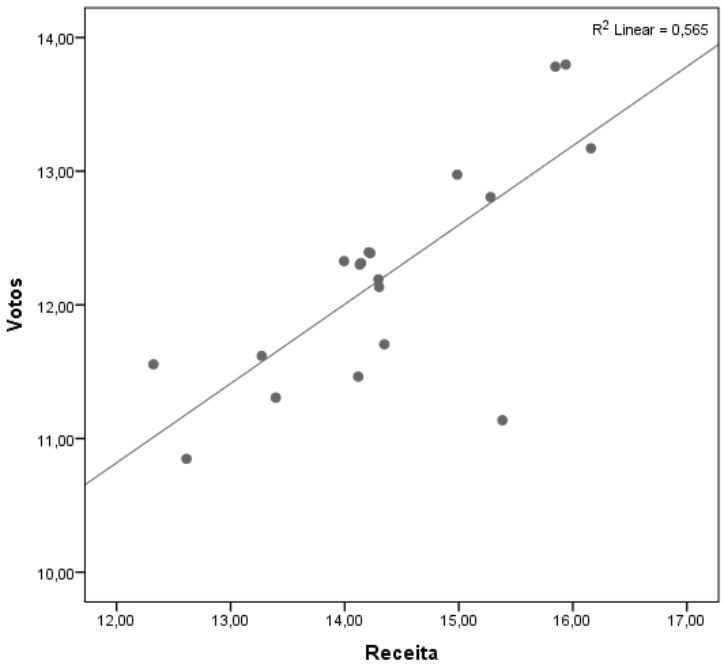
relation between revenue and votes. For the candidates who competed for re-election (Graph 7), the model explains 42.3% ($R^2 = 0.423$) of the variance of the average of the votes for the variance of revenue. Disregarding the outlier (Graph 8), this percentage rises to 56.5% ($R^2 = 0.565$). For challengers (Graph 9), the model explains 67.1% of this variance ($R^2 = 0.671$). The coefficient of determination rises to 0.691 when we remove the outlier to fit the model (Graph 10), which means that our explanation undergoes a slight increase and reaches 69.1%.

Graph 7 – Expenditures (log) and votes (log) by type of candidate – *Incumbents*



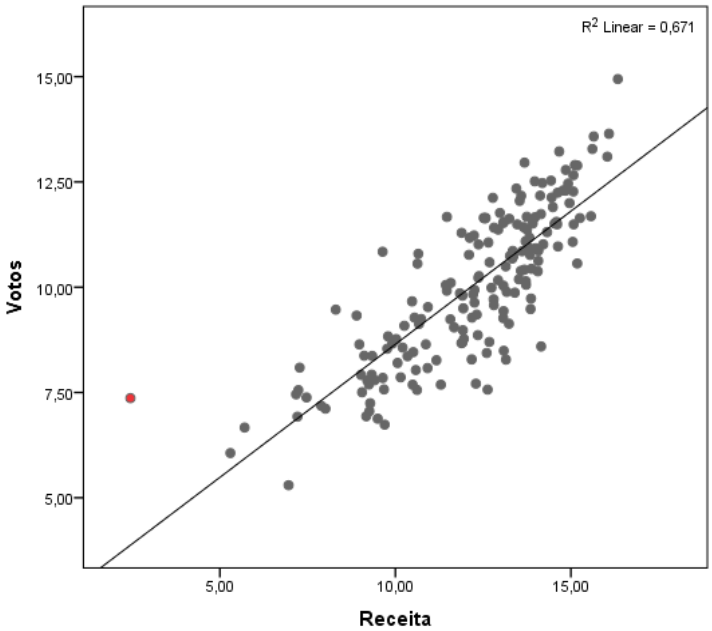
Source: Author's elaboration

Graph 8 – Expenditures (log) and votes (log) by type of candidate without outlier [11]– *Incumbents*



Source: Author's elaboration

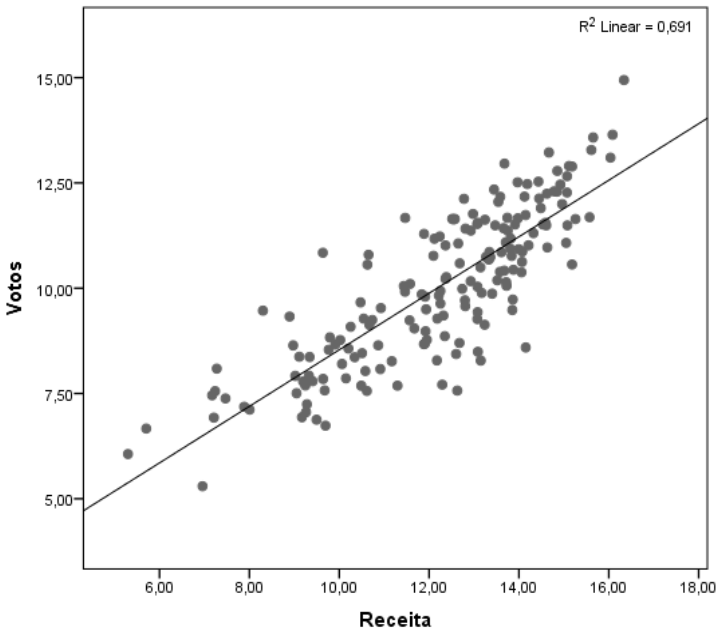
Graph 9 – Expenditures (log) and votes (log) by type of candidate – *Challengers*



Source: Author's elaboration

[11] João Alves Filho (DEM), in Aracaju, spent 1,758,905.28 and obtained 25,715 votes (not elected).

Graph 10 – Expenditures (log) and votes (log) by type of candidate without outlier [12] – *Challengers*



Source: Author's elaboration

Table 6 – Coefficients of incumbents (log-log)

Model MQO		Non-standardized coefficients		Standardized coefficients		
		B	Standard error	Beta	t	Sig.
	Constant	3,620	2,344		1,544	0,140
	Revenue (log)	0,591	0,163	0,651	3,634	0,002

Source: Author's elaboration.

Table 7 – Challengers Coefficients (log-log)

Model MQO		Non-standardized coefficients		Standardized coefficients		
		B	Standard error	Beta	t	Sig.
	Constant	2,325	0,416		5,588	0,000
	Revenue (log)	0,632	0,034	0,819	18,842	0,000

Source: Author's elaboration

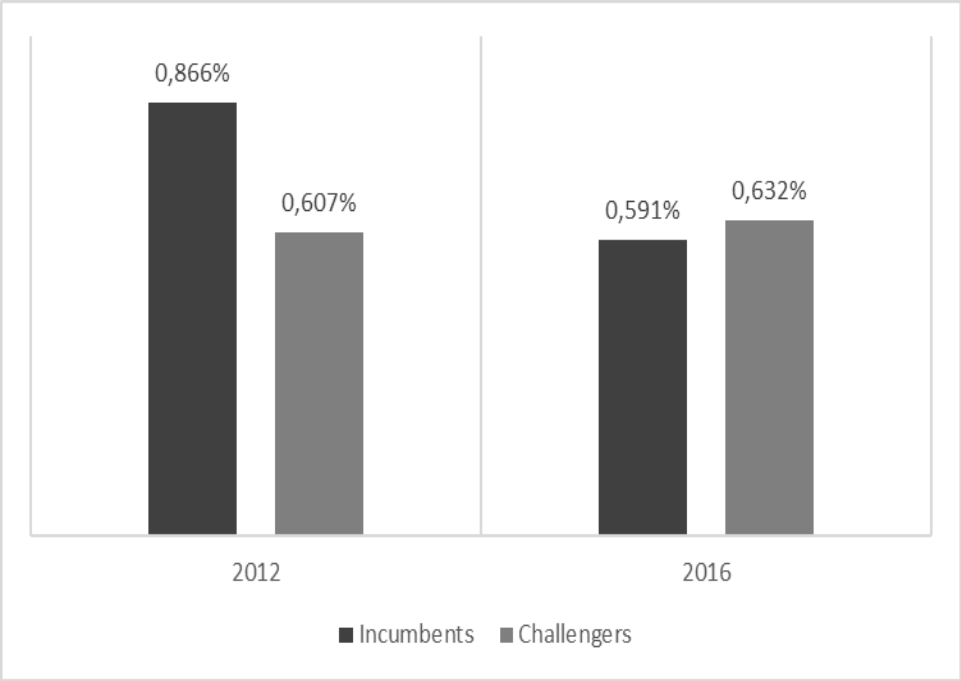
Considering the impacts from the non-standard coefficients of each group, we found a value of B = 0.591 (t = 3.634 and p-value <0.005) for incumbents (Table 6) and B = 0.632 (t = 18.842 and p- 0.001) for challengers (Table 7). This means that candidates competing for

[12] Maurício Leal Júnior (PEN), in Florianópolis, informed the Electoral Court that he spent only R $ 11.60 to obtain 1,580 votes (not elected).

reelection increase by an average of 0.591% the number of votes by increasing 1% in revenue (adjusted $R^2 = 0.391$). Challengers are more efficient at turning money into votes: every 1% more in revenue, the average amount of votes is 0.632% (Adjusted R $ = 0.669).

We therefore confirm the Jacobson Effect in the majority disputes in the country's capitals in 2016. The result differs from that found by Paranhos et al. (2013), when OLS estimates indicated that the 1% increase in campaign revenue represented an average gain of 0.866% (t = 4.535 and p-value <0.001) in the number of candidate votes in the situation and 0.607% (t = 17.48 and p-value <0.000) for challengers, and the Jacobson Effect is not applied in the 2012 mayoral elections in capitals (figure 11).

Graph 11 – Non-standardized coefficients in 2012 and 2016



Source: Elaboration of the author with information from Paranhos et al. (2013)

Table 8 – Coefficients with control variables

Model MQO		Non-standardized coefficients		Standardized coefficients		
		B	Standard Error	Beta	t	Sig.
	(Constant)	1,130	0,853		1,325	0,187
	Sex	-0,168	0,193	-0,036	-0,871	0,385
	Education	0,146	0,111	0,056	1,316	0,190
	Color	0,053	0,162	0,014	0,326	0,745
	Revenue (log)	0,643	0,033	0,814	19,359	0,000

Source: Author's elaboration

Controlling for the personal characteristics of the candidates, we did not find statistically significant results in the model for sex, color and schooling (Table 8). This means that these characteristics had no effect on the performance of candidates for mayor in the capitals in the

2016 elections when interacting with the variable revenue, which remains positive and significant (p-value = 0.000).

Final considerations

In this analysis, we confirm the occurrence of the Jacobson Effect in the majority elections of 2016 in the Brazilian capitals. We found that challengers were more efficient than incumbents in transforming campaign resources into votes, thereby confirming the hypothesis raised in this article (Ha). In 2012, this effect was not observed (PARANHOS et al., 2013). Like Paranhos et al. (2013), we can not make inferences for other positions because of the size of the sample and the temporal limitation, thus needing to improve this model by adding more cases and controlling by other variables, such as television time, coalition and evaluation of incumbents by the electorate.

The results show that, although the race for citizens' votes is still very dependent on resources (elected on average, they continue to spend more), the gap between the ability to turn revenues into votes in capitals has been reduced among those who run for reelection and challenging. One of the advantages of reproducing the framework of Paranhos et al. (2013) is to be able to make this comparison between the two disputes, which makes us believe that we are collaborating for the construction of scientific knowledge.

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Article received: 11/14/2017

Article accepted: 03/14/2018